SMART CONTRACTS IN LIGHT OF THE PROVISIONS OF ISLAMIC JURISPRUDENCE AND THE CIVIL LAW OF JORDAN

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Abstract

This study deals with a new technology in contracting, resulting from the information technology (IT) revolution in the field of electronic transactions, which is called "smart contracts". The latter has constituted a breakthrough in the field of contracting since it provides automation, which underlies many advantages for contractors, so that the software works of smart contracts provide immediate and automatic execution of the contract, which provides speed of implementation and security from manipulation after concluding the contract. So, it provides elements of technical security and trust for this type of contract. This new contractual pattern is considered one of the first in the provisions of Islamic Sharia, which urges us to know the extent of its compatibility with its contracting system. The study concluded with several recommendations, the most significant being that international accords lack comprehensive legislation governing transactions executed through smart contracts. While they contain certain restrictions about contracts formed through contemporary electronic methods, they inadequately elucidate the characteristics of such contracts and examine their specifics. The legal issues associated with smart contracts stem from their connection to digital currency, which is banned by Sharia law.

Keywords: Smart Contract, Blockchain, Islamic Jurisprudence, Civil Law, Electronic Transactions

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1. INTRODUCTION

Smart contracts represent a significant advancement in information technology (IT) within the realm of electronic transactions (Hassan, 2020). Although the smart contract is not a new idea in itself, the process of integrating it into blockchain technology gave it a new dynamism that made this contract replace the idea of credit intermediation in dealing with another existing idea on the system of dealing according to peer-to-peer technology, which raised the level of contractual security with the automatic implementation of contractual obligations (Allam, 2018; Mohamed, 2021).

From this standpoint, smart contracts integrated into the blockchain hold a promising future in the field of transactions. This innovation is likely to bring about a genuine economic revolution, as it will enable the authentication of transactions that have become increasingly digital (Papadouli & Papakonstantinou, 2023). It will also enable the automatic control of the processes surrounding the exchanges, in addition to the possibility of protecting the information and data exchanged between the parties of this contract from manipulation or forgery (Barreau, 2017; Al Zaabi & Nasser, 2018).

However, any use of electronic technologies in the field of commercial transactions requires an effective legal and regulatory framework, and this is what blockchain technology and the smart contracts integrated into it lack in the legislative field due to the modernity of this technology (de Graaf, 2019).

Therefore, to evaluate the opportunities for assimilating smart contracts within current modern electronic transactions, this study sheds light on some of the legal aspects related to this new type of contracts, by monitoring the conceptual framework of smart contracts and demonstrating their relationship to blockchain technology, in addition to the extent of international and local legislative recognition of these contracts (Gloudemans-Voogd, 2018).

Due to the importance of the topic of the smart contract and the connection between this new type of contract and many modern technologies such as blockchain and virtual currencies, and the lack of this technology in legal legislation regulating it civilly and criminally, this research attempted to open the way for legal researchers to this fertile field, and to draw attention to the legislator, especially the legislator in the Arab countries, considered the necessity of clarifying the conceptual framework for these modern transactions and contracts by shedding light on their concept and explaining their characteristics, legal nature, and the extent of legislative recognition of them, and following the example of the countries that codified these modern transactions and enacted some legislation and regulations to approve them, such as the American and French legislation.

The objectives of this study are represented in the following issues: enhancing overall research on the subject, as research and studies on it are very few, due to its scarcity, especially research in the Arabic language.

Presenting a comprehensive study that combined the attitude of Islamic Sharia and the law on smart contracts, as the studies that combined the attitude of Islamic Sharia and the law on the subject of smart contracts are almost few or non-existent, Most studies have dealt with the subject either from the point of view of Islamic Sharia or from the point of view of the law, and the addition offered by the researchers is the study of smart contracting from the perspective of Islamic Sharia and the law together.

The solutions provided by the research to confront the challenges imposed by smart contracts on contract provisions in Islamic law and in statutory law, such as the Jordanian Civil Law[1] and other international and national laws.

This study's issue pertains to elucidating the conceptual framework of smart contracts and the contemporary technologies associated with them, such as blockchain, which serves as the necessary information platform for their implementation. Ambiguity persists regarding these modern technologies, particularly from a legal standpoint, which can only be clarified through a comprehensive understanding of them.

Therefore, through this research paper, we will conduct an in-depth study of the concept and nature of smart contracts, in addition to demonstrating their legitimacy in contemporary Islamic jurisprudence by posing several legal questions, the most important of which are the following:

1) What challenges does this new contractual model create for contract law?

2) How can it be harmonized within the legal system for contracts and draw the legal features of smart contracting?

It should also be noted that another difficulty faced by the researchers in this study is the newness of the subject and, therefore, the lack and scarcity of academic material related to it, including studies and research, especially in Arab legislation. The issue required a great effort to become familiar with all its legal aspects and to come up with a specialized study on this topic. In addition, the use of electronic technologies in the field of commercial transactions requires an effective legal and regulatory framework, which is what blockchain technology and the smart contracts embedded in it lack in the legislative field due to the novelty of this technology.

This study seeks to answer the following research questions:

RQ1: What is the concept of a smart contract?

RQ2: How related is the smart contract to blockchain technology?

RQ3: What is the legal nature of a smart contract?

RQ4: To what extent is the smart contract legally recognized?

The rest of this paper is structured as follows. Section 2 reviews the relevant literature. Section 3 analyzes the methodology that was used to conduct the study. Section 4 presents the results. Section 5 discusses the results. Section 6 concludes the paper and provides recommendations.

2. LITERATURE REVIEW

Through this research paper, several previous studies were referred to, including a study entitled Taherdoost (2023). That study concluded that the implementation of predefined processes can be made transparent to the public by using smart contracts, which are essentially scripts that are anchored in a decentralized fashion on blockchains or other comparable infrastructures. Smart contracts enable the automation of previously manual business logic and the programmability of previously unrealized assets, like money (Taherdoost, 2023).

Ullah and Al-Turjman (2023) identified ten essential characteristics of blockchain smart contracts, categorized into six tiers for their implementation in smart real estate. The decentralized application and its interactions with the Ethereum Virtual Machine (EVM) are demonstrated to illustrate the development of a smart contract applicable to blockchain smart contracts in real estate. A comprehensive design and interaction mechanism is emphasized for real estate

[1] https://jordan-lawyer.com/2010/07/11/jordan-civil-law-with-all-amendments/

owners and users as participants in a smart contract (Ullah & Al-Turjman, 2023).

Atiyah et al. (2024) determined that blockchain smart contracts align with the principle of permissibility, as well as the Maliki school's stance on credit sales and negotiations from an "ijtihadi viewpoint". There is a necessity for additional investigation to elucidate this novel contract type to enhance its acceptance within Muslim communities (Atiyah et al., 2024).

The study by Ahmad et al. (2024) suggests that a smart contract could innovate the Islamic financial sector, provided it complies with Islamic contract principles and is subject to oversight by appropriate authorities.

3. RESEARCH METHODOLOGY

This study adopted the descriptive-analytical and comparative approach, where, through the descriptive approach, the attitude of the international and national legislation under study will be described by listing the various rules related to the conceptual framework of the smart contract and blockchain technology, and explaining its characteristics and legal nature.

As for the analytical approach, its purpose is to analyze the legal texts contained in the legislation related to the study to determine their effectiveness, the extent of their deficiency in explaining the concept of the smart contract, and the extent of international and national legislative recognition of this new type of contracts (Chen, 2018).

In addition to using the comparative approach as required by the study, to compare foreign legislation, such as the American legislation and French legislation, with some Arab legislations, to evaluate the most prominent aspects of agreement and difference, and to benefit from the legal experiences of other countries in dealing with this legal problem (Attia, 2021).

This study employs a qualitative jurisprudential research methodology to examine the components of smart contracts and their appropriateness and alignment with Islamic civilizations that utilize Islamic law as a principal source of positive regulation. The qualitative jurisprudential research approach analyses legal frameworks, laws, texts, legislation, cases, and jurisprudential decisions to interpret fundamental principles and doctrines, including their meanings, implications, and problems.

4. RESULTS

4.1. Smart contracts and their relationship to blockchain technology

The concept of smart contracts is one of the newly emerging concepts. However, it has gained great importance as a result of the special features that characterize these contracts, which require researching their meaning and explaining what they refer to, as well as researching the characteristics that they have, which distinguish them from the rest of the contracts (Allam, 2018). Then, the researchers can introduce the concept of blockchain technology and clarify the close relationship between it and smart contracts, considering that blockchain is the information platform required to implement these contracts (Nam & Choi, 2023).

4.1.1. Definition of smart contracts

Firstly, it must be pointed out that there is no unified and agreed-upon definition of the smart contract, whether at the national or international level (Lee, 2018). This is due to the new nature of this modern technology, or to its complex technological basis (AlKhatib, 2020).

However, serious attempts have been made and are still being made in this regard by jurisprudence. It was defined as: "It is an information program that aims to implement the contract autonomously without interference from a third party, and this is done by employing modern technology called "blockchain" technology, which allows, through certain protocols, people who do not have any fiduciary relationship to conclude transactions safely, and without the need for credit from others" (Agung et al., 2022, p. 365).

Barreau (2017) defined it as: "A computer program consisting of a set of codes and symbols, which represents the conditions and details that were written by agreement between two or more parties participating in the contract" (p. 75). If the conditions written in the contract are met, this program is run and implemented using one of the electronic platforms on the blockchain, such as the Ethereum platform, which is currently the most famous smart platform, accordingly, the smart contract allows for the automation of processes in a decentralized manner, and this is done by writing and verifying the conditions, in addition to executing them electronically away from the presence of any intermediary or third party in this process (Khan et al., 2021).

In other words, it can be said that smart contracts are contracts that are pre-programmed according to the final rules and regulations, and self-executing without the need for any intermediaries (Kirsanov & Popovich, 2020).

It is worth noting that the idea of smart contracts first appeared in 1994, by the computer scientist and pioneer of cryptography, Nick Szabo (Zubaidi & Abdullah, 2017).

This concept was proposed years before the emergence of blockchain technology. Nick Szabo developed what was then a group of terms specified in digital form, including the protocols in which the parties perform those terms (Rejeb, 2022).

However, the idea of smart contracts was not activated at that time and remained purely theoretical, because this modern form of contracts depends, in their implementation and operation, on advanced technologies that did not exist at that time, such as blockchain which is a huge collection of electronic information on which the preparation and completion of the smart contract depends (Naqvi & Hussain, 2018). The second technology is virtual electronic money, according to which the price or cost is paid in that contract, which in turn has not been known yet (Qtaishat et al., 2022).

4.1.2. Characteristics of smart contracts

The smart contract has a set of characteristics, the most prominent of which can be summarized in the following points:

1) Electronic environment: Smart contracts are characterized as automated contracts concluded via a computer through various programming languages and electronic encryption techniques. They are

securely encrypted files, as a result of the use of electronic digital signatures based on encryption keys, public key, and private key (Al-Sadiq, 2019).

It is stored within the computer, so there are no traditional paper files that are subject to damage, loss, or erosion over time, which helps individuals and companies organize their files and transactions in an organized and orderly manner so that the required files and contracts are accessed very quickly and in a safe manner (Abu Ghadda, 2019).

2) Automatic execution: Smart contracts are implemented through computers automatically, meaning that implementation is done through algorithms and mathematical equations that make up computer programs, which implement this contract far from any human discretion on the part of the contracting parties, as none of those parties can interfere in changing the codes or symbols that make up those algorithms or computer programs, which prevents breach of the contract and limits the possibility of any potential disputes occurring in the future, and hence self-execution eliminates the need for judicial assistance necessary to implement this contract (Issa, 2022).

3) Conditional nature: In smart contracts, all the terms of the contract are written clearly and in detail in the programming language, and then these terms and conditions agreed upon before starting the contract on the blockchain platform are kept, and accordingly, any condition outside the terms written in these contracts may lead to an error during implementation, and therefore when creating smart contracts, all conditions are set in detail, and this is because the performance and implementation of these contracts are mainly due to the conditional data and information included in them, which makes smart contracts fall within the classification of contracts that have a conditional nature (Ibn Rushd, 2004).

4) No intermediary parties: Smart contracts do not need intermediary parties to guarantee their implementation "such as banks, notaries, real estate agents, consultants, assistants, or any other intermediaries", as the first party "the seller" creates a smart contract in which it specifies a set of conditions and requirements that, once met, the contract is implemented, and when the second party "the buyer" fulfills these conditions, the smart contract, spontaneously and automatically, audits and reviews the terms of the contract, then carries out the exchange process, and finally the contract records the process and adds it to the blockchain records (Gloudemans-Voogd, 2018). Thus, the information about the process becomes public and permanently available to everyone. All of these procedures are done automatically, and without the presence of any intermediary bodies to guarantee the implementation of the terms of the contract (Rejeb, 2022).

5) Trust and security: The use of a smart contract enhances the elements of trust and security, as the automation of many tasks and procedures through the use of the blockchain platform would reduce the risk of forgery of exchanged documents (Hoffmann & Skwarek, 2019), and this comes from the ability of the blockchain to prove the receipt and delivery of documents with their real date and time, "in real-time", which would reduce the deadlines and dates for exchanging documents, in addition to avoiding the problem of sending goods and documents to the wrong destinations (Mekki, 2017).

4.2. The extent to which smart contracts are related to blockchain technology

Smart contracts are linked to the blockchain with a close and inextricable bond, because smart contracts are based on the blockchain chain in the process of preserving and transmitting information about contracts and digital financial transactions exchanged on this platform in a decentralized, safe, and fair manner, in addition to the processes of storing and implementing it automatically as soon as they meet the pre-defined terms and conditions (Hoffmann & Skwarek, 2019).

4.2.1. Definition of blockchain

The blockchain is a massive database that uses an encryption mechanism to build a decentralized electronic ledger, in which data is distributed interconnectedly and in a historical, hierarchical manner that cannot be modified or tampered with (Dupont, 2017). This record is also characterized by transparency, speed, and ease of processing operations, and the possibility of the parties concerned with it participating in its construction, as well as ensuring its validity and maintenance, according to the self-operating systems and instructions codified for use. The first practical application of this technology is encrypted virtual currencies, led by Ethereum and Bitcoin (Lin et al., 2022).

Accordingly, the blockchain is a special and unique type of database, as it differs from the rest of the currently existing technologies in a fundamental way, which is the non-centralization of data storage, as storage in it is distributed in many points spread over the network, while other systems store their data on specialized central devices (Bacina, 2018).

4.2.2. Blockchain elements

The blockchain consists of four main elements: block, information, hash, and time fingerprint, which we will explain in detail as follows.

1) Block: The block represents the building unit of the chain. It is a set of tasks or operations that are to be carried out or implemented within the chain, such as transferring money or recording data. Each block usually accommodates a certain amount of information and data and does not accept more than it to complete (Markey-Towler, 2018). The operations within it are final, and then a new block associated with it is created. The aim of this is to prevent fake transactions from occurring within the block that cause the chain to freeze, or to prevent it from recording and terminating transactions (Durovic & Janssen, 2019).

2) Information: It is the sub-process that takes place within a single block, or it is the individual immediate command that takes place within the block and is represented with other commands and data that were sent and stored within the same block (Otto & Conrad, 2019).

3) Hash: A hash is considered the distinctive DNA of the blockchain, and some call it a digital signature because it is a code or symbol that is produced through transactions based on very complex algorithmic equations within the blockchain

program (Albnian et al., 2025), called the hash mechanism, and this mechanism performs important functions such as: identifying and knowing each block, and distinguishing it from others within the single chain, as each block takes its own hash, and the hash also performs the task of linking the blocks to each other within the chain, as each block is linked to the hash preceding it and the subsequent one, which makes the hash proceed in only one direction from the original blocks after it, and so on (Chen, 2018).

4) Time fingerprint: This is the time at which any operation was performed within the chain (Curran, 2018).

4.2.3. How blockchain works

The blockchain system works according to three main principles, which are as follows: the open record, the distributed database, and mining. These three principles represent the basis on which the blockchain mechanism is based (Wolfskehl, 2018), within the framework of which various transactions for individuals and companies are completed, and the implementation of smart contracts, which will be addressed in detail as follows.

1) Open record: Blockchain is a digital platform embodied in the largest distributed and open financial record, which includes data on the financial, legal, electronic, and physical assets of its users, which can be shared over the internet using peer-to-peer technology, meaning that all the information contained in this registry is available to everyone, as all people within the chain can see each other's holdings (Roth & Eitelwein, 2018), and thus everyone in the chain can see everyone's money while maintaining the inability to reveal and know their true identity; this is because the chain allows individuals to use false nicknames that appear to chain users, and thus it is difficult to identify people, although it is easy to know the amount of money they own (Treiblmaier, 2019).

2) Distributed database: This mechanism means that there is no one party, one server, or one device that controls the blockchain. Rather, the chain is distributed among all the people participating in it around the world, where any individual in the world can download the chain and view it (Markey-Towler, 2018). This mechanism is one of the most important elements of security and trust for the chain. For example, if a hacker wants to tamper with the chain or hack it, he must hack all the individuals in it, which is highly unlikely to happen (Naqvi & Hussain, 2018).

3) Mining: This means the use of computers and the internet to solve complex mathematical equations, by people called miners, who collect information about the operations that take place within the blockchain, to ensure their reliability through an encryption system (Dupont, 2017). High complexity, in addition to extracting encrypted assets using a process called hashing, and the first person to solve the relevant equation is rewarded with wages paid in a virtual currency such as Ethereum or Bitcoin because he is the first to be able to encrypt and localize this process (Alhammouri et al., 2025).

5. DISCUSSION

5.1. Smart contracts according to the contract theory in Jordanian Civil Law and the extent of its legislative recognition

Smart contracts are not new contracts, but rather traditional contracts that are implemented in an intelligent way via blockchain platforms, as they save time, effort, and money, and also provide many of the procedures required by traditional contracts (Al-Sadiq, 2019). Instead of writing the contract in a traditional way, it is written in a digital form that computers understand. There impedes benefiting from blockchain technology, with its public and private networks, in traditional contracts carried out by Islamic institutions and banks (Hyland-Wood & Khatchadourian, 2018).

5.1.1. Smart contracts according to the contract theory in Jordanian Civil Law

According to the provisions of the Jordanian Civil Law, concluding any contract requires a convergence of offer and acceptance between the parties to the contract, so that its effect is determined by the contracting person (Qtaishat et al., 2022).

The Jordanian legislator has permitted the expression of will in any way that leaves no room for doubt to express the innermost soul, including electronic means (Al Zaabi & Nasser, 2018). The Jordanian legislator has assumed that there are cases in which contracts are concluded remotely, and the rules governing the time and place of the contract concluded remotely are regulated, whether that is in the texts contained in the provisions of the Jordanian Civil Code or the Electronic Transactions Law, and in light of the special nature of the smart contract (Mohamed, 2021). This type of contract will not be subject to one legal provision concerning issues related to the establishment of the contract, and the reason for this is that jurisprudence divided these contracts into two types as follows.

The first type: The smart contract is attached to the implementation of the original contract concluded between the two parties to the legal relationship in a traditional manner (Papadouli & Papakonstantinou, 2023). The smart contract is a document that confirms the terms of the traditional contract and works to implement it automatically so that the clause texts are formulated in code form by the specialized programmer and linked to the blockchain platform where the contract is executed and tracked (Hassan, 2020).

The second type: The smart contract concluded directly between the two parties to the relationship on the blockchain platform in the form of algorithms, starting with there being no previous traditional contract between the contracting parties (Nam & Choi, 2023). Although this type of contract is not common, it is likely to occur in contemporary practical reality, where the contractual relationship from beginning to end is through algorithms written by computers on the blockchain platform and is exchanged electronically (Attia, 2021).

Referring to the provisions on the contract theory in the Jordanian Civil Law, the researchers dropped the relevant texts on smart contracts, it was found that the contract that was established initially between the parties to the contractual relationship

will automatically be subject to the general theory of the contract in terms of the availability of its elements such as consent, subject matter, and reason, and it will also be subject to everything that would cause the contract to be invalidated, or suspended in accordance with the provisions of the Jordanian Civil Law (Khan et al., 2021).

As for the elements related to the subject of the contract, the Jordanian legislator stipulated the two pillars of the subject and the reason, and the subject matter is in "in-kind" contracts, the most important of which is the sales contract based on the sale and the price, as payment in smart contracts is made using the digital currency of the smart contract platform such as the Bitcoin or Ethereum, etc. (Kirsanov & Popovich, 2020). The paid amount is stored in the platform's wallet as a deposit until all conditions are met. If they are met, the smart contract is executed directly, where the terms of the contract are implemented, and digital money is withdrawn from the platform's wallet to be later sent to the wallet of the beneficiary of the contract (Curran, 2018).

The subject element poses a major problem with smart contracts if the legal system in the country prohibits the trading of digital currency, as is the case with Jordanian Law (Zubaidi & Abdullah, 2017). Although the Jordanian legislator does not criminalize dealing in electronic money, there are many directives issued by the Central Bank of Jordan that prohibit dealing with virtual currencies, due to their high risks to customers, financial institutions, and the national economy (Al-Borai, 2020). The high risks surrounding it include but are not limited to the significant fluctuation of its value, financial crimes, electronic piracy, and the risk of losing its value, in addition to the legal risks surrounding dealing in these currencies, as they are not classified as money, nor even as private funds or property, in accordance with the legislation, laws, and regulations in force in the Kingdom since it lacks a financial cover and is not issued by licensed or accredited bodies that are legally binding on it (Dhabash, 2018; Hmaidan et al., 2025).

As for the reason element in contracts, it represents the motive that leads to the contract, and it stipulates that it does not violate the public order and public morals in the country (Abu Ghadda, 2019). The idea of public order is a flexible idea that varies from one country to another, which is impossible for smart contracts to comprehend (Issa, 2022).

5.1.2. Smart contracts according to the terms and conditions of contracts in Islamic jurisprudence, and the legality of dealing with them

The smart contract is considered one of the new matters in the provisions of Islamic Sharia, which pushes us towards knowing its legitimacy by stating the attitude of contemporary Islamic Sharia jurists, and then the extent of its compatibility with the contracting system in Islamic transactions (Raskin, 2017).

Accordingly, it is understood from the previously mentioned laws, whether contained in international or national legislation, that they have been exposed to smart contracts indirectly, and in brief texts, and from our point of view, this exposure and treatment are not sufficient to confront the massive technological revolution, and to implement strategies aimed at adapting advanced technologies and their use in various commercial, governmental and civil transactions at the international and national levels (Wolfskehl, 2018; Al-Billeh et al., 2024). Therefore, the researchers hope that an integrated legal regulation will be created to regulate smart contracts and blockchain technology so that this tremendous technical development can be pursued (Treiblmaier, 2019).

5.1.3. Legitimacy of smart contracting

Smart contracts are among the innovations that were introduced in the area of contemporary Islamic jurisprudence, so they have only been addressed by a few scholars, due to their lack of use among individuals and institutions (Mohamed, 2021). The opinions of those who addressed them varied and came as follows.

The first trend: The proponents of this trend went on to say that smart contracts are not permissible according to Sharia law, because they depend on digital currencies as a means of exchange, and they are currencies that have not received general acceptance because they are forbidden and prohibited from dealing with them by most Islamic fatwa bodies (Hassan, 2020), and that it is found in Islamic jurisprudence. Alternatives that replace what is forbidden by law, and achieve the legitimate purposes of transactions, such as contracts of compliance, mutual nonverbal agreement, and subordination (Al Zaabi & Nasser, 2018).

The second trend: Smart contracts are the closest thing to meeting the requirements of contracts in Islamic jurisprudence, as deception is reduced to the point of non-existence. This is because the terms of the contract do not enter into force until all the conditions therein are fulfilled and confirmed. One of the contemporaries who said this was Qutb Sano, who held that the ruling on using smart contract programs is the ruling on using any computer program that is used to provide certain services, so it takes the rule of service if the service is permissible, such as a permissible sale or rental, then the smart contract is permissible (Sano, 2019). If the service is forbidden, such as a usury contract or a contract for renting forbidden pornographic films, then the smart contract is forbidden (Papadouli & Papakonstantinou, 2023). Accordingly, specifying a way for an obligation is obligatory, or specifying a way for a desirable one is desirable, or if it is a disliked way, then it is disliked. Otherwise, it is based on permissibility (Lee, 2017).

The third trend: Smart contracts are not one type, as the legal ruling on them differs depending on their types. Smart contracts that are implemented through blockchain-specific platforms, such as institutions, banks, and companies, or that are approved by the state, or that are implemented through public platforms and use digital currency, linked to a financial asset that is based on Sharia law, or has a guarantee from an approved party (Nam & Choi, 2023), so these contracts are permissible subject to certain controls: "that they meet the conditions and legal controls specific to contracts, such as not involving usury and not involving deception, and that their subject matter is permissible, in addition to the encrypted digital currency through which contracts are executed are supported by an accredited institution, or licensed by certain bodies such as banks, and do not violate the laws" (AL-Khalaileh et al., 2024, p. 11).

5.2. The extent of compatibility of smart contracts with the pillars and conditions of contracts in Islamic jurisprudence

Blockchain is a new means of concluding contracts. It must be controlled according to the principles of Sharia, and this is achieved by not being a means of achieving what is forbidden (Otto & Conrad, 2019). It is not right for these innovative and modern means in the financial industry to be a way to violate the intent of the Sharia and circumvent the Sharia rulings, as smart contracts must be subject to the general rules that regulate transactions in Islamic jurisprudence, including the necessity of fulfilling the pillars and conditions required in Islamic jurisprudence (Rejeb, 2022).

5.2.1. The formula in smart contracts and its conditions in jurisprudence

Jurists agreed to consider the formula as one of the pillars of the contract, and the Hanafi's considered it to be the pillar of the contract (Issa, 2022). The formula in traditional contracts consists of an offer and acceptance, and it may be expressed in words, writing, or electronic form. However, smart contracts have brought about a qualitative shift in the expression of offer and acceptance (Rejeb, 2022).

Referring to the opinions of jurists in Islamic law, the majority of jurists from the Hanafi, Maliki, and some Shafi'i and Hanbali schools have permitted the expression of the formula by any means indicating consent, because the transactions are based on custom and the original is permissibility, and the law has not specified a word without which it is not permissible to conclude transactions. They used the term "contentment" to express it, so it is legally expressive (Al-Sadiq, 2019).

Accordingly, the contractual terms must be matched between the parties to the smart contract, by matching the offer that was published via the blockchain network with the acceptance issued by network members who wish to interact with it. However, acceptance may be delayed from the offer in smart contracts (Abu Ghadda, 2019). So, is it permissible for acceptance to be delayed in Islamic jurisprudence?

To answer the previous question, we must refer to the jurisprudential opinions that dealt with this topic, and it has become clear that there are differences of opinion among jurists in this regard in two directions.

The first approach: The majority of Hanafi, Maliki, and Hanbali jurists agreed that there is no requirement for immediate communication between the offer and acceptance, as long as the contract session is held. This is because the accepting party needs to contemplate, and if he/she is limited to immediacy, he/she cannot contemplate, and because the place includes all the miscellaneous things, it is considered that one hour is facilitating to people (Dhabash, 2018).

The second approach: The Shafi'is went to stipulated immediacy. Acceptance must be issued immediately after the offer is issued. The separation between their two expressions must not be prolonged, and they must not be interspersed with foreign talk about the contract (Al-Sadiq, 2019). If it is prolonged or interspersed, it will not be concluded whether they are separate from the place or not. A short separation does not harm, but a long separation does harm because it makes one feel reluctant to accept (Ibn Rushd, 2004).

5.2.2. The parties in the smart contract and their conditions in jurisprudence

Parties to smart contracts conducted via the blockchain platform are characterized by the fact that their personality is virtual (Kirsanov & Popovich, 2020) and is expressed through their private keys and digital signatures in conducting and executing transactions on the blockchain (Roth & Eitelwein, 2018).

Smart contracts, like traditional contracts, require contractual parties to be competent. Islamic law requires contract parties to be sane, discriminating, and sensible (Alghuwairi et al., 2024). This is when he/she reaches puberty to benefit his/her religion and money, so a contract with a child, an insane person, or an unconscious person is not valid, However, the problem or difference in smart contracts is that the two parties are not present in the same place and may not have met before, which makes the personality of the contracting parties unknown to other parties and whether they meet this condition or not (Zubaidi & Abdullah, 2017).

The parties to the contract must also have a competence that authorizes them to conclude the contract, such as being owners or agents. If the contract is concluded through a person who does not have this competence, such as a curious person, then his/her contract is suspended according to the majority of jurists and invalid according to the Shafi'is (Dhabash, 2018).

6. CONCLUSION

This study indicates that smart contracts incorporate aspects that are not compliant with Sharia law. Two fundamental aspects of an Islamic contract utilized in smart contracts are incongruent with Sharia principles: the contracting parties and the topic matter. The contracting parties possess autonomy, which encompasses the aspect of gharar, as a criterion for assessing their eligibility. Gharar also influences the utilization of cryptocurrencies as a medium of exchange within smart contracts.

The origins of the smart contract go back to the American computer scientist Nick Szabo. Although it is not new, there are many definitions of jurisprudence around defining the concept of the smart contract, and there is no unified definition for it yet, which raises some problems around it. The smart contract is characterized by a set of characteristics represented in its electronic nature, automatic execution, and implementation through computer and information programs.

The subject matter of a smart contract concurrently encompasses manipulations that generate non-Sharia-compliant issues, like usury, gharar, drug trafficking, and the illicit trade of firearms, among others. Incorporating these difficulties into smart contracts introduces risks that are challenging for users to manage, hence unjustly impacting the contracting parties. Despite being regarded as an advancement over conventional contracts, smart contracts fail to satisfy the requirements of Islamic contracts.

This study analyzed blockchain smart contracts, which are digital programs utilizing distributed ledger technology to maintain immutable data, in the context of Islamic Sharia principles to assess the legitimacy of these transactions and their implementation in Islamic societies. The study examined smart contracts and blockchain technology, highlighting their interrelation to guarantee the transparency of smart contract transactions. The study highlighted the infeasibility of efficiently executing blockchain smart contracts without utilizing Bitcoin, a digital means of exchange, to facilitate online transactions.

In fact, the efficacy of smart contracts resides in their ability to address trust-based agreement issues and mitigate legal complications, founded on several principles, notably decentralization and an open network. Trust is derived from computer programs that operate on the principles of transparency and precision in the execution and storage of transactions conducted through them.

Therefore, international agreements lack comprehensive laws regulating contracting through smart contracts, although they contain some texts that address contracts concluded by modern electronic means; they are not sufficient to clarify the nature of this type of contract, nor to find out its details. As for dealing with smart contracts from a legal standpoint, the challenges you face are the connection of this type of contract to digital currency, which is forbidden by Sharia. Smart contracts are compatible with the contract in Islamic jurisprudence and with the contract in the Jordanian Civil Law in terms of fulfilling the concept and elements, but the Jordanian Civil Law has not regulated dealing with them until the date of writing this study.

Finally, we hope that the Jordanian legislator will issue independent legal legislation or legal texts that will be included in relevant laws, such as the Jordanian Electronic Transactions Law No. 15 of 2015, that work to regulate smart contracts and develop an integrated legal framework for them, that balances the economic and programming thinking of smart contracts and the ethical dimension of contract law, to keep pace with global and local developments because it has a promising future due to the advantages it enjoys. The study concludes that smart contracts should now be eschewed until their implementation by Islamic financial institutions guarantees their secure utilization in compliance with Sharia norms.

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