International Journal of Law in Changing World

Volume 4 Issue 2 (2025) ISSN 2764-6068

Research article
JNL: https://ijlcw.emnuvens.com.br/revista
DOI: https://doi.org/10.54934/ijlcw.v4i2.156

SMART CONTRACTS UNDER THE EGYPTIAN CIVIL LAW: STRUCTURE AND TERMINATION

Mohammed Ibrahim Abdel Nabi
Public Prosecution Office at the Egyptian Court of Cassation, Egypt

Yassin Abdalla Abdelkarim
Sohag Primary Court, Sohag, Egypt

Article Information:

Received
October 10, 2025
Reviewed & Revised
November 9, 2025
Accepted
December 2, 2025
Published
December 30, 2025

Keywords:

smart contract,
Egyptian Civil Law,
blockchain,
digital contractual means,
self-destructive smart contracts (selfdestruct)

ABSTRACT | 摘要 | RESUMEN

The prevalence of digital technologies in contemporary human interactions has elevated the role of digital means in contractual relations among society members, prompting renewed attention to smart contracts as automated, code-based legal instruments. This study examines the nature, structure, and operational mechanisms of smart contracts, comparing them to traditional contract theory under the Egyptian Civil Code (Law No. 131/1948). Smart contracts create binding obligations through software-based processes that rely on encryption, offering efficiency but also posing technical and doctrinal challenges. The paper investigates whether the Egyptian legal framework can adequately address issues such as consent, validity, termination, and dispute resolution in digital contracts. By analyzing smart-contract characteristics through the lens of Egyptian civil-law principles, the study seeks to clarify how existing doctrines may be adapted to accommodate emerging technologies. It ultimately proposes a jurisprudential foundation for integrating smart contracts into Egyptian law, ensuring legal certainty and coherence with established contractual norms.

FOR CITATION:

Ibrahim Abdel Nabi, M., & Abdalla Abdelkarim, Y. (2025). Smart Contracts Under the Egyptian Civil Law: Structure and Termination. International Journal of Law in Changing World, 4 (2), 20-37. DOI: https://doi.org/10.54934/ijlcw.v4i2.156

1. INTRODUCTION

Critical technological developments bear glaring impacts on legal fields. i.e., contractual aspects. Whenever a new technology appears on the horizon, it casts its shadow on transactions that have legal effects. International trade no longer follows traditional patterns of contract and transaction formation but has evolved, driven by successive technological developments, into electronic contracts. The latter are characterized by concluding via remote communication. Technological progress exceeded this stage to produce smart contracts, which enable the automatic formation and execution of contractual terms and conditions in the digital environment. The core pillar of this sphere is blockchain technologies. Smart contracts are a creative production of this newly emerging technology [6] (p. 477). The emergence of blockchain technology and smart contracts in the digital environment enhances trust and transparency in digital transactions while reducing reliance on intermediaries. Moreover, it helps reduce costs and increase operational efficiency.

This novel mechanism has recently emerged in the context of concluding traditional or electronic contracts. Smart contracts are the next generation of electronic contracts, as they are information programs that aim to implement the contract automatically without human intervention [6] (p. 482). An intermediary documents the transaction between the contractors on its platform using blockchain technology [12] (p. 7). Despite being advantageous, adopting blockchain technologies in contracts imposes several challenges due to contradictions with the existing legislative frameworks, which tend toward traditionalism. The contradiction creates legal and technical odds in practice, including the legislative vacuum of blockchain technology regarding contract theory. Moreover, questions arose about legal solidity, the contract's flexibility, its ability to be modified, and the dissolution of the contractual bond through termination.

The research aims to clarify how smart contracts work and identify areas that can benefit from their application, e.g., trade, law, and finance. It seeks to provide researchers and decision-makers with a deep understanding of the technical and legal challenges associated with adopting this technology from the perspective of Egyptian Civil Law by reviewing the contractual conceptions of smart contracts and blockchain technologies. Thus, it provides an appropriate legal and regulatory framework that supports the safe and efficient application of smart contracts.

https://doi.org/10.54934/ijlcw.v4i2.156

2. SMART CONTRACT FROM AN EGYPTIAN LEGAL PERSPECTIVE BACKGROUND

The concept of the smart contract has crystallized in contemporary legal thought through jurisprudential efforts that worked to understand its essence and adapt its technical content to the legal reference with a disciplined structure. Legislative efforts have combined with it through what the legislative authority has formulated in terms of legal texts that include an explanation of the concept of the smart contract within their midst.

2.1 Smart Contract Concept in Jurisprudence and Legislation

The Egyptian legislature defined the digital contract in Law No. 5/2022 on regulating and developing the use of financial technology in non-banking financial activities[1]. Under this law, a digital contract is a contract that includes the rights and obligations of the contracting parties electronically and can be recorded in a digital register. Accordingly, the digital contract may be a "smart contract" through a program that aims to implement, control, or document the provisions of the contract automatically.

However, the definition of a smart contract is not as simple as what the Egyptian legislator stated in the aforementioned law; as we will explain, the smart contract is not a contract in the traditional, conventional sense. For some, it is an information program that seeks to implement the contract in an automatic, self-executing manner without the intervention or mediation of others [6] (p. 482). For others, it is a computer program that works through blockchain technology and is implemented through the network. It is a program that plays an effective role in the automatic implementation of the conditions set in advance by the programmer [7] (p. 3). They are contracts that have been integrated with blockchain technology, granting them special technical characteristics consistent with the many advantages that this technology offers, including legal security and automatic execution of the contract after verifying the availability of the contract's elements. Their powerful technological advantages offer enhanced abilities to express the intents of the contracting parties and introduce their agreed-upon obligations and duties automatically.

Therefore, smart contracts are an advanced version of traditional contracts that are capable of executing and enforcing their terms automatically without human intervention when specific conditions are met [11] (p. 869). Accordingly, the smart contract is coded in a programming language by programmers, unlike traditional contracts that are written in a natural language, whether Arabic or English, by lawyers, legal experts, or the contracting parties themselves. This fact applies to the terms, conditions,

[1] Official Gazette No. (5) bis (d) dated 2/8/2022.

https://doi.org/10.54934/ijlcw.v4i2.156

and clauses of the contract. They are formulated as agreed upon by parties in the form of lines of symbols, codes, and programming and are stored on platforms operating with blockchain technology with a time stamp and are not subject to change or cancellation [7] (p. 4-5). When certain conditions are met according to the agreement, the required legal effect is produced, such as the transfer of ownership or payment of money. This reflects the smart contract's technical characteristics when integrated with platforms that operate with blockchain technology, which are security, transparency, stability, and non-amendability.

2.2 Egyptian Conventional Theory of Contract

Comparing the concept of the smart contract from the technological aspect with what is stipulated in the general theory of contracts reveals that the contract, according to the traditional theory, is every legal act issued by consent that is recognized by the law and is intended to create a legal status immediately upon its conclusion, such as sales, lease, and insurance contracts, or immediately upon the issuance of acceptance, such as an agency contract [17] (p. 458). In the judicial conception, the Egyptian Court of Cassation does not distinguish the smart contract concept from the conventional concept rooted in civil law and doctrine. The Court applies the conventional contract theory to each agreement intended to create a legal effect between parties[2].

Civil law jurisprudence emphasizes consent as the chief requirement of the contract concept [17] (p. 735). It should be explicitly stated in the agreement structure, and the acceptance should agree with the offer and be free from defects of will. The second requirement lies in the existence of the subject and its ability to be specified. The subject must be legitimate and not violate public order or morals [17] (p. 761-763). Last, the reason is the motive behind the contract and the commitment of the contracting parties. Whenever one of the pillars of the contract is missing, it becomes null and void [5] (p. 213-217). Therefore, if the contract contains elements of consent, subject matter, and cause, then it is valid, and the legal effects that the contracting parties intended will result from it[3]. The contract in its traditional form is written in one of the natural languages, whether Arabic or English, on paper or on electronic media.

To conclude, the smart contract is not a contract under the conventional conception of the general theory of contracts. At its core, it is a computer program or technological mechanism for the automatic implementation of the terms of the traditional contract, and it differs from the latter in terms of the language written in it and the absence of real oversight to ensure the availability and validity of its elements.

[2] Egyptian Court of Cassation - Appeal No.794 of 52 J.
[3] Egyptian Court of Cassation - Appeal No.12590 of 91 J.

https://doi.org/10.54934/ijlcw.v4i2.156

3. THE STRUCTURE AND CONCEPT OF BLOCKCHAIN TECHNOLOGY

The dominant factor operating in the environment of smart contracts is blockchain technology. Only platforms supported by blockchain technology can manage and conclude these contracts. Blockchain is an extensive database consisting of a series of blocks linked to each other via digital signatures, in which transactions are recorded between contracting parties using the electronic network, and information is sent between those blocks [1] (p. 2887-2889). A technology for storing and transmitting information transparently and securely without a central control body. It offers a protected, open-source database to document information, which safeguards against hacking. Moreover, this technology is tough and solid, and the document cannot be modified in any way. If the transaction is completed, it cannot be changed or reversed, and it does not require a third party. Blockchain operates through several platforms. Ethereum platforms are dominant in this aspect [16] (p. 96). They permit users to create the computer applications that they utilize to conclude the smart contract. Therefore, Ethereum's efficient capabilities enhance its use in digital contractual relations. In this section, the study reviews the debate over the impacts of blockchain's core features on contractual legal aspects under Egyptian Civil Law doctrine and jurisprudence.

3.1 Security

According to Mohamed Hassan (2023, p. 11), Smart contracts formed and executed on the blockchain are characterized by data protection, whether for parties or transaction data. This reflects blockchain's high security standards. However, this state of the art is not definite, as these digital platforms are vulnerable to several cyber threats, such as hacking or information technology outages. Furthermore, considerable concerns arise about the smart contract data confidentiality under conventional contract theories because utilizing novel technologies such as blockchain and smart contracts in concluding contracts triggers questions on the parties' confidentiality of identity, contradicting the obvious rules of the general theory of traditional contracts in Egyptian Civil Law [5] (p. 146-148). The chief requirement of the contract parties is the eligibility to perform legally. They should have the full capacity to execute legal acts. Determining this eligibility is straightforward for human users in traditional contracts, but not so straightforward for smart contracts, since smart contracts integrated into blockchain platforms rely on encryption. Without revealing the parties' true identities, it is difficult to verify that the party has fulfilled one of the contract's pillars, namely, capacity. This creates a technical odd that implies developing a solution to maintain the balance between the legal requirements for contract integrity and the effective use of technology to advance contractual relations.

https://doi.org/10.54934/ijlcw.v4i2.156

3.2 Non-amendability

Another technical odd concerns the flexibility of the smart contract, which might hinder the expansion of blockchain technology adoption in contractual relations. Ali Hassan (2022, pp. 764-769) argues that smart contracts are executed automatically according to the code or tokens once they are registered on a blockchain platform and cannot be modified. Therefore, the contract data becomes formidable to delete, modify, or change. This enhances the stability of the contractual relation reflected by the contract. However, errors in the contract structure cannot be remedied, which creates conflicts that threaten transaction stability [6] (p. 478). Being constant and non-amendable, the smart contract might not fulfill the requirements of Article 147 of the Egyptian Civil Law, which states that it must be "the law governing the parties' relation, and it may not be revoked or modified except by agreement of the two parties or for reasons determined by law." Consequently, the principle of the sovereignty of the will continues to dominate legal thought, emphasizing that neither party to a contract should revoke, terminate, or modify the agreement in any way that deviates from its terms unless mutual consent is obtained[4]. Thus, the smart contract's non-amendability creates an obstacle to the parties' common will to amend the contract's terms later, after it is concluded. Moreover, it contradicts the second paragraph of the aforementioned article that states "However, if exceptional general incidents occur that could not have been anticipated and their occurrence results in the implementation of the contractual obligation, even if it does not become impossible, becoming burdensome to the debtor in a way that threatens him with a huge loss, the judge may, according to the circumstances and after balancing the interests of both parties, reduce the burdensome obligation to a reasonable limit, and any agreement to the contrary shall be null and void." In light of this, it could be concluded that a chief effect of this feature is that smart contracts cannot be modified to keep pace with new developments and changes during the period of contract implementation, especially if implementation takes place over periods, as if it were a supply contract, for example, which restricts the authority of the judiciary to restore balance in contractual obligations.

3.3 Transparency

One notable feature of blockchain technology is its open-source nature, which grants everyone on the network access to information meant to be publicly available. At the same time, it enables the concealment of sensitive information, ensuring it is visible only to specific individuals. [12] (p. 37) This combination of openness and selective privacy makes blockchain a technology characterized by both transparency and confidentiality.

[4] Egyptian Court of Cassation Appeal No.14167 of 89 J.

https://doi.org/10.54934/ijlcw.v4i2.156

A potential conflict may arise in this context when considering the general theory of contracts, which allows parties to define the terms of their agreements so long as they do not violate public order. Contracts might contain sensitive information or trade secrets, posing a challenge when utilizing blockchain technology to execute smart contracts.

4. USING BLOCKCHAIN TO CONCLUDE CONTRACTS UNDER EGYPTIAN CIVIL LAW

4.1 Practical Mechanism

Once the concept of blockchain technology is clarified, one of its most significant applications is the execution of smart contracts. However, this is not always the case, as smart contracts can function independently of blockchain. Through blockchain technology, the process of creating and fully executing certain contracts can be carried out entirely without human involvement [16] (p. 96). Therefore, smart contracts within the blockchain pass through several stages.

The first stage involves converting the contract terms and conditions from natural language (human language) to a programming language, expressed as symbols and code necessary to operate and activate smart contracts [7] (p. 5).

The second stage includes copying the code (contract) onto the blockchain platform. The programmer uploads the contract to the platform using encryption techniques and inserts the smart contract into a blockchain block, which contains other transactions and is permanently added with an electronic timestamp. [5]To specify the date and time of the transaction so that anyone can track it [7] (p. 5).

The third stage is contract implementation. When the conditions set in advance are met, the contract automatically implements its terms and clauses, producing its legal effect between the parties. It no longer depends on the will of its two parties or a third party and does not require any additional approvals or procedures [7] (p. 6).

Finally, after execution, the smart contract remains stored within the blocks unless its structure and programming include a "self-destruct function" to end its legal and real existence.

[5] What is placed on an electronic document and takes the form of letters, numbers, symbols, signs, or other things that link that data to a specific time to prove the existence of that electronic document at that time - Ministry of Communications and Information Technology Resolution No.467 of 2024 amending the executive regulations of Law No. 15 of 2004 regulating electronic signatures and establishing the Information Technology Industry Development Agency. Published in the Egyptian Gazette - Issue 141 (continued) dated 7/2/2024.

https://doi.org/10.54934/ijlcw.v4i2.156

4.2 Challenges

Despite the benefits of technological developments, practice reveals flaws and shortcomings that pose technological and legal challenges, hindering the adoption of smart contracts in legal life.

4.2.1 Technological Challenges

Concluding contracts and converting them into symbols and codes by reformulating the traditional contract from the natural language in which it was written to the programming language - computer language - in the form of code, i.e., symbols and forms consisting of a set of instructions in the form of a condition and a result, meaning that if the condition is met, the effects result [12] (p. 32). The smart contract is written in one of two languages, one of which is called "Python" and the other is called "JavaScript". This requires knowledge of the basics of programming, as the two mentioned languages are programming languages. Because the programmer may not be a legal professional and lacks essential legal background, the contract code would be legally inefficient.

The contracting parties must trust the programmer tasked with translating the contract's terms and conditions into code. The possibility of technological illiteracy among the contracting parties underscores the significance of this trust [7] (p. 6-7); [11] (p. 872). Moreover, if the parties were completely aware of the technological aspects of the smart contract, they still might be challenged by severe cyber threats, either caused by poor technical designs, programming, construction, and structure of the smart contract or deficiences of the digital platform where the contract stored within that offers security vulnerabilities [16] (p. 97); [8] (p. 4).

4.2.2 Legal Challenges

During the implementation of the contract, especially contracts that require a period for their implementation, e.g., supply contracts, accidents, or other circumstances may occur that temporarily or permanently prevent the parties' complete fulfillment of their contractual obligations, either due to force majeure or unforeseen circumstances. Consequently, a judicial intervention is initiated to restore the contractual balance by amending the contract. However, the impossibility of amending rigid smart contracts due to their core blockchain's rigidity frustrates judicial efforts to restore this balance. This constitutes an obstacle against the effective application of the theories of force majeure and unforeseen circumstances [16] (p. 98); [9] (p. 189). Thus, certain jurists have suggested adopting multiple assumptions when setting the terms of the smart contract, thereby enabling any emergency circumstances that may arise to be addressed [6] (p. 497).

https://doi.org/10.54934/ijlcw.v4i2.156

In addition, when the parties have a dispute concerning the smart contract, which document should be presented to the court? Is it the contract in its traditional form or its coded form? If it is in the second case, what is the technical ability of the court to interpret it? Accordingly, the issue of understanding and interpreting the smart contract in its technological form in light of the contracting parties' will represents a legal challenge to activate smart contracts in contractual contexts because their programming structural technological complexity and ambiguity might prevent flexibility [7] (p. 8); [12] (p. 40). Therefore, the contracting parties should exert due care when programming the contract terms to demonstrate their true intention under the principle of freedom of expression of will.

Moreover, the physical implementation of the smart contract in the real world still lacks legal and jurisprudential theories [16] (pp. 102-103). A de facto legislative and jurisprudential vacuum dominates the legal scene regarding implementing smart contracts. This state-of-the-art makes smart contracts immune to oversight, facilitating the conclusion of terms that violate fundamental public order or general contract theory rules. In particular, core principles governing the implementation of traditional contracts prove inefficient in the technological context of smart contracts. The digital electronic theme of smart contracts jeopardizes the manifestation of moral principles, such as bona fide and the prevention of arbitrary clauses [12] (p. 43)

Given the confidentiality that blockchain platforms provide regarding the contracting parties' identities, they frustrate the determination of the parties' actual identities and verification of their ages and legal capacity [6] (p. 495). Consequently, the contract becomes a black box that contradicts the required clearance and transparency.

Thus, being non-specialists in the technological field, jurists should seek to develop legislation for blockchain technology and smart contracts. A technician's assistant is essential to ensure the effectiveness and applicability of the legislation. Legal technicians must participate in laying the foundation for legislation to encompass all aspects of technology.

5. TERMINATION OF THE SMART CONTRACT

5.1 General Rules

Upon their full implementation, contracts expire under the traditional theory in civil law. This consequence is not absolute, as several factors may override the ordinary termination of contracts. Rather,

the contractual relationship terminates differently, and the parties return to their pre-contractual legal positions as a penalty for the termination resulting from their failure to fulfill their contractual obligations. Under Article 154/1 of the Egyptian Civil Law, the contract-binding force permits a party to terminate it once the other party fails to fulfill his contractual obligations, upon notifying the other party and providing compensation if there is a reason for it. Moreover, Article 158 permits the automatic termination of a contract without resorting to courts upon the failure to fulfill its obligations. Automatic termination still requires notification unless the contracting parties explicitly agree to an exception. Jurisprudence affirmed this principle[6]. The legislator intended to introduce a contractual penalty for violations of the parties' contractual obligations to preserve the legal conception of contractual liability. The penalty includes removing all obligations and duties arising from the contract by dissolving the contractual bond and treating it as if it had never existed. As a consequence, each party restores the original pre-contract status [17] (p. 212).

Therefore, jurisprudence reveals that contract termination in the civil law doctrine has one root: the failure of one of the contracting parties to fulfil contractual obligations. Then, the other contracting party can initiate judicial proceedings to terminate the contract and seek an appropriate remedy or adhere to the termination condition contained in the contract. Both approaches stipulate mutual contractual binding on the parties, since the termination rules aim to release the contracting party from their obligations as a result of the other contracting party's failure to fulfil their reciprocal obligations. Accordingly, the Egyptian Court of Cassation decided that the legislative exemption from the general rule of contract judicial termination, as provided in Article 158, sought to highlight the prominence of the parties' consensus over the contract's existence[7]. This ruling implies that the principle is the judicial termination, and the exception is that it is consensual and occurs by force of law once the violation occurs. The judiciary's role is to reveal the termination, not to establish it.

Terminating the contract triggers the principle of restoring the parties' original pre-contract status as a retroactive effect of contracts included in Article 160. Each contracting party recovers what they provided to the other while implementing the contract[8]. This means returning everything to its original state and treating the contract as void from its inception. The parties return to the state they were before concluding the contract. If this is impossible, compensation may be awarded. Then, that rescission

[6] The Egyptian Court of Cassation, Appeal No. 17714/81 J.
[7] The Egyptian Court of Cassation, Appeal No. 10494/85 J.
[8] The Egyptian Court of Cassation, Appeal No. 12058/87 J.

https://doi.org/10.54934/ijlcw.v4i2.156

includes the meaning of a penalty for the contracting party who fails to fulfil his obligation, which destroys the contract and dissolves the contractual relation [6] (p. 492).

In conclusion, the theory of contract termination in Egyptian Civil Law grants the parties the right to terminate the contract if one of the parties breaches contractual obligations. It returns them to the previous state before the contractual bond was formed upon termination.

5.2 Applicability to Smart Contracts: A Dilemma

In light of the above, the objective of contract termination rules is to provide legal protection for contractual relations within society due to their prominence in establishing an intact legal life. The chief consequence is to return the parties to their original status. This manifests the core of contract termination theory.

Smart contracts, being constructed on blockchain technology, ensure the automated implementation of their clauses according to specific technical mechanisms and procedures [12] (p. 9). Automatic execution prevents human intervention at any stage [12] (p. 33). The question revolves around the applicability of general contract termination rules in the pure technological environment of smart contracts, where the contracting parties exercise no actual control over the contract's execution.

To settle the dilemma, Ali Shah and Al-Saadi (2022, p. 114) suggest permitting the parties to exclude the retroactive effect rule, assuming that adopting a smart contract reflects their intention to avoid this rule, or that the contracting parties would enforce the retroactive effect manually outside the contract digital environment, i.e., the real world. This solution offers an alternative to the blind automated process of the smart contract implementation. In contrast, Al Dabousy (2024, p. 396) claims that technological constraints would prevent the application of this penalty to smart contracts. Moreover, it would contradict the bona fide principle in the implementation of the contract. Thus, he suggests applying this penalty electronically.

To conclude, the direct application of contract termination general rules of the Egyptian Civil Law to smart contracts is unimaginable, given the firm stability of smart contracts and the glaring inability to modify them after registering their core code on the platform. Therefore, resorting to an unconventional solution accords with logic in addressing this technical dilemma concerning the dissolution of the contractual relationship. The research introduces self-destruct as a mechanism to terminate a smart contract, addressing the legal vacuum in Egyptian Civil Law doctrine and jurisprudence.

https://doi.org/10.54934/ijlcw.v4i2.156

6. SELF-DESTRUCTION OF THE SMART CONTRACT: UNCONVENTIONAL SOLUTION

In the structure of smart contracts, automated tools are utilized to enhance their effectiveness and produce legal effects between the parties. Meanwhile, they administer the termination of the contract, ending its legal existence and automatically erasing contractual traces without the parties' intervention. The research introduces the selfdestruct function as an unconventional mechanism for automatically terminating a smart contract. It proves controversial because of its risks, making the smart contract like a building that explodes in a controlled internal explosion. Likewise, when the smart contract's self-destruct function is triggered, it ceases to exist. Selfdestruct is the "big red button" of smart contracts - the ultimate kill switch for the legal existence of the contract.

6.1 Demonstrating the Function

The concept of smart contract self-destruction emerged initially as a cyberattack targeting the cryptocurrency assets held by smart contracts in 2017, causing financial losses of approximately $152 million to the contracting parties [10] (p. 516). Consequently, self-destruct gained a negative reputation in the technical community, triggering serious concerns about its potential use in legal and commercial transactions. However, smart contract developers incorporated this technology into the smart contract's core blockchain. They sought to employ self-destruct to terminate smart contracts and end contractual relations.

Unlike Bitcoin's restricted architecture, smart contracts' core programming is the Ethereum blockchain. Ethereum offers smart contract developers ultimate and broad authority to create contracts, define the obligations of their parties, and determine the resulting legal positions and impacts of the contracting parties [8] (p. 4) because of its self-executing code. Upon activation, the smart contract operates automatically and permanently until termination.

The self-destruct function is provided for smart contracts built on the Ethereum blockchain to terminate the contract and end its effects. Nevertheless, Chen et al. (2021, p. 1) consider it a double-edged sword in the contracting process because the use of the self-destruct function enables contracting parties and stakeholders to remove smart contracts and transfer the crypto assets, which enables them to face emergencies such as cyberattacks. However, this function might complicate contracting processes because of crypto assets' vulnerabilities to cyber threats, which inflict damage to the contracting parties' legal positions.

https://doi.org/10.54934/ijlcw.v4i2.156

Despite the smart contract's non-amendability, self-destruct allows the parties to terminate an existing contract and replace it with another that satisfies the modifications they require [8] (p. 6). This possibility can be implemented throughout the smart contract's life cycle. In this case, it is limited to terminating and destroying the initial version of the contract. The parties then create a new version that responds to emerging requirements during the implementation of the original contract [8] (p. 16). This scenario is common in legal life due to the ongoing changes in human relations and needs. Flexibility that promotes the endurability of contractual relations among society members. This use of self-destruct proves smart contracts' ability to evolve continuously and eliminates their criticized rigidity [14] (p. 544). Moreover, this function enables the contracting parties to address force majeure and other unforeseen circumstances that arise during smart contract implementation and hinder the parties' fulfillment of contractual obligations.

The nature of the Ethereum blockchain enhances the privilege of self-destruct. It is not an information network in the technical sense but rather an access permission for blockchains that encrypt legal and financial transactions between the contracting parties [8] (p. 5). These permissions are subject to continuous verification of their codes embedded in the smart contract blockchains to ensure a high level of security and effectiveness of the smart contract. This technical protection promotes adopting smart contracts in legal life.

Security against the vagaries of technology is the main motivation for adopting the self-destruct function to terminate smart contracts. It enhances the protection of the crypto assets reflected in the contract. Nevertheless, Parisi and Budorin (2023, p. 84) emphasize that smart contracts should not include self-destruct clauses unless necessary. Instead, smart contracts could be provided with the ability of temporal suspension to enhance the protection. This facility entails that the contracting parties refrain from implementing their contractual obligations for a period upon fulfillment of a condition stipulated in the contract programming code [8] (p. 28). Furthermore, the contract activation could be conditioned on the parties' digital signatures to strike a balance between the contract's existence, as its termination is not yet certain, and enhancing its adaptive ability to changing circumstances concerning the contractual relation.

It is worth noting that the close nexus between the Ethereum structure and the blockchain that constitutes the smart contract has prompted the suggestion of limiting the adoption of the self-destruct technique to contracts involving Ethereum assets [8] (p. 27). The need for this function disappears in other smart contracts because Ethereum is the most effective and high-quality blockchain system used to transfer and store contract-encrypted assets owned by the parties [15] (p. 318), providing an appropriate environment for exchanging digital assets.

https://doi.org/10.54934/ijlcw.v4i2.156

To sum up, the self-destruct function is the sole mechanism for terminating smart contracts and extinguishing their legal existence and effects on the contracting parties. Being purely technical, selfdestruct can accomplish this function in the Ethereum environment due to its automation. Upon termination of the smart contract, the contract automatically returns the encrypted assets it contains to their original owners, restoring the parties' pre-contract status.

6.2 Applicability Under Egyptian Civil Law

Employing the smart contract self-destruct function to govern its termination manifests a leap in legal doctrine, as using a technical function to eliminate an existing legal establishment is a novel question featured by a legislative and jurisprudential vacuum. Under the general rules of contract termination in Egyptian Civil Law, a contract may be terminated if a party fails to perform a contractual obligation. The harmed party can seek termination judicially or consensually. While the former is achieved by a court ruling, the latter depends on a terminative clause included in the contract, introducing an automatic approach to terminate the contract under Article 158 of the Egyptian Civil Law.

As previously mentioned, the self-destruct function is an automatic mechanism to terminate smart contracts. Without the parties' or the courts' intervention, the failure to satisfy a contractual obligation activates the destruction code, which initiates the termination process. An entirely automatic process that ends the contract's legal existence and eradicates its effects. Thus, the automatic self-destruct feature complies with the termination approach set out in Article 158. Since this article does not require a specific physical form for the automatic consensual approach, the parties may draft a specific approach, even if unconventional in legal practice. The technological benefits of algorithms and coded contractual structures drive the parties to adopt technical methods to end the smart contract's legal existence. The self-destruct function integrates powerful artificial intelligence capabilities into the contractual relationship, making it tighter and clearer. Therefore, it is recommended to take advantage of Article 158's broad conception of contract consensual termination by integrating technological mechanisms into the contract, as there is no contradiction between adopting technology in contracts and the general contract theory rules in the Egyptian Civil Law. Moreover, technology enhances the achievement of the true aims of the contract theory.

https://doi.org/10.54934/ijlcw.v4i2.156

7. CONCLUSION

The research reviewed smart contracts through an Egyptian lens, offering a modern technological approach to contracts. Blockchain technology ensures security but presents challenges, particularly its incompatibility with traditional Egyptian legal frameworks, which complicates its integration into legal transactions. While smart contracts benefit from automatic execution, their non-amendability conflicts with legal principles such as force majeure or emergency circumstances. A legal framework must be adopted by developing ad hoc legislation to regulate aspects of smart contracts that take into account their technical nature. To settle the dilemma, the study integrates contractual blockchains into traditional contract theory under Egyptian Civil Law, offering an unconventional solution that draws on law and technology.

The smart contract self-destruct function is an innovative method that offers automated termination but raises legal and technological complexities. In this context, the research emphasizes coordination between legal and technical experts on contractual issues to avoid legal loopholes arising from technological illiteracy. Indeed, adopting consensual solutions such as self-destruct promotes handling emergency circumstances. Last, the study contributes to enhancing the Egyptian legal understanding of smart contracts and blockchains as a novel form of contract theory.

REFERENCES

[1]Ali, A. S. M. (2025). The Impact of Smart Contracts Executed via Blockchain Technology on the Development of Administrative Contracts: A Comparative Analytical Study, Journal of Sharia and Law in Cairo, vol. 44, pp. 2877-2975. DOI: 10.21608/mawq.2025.323520.108 (in Arabic)

[2]Ali Hassan, H. (2022). Questions on Smart Contracts in Private International Law: Comparative Analytical Study, Mansoura Journal of Legal and Economic Studies, Vol 12, No. 82, pp. 737-971. DOI: https://doi.org/10.21608/mjle.2022.294119 (in Arabic)

[3]Ali Shah, A. A., & Al-Saadi, J. H. (2022). Legal problems in self-executing contracts, Imam Ja'afar Al-Sadiq University Journal of Legal Studies: Vol. 2: Iss. 2, Article 5.(in Arabic)

[4]Al Dabousy, A. M. (2024). Legal Problematics of Smart Agents Concluding Smart Commercial Contracts in the (Blockchain) Era – State of Kuwait and UAE as Model: A Comparative Analytical Study, Kuwait International Law School Journal, vol. 46, pp. 381-430 (in Arabic)

[5]Al-Sanhouri, A. A. (2024). Principles of Law, Summary of the Lectures Delivered, Dar Al-Ahram for Publishing, Distribution and Legal Publications (in Arabic)

[6]Bin Tariyah, M. (2019). Smart contracts integrated into the blockchain: What challenges are facing the current contract system? Kuwait International Law School Journal, Vol.4, No.1.

[7]Bassan, F., & Rabitti, M. (2024). From smart legal contracts to contracts on blockchain: An empirical investigation. Computer Law & Security Review: The International Journal of Technology Law and Practice, vol 55, article 106035. https://doi.org/10.1016/j.clsr.2024.106035

[8]Chen, J., Xia, X., Lo, D., & Grundy, J. (2021). Why Do Smart Contracts Self-Destruct? Investigating the Selfdestruct Function on Ethereum, ACM Transactions on Software Engineering and Methodology (TOSEM), vol 31, Issue 2, Article No. 30, pp. 1 – 37. https://doi.org/10.1145/3488245

[9]Cuccuru, P. (2017). Beyond bitcoin: An early overview on smart contracts, Int'l JL& Info. Tech, vol 25, no. 3, pp. 179-195. http://dx.doi.org/10.1093/ijlit/eax003

[10] Fröwis, M., & Böhme, R. (2023). Not All Code are Create2 Equal. In: Matsuo, S. et al.. (Eds.) FC 2022 Workshops, LNCS 13412, pp. 516–538.https://doi.org/10.1007/978-3-031-32415-4_32

[11] Mao, T., & Chen, J. (2022). Smart Contract in Blockchain, Proceedings of the 2022 International Conference on Bigdata Blockchain and Economy Management (ICBBEM 2022), pp. 868-875. https://doi.org/10.2991/978-94-6463-030-5_86

[12] Mohamed Hassan, H. M. (2023). Smart contracts concluded via Blockchain, Legal Journal, Volume 16, Issue 1. https://jlaw.journals.ekb.eg/article_297185_a572358c5ff30f8810489a0e088bf990.pdf (in Arabic)

[13] Parisi, C., & Budorin, C. (2023). Smart Contract Security. In: Huang, K. et al. (eds.), A Comprehensive Guide for Web3 Security, Future of Business and Finance. https://doi.org/10.1007/978-3-031-39288-7_4

[14] Salehi, M., Clark, J., & Mannan, M. (2023). Not so Immutable: Upgrading Smart Contracts on Ethereum. In: Matsuo, S. et al. (Eds.): FC 2022 Workshops, LNCS 13412, pp. 516–538. https://doi.org/10.1007/978-3-031-32415-4_33

[15] Tantikul, P., & Ngamsuriyaroj, S. (2022). Exploring Vulnerabilities in Solidity Smart Contract, Proceedings of the 6th International Conference on Information Systems Security and Privacy (ICISSP 2020), pages 317-324. DOI: 10.5220/0008909803170324

[16] Temte, Morgan N. (2019). Blockchain Challenges Traditional Contract Law: Just How Smart Are Smart Contracts? Wyoming Law Review, Vol 19 Number 1 Article 7. DOI: 10.59643/1942-9916.1409

[17] Tolba, A. (2018). The Extended Explanation of Civil Law – Modern Unversitial Press.

ABOUT THE AUTHORS

Mohammed Ibrahim Abdel Nabi – Chief Prosecutor at the Public Prosecution Office at the Egyptian Court of Cassation, PhD researcher in Artificial Intelligence and Arbitration at the Faculty of Law, Alexandria University, Egypt
e-mail: mabdelnabi315@gmail.com
ORCID ID: https://orcid.org/0009-0008-8435-3968

Yassin Abdalla Abdelkarim – Judge at Sohag Primary Court, Arab Republic of Egypt, Master of Laws from Leeds Law School, Leeds Beckett University, United Kingdom.
e-mail: yassinabdelkarim91@gmail.com
ORCID ID: https://orcid.org/0000-0001-7388-1337

ABOUT THIS ARTICLE

Conflict of interests: The author declares no conflicting interests

https://doi.org/10.54934/ijlcw.v4i2.156

CONTRATOS INTELIGENTES BAJO EL DERECHO CIVIL EGIPCIO: ESTRUCTURA Y TERMINACIÓN

RESUMEN

La prevalencia de las tecnologías digitales en las interacciones humanas contemporáneas ha elevado el papel de los medios digitales en las relaciones contractuales entre los miembros de la sociedad, impulsando una renovada atención a los contratos inteligentes como instrumentos legales automatizados basados en código. Este estudio examina la naturaleza, la estructura y los mecanismos operativos de los contratos inteligentes, comparándolos con la teoría contractual tradicional del Código Civil egipcio (Ley n.º 131/1948). Los contratos inteligentes crean obligaciones vinculantes mediante procesos basados en software que se basan en el cifrado, lo que ofrece eficiencia, pero también plantea desafíos técnicos y doctrinales. El documento investiga si el marco legal egipcio puede abordar adecuadamente cuestiones como el consentimiento, la validez, la rescisión y la resolución de disputas en los contratos digitales. Al analizar las características de los contratos inteligentes a través de los principios del derecho civil egipcio, el estudio busca aclarar cómo las doctrinas existentes pueden adaptarse para dar cabida a las tecnologías emergentes. En última instancia, propone una base jurisprudencial para la integración de los contratos inteligentes en el derecho egipcio, garantizando la seguridad jurídica y la coherencia con las normas contractuales establecidas.

Palabras clave: contrato inteligente, Derecho Civil egipcio, blockchain, medios contractuales digitales, contratos inteligentes autodestructivos (selfdestruct).

埃及民法下的智能合约：结构与终止

摘要

数字技术在当代人际互动中的普及提升了数字手段在社会成员间契约关系中的作用，促使人们重新关注智能合约这种自动化、基于代码的法律工具。本研究考察了智能合约的性质、结构和运行机制，并将其与埃及民法典（1948年第131号法律）下的传统合同理论进行比较。智能合约通过基于软件的加密流程产生具有约束力的义务，这在提高效率的同时，也带来了技术和法理上的挑战。本文探讨了埃及法律框架是否能够充分解决数字合约中的同意、有效性、终止和争议解决等问题。通过运用埃及民法原则分析智能合约的特征，本研究旨在阐明如何调整现有法律原则以适应新兴技术。最终，本研究提出了将智能合约纳入埃及法律的法理基础，以确保法律确定性并与既定的合同规范保持一致。

关键词：智能合约、埃及民法、区块链、数字合约手段、自毁式智能合约（selfdestruct）

https://doi.org/10.54934/ijlcw.v4i2.156