SMART CONTRACTS: PROSPECTS FOR LEGAL REGULATION

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Abstract: *The world is undergoing tremendous changes in connection with the transition to the information society. These changes lead to certain challenges that contract law faces.*

The emergence of smart contracts, the transformation of the institution of fulfillment of obligations towards the automation of fulfillment are occurring due to the development of information technology, the Internet and electronic commerce. Factors such as distrust of the parties to each other, the desire to reduce the costs of the participation of intermediaries in transactions as well as the time to fulfill obligations and guarantee their fulfillment lead to the use of smart contracts.

At the same time, the concept of a smart contract and the peculiarities of its application are not reflected in the current legislation, which can create difficulties in practice. Thus, the parties that enter into a smart contract do not receive proper legal protection due to the lack of relevant provisions in the legislation. This also raises a question of what options are available to fulfill the obligations from a smart contract.

The purpose of this paper is to study theoretical and practical problems of legal regulation of smart contracts and review the legal consolidation of smart contracts in UK legislation as part of the regulation of digital financial assets. This paper analyzes the concept of a smart contract as well as the general possibilities for smart contract adoption in the United Kingdom's contractual practice. In addition, the legal challenges surrounding the use of smart contracts are examined.

Key words: *Smart Contracts, Blockchain technology, cryptocurrency, code*

"With smart contracts, the problem is that anyone can write a smart contract, and you have to trust the creator and the team behind it"

~ Matt Suiche[1]

Introduction: Technology has positively impacted our daily life and made our life easier. Thanks to technologies and modern infrastructure, many operations can now be accessed in "one click" and are performed in just a few minutes.

Along with technology, new types of contracts, the so-called *"smart contracts"* have appeared in recent years as a result of the formation of public ledgers such as Blockchain and the creation of digital cryptocurrencies.

It should be noted that technological innovations as such were introduced several decades ago. The idea of a smart contract was first proposed in 1994 by Nick Szabo1 (USA) - scientist in the field of computer science, cryptography and law. He described smart contract as "a digital representation of a set of obligations between the parties, including a protocol for the fulfillment of these obligation[2].

"Smart contracts" are decentralized agreements with built-in computer code stored on a blockchain.[3]

Smart contracts enable firms to transact without the need for laws or courts. The companies can autonomously negotiate with other parties or other parties' smart contracts and attach directly to the parties' information systems so that services and payments promised by the contract are automatically delivered.[4]

This analytical review explains the concept of smart contracts, discusses the mechanism of work and their scope, analyzes the issue of whether smart contracts are enforceable in contrast with traditional contracts. This topic has attracted a lot of attention in the UK and we will be examining the enforceability of smart contracts under the English law and analyze Uzbekistan's law on this matter.

Despite the fact that smart contracts have advantages such as prompt execution instead of bureaucratic processes, transparency of

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[1] *Chief Healthcare Executiva, "Is Blockchain the Answer to Healthcare's Cybersecurity Concerns?" <https://www.chiefhealthcareexecutive.com/view/is-blockchain-the-answer-to-healthcares-cybersecurity-concerns> assessed 10 February 2022*

[2] *Nick Szabo (2002). A Formal Language for Analyzing Contracts https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/contractlanguage.html*

[3] *Harvard Law School Forum on Corporate Governance, "An Introduction to Smart Contracts and Their Potential and Inherent Limitations" < https://corpgov.law.harvard.edu/2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/> accessed 10 February 2022*

[4] *Skadden, "An Introduction to Smart Contracts and Their Potential and Inherent Limitations" < https://www.skadden.com/insights/publications/2018/05/an-introduction-to-smart-contracts> accessed 10 February 2022*

actions in smart contracts, as well as cost reduction due to the exclusion of intermediaries from the chain. One should not ignore such disadvantages as weak legal regulation of smart contracts and high dependence on programmers and susceptibility to errors.

At the same time, the very concept of a smart contract and its legal nature cannot be considered or studied in civil law as the definition of a smart contract has not been developed yet. In addition, the issues of change and termination, as well as the application of protection and liability measures in relation to a smart contract have not been sufficiently studied.

It should be noted that smart contracts also have a wide scope for applications not only in the financial sector but in other sectors of the economy as well. However, one should not expect a quick and widespread introduction of smart contracts, since any technology must go through a certain development path before being deployed in the field.

Some countries have already acknowledged smart contracts by enacting new legislation and regulations, as well as giving legal definitions for them, while others remain suspicious.

There are few disputes about smart contracts now, but this does not eliminate the need for their definition and legal regulation.

Uzbekistan has a high potential to join the list of countries that have accepted smart contracts in the near future by enacting special laws and regulations in that area.

An Introduction to Smart Contracts: Blockchain and functionality

Blockchain is a continuous sequential chain of blocks containing information built according to certain rules. Most often, copies of block chains are stored on many different computers independently of each other.

For the first time, the term appeared as the name of a fully replicated distributed database implemented in the *Bitcoin system*, which is why blockchain is often referred to as transactions in various cryptocurrencies, however, blockchain technology can be extended to any interconnected information blocks.

Blockchain is a distributed, unchangeable ledger that makes recording transactions and managing assets in a corporate network much easier. A tangible asset (a house, car, cash, or land) can be intangible (intellectual property, patents, copyrights, branding). On a

blockchain network, virtually anything of value may be recorded and traded, lowering risks and cutting costs for all parties involved.

The importance of blockchain: Business runs on information. Because information is delivered immediately, is shareable and entirely transparent, it is kept on an immutable ledger that can only be viewed by permissioned network users. Blockchain is excellent for delivering that information. Orders, payments, accounts, production and much more can be tracked using a blockchain network. We can see that all details of a transaction end to end and members share a single view of the truth. This provides users greater confidence as well as additional efficiencies and opportunities.

One of the elements of a blockchain is a collection of rules called a smart contract stored on the blockchain and executed automatically to speed up transactions. A smart contract can specify requirements for corporate bond transfers, as well as payment terms for trip insurance.[5]

The blockchain, as a distributed database, is made up of data blocks linked together by encryption and containing information about network transactions. Every node in the blockchain network has the ability to create and view transactions. Each block is then summarized and recorded with a specific amount of transactions. Each block utilizes a hash to link to the previous block and its transaction history at the same time. Miners oversee the verification of the blocks. These are blockchain nodes that contribute processing power in order to produce a preset hash for each block using the brute force approach. Proof of work is the term for this form of verification.[6]

Miners serve as the blockchain's bookkeepers, certifying the authenticity of transactions on the network. When a new block is created, the information is sent to all nodes in the blockchain network and saved on the blockchain's local copy. Any changes to the data after that are impossible because even minor changes would have a significant impact on the hashes that the individual blocks use to link to one another.[7]

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[5] *https://www.blockchain-expo.com/2017/02/blockchain/anatomy-smart-contract/#:~:text=Refactoring%20a%20Smart%20Contract&text=These%20basic%20components%20are%20the,ledger%20corresponds%20to%20a%20database.*

[6] *Ibid*

[7] *Myra, "What is a blockchain?" https://www.myrasecurity.com/en/what-is-blockchain/ accessed 26 January 2022*

Application of Smart Contracts: Advantages and disadvantages of smart contracts

Advantages of smart contracts include the following[8]:

– High speed of execution with the use of mathematical algorithms in blockchain applications instead of bureaucratic mechanisms.

– Transparency of actions in smart contracts on blockchain in the system, along with the confidentiality of the parties to the contract;

– Automation of smart contracts;

– Cost reduction due to exclusion from the chain of intermediaries;

Reliability and immutability provided by the decentralized data storage system in the blockchain technology.[9]

Speed, efficiency, and accuracy

When a condition is met, the contract is immediately executed. Because smart contracts are digital and automated, there is no paperwork to process and no time spent reconciling errors that frequently occur when filling out forms manually.[10]

Trust and transparency

There is no need to question whether information has been altered for personal gain because there are no third parties involved and encrypted records of transactions are shared among all participants.[11]

Security

Since blockchain transaction records are encrypted, they are extremely difficult to hack. Furthermore, because each record on a distributed ledger is linked to the preceding and subsequent entries, hackers would have to change the entire chain to change a single record.

Savings

Smart contracts eliminate the need for intermediaries to conduct transactions, as well as the time delays and fees that come with them.

Along with advantages, smart contracts also have several limitations and disadvantages, such as a high reliance on experienced programmers who develop the code of a given contracts, which leads to increased likelihood of software flaws occurring during the

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[8] *Know Techie, Advantages and disadvantages of using smart contracts – How to create a smart contract? < https://knowtechie.com/advantages-and-disadvantages-of-using-smart-contracts-how-to-create-a-smart-contract/> accessed 26 February 2022*

[9] *Ibid*

[10] *IBM, "What are smart contracts on blockchain?" <https://www.ibm.com/topics/smart-contracts> accessed 12 February 2022*

[11] *Ibid*

development process.[12] Furthermore, the inability to amend smart contracts means that any mistakes made will not be remedied promptly, and it will be costly for both parties to fix any errors. Additionally, there is a specific requirement for external services relating to regular engineering inspection of each contract so that all procedures and future operations are carried out properly. From a legal standpoint, smart contracts' code is written in a specific programming language as a computer software, but paper-based contracts are written using human language, implying that there is a significant difference between these two notions. It gets to the point where most countries around the world do not recognize smart contracts from a legal standpoint, making it difficult to accept and govern such contracts in the first place due to the lack of explicit law that will apply in such circumstances.[13]

Disadvantages of smart contracts include the following [14]:

- Weak legal regulation of smart contracts;
- The necessity to address the issue of transaction processing speed and scalability in blockchain technology;
- Inability to adjust smart contracts;
- High dependence on programmers and exposure to software bugs.

After weighing all the benefits and drawbacks of smart contracts and considering the world's quick and progressive technological growth, we can conclude that smart contracts will inevitably replace traditional contracts in the near future. On the other hand, some individuals feel that it is impossible to replace traditional contracts because smart contracts would be perceived as one-time operations that are not suited for long-term collaboration. Nonetheless, based on recent statistics shown in the Figure, it is possible that the trend of adopting smart contracts will continue to grow year after year, eventually resulting in all transactions being delivered in a digital format. With its enormous potential for improving practically every aspect of human existence, there is hope that governments will be able to legislate all necessary legal norms quickly to keep up with that rapid change. Thus, certain steps should be taken from the government's side, more specifically, establishing the legislative scope for smart contract regulation, as well as hiring

[12] *https://www.ibm.com/topics/smart-contracts*
[13] *https://www.assure.co/blog/5-key-elements-to-look-at-before-adding-smart-contracts-to-your-business*
[14] *Block hunters, "Smart Contracts- Definition, Pros and Cons https://blockhunters.io/smart-contracts-definition-pros-and-cons/ accessed 4 February 2022*

professional programmers and engineers with high qualifications and introducing coding courses in educational establishments to prepare sufficient future workforce in software development and programming field in order to facilitate a smooth transition to smart contracts.

Regulatory framework of Smart Contracts: Legal Issues Surrounding the Use of Smart Contracts

In this chapter, we will look at how to create smart legal contracts. We start by outlining the requirements for a legally binding contract under English and Welsh law. Then we'll talk about how these requirements might be met in the context of smart legal contracts. About each requirement, various opinions will be expressed on whether the current law is adequate to accommodate smart legal contracting, or whether reform or additional legal consideration is required. It is concluded that smart contracts can be legally binding contracts under English and Welsh law, though there are additional complexities about deeds, which are subject to additional formality requirements.

Under the law of England and Wales, there are several requirements for the formation of a legally binding contract. These are: (1) agreement; (2) consideration; (3) certainty and completeness; (4) intention to create legal relations; and (5) formality requirements.

Some contracts are required by statute to be made or evidenced "in writing". "Writing" is defined in schedule 1 of the *Interpretation Act 1978* as follows:

"Writing" includes typing, printing, lithography, photography and other modes of representing or reproducing words in a visible form, and expressions referring to writing are construed accordingly.

The enforcement of promises is the subject of contract law. It may be claimed that because smart contracts are automatic and computer code is mechanistic, there is no need for a party to promise performance or resort to the law to enforce a promise made by their counterparty: the code will simply execute what it has been programmed to do. Even if it is correct, we do not believe it is a valid reason to approach smart contracts differently from traditional contracts in principle. Smart contracts may limit the scope of legal intervention to the extent that they may prevent intentional non-performance by a party and avoid or minimize factual disputes and term interpretation issues. However, there is always the possibility that performance will be impacted by an event outside of the code, such as a system failure, or that the code would work

in an unanticipated or undesired manner, in which case any dispute must be able to be resolved. It is open to parties to agree expressly that a smart contract is not legally binding, as they could with a conventional agreement, but we think that would be very unusual (and unwise) in a commercial context. Based on the points made above, the ordinary rules of contract law apply to smart contracts.

Contracts do not need to be in any particular form under English law. It will uphold any promise (or at the very least pay damages for breach) if the common law standards for contract formation are met and there are no vitiating elements (such as duress, misrepresentation, or illegality).

The three requirements for the formation of a contract are: first, that the parties have objectively agreed on sufficiently certain terms; second, that the parties intended (again, objectively) that they would be legally bound by their agreement; and third, that each party to the contract must give something of value, which is referred to as "consideration"—a gratuitous promise in return for nothing is not regarded as a consideration.

Under a smart legal contract, some or all of the contractual obligations are performed automatically by a computer program and the contract is legally enforceable.

UNCITRAL has already drafted measures that will allow Smart Contracts to be used lawfully. *Article 12 of the 2005 United Nations Convention* on the Use of Electronic Communications in International Contracts37 allows for the use of automated message systems for contract formation, and Article 6 of the UNCITRAL Model Law on Electronic Transferable Records recognizes the possibility of inserting information, including metadata, into an electronic transferable record in addition to that contained in a transferable document or instrument. However, it appears that only a small percentage of the population is aware of these rules. Furthermore, new business practices may necessitate the creation of new provisions or legal guidance.

To begin with, the writing and signature of those who promote the creation of contractual rights and obligations are required by Articles 6 and 7 of the UNCITRAL Model Law of Electronic Commerce, in order to establish a principle of confidence that the information is complete with respect to the encrypted data. Because the time stamp and data encryption in the blocks are resistant to external attacks

(hacking/cracking), this criteria is met in the case of blockchain systems. This is owing to the technological inviolability of the consensus protocols, as well as the criteria for incorporating, generating, and registering hashes that connect the blocks of the chain.

This feature ensures that the information entered is irreversible.

The second part is to meet the necessity of support for the generated rights and obligations, which can be found in the description of its substance. In this regard, a blockchain platform that performs the function of supporting SC shall adhere to the UNCITRAL Model Law on Transferable Electronic Records' Articles 1, 2, 10, and 11. (2017). The holder of a transferable electronic record has the ability to enforce the contract in court. In a similar fashion to the transfer of ownership of rights embodied in letters of credit, the existence of the transferable record helps the lawful transference of the rights formed and incorporated therein.

By permitting exclusive management of the community of nodes, blockchain enables the secure formation of contractual rights and duties to the degree that the cyber documents are specified in the blocks unambiguously. This enables compliance with the legal security standards alluded to in the aforementioned Model Law, as well as the Rotterdam Rules. Both regulatory authorities recognize the functional equivalency of electronic methods (cyber-registration) and the presence of other types of commercial documents on paper.

Conclusion: Limitations and Further suggestions

Smart contracts and blockchain are here to stay. Transacting parties are eager to defend their interests and determine financial transactions in today's world where the focus is on the decrease of paper transactions.

Despite the multiple legal difficulties mentioned in this work, the usage of blockchain has contributed to the use of smart contracts. Given the legal ambiguity, active steps must be done to standardize their use. To accomplish this, we need a thorough understanding of how the blockchain and the law interact.

This research is limited to making legal suggestions for fully integrating smart contracts into international business transactions.

This list of real-world smart contract applications is far from complete, and smart contract technology has the potential to benefit many other

industries in the future. Many academics and developers are keen to take advantage of smart contract technology's advantages to meet the needs of the expanding Internet of Things (IoT). While blockchain technology is currently being utilized to provide security and transparency to IoT devices in general, smart contract benefits may lead this integration to go even further.

After considering all aspects of smart contracts from various viewpoints, it is possible to conclude that smart contracts have a significant number of problems and benefits listed above. Some countries have already acknowledged smart contracts by enacting new legislation and regulations, as well as giving legal definitions for them while others remain suspicious.

In terms of smart contract enforceability, it should be noted that not all nations around the world, including Uzbekistan, have established specific legislation to govern smart contract enforceability. In terms of RUZ's legal system, it is possible to draw the following conclusion: RUz's constitution and its civil code neither admits nor acknowledges smart contracts on its territory.

It cannot be claimed that new technologies will be represented and developed every year. This can prevent governments from avoiding such extreme modern developments in the future and will almost certainly lead to the adoption of new laws to regulate hi-tech systems. As a result, based on the laws and decrees enacted by the government in the areas of innovation, technology, engineering and infrastructure there are reasonable grounds to believe that Uzbekistan has a high potential to join the list of countries that have accepted smart contracts in the near future by enacting special laws and regulations in that area.

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