

# BLOCKCHAIN AS AN INNOVATIVE TECHNOLOGY IN THE STRATEGIC MANAGEMENT OF COMPANIES

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## ABSTRACT

*Thus, the blockchain technology is currently being actively developed; it is a promising tool for many fields of the economy and business. The advantages of a distributed registry, such as the lack of a hierarchy of participants, the ability to conduct transactions with protected personal data, the high ability to adapt to various processes—from conducting operations in insurance to tracking the supply chain of goods—make this technology and solutions based on it more than relevant. The ability to optimize processes and create cheaper alternatives to existing mechanisms is confirmed by the experience of companies such as ING, Santander, Walmart, Maersk, etc. The prospect of conducting secure transactions protected by cryptography and consensus mechanisms attracts billions of dollars of investment in blockchain projects around the world.*

**Keywords:** Blockchain, Cryptocurrency, Latest Technologies, Economic Development, Digitalization Processes.

**JEL Classifications:** M5, Q2

## INTRODUCTION

The modern economic system is increasingly developing in the direction of its intellectualization, the main resource of which is the latest technology.

The conditions, nature and results of the development of the world economy are closely interconnected with technological changes, scientific progress at all levels—from individual sectors to national economies, affecting billions of people around the world. The processes of “digitalization”, the penetration of new technologies and the principles of fulfilling both routine and innovative tasks based on the Internet in such areas as retail, rental of housing and cars, organization of the workspace (cloud solutions, etc.) are becoming increasingly popular, they have already made and are making significant changes to the traditional systems of social relations prevailing in the fields of economy and business.

Along with such technological areas as Big Data analysis, Machine Learning, Artificial Intelligence, a technology that, in our opinion, will find its application in almost all areas of human interaction with a smartphone or PC, Blockchain technology is designed to change the current state of affairs and the distribution of forces in both growing and existing industries.

This topic, in our opinion, is extremely relevant and interesting for study - both from a theoretical and, to a large extent, practical point of view. The possible extent of the influence of decentralization and blockchain technologies as their most striking manifestation may in the next few years have a significant impact on the development of the economy, on the system of relations between people regarding economic activity.

## REVIEW OF PREVIOUS STUDIES

Despite the transparency and accessibility of all transactions, the system is extremely secure due to complex encryption and the use of two types of keys for each wallet - a public one to which cryptocurrency can be sent and a private one with which a user can conduct a transaction (Beck et al., 2017; Garbowski et al., 2019).

Thanks to blockchain technology, it becomes possible, among other things, to reduce the risks of interacting with counterparties during both financial transactions and transfer of property rights, and through its applications, such as “*smart contracts*”, to make many processes in the economy more efficient and safe (Drobyazko et al., 2019).

Moreover, the issue of trust in relation to centralized organizations in the digital age, in our opinion, is extremely relevant and problematic.

Users are no longer inclined to entertain themselves with illusions about the absolute security of their data, which they transfer not only to state organizations, but also to structures of joint-stock ownership (often without even realizing this). Personal data today may be in danger even if it is stored by recognized companies with significant experience (such as Facebook, Yahoo, Equifax, etc.) (Zheng et al., 2017; Drobyazko et al., 2019).

Moreover, the business model of such companies includes the monetization of user information, its use for advertising purposes.

Users of tools based on blockchain technology-whether it is banking applications, or cryptocurrency - trust the system itself, which has only minimal information about the identity of the issuer of the transaction, and which task is only to confirm the authenticity of its “*good intentions*”, transaction (thanks to a special mechanism of consensus) (Huh et al., 2017; Musawenkosi & Lawrence, 2019).

There is a certain periodization of the development and application of solutions based on distributed registry technology: Blockchain 1.0; 2.0; 3.0; 4.0 (Mokhnenko et al., 2019). Cryptocurrencies can be put on the first stage with Bitcoin as the most successful and widespread example.

In turn, the second stage is the distribution of smart contracts - special programs that are implemented on the blockchain for the purpose of, for example, transferring property rights, in fact acting as a registering counterparty (but with a much higher level of security). Such programs work autonomously, according to predefined characteristics. It is thanks to them that Bitcoin or ether (ETH) is exchanged for cryptocurrency project coins during the ICO (“*Initial Coin Offering*”, trans. from English) (Meng et al., 2018; KorauÅ et al., 2019). The most successful example of this stage is the Ethereum project, which created a foundation, a platform for decentralized crowdfunding campaigns.

Blockchain 3.0 is represented by “*decentralized applications*”, DApps. As the basis of their work, they use distributed peer-to-peer (peer-to-peer) networks-a blockchain, similar to how ordinary applications rely on server operation (Sikorski et al., 2017). In other words, the interface of such an application can be written in a common programming language, at the same

time, relying in its work, for example, on the Ethereum blockchain. As examples we can mention NEO and EOS projects.

Based on all previous achievements within the framework of Blockchain 4.0, it is planned to develop and put into practice solutions relevant to the “*fourth scientific and technological revolution*”. The most interesting areas are (Zhang & Wen, 2017): “*Internet of Things*”; the fight against counterfeit goods; the problem of centralization and complexity of the medical records system; conducting transparent elections; storage of personal data; the financial sector.

## METHODOLOGY

In the course of the study, scientific methods such as empirical analysis were applied, as well as theoretical processing of the results. Also we used analysis and synthesis, comparison, as well as abstraction.

The methodological basis of work is a set of methods of scientific knowledge in the form of general scientific and special methods of research. In order to achieve the set goal and implement the specified tasks, the following research methods were used: critical analysis, scientific abstraction and generalization of the scientific experience of modern theoretical studies; analysis and synthesis, induction and deduction, system analysis and expert method.

## RESULTS AND DISCUSSIONS

The constant and unchanging, permanent nature of the blockchain, due to the presence of tens of thousands of computer nodes on the network (to break and compromise which, theoretically, computing power would be unthinkable), allows, among other things, to use the blockchain as a bank, “*storing*” data in it

Fields such as the control of fakes in the world of art and in relation to luxury goods can also be an object for adaptation of blockchain technology. In particular, the American company Verisart believes so. The start-up, reported by the reputable TechCrunch resource, has attracted \$ 2 million in venture capital investments and has already released its blockchain application, which allows assuring originality and copyright for the picture, for example. It is possible that in the future such applications will significantly mitigate the problem of copyright infringement, which is especially acute with electronic goods. The aspect of the application of blockchain technology, in contrast to the theoretical and technological aspects, is covered in the scientific literature, in our opinion, in insufficient detail. That is, a study that is more detailed and illustrated with real aspects and problems is relevant, dictated by modern conditions.

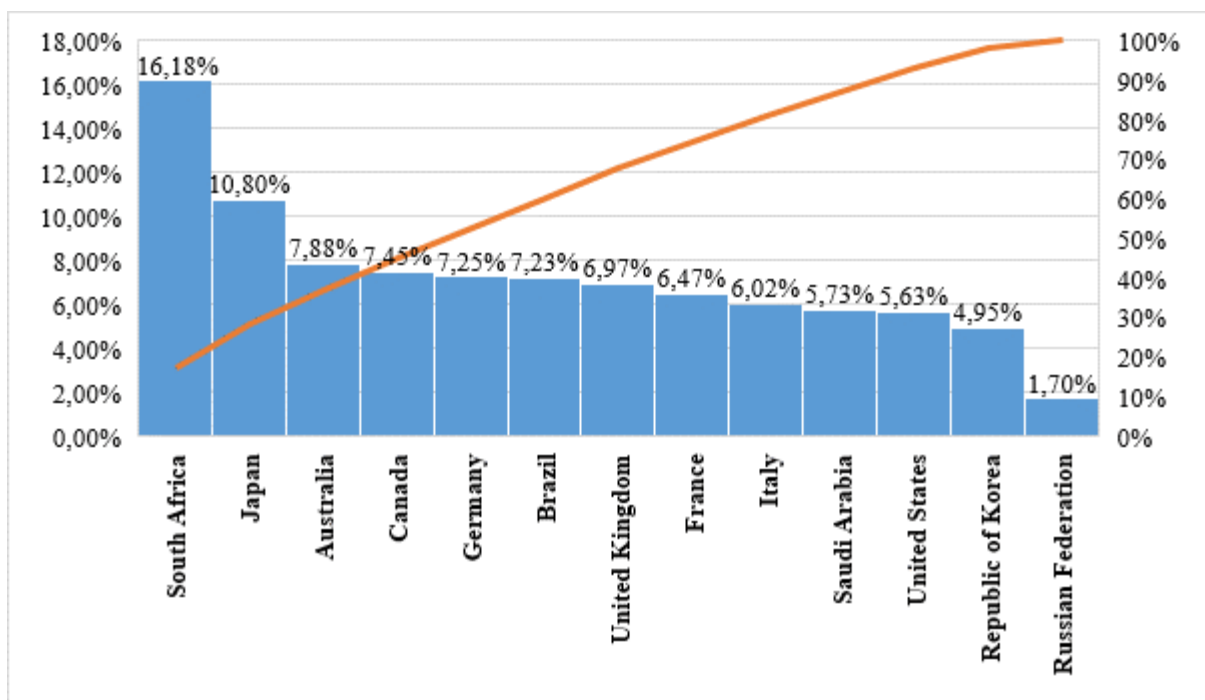
Figure 1 shows the values of the fees charged when transferring funds from G20 countries.

Cryptocurrencies themselves, like virtual currencies with a floating rate, can also be used for cross-border transfer of funds. As a matter of fact, it was this (fast and anonymous payments between strangers in different parts of the world in a matter of minutes) that was the basis of the idea of bringing together cryptography technologies, programming and transaction authentication algorithms (to avoid double costs).

The process of transferring funds using cryptocurrency, at first glance, looks quite simple. By analogy with the dollar, euro, yen and other currencies, cryptocurrencies are traded on exchanges.

That is, despite the very cryptographic security of the blockchain (network) of individual cryptocurrencies, exchanges formed as yet another intermediary are in fact not subject to innovation. Some of them use the 2FA (two-factor user authentication) system that is simply necessary in modern conditions, for example, Binance (Zamazii & Korolenko, 2019), the others do not. Moreover, the storage of cryptocurrencies in fact can be carried out in three different ways.

Firstly, despite the huge number of possible public key numbers (wallet numbers such as bitcoin or ether), you can generate online a unique wallet, which based only on chance and does not coincide with any other “*wallet*” and which can then be printed on paper and accept funds. Thus, it will not be active on the network until the owner wants to pay with it some goods or send money to another wallet using a mobile application (for which a special QR code is used, which is scanned by the camera).



Source: Author's study

**FIGURE 1**  
**THE AMOUNT OF COMMISSIONS CHARGED WHEN TRANSFERRING FUNDS**  
**FROM G20 COUNTRIES**

Another way to store cryptocurrency is through special hardware wallets, which also provide a good level of protection against hacking. They are called “*cold*” because they are not connected to the Internet. Some of them do not exceed the size of the USB-drive, while others can reach the size of a smartphone. They also use security systems such as 2FA and data encryption. In addition, you can store cryptocurrencies using the online wallet of the cryptocurrency developer project.

Finally, which is especially true for cryptocurrency traders, the most undesirable is to store coins directly on the exchange. The fact is that in order to avoid delays, and to ensure the speed of performing large volumes of operations, crypto exchanges save a significant part of their funds on “hot” wallets connected to the Internet. This, in addition to the often software vulnerability of the platforms themselves, makes them a target for hackers.

Here lies the need for the emergence of mobile applications (since the total number of Internet access via PC is now inferior to smartphones) as fast and cheap, but cryptographically protected thanks to the integration of blockchain, way of cross-border money transfers without the need to buy cryptocurrency. In fact, such applications do all the work listed above: convert dollars or euros to cryptocurrency, pass it through the blockchain, maybe even carry out procedures with additional anonymization of funds (for example, “mixing coins”-splitting a large transaction into many smaller ones), and finally transfer funds to another user of the same mobile application, all in the same dollars or euros.

## RECOMMENDATIONS

It is also worth to mention the industry, which is no less sensitive to the possible practical implementation of the technology - international cargo insurance. It is no secret that when transporting goods by sea, many things can go wrong- the cargo can be damaged, the ship may be delayed due to weather conditions, etc. Carrier companies, owners of container ships enter into insurance contracts, while using the services of many intermediaries - brokers and underwriters.

## CONCLUSIONS

It can be assumed that in the future, with the successful application of ready-made blockchain solutions, many retail chains will be able to include them in their delivery processes, increasing customer confidence and at the same time reducing costs associated with the use of a relatively inefficient paper accounting system.

However, the need for further scientific, practical and legal execution of blockchain technology and its practical use is obvious. The issue of determining the status of cryptocurrency and distributed registry technology is on the agenda today, and the need for a balanced and clearly defined economic policy in this area can be demonstrated by both positive and negative examples (the formation of the “*Crypto Valley*” in Switzerland and a complete ban in China).

In the future, processes such as job search and hiring can be greatly simplified and become more transparent as a result of using a single employee database on the blockchain, which will be cryptographically protected.

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