

## Conference Paper

# Use of Blockchain in the Banking System

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## Abstract

To date, blockchain technology is relevant in all areas and the banking system is not an exception. New technologies, such as blockchain technology should be introduced in the modern banking system, since they provide control over cryptocurrency that will help in counteracting money-laundering and financing of terrorism in the country and around the world. This article considers existing and new options of applying technology in practice and the problem of blockchain.

**Keywords:** blockchain technology, cryptocurrency, micro-payments, a distributed registry.

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## 1. Introduction

At present the world is increasingly talking about such a new technology as a blockchain. One can not deny its relevance in a world in which the need for reliability and protection of stored data increases. Many experts believe that it may be used everywhere. The data storage blockchain technology can serve as a new round in the system of public administration, financial services and industry. With the use of this technology, it is possible to reduce the risks associated with the money laundering from crime and financing terrorism.

The aim of the study is to highlight the advantages and disadvantages of the new blockchain technology, to consider the use of this technology in various areas of life and to identify the problems associated with the use of blockchain. The basis for the study was various publications on this topic, expert assessments and analytical data.

## 2. Material and Theoretical Bases of Research

Blockchain is a technology of decentralized, encrypted storage and processing of records, that is, a technology of reliable distributed storage of reliable records, in general, about anything. This modern technology is developing quite intensively.

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There is an active use of blockchain in cryptocurrencies such as bitcoin, next, litecoin, ethereum and many others, which helped to reveal the advantages and problems of this technology. Interest in this modern technology is increasing in other areas of activity. In 2016, the analytical company CB Insights published a list of 20 industries in which blockchain technology can be used: banks, payments and money transfers, leasing, car sales, cybersecurity, voting, education, forecasting and others [1].

The banking sector in modern conditions is trying to grow in an innovative way, as it needs to meet the requirements of modern customers who want to have easier and faster access to services and transactions. This is the reason for the banks' great interest in new technologies, namely blockchain technology. According to Accenture's report, 9 out of 10 surveyed banking professionals working in large European, American and Canadian commercial banks reported that they are now studying the use of blockchain technology for payments [2]. According to the European banking organization, blockchain will provide an opportunity to improve the market of banking services, reduce the commission for operations, and also to increase the speed of processing transactions and increase profits. Thus, 45 of the world's largest banks entered the consortium in 2015 and established the company R3, which currently is developing the application of this technology in the financial sphere. According to the Deputy Chairman of the Central Bank of the Russian Federation Olga Skorobogatova in 2017, 80% of the world's banks are planning to introduce technologies of distributed registries, including blockchain [3]. However, speaking at the St. Petersburg International Economic Forum in May 2017, Olga Skorobogatova stated: "It will take 7-10 years for blockchain to be fully used in the financial and other sectors in industrial projects on full scale" [4].

In Russia, the development of blockchain occurs at a slower pace than in other countries of the world, but this can not be seen as a negative attitude of Russian banks to this technology. Since, for example, the Bank of Russia has found application of a blockchain to address the problem of "off-balance" investors, when people do not find themselves in the register after the license is revoked from the credit institution. Unscrupulous banks simply do not contribute depositors to the balance, in order to use it for their own purposes [5]. That is why at the end of 2015, the Central Bank of the Russian Federation set up a special working group that is to develop the fields of application of blockchain technology in the banking sector, in accordance with Russian legislation. However, at the same time, the Central Bank of Russia is against cryptocurrencies, including bitcoin, but supports the use of blockchain technology.

The main idea of blockchain technology in the banking system is decentralized markets, i.e. the removal of any centralized intermediaries through registration, validation and transfer of any type of contracts in the system based on blockchain. For example, this technology can be applied in compiling and recording credits, deposits, different arrangements and so forth. An example of using contracts may be automating the transfer of ownership of an apartment from the Bank to the customer after full repayment of the loan. This will give the customer an opportunity, firstly, to eliminate time loss for formalization of all documents, secondly, to reduce significantly the time of committing the operation.

The essence of "chain blocks" as popularized, distributed and 100% reliable database makes use of blockchain very attractive for companies operating in different areas. At present, there are already a number of extensions to develop business applications on blockchain, which provide:

- secure network administration, excluding hacker attacks MIM ("people in the middle") and removing the problem of "single administrator";
- the storage of digital certificates, which completely protects users' access to sites (in particular, excluding password interception);
- safe bilateral transactions without involvement of a guarantee of third party (law firm, notary, bank, etc.);
- fixing the time of placement of documents, allowing to solve issues of patenting, copyright, etc.;
- confirmation of the authenticity of the product (product) with the help of a secure certificate;
- confirmation of the rights to any property;
- creation of public electronic business cards, information on which is automatically updated even after "distribution" on Internet resources;
- DNS system, invulnerable to DDOS attacks, and more.

We should note the possibility of applying blockchain in the national system to counteract the legalization (laundering) of income obtained by criminal means:

- higher level of quality and speed of identification;
- increased level of security to protect confidential information, reliable protection against "phishing";
- a significant reduction in the number of "suspicious" and "doubtful" transactions;

- reduced costs for carrying out KYC process;
- increased level of security of ongoing transactions due to the dissemination of identification information in real time;
- the emergence of a new monitoring tool for regulators;
- immediate informing about changes in the principles of AML / CFT application.

Blockchain technology can still be applied in the following areas.

Reporting to supervisory authorities. Due to the increasing amount of reporting to various agencies and the increased fines, the supervisory authorities need to ensure the uninterrupted reception of published reports and the irrefutable nature of their publications, in case of failures on the part of departments. With the help of blockchain technology, banks will be able to immediately send reports regardless of the efficiency of the systems of regulatory agencies. But in carrying out the operation, special attention should be paid to the data security and safety, therefore, agencies will need to provide banks with a special key for data encryption.

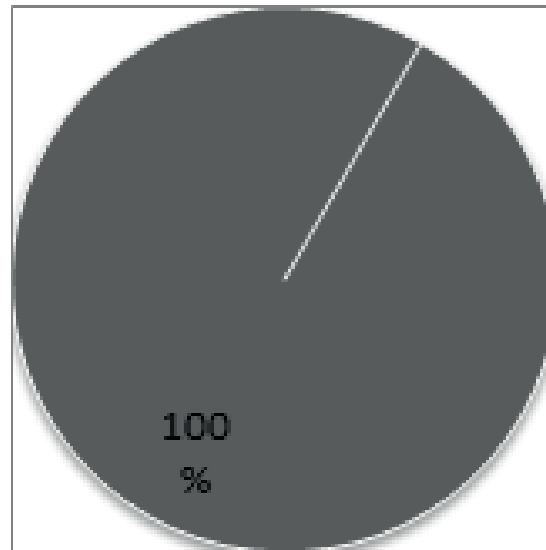
Micro-payment system. With the use of blockchain technology, bank customers will be able to conduct micro-payments more freely, since the commission for the transaction will be significantly lower. Banks will only need to enter and withdraw funds and screen these transactions.

According to the results of a survey of 32 leading banking professionals by Accenture, with the aim of assessing their views on the potential of blockchain technology, the following data were presented in Figure 1 [6]:

- 30% of commercial banks are at the advanced stage of adopting blockchain technology for payments. These banks stated that they are “on the front line of the revolution” (17%) or “engaged in the sale of products” (13%);
- 70% of commercial banks are still at the early stage of adopting technology. 30% of banks “participate in the processes of confirming the concept’s working capacity together with other companies”, about 27% are still “developing a strategy” and 13% are only “considering the technology”.

Bonus programs. Almost every company or bank at the moment has its own bonus program. Using blockchain you can create a single platform for bonus programs for all participants.

Multilateral services facilitation. For example, a buyer is going to buy property from a seller by transferring money from one to another through a bank. In this example, Blockchain is a sphere of interaction of all agents. That is, the buyer signs the transaction with his electronic key. The Bank acts as an arbitrator of the payment and certifies



**Figure 1:** The readiness of banks to introduce blockchain technologies for payments.

the fact of depositing money under the transaction by its electronic signature. Thus, the money is transferred to the seller who signed the contract with his or her electronic key. Then the rights register confirms by its electronic signature the transfer of rights from the seller to the buyer and fixes the transaction. Blockchain will be engaged in fixing this electronic contract.

SIX Securities conducted a study among banks and revealed different approaches of banks to innovations. So, about 32% of participants of the financial market carried out conceptual studies, 18% of the total number of respondents implement pilot projects introducing products or services. 14% reported creating innovative laboratories for blockchain technology and 12% have entered into partnership agreements with companies working with this technology [7].

According to a survey conducted by SIX Securities, one third of financial institutions believe that blockchain technology will have the greatest impact on the scope of payments (38%) and clearing (34%). And only 20% of participants agreed that blockchain will completely eliminate the need for clearing [7].

The introduction of blockchain technology is slowed down by many factors. Among them there are significant energy costs, the waiting position of market players, the lack of legislation, the protection of the FSB and the difficulty in reaching consensus on the creation of new systems among a large number of interested parties.

As a result of research conducted by SIX Securities Services, the main obstacles to the introduction of technology in the short term are regulatory uncertainty and lack of own experience.

Regulation is perceived as the main barrier, especially by global backbone banks - 72% of participants note this as one of the three main factors hampering the introduction of blockchain technology today. The interviewees also suggest that the conservatism of top management and inherent caution must be overcome [7].

Another problem is the problem of openness/closeness of transaction data, in other words, the issue of privacy when using blockchain technologies any node knows about transactions of every other node in the network. That is, in fact, you can look into the purse of a potential buyer and find out about its solvency. It is not comfortable for everyone, so recently "closed" blockchain versions have appeared. However, it is more difficult for such chains to fulfil the requirement of "transparency" of transactions, which is a necessary condition for the functioning of the system.

The problem is that the world banks face the prospect of losing the privileges of creating money on the one hand, and on the other hand - losing their usurped role of intermediary of all the capital flows that they have been playing for a very long time.

### 3. Conclusion

Currently blockchain technology is developing actively. Blockchain has only started to be used in the banking system, and quite a bit of banks in Russia have an opportunity to use the technology. Nevertheless, the areas of application of blockchain in the banking system are multifaceted and constantly increasing, which indicates the desire of credit institutions to improve the process of performing transactions. But at the moment there are some problems on the way to mastering and applying this technology. However, blockchain will be able to bring substantial infrastructure relief and help monitor the processes of money laundering from crime and financing terrorism.

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