

# On Determining the Legal Nature of Smart Contracts

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## ABSTRACT

The rapid development of the use of information and communication technologies, in particular smart contracts, necessitates legal regulation of the latter. The principle and mechanism of operation of smart contracts are of great legal interest, and although certain programmers the idea is expressed that a reasonable contract is software and is not a legal term, I do not agree with this possible, because a reasonable contract falls under the generally accepted definition of the contract, promotes monetary turnover and has real material consequences for the parties. The purpose of the smart contract is to transfer information and ensure that all participants fulfill the conditions set in the code. The potential of smart contract technology is capable of changing approaches to contract law no less than the advent of computers and the Internet has changed the way lawyers work. Taking into consideration the diversity of scientific views on the legal nature of the smart contract, the lack of established scientific approaches, the considerable scientific interest of the topic requires its proper theoretical justification.

**Keywords:** *blockchain, smart contract, cryptocurrency, contract, legal regulation.*

## 1. THE AIM

The purpose of this work is to study the legal nature of the smart contract, to provide with the comparative characteristics of the smart contract and civil contract, and to determine the legal status of cryptocurrency as a condition for the implementation of the smart contract.

## 2. MATERIALS AND METHODS

In preparing the article the scientific papers that explore the application of the latest information technology in contractual relations were studied. To achieve the goal in the research process a set of general and special methods of cognition, in particular the system-structural method, the method of generalization, the method of analysis and synthesis, and others were used.

## 3. REVIEW AND DISCUSSION

The concept of smart contracts appeared in 1994, when cryptographer Nick Szabo came to the conclusion that with the help of an electronic decentralized register it was possible to conclude contracts that were executed automatically [1]. However, it became possible to implement this idea only in 2008, thanks to the advent of blockchain technology.

The development of the information economy causes such institutional problems of the society as the problem of trust, high costs of managing large amounts of information, risks of information attacks and the possibility of damage or loss of data due to various circumstances, including fraud, theft or unauthorized use.

The potential of a decentralized approach and the use of such a consensus mechanism, in which the final state of the accounting system database is well protected from changes used in blockchain technology, enables accounting systems with multiple independent validators to achieve not only secure database synchronization but also data [2; 13].

The innovation of this technology is that transactions are automatically verified and recorded by network nodes using cryptographic algorithms without human, government or third party intervention (banks, financial institutions and any other organizations) [4].

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The profile technical committee of the International Organization for Standardization (ISO) TC307 "Blockchain and Distributed Registry Technologies" considers the following definitions to be "working":

A distributed ledger is a register that is stored in a distributed, decentralized manner on a number of network nodes, rather than centrally located in one specific location.

Blockchain – is a type of distributed registry technology in which confirmed and verified groups of transactions are stored in blocks connected to each other in the face of unauthorized interference and allows only the addition of a chain starting with the primary block (genesis block), and in which each block contains a hash of the previous block of the chain [2; 5; 6; 7].

The essence of the blockchain concept is the idea of distributed, decentralized storage of registry entries on a number of network nodes, rather than centralized in one place. Typically, transactions registered in a distributed registry involve several parties, and each party has its own copy of the records of the transactions in which it participates.

One of the main tasks of Distributed Registry Technology (DLT) is to provide secure, resilient online transactions between parties. Using DLT technology requires a process that ensures the same instances of the transaction record on all nodes where such a record is stored, as well as the consistency of the content of the record by the parties involved in the transaction. The set of entries in the distributed register must be verified and audited.

According to experts from the International Organization for Standardization (ISO), blockchain technology and distributed systems are becoming an important new direction in the development of information technology, they can be used in many areas to solve a wide range of problems. Based on these technologies, it is possible to create new solutions that will have great potential, especially in cases where transactions between individuals or organizations require reliable and immutable documents, without the involvement of a trusted third party.

Theoretically, the blockchain can be used in any database and provide reliable data storage for electronic voting, supply chain management, decentralized trade, public registers and mutual settlements.

Blockchain technology allows to optimally solve the above problems, minimize costs on the part of participants in electronic interaction, opens new opportunities in the creation and management of electronic registers and in their promotion in a network economy. Blockchain technology can be implemented to solve information management problems.

In particular, O. Danilchenko believes that blockchain technology can be adapted to carry out any transactions, one way or another related to the registration, accounting or transfer of various assets (financial, tangible and intangible); at the same time, neither the type, nor the number of participants, nor their geographical location matter [8].

Expanded capabilities of electronic communication and the latest technical and technological solutions have significantly changed business communication and caused the need to improve legal requirements. In 2015, as a result of amendments to Art. 205 of the Civil Code of Ukraine, the electronic form of the transaction was equated to the written one, and when it was made it became possible to use facsimile reproduction of the signature by mechanical or other copying, electronic numerical signature or other analogue of handwritten signature 207 of the Civil Code of Ukraine) [9]. The concept of electronic contract as an agreement of two or more parties aimed at establishing, changing or terminating civil rights and obligations and executed in electronic form, is enshrined in paragraph 5 of Article 3 of the Law of Ukraine "On Electronic Commerce" [10].

Meanwhile, information technology made possible first electronic payments, and then led to the emergence in 2009 of "digital money" - cryptocurrency, as a special type of financial and payment asset, independent of the central banks of any country in the world, which exists exclusively in dematerialized (digital) form and provides complete anonymity of payment participants.

The digital environment of cryptocurrency circulation and its digital nature means that the application of a standard form of contract to transactions where it is a settlement instrument is undesirable. Today, such a tool is a smart contract.

Smart contract is a set of promises in digital format, including the protocol by which the parties fulfill these promises [1]. Smart contracts are agreements written in code that automatically perform programmed functions in response to certain conditions fulfilled by the parties to the agreement. as a computer protocol, which on the basis of mathematical algorithms translated into computer code, independently performs operations with full control over their execution.

The elements of smart contracts include:

- subject of the contract. The program must have access to the goods and services that are the subject of the contract and be able to automatically provide or close this access to the counterparty;

- digital signatures. The parties certify the agreement with their own secret digital keys generated by a single technology;

- the terms of the contract, set out in the exact sequence of operations, ie in the form of an algorithm, and agreed by the parties;

- decentralized platform. Recording, storage and enforcement of a smart contract takes place on a resource independent of the parties [11].

There is no definition of the concept of a smart contract in the legislation of Ukraine and the corresponding requirements to such contracts as well. It is necessary to agree with L. Mamchur and O. Nedybalyuk, who argue that it is impossible to consider a smart contract as a kind of contract concluded in electronic form, because, in accordance with paragraph 3 of Art. 3 of the Law of Ukraine "On Electronic Commerce", the electronic form of presentation of information is the documentation of information that allows it to be reproduced in a visual form suitable for human perception [12].

The basis of a smart contract is a transaction that is made via the Internet, and which can be qualified, according to paragraph 1 of Article 202 of the Civil Code of Ukraine, as an action of a person aimed at acquiring, changing or terminating civil rights and obligations.

Today, it is proposed to use smart contracts in a wide range of legal relationships, such as insurance, corporate acquisition of property, or for automatic payment for the delivery of goods or services. They are also especially recommended for the exchange of stocks, bonds and options, as well as for microfinance services.

Concluding a smart contract, in our opinion, does not formally violate the provisions of current civil law of Ukraine, because it is in full compliance with the principle of freedom of contract enshrined in Article 6 of the Civil Code. The parties are free to enter into a contract, choose a contractor and determine the terms of the contract according to the requirements of the Civil Code, other acts of civil legislation, customs of business turnover, requirements of reasonableness and justice (Article 627 of the Civil Code of Ukraine).

According to paragraph 1 of Article 638 of the Civil Code of Ukraine, the contract is concluded if the parties have duly agreed on all the material terms. The key points of the contract, from a legal point of view, are the real intentions of the persons, expressed in the form and essential conditions. For example, a contract with real estate, the validity of which requires their notarization, registration, etc. Thus, the recognition of smart contracts as legally binding is essential to ensure that the results of self-execution of a smart contract are legally effective and provided by the parties in court.

One problem is that cryptocurrency settlements are still outside Ukraine's legal field.

Article 177 of the Civil Code [9] classifies the types of objects of civil rights, indicating that they include:

- things, including money and securities (according to Article 179 of the Civil Code, a thing is an object of the material world, in respect of which civil rights and obligations may arise);

- other property (according to Article 190 of the Civil Code, property as a special object is a separate thing, a set of things, as well as property rights and obligations; property rights are a non-consumable thing; property rights are recognized as property rights);

- results of works (chapters 61, 63 of the Civil Code).

- services (Chapter 63 of the Civil Code).

- the results of intellectual, creative activity (in accordance with Article 199 of the Civil Code, the results of intellectual, creative activity and other objects of intellectual property rights create civil rights and obligations in accordance with Book IV of the Civil Code (intellectual property rights)).

- information (according to Part 1 of Article 200 of the Civil Code, information is any information and / or data that can be stored on physical media or displayed electronically. The legal status of information is determined by the Law of Ukraine "On Information" [13].

- other tangible and intangible benefits (among the latter can be identified personal intangible assets protected by civil law. In particular, in accordance with Part 1 of Article 201 of the Civil Code, such are life and health, honor, dignity and business reputation, name (name), authorship, freedom of literary, artistic, scientific and technical creativity, as well as other goods protected by civil law).

As it can be seen from the above, cryptocurrency is difficult to attribute to any type of objects of civil law, and therefore, this situation means a gap in the law: any rule of law can not be directly applied to legal relations with cryptocurrency. Therefore, in today's conditions, the only option for applying the analogy of law is as follows: if civil relations are not regulated by this Code, other acts of civil law or contract, they are governed by the legal norms of this Code, other acts of civil law. If it is impossible to use the analogy of law to regulate civil relations, they are regulated in accordance with the general principles of civil law (Article 8 of the Civil Code). However, the question remains, what kind of legal relationship can be applied by analogy to cryptocurrencies? [14]

Financial regulators of Ukraine are working on the legal status of cryptocurrencies and the legal regulation of transactions with them, taking into account the position of regulators in other countries and recent trends in the development of such technologies [15, 16]. The purpose of such a settlement is to protect the rights of consumers, to combat money laundering and other illegal actions, to identify the subjects of transactions (financial

monitoring), the mechanism of taxation of income, declarations, etc.

#### 4. CONCLUSIONS

The modern world forces traditional civilist doctrines to adapt to today's realities. Continuing the trend of recognizing the right to exist by electronic / digital technologies, which has already led to changes in the Civil Code of Ukraine on the admissibility of electronic forms of transactions, in the near future it is desirable to legalize the digital form (electronic protocol) of transactions by amending Art. 207 of the Civil Code of Ukraine.

The next step in creating a special legal framework for smart contracts should be to give cryptocurrency the status of an object of civil rights. Understanding the concept of "cryptocurrency" that exists in the world varies from identification with the concepts of "goods", "means of payment", "unit of account" to the concepts of "intangible digital asset", "investment asset", "financial asset", "separate type securities", etc. Although cryptocurrencies perform the functions of means of payment, they do not have a legislative consolidation and normative definition in Ukraine today. Therefore, to consider a cryptocurrency as a currency, currency value or security in accordance with the current legislation of Ukraine today is not possible.

One of the urgent needs in Ukraine today is the adoption of a law that would define the concept of "cryptocurrency" and would give the latter the legal status by including the concept of cryptocurrency in the list of types of objects of civil rights under Art. 177 of the Civil Code of Ukraine.

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