

SECTION 1.

ACCOUNTING REGION I AUDIT

1.1 Technology blockchain in accounting: the reality of today

Blockchain technology has started to gain popularity in Ukraine recently. It is most often mentioned by high-tech industry professionals who compete with traditional financial sector service providers. Blockchain technologies have enormous potential, as evidenced by the widespread use of their application across industries.

However, a lot of people nowadays believe that at the household level, Blockchain is closely linked only to crypto currencies, and more to bit coin. This may be the case, Blockchain is the technological basis of crypto currencies, but its scope is wider than usual. Technologies are constantly changing - and in this way they are wonderful. With the advent of Blockchain technology, it has become possible to translate accounting into a new format. Nowadays, the opportunities that Blockchain companies face are difficult to overestimate. The world's leading states, corporations, banks are actively studying and applying Blockchain, and this is already changing our world.

Blockchain - a distributed network, technology, that allows you to open and securely record information, track the path of transactions and reduce transaction costs. For example, today, the Bank of New York Mellon monitors bank transactions using Blockchain technology, capturing any cash flows. The State of Delaware, United States, along with Symbiont, also applies Blockchain to securities registration, shareholder communications. In Ukraine, the use of Blockchain has started actively in the last few years. According to the Blockchain Association of Ukraine, in 2017, 32% of all technology companies were founded. Most of the founders of Ukrainian Blockchain companies came to the field of programming and development (38%); finance, investment and trading (38%); cryptography and crypto currency (32%); marketing and advertising (12%). Considering the fact that the Blockchain technology market in Ukraine is already an objective reality, the formation of clear

rules for the functioning of this market by the state and the development of relevant positive jurisprudence in Ukraine is becoming increasingly important.

The purpose of the study is to explore Blockchain technology, its strengths and weaknesses, opportunities and threats, to investigate the application of the Blockchain principle in various fields and to consider the effective use of Blockchain technology in accounting.

Discussions about the theoretical understanding of the focus of this database are still ongoing among Blockchain scientists. The tasks, purpose, functions, etc. are constantly subjected to study. Many works of Ukrainian and foreign scholars are devoted to the study of these categories. A significant contribution to Blockchain development theory has been made by such researchers as: Lansiti M., Lakhani K. [1], Marr B. [2], Olleros F.X., Zhegu M. [3], Peters G.W., Panayi E. [4], Swan M. [5], Tapscott D., Tapscott A. [6], Wattenhofer R. [7], Yli-Huumo J. Ko D., Choi S., Park S., Smolander K. [8], Zheng S., Xie H.N., Dai Wang H. [9], Melnichenko O.V., Hartinger R.O. [10], Tishchenko O.S., Humen T.F., Trapezon K.O. [11], Usenko A. [12], Yushchenko N.L. [13]. Despite the significant achievements of these scholars, there is currently no clear understanding of the need to apply the Blockchain principle in accounting.

The Blockchain system emerged in 2009, along with the virtual currency bitcoin, while still being a record of digital transactions based on a huge database that contained records of electronic currency transactions. Particularly popular in transaction blocks was not until 2012, when they began to actively discuss the opportunities offered by bitcoin.

According to Panteleeva N.M., Blockchain is a technology whose elements are records of blocks of definite size, each of which contains references to the previous one and is united into a chain of blocks according to an identifier, which is calculated by a special mathematical algorithm [14]. In addition, powerful cryptographic algorithms ensure its protection. Distributing such a feature is the ability to store copies of data on a large number of computers located around the world, which in turn complicates the process of unauthorized access and modification of data.

Neizvestna O.V., Boyko O.O. considers Blockchain as a technology that involves creating long lists of sequential data [15]. Each component of the system remembers the previous one, and making unauthorized changes is immediately blocked. More than one centralized server is used to create the encryption, but the computing power of all process participants. It should be noted that any user of the Blockchain system may also own it. By the way, Kuibida V.S., Bilynska M.M., Petroie O.M. believe that Blockchain should be seen as accounting for and exchanging ownership of digital assets in a peer-to-peer network that contains structured data in the form of a distributed registry [16]. The main difference between Blockchain and classic registries, as they point out, is the simultaneous storage of data that is distributed among a certain number of network nodes without binding to a specific location. Oleksiuk O. states that Blockchain technology is a multifunctional and multilevel information technology designed for the distributed storage of records of all completed transactions [20]. It is a chronological database at which the time the record was made is inextricably linked to the data itself, making it non-commutative. All transactions are made using cryptographic protocol. The information in the block chain cannot be changed after the fact. If someone changes the base, it changes in all members of the network due to the consensus algorithm. This algorithm instantly updates all databases of network members. It is implemented differently in different Blockchains.

Thus, it can be said that the essence of Blockchain technology can be described as digital records, which are grouped into blocks, which, based on the algorithm, are linked by a "chain" in accordance with the performed operations. The block-encryption process known as hashing is performed by multiple computers running on the same network. If all the computers on the network receive the same result as a result of the calculations, then the block is assigned a unique digital signature that cannot be forged.

The peak of activity and interest of Blockchain investors happened in 2016, mainly in the context of crypto currencies. However, the possibility of using Blockchain in other areas, particularly in Ukraine, is underestimated [17].

In the course of the study, we analyzed the areas in which Blockchain technology is possible:

- the financial sphere. Using Blockchain technology instead of a centralized banking system will eliminate most of the drawbacks;

- legal sphere. With Blockchain, you can avoid unnecessary litigation and simplify legal processes;

- copyright. Although patenting is now in place, it does not adequately protect intellectual property. With Blockchain, this realm can change significantly. There will be an opportunity to track when another person will use intellectual property;

- the public sphere. Government agencies are in a bad situation because of the corruption. The government cannot properly fulfill its obligations to the people, and by using Blockchain it will become a community without unnecessary number of paper documents, and will eliminate corruption (voting (elections));

- charity. There is a Give Track platform that will open up information about donations and their costs;

- real estate. Applying technology for this area, we will accelerate the sale and the opportunity to keep the property rights in a safe place. Blockchain technology will help solve the liquidity problem and maintain the volatility of the industry form;

- trade. Many products are supplied by trading companies, but trade finance has many difficulties, including lack of transparency and security. Thus, the use of Blockchain technology will help to have complete control over the system. With it, recipients will be able to track the process and senders will receive payment on time;

- food safety. Using Blockchain technology will help you track where your food products come from and what is being used in the industry;

- medicine. Every year, hospitals spend a lot of money to improve their sector, but the consequences are minimal. Blockchain will ensure greater security of spending on repairs;

- insurance. The problem with this area is the large number of documents that only stop the insurance process. With Blockchain, this industry can be stripped of paperwork because everything can be done online right away;

This list can be continued, but if we talk about other areas (logistics, commerce, cyber security, media industry), the demand for the use of this technology will depend on the results of cases already implemented in other countries. However, there is another important factor - the demand for this technology largely depends on the activity and number of companies in the market that will sell their services. And here we are talking about a comprehensive approach and creating conditions that will contribute to the development of the entire industry, because most companies that offer Blockchain development have a basic income from working with crypto companies. Thus, it is necessary to develop a set of conditions that will allow the Blockchain industry in Ukraine to enter a new stage of development.

But it is also wrong to think that Blockchain technology can be applied wherever it is needed and that the potential of this technology is endless. Blockchain is not a magic wand that can solve anything if something is wrong with the digital world and the Internet. The true potential of a Blockchain will be how it is implemented and accepted. However, in our view, Blockchain is the safest technology today.

Blockchain serves as a distributed and decentralized storage system that is generated by economic system participants, where it is impossible to falsify data through chronological recording and public confirmation by all members of the transaction network, as well as full control of the digital asset participant. Blockchain technology is also called Distributed Register Technology or DLT (distributed ledger technologies) [18].

The main difference and the undeniable advantage is that this registry is not stored in one place. It is distributed among hundreds and even thousands of computers worldwide. Any user of this network can have free access to the current version of the registry, which makes it transparent to all participants [19].

Therefore, this technology is expected to impact audit, cyber security, financial planning and analysis very soon. In the course of the study, we identified the main advantages of Blockchain: reliability, independence (decentralization of the network, which allows transactions between people from different countries), transparency

(everything is open access and there is no possibility to change the data), infinity in theory (you can add new records as often as you want, Blockchain is often compared to a supercomputer).

So, it is clear that Blockchain is an approach, a digital solution that helps to get rid of intermediaries, implements effective peer-to-peer interaction. Also, it is important to emphasize that this is an approach and technology, not a specific software solution or application on the device.

SWOT analysis of Blockchain is presented in Fig. 1., which identifies the strengths, weaknesses, opportunities and threats of this technology.

Fig. 1 shows the results of the SWOT analysis of Blockchain implementation technology in the field of accounting. The most significant internal advantages of using Blockchain technology are related to the improvement of the management and control mechanism in accounting and technological improvement of the enterprise information system. However, the problems with integration with modern automated accounting systems, that is, technical ones, are rather hindered. External threats are, first and foremost, caused by the lack of a legal framework for the use of technology and legislative support. And the opportunities are: to meet global trends, to ensure the use of paperless technologies in accounting, require the search for the most appropriate configuration of the implementation of Blockchain in the field of accounting.

Since Blockchain is a digital register in which transactions are recorded chronologically and can be predicted by anyone with access, let's look at Blockchain principles that can be applied to accounting:

- 1) decentralization: all data will be stored immediately by everyone;
- 2) accessibility and transparency: data is accessible to all participants of the private Blockchain within the framework of access rights; records of all operations

S - Strengths:

- ensuring data integrity;
- reduction of errors;
- synchronization of accounting data;
- universality of the primary code of the system;
- collective work of system nodes;
- relatively cheap service;
- general automatic processing of operations;
- fast system operation;
- decentralized server operation;
- an opportunity for interested parties to keep track of all transactions performed;
- improving the management and control mechanism in accounting;
- ensuring a new technological level of control procedures;
- the huge potential of technology.

W - Weaknesses:

- enterprise policy that does not provide for such a vector of development;
- lack of motivation of the personnel for transformations;
- program code errors;
- inability to cancel transactions after confirmation;
- complexity of integration with modern automated accounting systems;
- small experience of use;
- insufficient cyber security development base for technology.

O-Opportunities:

- reduction of transaction costs;
- compliance with the established rules by employees;
- standardization: increasing transparency of operations;
- use of paperless technologies in accounting;
- identification of sources of errors;
- reduction of accounting procedures;
- mathematical confirmation of the actions taken;
- increase of productivity;
- preventing data falsification,
- diminishing the importance of the human factor;
- recovery of past transaction data when hacking the server;
- improving the system, its security and security.

T - Threats:

- collisions in the regulatory framework for accounting;
- no perception of innovation;
- settlement of conflicts of parties of use;
- elimination of the profession of accountant;
- the emergence of ways of hacking cryptographic ciphers;
- abuse of technology, falsification of decentralized systems centralized;
- lack of legislative support;
- lack of technical qualifications;
- loss of confidential information;
- loss of control over the distribution of powers;
- unique features of the system.

Fig. 1 SWOT Analysis of Blockchain implementation in accounting

(Source: created by the author)

performed throughout the history of system creation;

3) trustless: there is no need for the participants of the Blockchain to trust each other;

4) security: Blockchain changes cannot be added externally;

5) irreversibility: irreversibility of transaction, impossibility of changes;

6) consensus: data added by participants is verified by the system;

7) stability - it is not possible to delete or replace information "retroactively", but only to make a new agreement.

Therefore, accounting can be considered one of the areas most suitable for the implementation of Blockchain technology, which has great potential. It is, in essence, a single, non-centralized database that is distributed across many computers. It can even be called a "distributed database".

So, first of all, in accounting, this technology will be very convenient when calculating with external counterparts, since the implementation of Blockchain will not need to verify the calculations. Blockchain generated information does not need to be verified and trusted, even if there is no trust in the counterparty, as the transaction will occur if it is approved by both parties. In the future, this information will be protected from changes. Therefore, in the accounting, the formation and write-off of receivables and payables of the parties to the transactions will be simultaneously displayed in the same estimate at the time of the transaction. Therefore, it will not be necessary to confirm the fact of the transaction and its valuation. Of course there is something for the accountant: he will only have to correctly classify the acquired or transferred asset and accordingly attribute it to income or expenses.

You can also engage in transactions involving the movement of assets within the enterprise. For example, if you present any fact of business activity within an enterprise, then in real time it is possible to obtain information about the movement of any assets. But what exactly should an accountant do? In this case, he will have to make a correct classification of the values obtained and form the value of the accounting object. With Blockchain technology, it is possible to organize a local

Blockchain within the enterprise: release the assets from their storage location and then accept them, after which the asset is automatically credited to the appropriate accounts.

Another advantage of Blockchain is that due to this technology, there is no need to wait for the primary document to be processed by an accountant. Primary documents will, in principle, not be required, either in paper or electronic form. Instead, the transaction will be locked in Blockchain technology.

In accounting, the Blockchain mechanism will allow you to effectively combat fraud. So, tax evasion will not be possible for all businesses using this mechanism, as all transactions will be digitized.

However, we were able to uncover more obvious points in the application of this technology. It is enough to note that Blockchain is just beginning to be studied by all accounting "figures" of the modern world. But the fact that there is inevitability to its use and the need to reconfigure the usual approach to domestic accounting is an indisputable moment of today.

It is sufficient to note that at present, in our country, there is no special regulatory and legal regulation of Blockchain technology. Therefore, it is unclear whether Blockchain-based products can be legally recognized, or whether special legal regulation is required.

Additionally, as we explore the capabilities of Blockchain technology, we understand the fact that, before they can be used in accounting, we will need to radically change the current accounting laws. Thus, while the facts of economic activity will be fixed by the primary documents, which need to be drawn up either in paper form or in electronic form, to speak about the use of Blockchain is not just too early, but also inappropriate. However, management accounting for the benefits of using Blockchain technology needs to be implemented and implemented right now. It is appropriate to consider that very soon there will be companies that will offer to integrate Blockchain in their accounting software for the field of management accounting. After all, we believe that the lack of legal regulation of Blockchain technology will only hinder their practical implementation in the near future.

Thus, while the material above seems to be still unreachable and a long-awaited reality, it should be noted that there is already a clear understanding of the inevitability of Blockchain technology in the world and the need to rebuild the usual accounting approach.

We have analyzed the elements of the SWOT matrix of the implementation of Blockchain technology in the field of accounting. It was found out that the strengths of this technology are related to data integrity, error reduction, accounting synchronization, improvement of management and control in accounting, opportunities - with - the use of paperless technologies in accounting, reduction of accounting procedures, improvement of the system, its security and safety. The weaknesses of Blockchain technology in accounting are the lack of motivation for transformation, the complexity of integration with modern automated accounting systems, small experience of use. In our opinion, the conducted SWOT-analysis allowed to organize different views on Blockchain technology and its use in the field of accounting, as well as to build a scheme of interaction of strengths and weaknesses, opportunities and threats. As a direction for further research, we envisage an analysis of the key success factors for the introduction of Blockchain technology in accounting, as well as the classification of views on applications of Blockchain technology. It should be emphasized that the expediency and necessity of applying the principles of Blockchain technology in accounting will be proven not only in time but also in the importance of new accounting for the economy of any country. This should be understood not only by the representatives of the governments of the countries, but also by various international organizations and associations, as they contribute to the development of this issue.

However, what must be asserted is that in order to use Blockchain in accounting, it is necessary to change the legislation. Therefore, much work remains to be done to create a coherent legislative framework to regulate the Blockchain mechanism and its harmonization with European legislation. Public authorities, business and the accounting community should be involved in the process.