

CHAPTER 2

LEGAL RELATIONS: FROM THEORY TO PRACTICE

LEGAL ISSUES OF MODERN DISTRIBUTED DATA TECHNOLOGIES: THE USE OF BLOCKCHAIN IN PUBLIC GOVERNANCE

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Abstract. *The focus on informatization of society, the rapid spread of information and communication technologies and a significant increase in their number of users, the introduction of e-government, the transition to electronic document management and the use of electronic digital signatures include the accumulation of significant electronic resources and electronic documents. The solution to this problem is closely related to the use of the cutting-edge electronic information and communication technologies, such as blockchain. The purpose of this work is to study the development of the legal aspects of DL-technologies, their impact on public relations, changes related to the spread of blockchain and legal regulation peculiarities of using these technologies and to analyze the prospects for the use of blockchain technologies regarding information security, electronic document management, election and voting, public administration, corporate management. Blockchain technology allows to solve the above problems in an optimal way, to minimize the costs of participants in electronic interaction, opens new opportunities in the creation and management of electronic registers and their promotion in a network economy. Blockchain technology can be implemented to solve the problems of information management, for maintaining public registers of shareholders and members of the corporate investment fund.*

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Introduction. The rapid development of technologies of the last decades has significantly affected social relations. The Distributed Ledger Technology (DLT), in particular "blockchain" - a technology of distributed data system, which is the basis of cryptocurrencies, the most famous of which today is Bitcoin. The introduction and rapid spread of blockchain technology is causing changes in public relations that require legal regulation. Today we may observe the expanding of the scope of blockchain technology to various spheres of public life such as banking, finance, taxation, state registers, electoral law, land relations, etc.

Literature review. The introduction of blockchain technologies in business structures, public administration, corporate governance are widely discussed among politicians, lawyers, other specialists in the field of information and telecommunication technologies, and scientists as well. Blockchain issues have been developed in the works of: M. Atzori [1], M. Swan [2], D. & A. Tapscott [3], O. Danilchenko [4], P. Kravchenko [5] and others.

Today blockchain technologies are not widely used both in the field of public administration and in corporate management in Ukraine.

Aim. The purpose of this work is to study the development of the legal aspects of DL-technologies, their impact on public relations, changes related to the spread of blockchain and legal regulation peculiarities of using these technologies and to analyze the prospects for the use of blockchain technologies regarding information security, electronic document management, election and voting, public administration, corporate management.

Methods. The methodology of this study implies the use comparative analysis, the study of domestic and foreign researches, studying digital transformation processes of the law system in Ukraine.

Results. The focus on informatization of society, the rapid spread of information and communication technologies and a significant increase in their number of users, the introduction of e-government, the transition to electronic document management and the use of electronic digital signatures include the accumulation of significant electronic resources and electronic documents. The solution to this problem is closely related to the use of the cutting-edge electronic information and communication technologies, such as blockchain.

The essence of the blockchain concept is the idea of distributed, decentralized storage of registry entries on a number of network nodes, rather than centrally 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.

The architecture of blockchain technology is based on the principle of decentralized management of data. Blockchain can be applied to any database and provide reliable storage of information. Within this system, there is no "management" center (single server), which makes falsifying voting results not possible.

Among the advantages of blockchain the ability of the technology to more effectively preserve the privacy of users, the ability to individually control their personal data should also be noted.

The legal security of a blockchain system can be ensured if its development, implementation, operation and decommissioning are carried out in such a way that over time, despite changes in legal, technological or social conditions, the following requirements are met:

- documents stored (or managed by) a blockchain system must retain their business or legal value for as long as necessary;
- interaction with courts and regulators (especially in situations where courts will request documents or information or require them to be deleted, modified or blocked) should not have catastrophic consequences for the system (say, by violating the principle of record-keeping);
- it should be possible (technical and legal) to submit certain documents to the court or the regulator (it should be determined who and how will certify them);
- the authenticity, integrity, usability and confidentiality of both the system itself and the documents stored in it should be ensured so that it can be demonstrated to the regulator and the court;

- comply with existing legal and regulatory requirements for storage and protection of personal data;
- it should be clear who is responsible for the proper functioning of the system and who compensates for the losses;
- operators (or the stakeholder community) should monitor legislative and regulatory changes and take appropriate action;
- make efforts to solve the problem of ensuring long-term storage of information in the blockchain.

A key innovation in the use of DLT-systems is a new model of trust, which, unlike traditional systems, does not rely on the authority of the organizer and trust of its participants, nor on the rules of specific jurisdiction and generally does not require the use of trusted third parties. including certification centers and timestamp services. The DLT system itself seeks to become a universal intermediary that organizes direct interaction between the parties to transactions.

A number of states are already using blockchain solutions as an additional tool independent of the state and some specific commercial organizations to ensure the credibility of electronic data and documents.

The important point is that in a blockchain system built on the type of bitcoins, there is neither an official owner and jurisdiction, nor an operator to which claims and claims could be made (which, depending on the circumstances and tasks, can be as good , and bad).

Such uncertainty can be useful where, for example, it is necessary to circumvent barriers to cross-border cooperation related to the sovereignty of states and to limit the ability of individual states to interfere in the management of the system, seize information and impose sanctions. A blockchain solution can be intentionally created as a neutral trusted intermediary "without citizenship". Due to the lack of an official owner and operator, it is difficult for law enforcement agencies in a particular country to access confidential information belonging to DLT participants.

The fundamental distribution and / or decentralized blockchain solutions make them catastrophic as well as resistant to the influence of certain states.

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. 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, which may change the very model of public administration in the future [4].

The peculiarity of the blockchain is the possibility of decentralized storage and processing of user and other data: this universal principle can be used in any voting process. The technology is able to guarantee a qualitatively higher degree of security, including effective protection against hacker attacks and misuse of personal data.

A separate case of the use of blockchain technology is the system of public administration. Blockchain technology allows you to maintain decentralized state

registers, including registers of ownership of land, real estate, etc., it can be used as a file storage of huge amounts of information, allowing you to effectively manage any assets or information through high transparency.

According to K. Yarmolenko, Advisor to the Head of the State Agency for Electronic Government of Ukraine, the Ministry of Justice of Ukraine in 2017 is ready to introduce blockchain technology in the system of sales of confiscated property "SETAM" and in basic registers, as technology prevents fraud in state registers as inside when bribing an administrator or registrar, and externally when cyberattacks take place [6].

The development of blockchain technology gives impetus to new implementations of e-government, especially in the field of information security from falsification. Data on citizens, real estate, certificates, permits, property rights, etc. after entering in the state blockchain registers is almost impossible to change. Data from state registers can be used as full-fledged documents that have legal force and are available to all stakeholders.

However, along with the advantages of blockchain technology, certain disadvantages should be taken into account.

Existing blockchain solutions are optimized to manage "tokens", which are different types of assets, and are not suitable for storing documents, because the documents themselves do not fit into the blockchain (otherwise due to the rapid increase in volume it would be extremely difficult to maintain copies of the register on numerous computers). The blockchain in this case stores only hashes of documents or documented information, i.e. the blockchain solution acts as a trusted timestamp system that operates without the use of traditional public key infrastructure (PKI).

According to the current legislation, in some cases changes should be made to the register: this may be necessary, for example, by a court decision that declared certain agreements invalid. However, the world community of experts is much more concerned about the legislation on personal data protection and privacy, especially in its European version, which provides for the "Right to erasure" ("Right to be forgotten") [7] and considers the right to personal data protection as a fundamental, inalienable human right that is undeniable.

It follows from the general considerations that solutions based on blockchain and distributed registry technologies can be quite effective as a tool to support initially decentralized and non-centrally controlled activities and processes. Conversely, traditional solutions should be expected to continue to be more effective where activities are centralized or centrally controlled.

The perspectives for the use of blockchain technologies in the field of corporate management i.e., when making decisions at a general meeting of shareholders also could attract attention.

Internet voting has been used worldwide since 2000. However, the advantages of blockchain voting during the general meeting of shareholders are obvious. This is transparency and the impossibility of falsification. In addition, the world is facing a

pandemic, and the use of blockchain voting allows not to visit the venues of the general meeting of shareholders. The only need is to install the necessary software.

The right to hold general meetings remotely during quarantine is provided by the Law of Ukraine № 540-IX of March 30, 2020 “On Amendments to Certain Legislative Acts of Ukraine Aimed at Providing Additional Social and Economic Guarantees in Connection with the Spread of Coronavirus (COVID-19)”. To implement the provisions of Law № 540-IX, the National Securities and Stock Market Commission (NSSMC) approved the Temporary Procedure for convening and remote holding of general meetings of shareholders and general meetings of corporate investment fund participants.

The decision of the NSSMC № 196 of April 16, 2020, which approved this procedure, states that the body convening the general meeting must enter into an agreement with the Central Depository on the provision of services for remote general meeting.

Discussion. In turn, shareholders, for registration at the general meeting, submit ballot papers to the depository institution that maintains the securities account of such shareholders. If a shareholder has security accounts in several depository institutions where the company's shares are accounted for, each of the depository institutions accepts a ballot paper for voting at the general meeting. Thus, according to the NSSMC, issuers will interact with the Central Depository, and shareholders - with depository institutions, with which they have a contract for servicing a securities account. Through the depository system, the information will reach the issuer from the shareholders, and in reverse order, the issuer will receive the results of the shareholders' voting.

The weakness of such a voting system is its vulnerability to hacker attacks and the possibility of data loss due to fraud, theft or unauthorized use of data from these registers.

Summarizing the above, we conclude that barriers to the use of blockchain technologies can be: legal restrictions, novelty of technology; lack of knowledge and skills of staff working with technology; lack of sufficient state support and high cost.

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.

Since blockchain technology is a document management technology, its further development would benefit from the application of theoretical and practical knowledge accumulated by archival science.

Currently, the technology is not ready to guarantee long-term storage of legally relevant information and documents at intervals of about 10 years or more, so its use for archival storage is associated with serious risks. It can be used in the presence of a thorough legal and regulatory framework and the formation of judicial practice in the management of documents in the short and medium term.

Conclusions. Blockchain technology allows to solve the above problems in an optimal way, to minimize the costs of participants in electronic interaction, opens

new opportunities in the creation and management of electronic registers and their promotion in a network economy. Blockchain technology can be implemented to solve the problems of information management, for maintaining public registers of shareholders and members of the corporate investment fund.

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