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LEGAL ISSUES FACED BY SMART CONTRACTS FROM THE PERSPECTIVE OF CONVENTIONAL CONTRACTS

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ABSTRACT

In the realm of law, technology is utilized to cope with the influx of smart contracts to replace traditional contracts that govern contractual dynamics. Smart contracts differ from traditional contracts as they rely on computer codes to fulfill the contractual obligations of the involved entities. This article discusses the current state of Iraqi contract law and assesses the feasibility of integrating Iraqi law to manage and implement smart contracts within the Iraqi legal system. The study employs a qualitative approach and adopts comparative doctrinal research to investigate current legal practices, the relevant legislation, and the adaptation of Iraqi laws to smart contracts. As a result, the study reveals the inadequacy of Iraqi contract law in incorporating smart contracts into existing legal practices in Iraq. It also underscores the necessity of enacting new laws to explicitly regulate the operation of smart contracts involving the use of cryptocurrencies.

Keywords: Smart contract, conventional contracts, traditional contracts, cryptocurrency, blockchain.

INTRODUCTION

For centuries, traditional legal contracts have governed agreements and commercial exchanges worldwide (Rahman et al., 2020). Because of the complexities of these contracts, as well as the frequent disputes and litigation that result from them, legal practitioners have been motivated to pursue alternative solutions, such as utilizing standard terms and conditions that cover the new contractual arrangements in their entirety. Traditional contracts are unsuitable for dealing with revolutionary

blockchain and cryptocurrency technological developments. As a result, smart contracts have been proposed as the best solution in light of these new developments.

A Smart Contract, like a Traditional Contract, may include the terms and conditions accepted by two or more untrustworthy parties (Gürkaynak et al., 2018). The operational foundations of a workable code that operates blockchain enforcement to enable contract performance have been established by contractual ramifications. The primary reason smart contracts were developed was their ability to orchestrate and safeguard all parties' transactions in dubious circumstances (Chaveesuk et al., 2020). However, under the contract laws of Iraq, the implementation and legal status of smart contracts have caused tension and controversy. This article provides an overview of smart contracts and their functioning within blockchain technology. It then delves into the legal issues that emerge when employing smart contracts under Iraqi contract law (Jumaa & Shakir, 2022). The study also examines the status of smart contracts in the United States (US) and the United Arab Emirates (UAE), using them as models for potential implementation in Iraq.

METHODOLOGY

This research has assessed the compatibility of Iraqi laws with smart contract transactions, and to accomplish this, the study adopts a qualitative doctrinal methodology. Doctrinal legal research is variously referred to as library-based research, pure theoretical based research, legal dogmatic, black letter law research, or arm chair research (Balasingam, 2022; Kundu, 2017; Murshida et al., 2019; Raji & Akolokwu, 2019). In the present research, existing literatures and other legal texts on the topics of Smart Contracts and Traditional Contracts were analyzed with particular reference to the US and the UAE to highlight developments in these jurisdictions. The aim for doing so is to highlight lessons for Iraq and other countries that have yet to develop smart contracts in their jurisdictions.

BLOCKCHAIN AND SMART CONTRACTS

Smart contracts are computer protocols that can operate autonomously and on network computers free from a mediator. Computer programs generate contracts by utilizing cryptographic codes (Sklaroff, 2017) formed using a programming language to transmit the rights and duties of the parties involved (Munawar, 2022). This ability has led to a reliance on blockchain technology, which can be operated publicly and independently while remaining impervious to change (Werbach & Cornell, 2017). When the programming requirements are met, the relevant action is prompted via smart contracts on the blockchain. For example, blockchain technology may be used to enforce the agreed-upon payment when products or services are sold or delivered. If no payment is received, goods will be automatically recovered or services will be terminated.

Smart contracts are an example of a smart contract idea that has gained popularity after Szabo's smart contract concept was used as an explanation for purchasing something from a dispenser machine (Paech, 2017a). A smart contract is a process that transfers ownership autonomously based on a predefined set of inputs. In this case, the autonomous transfer involved a confectionery item. When the predefined input is received, the money inserted into the vending machine is dispensed (Agnikhotram & Kouroutakis, 2018).

The efficiency and cost-effectiveness of smart contracts are the outcomes of numerous advancement projects around the world to combine technologies required for their execution. The fundamentals of smart contracts are based upon cryptocurrency and are outlined in a distributed system that is not centralized for engaging with virtual currency in the blockchain. Since all activities are processed as units connected in chronological order, this ledger is known as a blockchain (Patel et al., 2018). Presently within ten minutes, a blockchain transaction is formed when two entities exchange virtual currencies, resulting in the creation of blocks that are linked to other blocks in their entirety. A blockchain transaction involved a signature in digital form and is transmitted securely and permanently to a peer-to-peer (P2P) network (Bhattacharya, 2022). This allows the contract to function effectively and cost-effectively free of the need for mediators like lawyers or a centralized authority. According to research, smart contracts cannot function in a blockchain-free technology (Upadhyay et al., 2021).

Research indicates that smart contracts cannot function in a blockchain-free technology. Smart contracts function in conjunction with blockchain to implement transactions. According to a study by Ahmed Aziz Hassan, using smart contracts on blockchain not only saves money, but also provides additional advantages (Hassan, 2018). These include the following: (1) enhanced efficiency, (2) reduced involvement of mediators and legal expenditures, (3) improved openness, and confidentiality, (4) greater certainty, and (5) autonomous enforcement (Kirli et al., 2022). These benefits are explicated as follows:

- i. Smart contracts were shown to enhance contract completion effectiveness. Any contracting entities on the blockchain are required to confirm the agreement's terms and conditions, which will result in the autonomous execution of the contract (Hassan, 2018). This method is effective because it enables the blockchain to operate autonomously for transactions like record-keeping, auditing, and enforcement that do not depend on intermediaries for verification and authorization (Tai, 2018).
- ii. The lack of centralized power or a mediator in smart contracts implies that standard transactions and legal expenses that occurred during contract completion will be non-existent and void. Smart contracts can eliminate contract operational expenses, as well as commercial expenditures carried out by the entities.
- iii. Since smart contracts are transparent, all finalized business agreements on the public blockchain are available to all users and enable all users to maintain their privacy and confidentiality across all transactions (de Graaf, 2019). Firms dealing in credit cards, for example, put in place the requirement of their representatives to contact cardholders, in addition to collecting identifying data as a payment condition (Brownsword, 2019). However, consumers are in jeopardy of getting their data disclosed by hackers or scammers who gain unauthorized access to such sensitive information (McKinney et al., 2018).
- iv. A computer programmer completed the terms and conditions of a smart contract which is written in computer language. Researchers discovered that traditional contracts, whose terms and conditions are open to multiple interpretations, are less accurate but less problematic than computer language expressions (Weber, 2018). It is because of this aspect that many business agreements have found smart contracts to be an appealing alternative because of the greater level of certainty they provide.
- v. These smart contracts are capable of executing agreements autonomously, without any hesitancy from the entities involved. The terms and conditions of a smart contract is executable without the entities' involvement the moment the signatories of the contract put down their signatures. Even if the parties' intentions change, the contract is still enforceable since the computer code authenticates the circumstances and records the change in the blockchain

database. Consequently, the traditional contract system may be replaced by the smart contract system, which is both more effective and less susceptible to bias compared to its conventional counterparts (Giancaspro, 2017).

In the 1990s, Szabo describes the smart contract characteristics aforementioned as innovative ways to produce formally recognized safe digital connections that are much more feasible than a paper-based automated procedure (Hsiao, 2017b). Nonetheless, there is ambiguity with regard to whether Iraq's existing contract law is capable of dealing with deviations from traditional contracts, and whether Iraqis are willing to accept any flaws required to facilitate smart contracts in their business contractual arrangements. The present authors have argued that smart contracts and cryptocurrencies may face legal challenges, which vary from one jurisdiction to another. These legal challenges are as discussed below.

Legal Challenges of Smart Contracts

Enforceability

Determining the means of enforcing or remedying breaches of smart contracts might pose challenges. Conventional legal systems and authorities may have difficulties in intervening in situations where the code is decentralized and immutable (Paech, 2017b).

Regulatory Compliance

Smart contracts must adhere to a range of legal and regulatory obligations, including but not limited to consumer protection laws, anti-money laundering (AML) standards, and privacy laws. Ensuring adherence to the code may be intricate (Savelyev, 2017).

Ambiguity

Because smart contracts are self-executing agreements encoded in code, their terms and conditions must be explicit (Hsiao, 2017a). However, uncertainty in the interpretation of the code might lead to possible disagreements.

Error or Bugs

Smart contracts may have bugs or coding flaws that have unexpected consequences. Such problems may give rise to monetary losses or legal obligations, necessitating difficult procedures to deal with these risks.

Data Protection and Privacy

Smart contracts frequently involve the processing and storage of identifiable personal information (De Caria, 2018), which raises concerns regarding data protection regulations. Compliance with privacy laws can be difficult to ensure.

Jurisdictional Matters

The use of blockchain enables transactions to occur without geographical limitations. However, legal systems are often structured around the boundaries of individual nations. Identifying the relevant legal

regulations and jurisdiction in the event of conflicts might pose challenges in cross-border smart contract situations (Ganne, 2018).

Lack of Legal Precedence

The absence of recognized legal precedents creates uncertainty in predicting how courts will handle smart contract disputes because the legal precedents for smart contracts are still limited (Alex Lipton, 2018).

Lack of Consideration for Force Majeure and Excuses in Smart Contracts

Smart contracts are specifically designed to be autonomous and legally binding, minimizing the possibility of mistakes or failure to fulfil obligations. Nevertheless, there are some situations in which the failure to fulfil obligations under a smart contract might be deemed acceptable. Here are a few such scenarios:

- i. ***Force Majeure***: In the event of unanticipated circumstances beyond the control of the parties involved, such as natural catastrophes, wars, or government involvement, it may be considered excusable under the concept of *force majeure* (Tai, 2018).
- ii. ***Technical Problems***: Despite the sophisticated nature of smart contracts, non-performance might result from technical problems or faults in the code. In some situations, it could be acceptable to provide an explanation if the non-performance was caused by a bug or security hole in the code, especially if the party who failed to perform obligations was acting in good faith (Abdullah et al., 2023). It is not fair to hold the party concerned responsible for non-performance in this case.
- iii. ***Mutual Agreement***: In the event that both parties participating in the smart contract reach a consensus to alter or terminate the contract due to changed circumstances or unexpected occurrences, failure to fulfil obligations may be pardoned by mutual agreement (Mik, 2017). However, with smart contracts, this scenario would be impossible.

Legal Challenges of Cryptocurrencies

The use of cryptocurrency faces several legal obstacles. Notable examples include the following:

Lack of Legal Framework

Cryptocurrencies function in a relatively new and expanding space, and their use is often not governed by a distinct regulatory framework (de Caria, 2017), unlike traditional currencies such as banknotes and coins, which have the status of “legal tender” (He et al., 2016).

Theft of Data and Financial Fraud

Two other urgent legal issues relating to cryptocurrency are data theft and financial fraud. Many users engaged in criminal activities may be persuaded to adopt cryptocurrencies for payments by the blockchain's promise of anonymity and its seeming lack of rules.

Money Laundering and Criminal Activities

Cryptocurrencies' anonymity makes them attractive for unlawful operations, including money laundering, terrorist funding, and drug trafficking (Dyntu & Dykyi, 2018). Tracing transactions and identifying individuals engaged in these crimes is challenging for law enforcement organizations.

Consumer Rights and Dispute Resolution

The irreversible nature of cryptocurrency transactions and the absence of intermediaries in their use make it difficult to address scams, theft, and fraudulent transactions. Protecting consumer rights involved in these transactions is therefore, challenging.

Protecting Investors

Decentralized and uncontrolled cryptocurrency marketplaces pose hazards for investors (Kamis et al., 2023). Investors sometimes lose their money due to fraudulent Initial Coin Offerings (ICOs) and market manipulation. Investor protection becomes a legal issue in this field (Navarro, 2019).

Taxation

Cryptocurrency taxes vary by jurisdiction. Taxing bitcoin transactions, capital gains, and mining or staking revenue is difficult. Clear rules prevent tax avoidance and assure compliance. Precise directives and rules are necessary to guarantee adherence and prevent tax evasion (Bolotaeva et al., 2019).

It is crucial to acknowledge that the aforementioned legal challenges may change as the legal framework for smart contracts and cryptocurrencies progresses. Therefore, it is important for individuals and organizations to seek legal counsel tailored to their jurisdiction and circumstances. Additionally, governments must develop unambiguous guidelines, laws, and precautions to safeguard the interests of individuals, investors, and society as a whole.

SMART CONTRACT PROCEDURES IN IRAQ

The contract law in Iraq is governed by the Iraqi Civil Code No. 40 of 1951 (ICC) and the 2012 Electronic Signature & Electronic Transactions Law No. 78 of 2012. The ICC governs several rules associated with legislative foundations, and the difference between the rights of individuals and legal entities, and the law enforcement, whereas the Electronic Signature & Electronic Transactions Law governs electronic contracts.

A contract is formed when a contracting entity makes a proposal, and another entity agrees to it. This agreement is established through the contract's object, as outlined in Article 73 of the ICC. The establishment of a contract entails two entities reaching a consensus and the other entity accepting the proposal. The contract terms bind the parties once a consensus is reached and the contract controls the association between the entities. Furthermore, Article 77 of the ICC asserts the obligatory agreement of the entities to the contract's terms and conditions to complete a valid and binding contract. This refers to the entities' obligation to meet the offer and agreement consensus. The offer and acceptance can be conveyed whether explicitly or implicitly through generally understood terms and concepts used by the entities ("Iraqi Civil Code, No. 40," 1951).

Article 18 (1) of the Electronic Signatures and Electronic Transactions Law also governs the fundamentals of the offer and acceptance, stating that entities may convey their offer and acceptance in digital format. This proviso states that entities may use digital communication such as an email, some other communication method using the internet, or recording techniques when contracts in Iraq are entered into ("Electronic Signature & Electronic Transactions Law, No. 78," 2012). Unlike conventional contracts, smart contracts require all terms to be agreed upon prior to the smart contract signing; once the contract is signed, it will be immediately executed and cannot be altered other than in the particular instance of contract revocation. The entities' acquiescence or original intent to form a contractual relationship may be predicated on their consensus to mutually deliver and share their cryptographic keys (Jaccard, 2018). This is consistent with the ICC article 87 section (1), which states that a contract is considered to be finalized when the person who offered the contract becomes cognizant of such acceptance ("Iraqi Civil Code, No. 40," 1951). When applied to smart contracts, this signifies that a smart contract has been clinched when the entities sign the contract using the cryptographic method and it becomes an obligation to enforce, rather than waiting for it be certified by a notary.

The content is not transferred from a conventional contract controlled by civil law rules, in the particular instance of a smart contract. Nonetheless, smart contracts necessitate compliance with the three components of a conventional contract, which are as follows:

Offer and Acceptance

Offer and acceptance form the fundamental standards of contract law in Iraq. Lawmakers in Iraq established Article 18 Section 1 of the Electronic Signatures and Electronic Transactions Law ("Electronic Signature & Electronic Transactions Law, No. 78," 2012), in which the law has approved an electronic contract offer and acceptance. Without an offer and acceptance, the entities are not obligated to deliver any of the contract's commitments, nor does a breach can be declared. Since smart contracts use applications on the blockchain that utilize language software instead of conventional legal methods, there is a basic policy for contracts asserting that entities are entitled to select whatever mode for authorization after an offer.

As a result, if the smart contract code is implemented on a public blockchain, it may be interpreted as an offer if any person involved in the blockchain is eligible to implement the smart contract. However, in certain private blockchain systems, both entities can transmit a smart contract as an offer to a different entity, which consists solely of an offer to that entity. As a result, the offeree exhibits acceptance through the signing of the contract with the entity's private key. As a result, upon signing a smart contract, the transmission of a specific cryptocurrency quantity in exchange for the service or product acquired will be guaranteed by a blockchain (Mik, 2017), making the offer validly accepted. Under the relevant Iraqi law, implementing a smart contract to a blockchain, in addition to a SC signing with a private key constitutes a legitimate instance of offer and acceptance.

It is noteworthy that smart contracts have bottlenecks. These issues may go unnoticed in a conventional contract. Thereby, implementing a smart contract using contemporary communication methods may ascertain the problems in validating the credit worthiness of the smart contract's counterparties (Werbach & Cornell, 2017). Due to this, on a technological level, the smart contract's entities are not persons. They are, on the other hand, cryptographic private keys (O'Shields, 2017). Because cryptocurrency purchase contracts or cryptocurrency payments are undisclosed to the entities, this secret private key denotes them. Consequently, there is an absence of acknowledged exchange channels in

Iraq that allow the powers that be in Iraq to identify the entities involved in the contract in the event of disputes.

Contract Subject Matter

The subject of the obligations in the SC can in no way be legally barred or be opposing the public peace system or etiquettes, as per the Iraqi Civil Code No. 40 of 1951 and amendments (Section,1, Act 130), or it will be considered void. This implies that the debtor's obligation to the creditor will either be in transmitting a right, executing it, or abstaining from executing it. It is well understood that, except if forbidden by law, engaging in all matters and services through the internet is permissible, concerning the premise of contract liberty, which specifies everybody has total autonomy to practice any commerce, career, art, or craft which they consider fit.

Recognising what is considered contrary to public ethics can render a contract's subject matter unlawful (Hamdy, 2015). This may include engaging with websites that offer pornographic images, gambling, (Hsyn, 2016) facilitating the sale of drugs (Earls et al., 2018) and weapons in countries where such activities are prohibited. Smart contracts regard lawful and unlawful subject matter alike, with the key factor being the ability to execute such subject matter through a "code". Various arguments about the possible unlawful usage of cryptocurrency have cast a cloud over blockchain technologies. Smart contracts may equally be utilized for unlawful reasons, such as by obtaining hacker assistance and utilizing a contract that offers a cryptocurrency as an incentive for hacking a specific website (Savelyev, 2017).

It is important to note that proceedings executed electronically in Iraq are frequently transnational. The Smart contract's content may be legal in a certain country but illegal in another. As a result, even if the subject of the seller's or service provider's obligation in the smart contract is legal, the obligation of the other distinct entity, such as the purchaser, debtor, or person who is obligated to pay the fees in cryptocurrency would tantamount to be illegal under the regulations of the Iraq Central Bank. Such regulations stipulate that currency traders or persons who conduct cryptocurrency proceedings will face fines outlined in the nation's anti-money laundering legislation (Iraqi Central Bank instructions, 2017).

As a result, the Iraqi legislative system's only option is to find and prosecute the persons participating in smart contracts that are deemed unlawful in reality. It appears inconceivable because the government of Iraq lacks the advanced technological capability to manage cryptocurrency transactions in lieu of the legislative system's inability to manage the commercial trade of commodity markets and cryptocurrency, in the broad sense of the digital realm.

Mutual Obligation Cause

According to Iraqi legislators, the third component for contract (cause) in Article 132 of the ICC has granted that:

- i. If the contracting entities break a law without any justification "Cause," or for whatsoever justification forbidden by jurisdiction, or in serious breach of public order or morals, the contract is null and void.
- ii. Except if proof establishes contrarily, each obligation has been presumed to have a justifiable reason, even though this justification is not specified in the contract.

- iii. Except if facts show contrarily, a justification noted in the contract is assumed to be the true justification.

As per the ICC Article 132, in the event that the immediate justification for a smart contract is to acquire cryptocurrencies, the SC is deemed null due to the contract cause being unlawful under the ICC ("Iraqi Civil Code, No. 40," 1951).

SMART CONTRACT PRACTICE OF THE INTERNATIONAL COMMUNITY

To enhance smart contract execution in Iraq optimally, it is beneficial to understand and embrace knowledge from the smart contract practices of other countries. The following discussion will be founded on the laws underpinning smart contracts in the United States and the United Arab Emirates.

Law Governing Smart Contracts in the USA

Contracts in the United States are controlled by the following two legislations: common law and the Uniform Commercial Code. Article 2 of the Uniform Commercial Code (UCC) regulates contracts between merchants and the transaction of products being sold. The UCC is made up of two arrays of contract regulations.

The first set of rules applies to all, while the second set applies only to dealers (Sidekick, 2023). There was the necessity for statutory provisions to adjust the statutory obligations of paper proceedings to this new technology which had expanded in the United States, and when e-commerce proceedings amounted to an estimated \$43 billion just in 1998.

This incredible expansion of e-commerce has resulted in the necessity for state and federal legislations to adjust in 1999 the statutory obligations for paper proceedings to this latest technology so as to be able to capitalize on the benefits of e-commerce (Freedman, 2001). Moreover, in 2000, California, as well as certain states legislated the Uniform Electronic Transactions Act (UETA), which offered individual states the autonomy to enforce e-commerce. The United States legislated the Electronic Signatures in Global and National Commerce Act (E-SIGN Act) to monitor and control proceedings done electronically at the federal level. However, in cases where there is a necessity for the contract to be prosecutable, it must comprise key components as defined in Article 2 of the Uniform Commercial Code (UCC). The following are the aspects:

- i. **Mutual Assent:** In US contract law, legal intent is typically considered part of the offer and acceptance process rather than a separate component. Courts impartially determine whether an entity's offer constitutes a legitimate expression of assent to the terms of an agreement and whether the other party's acceptance demonstrates comprehension and willingness to enter into the contract. Mutual assent, therefore, requires clear evidence of both parties' understanding and intent to be bound by the contract's terms. The Uniform Commercial Code (UCC) addresses aspects of offer and acceptance in specific provisions, such as Sections 2-204 and 2-206, which provide flexibility for contracts formed through electronic means. These provisions recognize that an agreement can be established through modern communication methods, including electronic intermediaries and digital acceptance. While the UCC was not explicitly designed with smart contracts in mind, its principles may be adaptable to the unique features of smart contracts, potentially offering a framework for their recognition and enforcement in the future.

- ii. Entities with Legal Capacity to Make a Contract:** Regarding the confidentiality of the entities involved in the smart contracts and in terms of determining their capacity, this issue tends to be nearly resolved as per the American legislative system, which could employ certifications in digital forms for the subscribers of blockchain platforms issued by certification authorities that encompass asymmetric cryptographic key pairs such as the procedure of signing on smart contracts, which rely on the pairs of public and private keys. In this case, the issuance of the certificate is following the state laws in the provision of the required assurance by associating a particular signer with a distinct key pair. Meanwhile, a certification authority is a reliable establishment that serves as both an issuer and a repository for digital certificates and is regarded as a reliable third entity, or known as a party (Schwaer, 2004). Consequently, the entity that receives a smart contract with a digital signature could get in touch with a digital signature database to confirm that the certificate and related public key are accurate (Peterson, 2000).

The technology used in American digital certification (USA) offers answers technologically for creating electronic signatures that are lawful. They bind the signatories and prove their legitimate owner's identity for e-contracts and e-commerce. These contracts can therefore, take place with the safe knowledge that they are secure.

- iii. Consideration:** In contract law, consideration is a gain that each entity desires or anticipates getting in exchange for entering into a contract. It is usually in the form of money; however, it may be in the form of a pledge to execute a particular action or a pledge to avoid a certain thing. To be legally binding, it is imperative for an agreement or contract to comprise a certain form of consideration for every individual entity concerned. A contract is considered to be a mutual two-way means, which denotes that each person involved should obtain some kind of value from the other entity or entities (Kailyn Champlin, 2015).

In terms of smart contracts, the consideration value will be virtual currencies, where cryptocurrencies were classified as an unapproved form of exchange or government approved by numerous states in the United States. Virtual currencies are liable to the Uniform Money Services Act (UMSA), chapter 19.230 RCW.117 in some states, including Washington, California, and New York (Hughes, 2017).

Finally, the courts in the United States appear to be receptive to providing statutory standing for automatically generated digital contracting. As a result, the concept of consideration is deemed unproblematic concerning smart contracts. Consequently, smart contracts may be endorsed by certain legislations of the American courts.

In the United States, the consideration threshold is lower than in other countries such as that of France. Furthermore, there was an oversight by the US courts in assessing the sufficiency of consideration, but instead only contemplated whether it was bargained for (Bayramoğlu, 2018), rather than assessing its sufficiency. Further to what has already been mentioned, this article will explore the probability of implementing smart contracts and gaining statutory standing in certain US states through explicit legislation.

Enforceability of Smart Contracts under US Law

There is no federal contract law in the US. Instead, the mechanisms for interpreting and enforcing agreements are established on a state-by-state basis. Many basic tenets extend across state borders, and

the National Conference of Commissioners on Uniform State Laws has undertaken initiatives to unify state laws. This variation in state positions should mitigate any smart contract outcomes. The assessment of the effective enforcement of smart contracts should be initiated with an essential distinction between a contract and a smart contract (Snider, 2019). State courts have traditionally determined applicability by ascertaining whether the common law criteria of offer, acceptance, and consideration are met. Supplemental smart contracts certainly meet these required elements (Alex Lipton, 2018).

Although numerous contracts are currently required to be in writing, additional legalities such as those imposed by the UCC and state fraud legislation are considered necessary ("Uniform Commercial Code, § 2-201, Formal Requirements; Statute of Frauds,," 1962). These requirements may not demand a written form for contracts to be deemed as feasible (Ku, 2007). As a result, many code-based SCs will be allowable under SC laws. vending machine, for example, is useful in this regard. While the consumer has some implied rights, the contract contains no significant written terms other than an itemized price display. Consequently, aside from the restrictions put in place by the UCC and fraud laws, the reality that an agreement is defined exclusively in code, such as in the instance with smart contracts that are solely in code form, poses no particular obstacle to the establishment of a contract.

The significance of information technology in the formation of a contract has been investigated for a long time in numerous laws and legislative frameworks. Enacted in 1999, the Uniform Electronic Transactions Act (UETA), serves as the foundation of forty-seven state laws and asserts that digital records, like the ones formed by computer programs, as well as e-signatures (digital signatures that employed public-key encryption technology), possess similar legal bearing equivalent to their written cohorts, subject to certain special cases. Furthermore, the UETA even recognizes "electronic agents," which it describes as "a computer program or an electronic or other automated method employed independently to begin an action or react to electronic records or performances in whole or in part, without inspection or action by a human" (Consumer Product Safety Act, 2008).

According to the UETA (Alex Lipton, 2018), the electronic agent is "capable of initiating, reacting, or engaging with other parties or their electronic agents within the boundaries of its programming after it has been activated by a party, without additional attention from that party". It may therefore be argued that this is an early recognition of smart contracts.

Likewise, the authenticity of e-signatures and e-records in trading transactions was affirmed by the federal Electronic Signatures Recording Act (E-Sign Act), which also states that a contract and other documents connected to a proceeding are allowed to be implemented electronically per any "contract, signature, or electronic record," cannot be denied legal effect, validity, or enforceability solely because it is in electronic form. Additionally, it provides that the transfer of funds or other documentation involving electronic agents must not be invalidated, provided the actions of such agents are traceable and attributable to the obligated part (15 U.S. Code § 7001 - General rule of validity, 2000).

Regardless of the reality that understanding the established legislative structure is required for evaluating the applicability of smart contracts nowadays, people who utilize smart contracts in the forthcoming time may not be entirely bound by traditional laws predating the emergence of blockchain technology. A few states, including Nevada and Arizona, have modified their state variants of the UETA to include blockchains and smart contracts clearly and unambiguously (Kelly, 2019). The truth of the matter is that these states have implemented completely distinct interpretations of these key terms, which implies that while many states heed their example, there might be growing coercion to accept cohesive interpretations to represent blockchain and smart contract advancements.

Legal Recognition of Smart Contract

Irrespective of established US laws like the UETA and the E-Sign Act that govern the provisions of electronic proceedings, one should note that they have flexible legal clauses. Over the last few years, blockchain-based smart contracts have been used in a variety of transactions.

Nevertheless, various US states have initiated the enactment of legislation specifying the acknowledgment of smart contracts and making reference to them, having deemed them as legal agreements, assumedly to draw possible entrepreneurs and inhibit innovative efforts from becoming clogged. The first step toward passing smart contract laws is to form a working group or exploratory panel to investigate potential applications of smart contracts and similar technologies. Other states including California, New Jersey, New York, and Texas have passed legislation establishing working groups to investigate a range of aspects associated with smart contract and blockchain technology applications (Adcock, 2020).

For example, Delaware debuted the Delaware Blockchain Initiative in 2016 to investigate blockchain and smart contracts, specifically whether smart contracts operated on a blockchain could be suitable within Delaware's existing corporate laws. The Delaware Blockchain Technology Initiative stated the potential value of smart contracts as effectual tools, asserting that smart contracts can provide an effective and novel way to help facilitate burdensome back-office processes, and lower proceeding expenses for businesses and users, in addition to mitigating and reducing threats.

Another important development was when Arizona passed into law the inaugural smart contract laws in March 2017, recognizing as legally binding executable "digital signatures" acquired through smart contracts under current electronic signature legislation. Similarly, Tennessee approved a bill expressly authorizing smart contracts by recognizing "cryptographic signatures" that distinguish the entities transacting as legally valid and obligatory. It is clear that Arizona and likewise, Tennessee laws aspire to implement smart contracts using established provisions, like established electronic signature statutes and contract laws (Arcari, 2018).

A few states have enacted or are considering smart contract legislation which seeks to establish a fundamental system for smart contracts in state commerce via a combined application of incorporating additional interpretations to its business codes, enacting smart contract legislation, and enacting smart contract laws. Recognizing the legal employment of smart contracts or allowing the utilization of associated technologies in specific conditions has occurred in Nevada, Arkansas, Maryland, Oklahoma, South Dakota, New York, Utah, Texas, and Washington, which are among the states that have introduced laws that codify one or more smart contract principles. Furthermore, a bill in New York is being considered which would recognize the employment of blockchain technology and smart contracts in commercial activity.

Several states have taken a further broad approach to smart contract regulatory frameworks, implementing specific protection systems and limitations on smart contract utilization. The Blockchain Technology Act, which is amongst the utmost exhaustive smart contract legislations to this day, was also endorsed in Illinois. The South Carolina Blockchain Industry Empowerment Act of 2019 is currently being debated by the state legislature in South Carolina. This extensive bill seeks to establish South Carolina as a start-up incubator for blockchain technology. Whereas the law is essentially associated with tokens and virtual currencies, it defines smart contracts, e-signatures, and a variety of

other aspects that are associated as well. This bill, if passed, would lay the groundwork for the state to implement blockchain-based fintech (Adcock, 2020).

Significantly, although smart contracts are not acknowledged throughout the United States, several states are exploring laws connected with smart contract execution and blockchain technology. Numerous states had dabbled with smart contract laws. Smart contracts will be used more broadly and creatively as state legislation becomes more resourceful in scope.

Legislations Regulating SCs in the UAE

The United Arab Emirates Civil Code governs the establishment of contracts in the UAE. A contract can be established by the convergence of mutual consent, based on the United Arab Emirates Civil Code, Article 13 ("The Civil Transactions Law of the United Arab Emirates, promulgated by Federal Law No. 5 of 1985 as amended by Federal Law No. 1 of 1987," 1987) and the offer and acceptance are deemed as "expressions of intent" to maintain the remaining legal provisions. A statement of intent could well be "conveyed verbally or in written form" or "by an interaction of actions expressing binding understanding or by selecting any other path wherein the conditions remove any doubt that they reflect common intention, according to Article 132 ("The Civil Transactions Law of the United Arab Emirates, promulgated by Federal Law No. 5 of 1985 as amended by Federal Law No. 1 of 1987," 1987). Generally, the UAE Civil Code permits a written contract, verbal contract, or through acts (Bench, 2019).

The UAE authorities had accepted Federal Law No. (1) of 2006 on Electronic Commerce and Transactions ("ECTL") to augment and make clear the expansive principles of contracting set as per the UAE Civil Code in the creation of digital or electronic contracts. Similarly, the Dubai Law No. 2 of 2002 pertaining to e- transactions and commerce ("Dubai ETCL") was passed into law based on a common aim.

Article 2(2) of the ECTL applies to "digital records, documentation, and signatures relating to electronic exchanges and commercial initiatives" contingent on the mentioned exemptions. Meanwhile, electronic transactions are defined as "whatever agreement, contract, or consensus confirmed or conducted entirely or partially via electronic means." Comparable definitions are also included in the Dubai ETCL.

E-commerce refers to business operations carried out via e- communication ("Federal Law on Electronic Commerce and Transactions," 2006). Pursuant to article 13 of the Dubai ETCL, No.2/2002, and likewise Article 11 of the Federal ECTL, both the laws stated expressly that "to contract, an offer or the acceptance of an offer may be expressed, in whole or in part, by electronic communication" as well contained. The contract still cannot be deemed inapplicable or null and void exclusively because it was created through electronic means. It should be argued that the terminology "electronic" has an expansive meaning under the ECTL. The term signifies whatever that is "relating to modern technology that has electrical, automated, optical, wireless, magnetic, electromagnetic, digital, photonic or similar capabilities". The term "electronic" will encompass new technologies like blockchain technology (Southon, May 1 2019).

Aside from the legitimacy of e-communication as a means of offering and accepting legal contracts, the law has also looked into the likelihood of a contract being established through the interplay of processes. In addition, Article 12 of the ECTL (Automated Electronic Transactions), which was released to the

public in 2006 before the formation of blockchain, seems to particularly allow the establishment of contracts through the use of a computer code, stating that:

1. A contract can be formed by the exchange of automated e-agents, encompassing two or more preceding sets and preceding programmed information technology systems. Even though no user was actively engaged in the contract's realization within these systems, a contract like this would be deemed legitimate and executable.
2. A contract could be established between a natural or legal person in custody of a computer-controlled electronic information system that operates on automation and another natural person, whereby the latter understands or believe that this system automatically finalizes or undertake the contract (Federal Law No. (1) of 2006 on Electronic Commerce and Transactions).

SCs have demonstrated lately their capability to execute a wide range of processes and systems through automation, particularly in the banking and financial industry; the most obvious have been in the form of payment and actions contingent upon payment. Additionally, smart contracts may benefit the insurance industry, and the "DLA Piper"¹ company recently helped a large insurance company create a smart contract for the automated processes of specific insurance contracts (Paul Allen, 2019).

SMART CONTRACT VIABILITY FOR IRAQ

Even though smart contracts are optional voluntary-based contracts, the contract is the primary source of commitments. The contracting entities are entitled to enter into a contract freely or otherwise, based on the dominion of will theory. Thus, no one can force the other to enter into contractual relationships that a person does not want with others.

Therefore, the use of this contractual pattern flourished in most countries, which prompted legislators to amend the legislation related to electronic transactions, to recognize the probative value of these transactions. Even though the Electronic Signature and Electronic Transactions Law No. (78) of 2012 was passed into law to provide the underpinnings and legal structures for online proceedings via modern methods of communication, as well as to promote and support the internet and information technology industries, there are challenges, as Iraq must establish itself to be among the countries that have adopted blockchain technology. The many flaws that can be addressed include the following:

1. According to Article 18(1) of ESET No. 78 of 2012, offer and acceptance can be conveyed electronically, so contracts can be finalized through electronic means, such as via emails, the internet, or any other electronic means. Within which the smart contracts can be in computerized codes format that reflects the parties' accord, a complex problem that could emerge is the entities' consensus in this type of contract (Djurovic & Janssen, 2018). In smart contracts, the entities' assent is reflected by the signing of the agreement in cryptographic form; the submission of the cryptographic keys by the entities involved to dedicate their assets as evidence of the entities' intention to enter into a contract (Debono, 2019). Nevertheless, conveying the entities' mutual intentions through this manner is not an implication that they

¹ DLA Piper is a global law firm with lawyers located in more than 40 countries throughout the Americas, Europe, the Middle East, Africa and Asia Pacific, positioning itself as having the expertise to help clients with their legal needs around the world.

have reached an agreement pertaining to the particular contractual terms, which might lead to misunderstandings about the contract or its precise terms. The agreement would be irreversible and enforced blindly.

2. Given the Central Bank of Iraq's caution that cryptocurrency subscribers might be slapped with penalties under the provisions of the Anti-Money Laundering Law No. (39) of 2015 (Atiyah et al., 2023). Smart contracts would be rendered null and void due to the employment of an illegal payment means, in the form of cryptocurrencies. This problem can be solved by recognizing cryptocurrencies as a commodity or medium of exchange, or by issuing a local cryptocurrency owing value as a stablecoin.
3. According to Article 93 of the ICC, everyone is eligible to practice contractual arrangements, except if the legislation determines or restricts a person's capabilities. Youths and those who are incapacitated or have an intellectual disability are typically not held by legal contractual bindings. Since entities are signified to be in the form of cryptographic private keys rather than individuals, no capability is usually evaluated prior to the execution of a smart contract by an individual. This provides an opportunity for anyone with no legal standing to access a smart contract. Consequently, the question arises regarding the implementation of a smart contract initiated by an individual lacking legal capacity (Rodríguez de las Heras Ballell, 2017). As a result, the Iraqi legislator should authorize licenses to trusted blockchain platforms that prohibit the employment of smart contracts, in the event that the contract entities are not recorded in the use of know-your-customer technology.

In contrast to conventional contracts, smart contracts are nevertheless executable even though the situation changes, making it difficult for entities to be given access to solutions for any contract breach. Since they do not possess dominion over the automated proceedings, the incapability to perform automatically does not give access to an entity to solutions. Changing or adjusting the smart contract terms is difficult.

Consequently, Smart Contracts are written in computerized codification and runs on a blockchain in a fully automated execution of code that is irreversible. It is impossible to change the contract through technical means (Puri et al., 2021). As a result, lawmakers must carefully examine established laws to make sure that every aspect of conventional contracts is compatible with smart contracts. This is necessary to guarantee that the smart contracts are independent of any unlawful components which might render the contracts null and void. To avoid additional problems stemming from the fully automated execution of smart contracts, the current established contract law must recognize blockchain viability.

APPLICABILITY OF SMART CONTRACTS IN IRAQ

The researchers in this study are of the opinion that the framework and adoption of SCs are not dissimilar to conventional contracts. However, the distinction can be seen in the following discussions:

The smart contract's autonomous-execution characteristic prioritized contractual entities over those found in conventional contracts, in which the conventional contracts need mediators or third entities to finalize the contract, like the lawyers, witnesses, or any entities involved in the contract.

Smart contracts compel themselves to autonomous solutions to find rectification if a non-payment occurs. Either it will activate the recovery process or nullify whatsoever services performed whilst in

the contract, as opposed to conventional contracts wherein the non-breaching entity must seek a solution via legal proceedings, which is more expensive.

Nevertheless, there remains a necessity for the improvement of the legal framework in Iraq. This is especially true of the contract legislation which covers smart contracts. Moreover, the e-contract law in Iraq is controlled by the Civil Code that relates to the ICC and ESET Law No. 78 of 2012, which appears exhaustive to regulate smart contracts, but possess inadequate explicit recognition of smart contracts and the blockchain.

This encompasses terminologies like an autonomous executing contract, automated transactions, smart contract, blockchain, electronic agent, and electronic records on a blockchain. It is proposed for Iraq to endorse distinct legislation to regulate smart contracts instead of being dependent upon conventional contract law under the ICC. Subsequently, Iraq must offer cryptocurrencies a particular categorization as a payment method and satisfy the obligations in the smart contracts, as in the case of the USA once it has categorized the cryptocurrency blockchain technology to be a commodity.

Furthermore, Iraq must create an IT infrastructure with networks to facilitate a private blockchain to create smart contracts system, which will allow the government to recognize the contract entities and cryptocurrency exchanges. Furthermore, legal contract drafting must be prioritized, with a focus on the capacity of contracts that have been generated by computer-generated contracts in the drafting of smart contracts. In contrast to conventional contracts, the contract drafts might be intention-based. Smart contracts do not utilize paper and are written using computer codes. It is important to keep in mind that the computer codes do not indicate the conventional offer and acceptance.

CONCLUSION

Smart contracts have emerged as the preferred method of obtaining commercial transactions in a community plagued by slow litigation processes in conventional contracts and by the inability of banks to provide e-payment services in a timely and transparent manner. Therefore, this research recommends that Iraqi legislators formulate legal rules regulating smart contract work and recognize blockchain technology, with explicit texts. This is because it is in accordance with the practice of the majority of the developed countries, that it is the nucleus of the fifth industrial revolution in the twenty-first century. Furthermore, the Iraqi legislation should safeguard smart contract consumers by establishing technical processes and a legislative framework to monitor and control smart contracts which negotiate with cryptocurrencies external to the legislative structure. To bridge the disparity between advanced technologies and the legal system, there should be a provision for the judicial infrastructure system to provide a better understanding of how blockchain and smart contract technology work by preparing development courses for groups working in the field of contracts. This will enable Iraq to benefit from smart contracts while also safeguarding citizens from fraudulent proceedings.

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