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The Analysis of Prospects of Practical Application of Blockchain in Management

The review of the main directions of use of blockchain technology is provided in article. Cases on the examples of companies and startups from various branches are considered. Comparison of the centralized and distributed accounting systems is presented. The main stages of development of blockchain technology from the confidential distributed accounting book to smart contracts are considered.

Keywords: blockchain; management; accounting system; decentralization; smart contracts; asset token; cryptocurrency.

The technologies connected with construction of blockchain-systems, are actively approved, tested in various branches by commercial and non-profit structures in which transparent and effective accounting of large or small number of operations is necessary. Even at small transactions often a key role is played by their transparency. And if we consider the resource-intensive transactions, also optimization of speed of their performance is important. All these problems are solved using blockchain.

In fact, the blockchain technology is some kind of distributed and replicated general register of account for management of transactions and for recording them between several participants at once. Fundamental difference from the traditional centralized systems is that transactions are not stored in the uniform database any

more, and on the contrary — are fixed between participants — knots. Structurally these systems look as follows (figure 1).

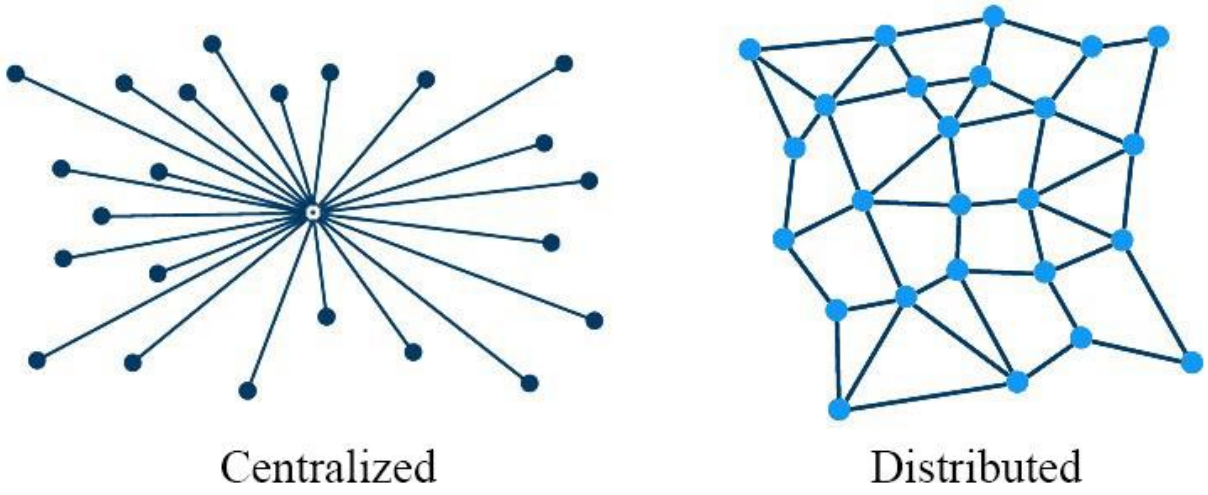

Figure 1 – **The centralized and distributed accounting system**

It is possible to highlight features of the centralized system:

1) Transactions between knots of network are possible only through the third party acting as the intermediary

2) Participation of the intermediary is often necessary as it creates trust in the environment where partners in the transaction do not know each other.

3) Intermediaries usually raise a payment for the services. Also, in the presence of intermediaries, processing time increases.

4) The system has one point of possible crash (so-called SPOF, Single Point of Failure). All relevant data, for example, the book of account, are stored on the central server or in the centralized infrastructure.

Features of the decentralized system:

1) Blockchain as the distributed technology of account solves problems of high transactional costs, low speed of processing, SPOF and lack of transparency.

2) In the distributed network various network knots can interact directly with each other without presence of intermediaries.

3) Existence of only one point of refusal is excluded and the transparency is increased.

According to survey which was conducted by the PwC company in 2017, 70% of the interviewed CEOs (Chief Executive Officers) see as the main problem — the speed of technological changes (the growth on this indicator is observed, because it was only 58% in 2015). In the theme of technological achievements the internal poll of PwC shows that blockchain is represented as the most large-scale "digital shock" for PwC clients in the next five years. [1]

Blockchain has the potential which can be disclosed in the following directions:

- Cryptocurrencies and smart contracts
- Storage on a distributive cloud (P2P)
- Management of identification
- Registration and verification of data
- Automatic implementation of contracts
- Notarial services
- The automated safety
- Collaborative economy (leasing of property)
- Carrying out Internet votes
- The market of the electric power without intermediaries: the system in which houses can develop own electric power and sell surplus
- Application in media for the organization of systems of collection of payment for information
- Application in the military sector (information transfer safety and also when using systems of an unblocking of automatic vehicles and weapon)
- Decentralization of the Internet of Things (IoT)
- Application in the sphere of insurance (Insurtech)

• Application on the Internet (decentralization of DNS servers) [2]

In 2018 both the large companies, and startups in the most different branches test the use of blockchain technology. Some examples of such cases are presented in table 1.

Table 1 – Examples of practical use of blockchain technology by the enterprises [1]

No	Company	Branch	Case of using blockchain
1	"Bankymoon", "AutoGrid"	Power, utilities and mining industry	1) Clever measuring system of general purpose 2) The decentralized platform of data on power
2	"Ascribe" "Mycelia"	Media and entertainments	1) Control of ownership rights on digital media 2) Elimination of mediation in recording studios
3	"Bitcoin" "Coinfirm"	Financial transactions	1) International P2P transactions 2) Anti money laundering
4	"Factom" "Follow My Vote" "Tradle"	Public and social services	1) Cadastral registration 2) Systems of carrying out votes, steady against sabotage 3) Digital identification of citizens
5	"HealthNautica" "Tierion"	Health care	1) Storage of medical records 2) Health of the population and clinical trials
6	"Loyyal"	Hospitality and rest	Loyalty program
7	"InsurETH" "Stratumn"	Insurance	1) P2P-policies of assurance of flights 2) Microinsurance
8	"Wave"	Transport logistics (freight	1) Trade documentation (for

	“Skuchain” “Provenance”	transportation)	example, consignment) 2) Trade financing 3) Transparency of a chain of deliveries
9	“Loyyal”	Transport and logistics (aircraft)	1) Distribution of tickets and additional services 2) Loyalty program 3) Management of identification of passengers

Depending on requirements of each concrete type of business, various elements of blockchain technology are applied in different degree. The potential of blockchain technologies for goods is double-sided: in the short term blockchain can help to order processes while in the long term it can exert destructive impact on all structure of the market. In particular, the blockchain technology can simplify transactions in the wholesale markets of the electric power which is substantially affected by production of renewable energy.

Nevertheless, the most part of the possible directions of use of blockchain technology still is at an early stage. In development of blockchain technology it is possible to allocate three key stages:

1) The confidential distributed book of account (an example — "Bitcoin")

2) Token assets (an example — a blockchain platform of "LINQ" from NASDAQ)

3) Smart contracts ("Ethereum")

So, the main advantages of the decentralized control system based on blockchain technology are transparency of operations for all participants of network and also, respectively, confidential interaction within the platform; the efficiency which is expressed in low costs of time and resources of observance of

all requirements and the solution of contradictions, settlement of disputes; simplification and automation of control and accounting of payments and other transactions between participants.

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