

ІННОВАЦІЙНЕ ПІДПРИЄМНИЦТВО ТА ІНВЕСТИЦІЙНА ПРИВАБЛИВІСТЬ

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ВПРОВАДЖЕННЯ БЛОКЧЕЙН ТЕХНОЛОГІЙ НА УКРАЇНСЬКИХ ПІДПРИЄМСТВАХ: ПЕРСПЕКТИВИ І ВИКЛИКИ

THE MAIN CHALLENGES OF IMPLEMENTING BLOCKCHAIN TECHNOLOGY IN UKRAINIAN ENTERPRISES

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АНОТАЦІЯ. Дана робота спрямована на дослідження сутності такого інноваційного рішення, як блокчейн і основних переваг його впровадження на підприємствах. Об'єкт дослідження: процеси впровадження блокчейна на підприємствах. Предмет дослідження: комплекс теоретичних і практичних знань про сутність і процеси впровадження блокчейну. Мета: оцінити ефективність і основні бар'єри впровадження блокчейна на підприємствах на основі проведених досліджень. В результаті: досліджено сутність технології блокчейн; визначено основні її переваги та уразливі місця; систематизовано напрямки використання локчейну на підприємстві; сформульовано основні проблеми впровадження даної технології у практику діяльності вітчизняного бізнесу.

КЛЮЧОВІ СЛОВА: смарт-контракти, приватний блокчейн, CRM-система, цифрові права.

ABSTRACT. This work is aimed to investigate the essence of innovative decision, the main benefits from its implementation in enterprises.

Object: the processes of implementing blockchain on enterprises. Subject: complex of theoretical and practical knowledge about essence and processes of implementing innovative technology. Goal: to assess the effectiveness and the main barriers of implementing blockchain in enterprises on the basis of conducted researches. Main tasks, that were solved: to investigate the essence of technology; determine main advantages and disadvantages; observe the fields of possible implementation; decide about the main challenges of implementing technology on enterprises.

KEY WORDS: Smart-contracts, Private blockchain, CRM-system, Digital rights.

Introduction. In terms of rapid information technologies development, business demands new decisions for optimization of its performance, acquiring competitive advantages and getting profit. This work is aimed to investigate the essence of innovative decision, the main benefits from its implementation in enterprises.

Analysis of the last scientific publications: nowadays, this particular issue is being investigated by many worldwide economists, such as Yan Khahn, Melani Swan, William Mougayar and others. The articles and books by these authors are researching the point, main advantages, disadvantages and functions of blockchain. However, this particular work is aimed to find out the benefits and challenges of implementing it on enterprises.

Goal: to assess the effectiveness and the main barriers of implementing blockchain in enterprises based on conducted researches. Main tasks:

- to investigate the essence of technology;
- determine main advantages and disadvantages;
- observe the fields of possible implementation;
- decide about the main challenges of implementing technology on enterprises.

Results. Since 1991 when the trial blockchain version was invented [1], it was counted to be an appliance for cryptocurrency. Even in 2008, when unknown who is working under name Satoshi Nakamoto [1] developed the technology, it was aimed to serve as a background for bitcoin and other similar currencies.

Nakamoto succeeded in mining the first bitcoins in January 2009 [1], since that point the cryptocurrency era has born. However, in that time its foundation, the very technology that made it possible, which is called blockchain [2], stayed in the shadow. Nakamoto mixed accustomed cryptographic tools with methods derived from decades of computer science research to give a possibility to participants of pub-

lic network who may not even trust each other to agree that a shared accounting book reflects the reality.

As the time passed and more bitcoins were mined, IT-specialists realized that blockchain can be adopted for other things besides money. In 2013, 19-year-old Vitalik Buterin offered Ethereum [2], which would track not only currency transactions but also the state of software, so called «smart con-tracts». Launched in 2015, Ethereum was determined to make possible creating a new generation of applications that are managed by decentralized computer networks instead of a company's servers [3].

In 2016, the idea of using blockchain in business was widely developed [3]. The Economist's experts described implementation of this second-generation programmable blockchain as «a programming language that allows users to write more sophisticated smart contracts, thus creating invoices that pay themselves when a shipment arrives or share certificates, which automatically send their owners dividends if profits reach a certain level. » [4].

It means that blockchain started to be considered not just as an addition to bitcoin, but also as an independent technology that can be exploit by entrepreneurs. Such a vision is absolutely reasonable. Blockchain is a perfect way of optimizing many businesses. Moreover, it can give an opportunity to in-crease profit, decrease costs and get the competitive advantage in modern, IT-based economic environment.

There are numerous of formulating of the blockchain's essence [2] [3] [4]. We are going to give our own explanation according to the core point, structure and functions of the technology.

Therefore, blockchain is innovative technology which can be used for both cryptocurrencies and business processes. In the way, we are going to describe.

First of all, blockchain is decentralized, distributed public electronic ledger which is openly shared among all users who are connected to the net. It records all the transactions, each one time-stamped and linked to the previous one. Changing of the information that was recorded is impossible. Actually, if the data in net changes it must be checked on the truth and originality by system itself and participants of the chain. It allows the participants of the chain to verify and audit transactions free with minimum of efforts and time.

Each digital record of information or transaction in the system is called a block. It allows both control set of users and entering information and participate in the electronic ledger. Each block is linked to the particular participant. Initially, block itself has its own

heading and contains the list of all the amount of transactions. In its turn, the heading of block contains individual hash together with information about previously connected blocks and additional information.

Each user of the chain can check the origin of information [4]. It's the main concept of the blockchain.

Before forward investigation, we must find out about hashing in order to understand how blockchain really works. So, what is hashing? The hashing process means taking an input string of any possible length and then giving out an output of a determined length. For example, if we use the SHA-324 (Se-cure Hashing Algorithm 324) [5] and code this transaction to the hash (no matter what is the length of input), the output will always have a fixed 324-bits length. Such a core function becomes critical when user faces with huge amount of data and transactions. Therefore, instead of remembering the input data, the user can just remember the hash and keep track of it. Such an advantage gives opportunity to save the time and efforts for coding, because blockchain systems will perform all other tasks instead of user.

The process of using blockchain is possible to describe in 3 steps [6]:

1. Creation of transaction.

Blockchain includes a built-in programming language that is why it can make multiple kinds of automatic transactions. The user can create smart con-tract that consists line and code. The advantage is that all the conditions of smart contracts are carried out automatically by default. In addition, the money for the transactions are payed automatically from the user's accounts if it is need-ed. Therefore, the first step is creation of transaction.

2. The transactions are broadcast in direction to a peer-to-peer network.

When the user of chain wants to make a transaction or send some mon-ey to other particulars user, the person should create a transaction on one's computer and refer to past transaction on the blockchain in which this user has received sufficient funds before. As well as the user should refer to private key to the funds and particular (desirable) participant address. After that, the transaction is sent out to other computers in the network. As long as the in-formation is approved and validated by system, it will become a part of a new block.

3. Creation of new blocks.

Valid transactions are organized into blocks and saved into each com-puter that is connected to the system. It contains all the main and additional in-formation about transactions and actions.

Thus, the functioning and using of blockchain is completely simple, transparent and secured. Therefore, what can blockchain really do, let us consider in the following list.

- Establish data identity

As it was mentioned before, technology contains cryptographic keys. The mixture of public and private keys provides strong digital identity reference, which is based on possession. It helps user to keep the identity in the «crowd» among other users.

- A system of record

Blockchain records as statistic data (entering) as dynamic (transactions). The data can be stored in blockchain in any of 3 combinations:

Unencrypted data — can be read by each participant in system. It is fully transparent.

Encrypted data — can be read by participants with a particular decryption key. The key allows to access the information on the blockchain and allows to find out who has added the data and when it has been added.

Hashed data — can be represented along with the function that created it, in order to show that the data was not tampered with.

- Prove immutability

According to the previous descriptions of blockchain, database has its history.

That is why any changes demand huge efforts. It will require changing of the information that comes afterwards.

- Serve as a platform

The system is a perfect field for smart contracts. As every conditions, money transactions are carried out automatically and are saved in the blocks.

According to the main abilities of blockchain we can make a conclusion that it's extremely convenient and save way of leading any kind of economical transactions.

One more thing about blockchain that we should be aware of is its types. There 3 of them [7].

I. Private blockchain. In this type, a single centralized entity is completely controlled over the data written on the ledger, so there is only one writer. The readers of information can be the public, the entity's clients, or a regulator. If it is needed, different additional readers can see the information if the writer allows. In such a system, the writer is disciplined entirely by the readers. They may decide to punish the writer in particular way when the writer changes the ledger's rules (or fee). As an example can serve an online platform Amazon. If

the writer decides to raise subscription rates for vendors and vendors respond by switching to a competitor.

II. A permissioned blockchain. In this case, the writing privilege is granted not to one entity, but to a consortium of entities. These entities manage the policies of the blockchain and are the only ones permitted to propagate and verify transactions. The read ability may be passed to the public or kept private to the certain extent. The permissioned writers usually take turns in adding blocks to the chain according to the algorithm. In contrary to the first type, if particular writer deviates and begins validating fraudulent ledger entries by including them in ones block, other writers may ignore the behavior and refuse to participate in extending the chain. On the other hand, prevent any a change by writing according to the existing policies.

III. Public blockchain. It is the most spread type of chain. Such kind of system gives unrestricted privileges. Each user works anonymously. Hereby, it allows any writer to add blocks more often than other users and, as a result, gives it significant power. This type of attack is called a “Sybil attack.” The decision of such an issues is to force writers to prove they have accomplished their task before permitting them to write on the ledger. This technique is known as Proof-of-Work (PoW) and is common among most major cryptocurrency blockchains, such as Bitcoin, Ethereum, and Litecoin.

This rather wide choice of types gives an opportunity for businesses to opt for the most appropriate one and implement it in order to get a competitive advantage and simplify operational procedures.

According to the all information about innovative technology, we can make a conclusion about its definition.

Blockchain is digital architecture of blocks where in electronic way all the desirable transactions are committed and saved. The blocks are mutual connected and bind all the users in touch, who can access and check the needed data.

All the risks and awards of implementing blockchain

Nowadays blockchain is rather controversial issue. The supporters say that the technology will cause a revolution in business word, but adversaries claim that the technology is not save enough and not so beneficial as it's de-scribed. [13] We are not going to join any camp; we are considering all pros and cons of implementing the technology.

At first, we are going to investigate which particular business processes can be based on blockchain. And which benefits and possible troubles it may cause. [8] [9] [10]

1. Payments and money transfers.

Using the blockchain technology enables to commit any money transactions they need. You are able to transfer funds directly, transparently and securely to any company in any location in the world almost at once and with ultra-low fees. It happens because of the absence of a larger amount intermediaries. This way, businesses should not pay outrageous transactions fees to several banks. It also saves a lot of time, as you do not need to wait a permission from the bank and do not have to commit any additional actions and operations. This practice is especially useful if there is international company. However, this function will be necessary for any kind of business.

2. Smart-contracts.

As we have mentioned before, one of the core abilities of blockchain is creating of smart-contracts. It looks like that, at the very beginning two counterparts reach their agreement about all conditions of the contract. As soon as all details are decided, this contract is coded into blockchain's block. After that, all conditions of the contract are performed automatically. Initially, such kind of contracts are stable, as information cannot be changed. In addition, in order to make it, business does not need any agent. The information is transparent and any user of chain can check it. This is also financial secured, as no one can break the system. The system runs exactly as programmed without any possibility of downtime, censorship, fraud or third party interference.

3. Distributed cloud storage.

Automation of business processes create an enormous amount of information. The problem is that information is confidential and needs a safe, huge storage. This kind of storage may be blockchain. It is convenient to save enterprise information in this way, as any participant of chain is able to get and save information from any gadget, in any place, at any time. Besides, cloud storages are not free, but with blockchain implementing, company does not have to spend money on it. As core feature of blockchain is security, it guarantees inability to hack it.

4. Customer services, supply chain.

If we take to consideration that blockchain is absolutely transparent technology where all the needed data exists in free access, than we can make a conclusion that suppliers, customers and contrparities can easily check the da-ta. If we talk about customer, it will be possible to scan QR-code of product and get all information about content, producing, delivering, etc. If its supplier, one can find the data about company's reliability and all additional information. Contrparities can find out about production, general characteristics of company, etc. In our opinion, with this feature of technology all market players will on-

ly get an additional benefit. It can even save some marketing costs, as companies do not need to introduce their production advantages.

5. CRM-system.

Blockchain technology is perfect CRM solution. As we are aware of that exceptional CRM software is every year subscription which costs a lot of money (approximately from 180 per year on one user without costs on implementing and support). Loyalty programs cost much more. With blockchain company can combine both CRM and loyalty and save huge sum of money, considering that the technology has no limits in users amount. In this way it becomes easier and cheaper to manage an internal enterprise environment and communicate with customers.

6. Digital rights

This point is especially important in current conditions. The innovative technology makes possible to protect brand, sign, digital rights and trademarks for every company. Blockchain technologies make tracking and managing digital identities both secure and efficient, resulting in seamless sign-on and thanks to this ability, it becomes possible to reduce frauds. Technological identity authentication checks whether the transaction was signed by the correct private key. It is inferred that whoever can have an access to the private key is the owner and the exact identity of the owner is regarded irrelevant.

7. Saving costs on financial services

According to the ability of smart-contracts creation and lead automatic payments, the accountant services on constant base are unnecessary. It becomes possible because assets' and liabilities' flows are coding in chain by de-fault. After a certain period (year e.g.) the balance of company's flows is formed automatically. Such a function can really reduce costs and avoid any kind of hiding the information.

What about the additional advantages of blockchain, there are also some that can be a competitive advantage for multinational corporations whose stocks are situated on stock exchange and which have a world chain of subsidiaries. There are main benefits below. [11]

- Tokenisation. It means submission of real or virtual assets on the blockchain basis. It can be distributed to raw materials, completed goods, income-producing securities, membership rights etc. Token is an entity of digital balance (the same as original stock, but digital that can be exchanged on money).

- Initial coin offerings (ICOs). As we know, thanks to ICOs companies sell a defined quantity of digital tokens to the public, are contributed with existing sums of money into blockchain system. Increasingly a disjunctive to the classic capital funding as provided today by

venture capital and private equity firms and banks. The largest ICOs have been already di-verse and included EOS. They are focused and based on blockchain infrastruc-ture. For instance, Huobi Token, a coin for a South Korean crypto exchange and Hdac, an Internet of Things platform.

- Enterprise software platforms. They are the engine for busi-ness operations such as finance, human resources and customer relationship management, which are possible to be integrated into blockchain system. For example, Microsoft, Oracle, SAP and Salesforce have all announced block-chain initiatives. According to economic forecasts, in the nearest future many core business processes will run on — or interoperate with — blockchain-based systems. Implementing of blockchain in consent with company resource planning platforms will ensure companies with processes streamlining, smooth the way of data sharing and improve its integrity.

- Crowdfunding is one of the greatest opportunities that blockchain can provide with. It is good idea for start-ups and new projects. Smart contracts allows to quickly and securely transferring money, data, and shares. Any business idea may create a fund and attract investors with all required conditions.

As a result, we can make an inference that blockchain is able to change some business processes or make some automatic. Altogether, it can significantly save company's costs, support its reliability and defend the rights and information. [12] But, in order to give real assessment to the expedience of implementing the technology, we are going to reveal main challenges of using blockchain.

First of all, in order to make it really secure, it must be accepted and trusted by government. Therefore, the authorities have to support the implementing by creation of relevant laws in order to protect the entrepreneurs' activities. Another difficulty can appear with updating and eliminating errors. The system should be updated on each node of the chain. It can take a lot of time and it means that at updating period the system will be not available for users. One more disadvantage is that on nowadays stage of developing blockchain it is impossible to redesign system. In a distributed database such as a block-chain, effort must be organized in the way ensuring that all nodes in the network reach consensus. Depending on the consensus mechanism settled, it may involve significant back-and-forth communication and dealing with forks and their consequent rollbacks. So, if some business process in not accepted by technology, the company should change the process or improve it. One issue that is more important is cost of implementing blockchain. It also demands

high-qualified IT-specialists to maintain a smoothly going of every process. Finally, the security of the system must be indefinitely maintained. Therefore, the IT-specialists must keep track of cyber security and defense of confidential information. Altogether, it creates great costs. [9] [14]

According to our investigation and revealed pros and cons of block-chain technology, we can make a conclusion that the system saves bigger costs than demands. Moreover, the technology is acceptable and beneficial as for small business as for medium and large [15]. For sure, each entrepreneur should count all the profits and loses for its business personally. However, in general, we can claim that such kind of holding a business is much easier, safer and in some cases cheaper than such ways that we get used to.

If two years ago implementing of blockchain was just a theoretic probability, now we can observe leaders in this field that got a competitive ad-vantage. If we appeal to PwC reports, the company reports that in 2017 they fixed the share of blockchain implementation cases in financial services on the level of 82%, but that field's portion dropped to 46% in 2018. [12] The survey respondents still choose financial services to be the current and nearest future leader of blockchain. However, economists also see a potential in industrial products, energy and utilities and healthcare. Moreover, if a year ago the US and Europe were considered as a center of gravity, nowadays this tendency is shifting to the East. The respondents claim that the US is the most advanced territory in developing blockchain today, but according to the current progress we can make a prediction that in three to five years, China may occupy leader position. [17]

The main fields of blockchain performance and what can prevent companies from implementing it.

Blockchain technology is claimed to cause the revolution that will touch each industry [16]. For sure, there are a huge number of cases of using blockchain technology in financial sector. But if we look into the essence of technology, we can make a conclusion that the system will be not less beneficial in other business fields such as retail, education, healthcare system, real estate, law enforcement, insurance, public governance and other.[19] [20]

We are going to investigate the most appropriate fields where block-chain can be not only implemented, but also become a new efficient tool for conducting business and governance. So, will look into feasible benefits of such a crucial changes and the greatest examples of companies which have already revolutionize their business and get benefit from it.

Banking services

According to the initial abilities of blockchain and functions that we have revealed, banking stands are disrupted the most by its technology. If we take into consideration that blockchain is a digital and tamper-proof ledger, the technology can really change completely conventional ways of financial transactions and banking system generally. The blockchain make all banking services more accurate, transparent and easier in using and understanding. Moreover, we can already observe the real examples of implementing blockchain in banking system. For instance, Swiss UBS and UK-based Barclays [22] have yet up innovative technology to accelerate their back-office operations and settlements.

Besides, there are some predictions for further blockchain development. As the Financial Times claims, introduction of blockchain in banking will decrease nearly \$20 billion in intermediaries' costs. One more cost-efficiency forecast from Santander FinTech study suggests that by 2022 banks should expect yearly reductions in infrastructure costs approximately \$15 — \$20 billion.

In result, costs are reduced, settlement times are shorter, auditing is easier, and security is more powerful.

Insurance

The blockchain is able to make insurance claims processing automatic, as a result, policy conditions will be coded into smart contracts. Keeping a shared database and creating records will definitely prevent frauds and ensure customers with equitable and timely payouts.

One of the examples is LenderBot [23], it's a kind of digital micro-insurance solution launched by blockchain startup Stratumn in cooperation with Deloitte. LenderBot offers users to accept any insurance claims through Facebook Messenger. They are simple in using and quick. This is a tiny model of possible future of insurance services.

Therefore, in this case the technology makes relevant and transparent data keeping, reduces insurance frauds and both cost and time of dealing with in-surance claims and also improves customer engagement.

Further, we will introduce non-financial fields where blockchain can be introduced. First of all and may be the most needed is, for sure, healthcare system.

Healthcare

Blockchain allows to simplify healthcare system and make it as much convenient as possible. It can be realized thanks to initial functions of block-chain. It stores medical histories so that both doctors

and patients can have an access to them in the most comfortable way. One of the pioneer in this industry is project named MedRec [24]. It is based on blockchain technology and allows to solve issues with electronic medical records by ensuring its users with transparent and safe mechanism for recording and keeping them. Besides, the company also uses cryptocurrencies flows thanks to blockchain. MedRec is a perfect example of decentralized system that started using smart contracts. In their turn, smart contracts give an opportunity to support the entire community and to audit and share data.

Law enforcement

Developing of the technology has stimulated a creation of a principally new organizational model this particular field. In this new model, intermediaries are absent. It leads to the decreasing in transaction costs and creates better protection of individuals' and organizations' rights. Meanwhile, the blockchain increases a proper legal framework of suits, legal affairs, forcing legislators, courts and regulators because of transparency that is underlying in blockchain point.

As for the first project that set up in this field the attempt to create such a «perfect» legal structure is Global Legal Blockchain Consortium (GLBC) [25]. The GLBC implies a creation of association that includes the biggest law firms, corporations, schools, and major legal software providers, as well as court systems and governments in all over the world in the future. In my opinion, it is a perfect idea to create fair rights system with management of property ownership and public records along with defense of individual's rights.

Real estate

Real estate is rather vulnerable because of huge amount of bureaucracy, paper stock, chance of illegal actions, inaccuracies in public records and lack of transparency, which in result can lead to problems with unknown liens, missing heirs, and frauds. The blockchain offers mechanisms to moderate these issues. Such kind of system exists and it is *velox.RE* [26], pilot project set up in Chicago. Underlying in its basement blockchain allows to cut up the number of documental records, accelerate transactions and turn them into cost-efficient on the one hand and it creates digital ownership and property data exchange in blockchain system.

Public and corporate governance

In the case of governance, we will consider both corporate and public governance because implementing blockchain technology can influence the most on these two sectors. If we talk about public governance, in my opinion, the greatest way to make the governance the most efficient is to make it fair and transparent. So, the

basement of blockchain can ensure these conditions. It is able to eliminate corruption locally and globally. As we now, for many countries such as Ukraine this issue is one of the most important nowadays.

The blockchain's digital identity abilities can completely change the way society votes, pays taxes and implements different government services.

If we talk about corporate governance, blockchain will make it possible to eliminate the centralized involvement of governments in business, improve the security of companies' assets and accelerate business transactions.

As an example, I would like to mention the Bitfury Group [27], which has a direct relation to our country. As we know, Ukrainian government has signed a contract with particular this company in 2018 [18]. The reason is transform the land registry on blockchain system. It seems to be the best decision in the way of improvement. Because it provides secure, cost-effective, fast, transparent and easy structure of the registry with an exceptional ability to remove all il-legal commitment.

Education

Academic credentials are one the most significant information that must be universally recognizable and verifiable all over the world. Blockchain technology will take the place of paper documentation and case-by-case checking. All kinds of educational system are possible to place on blockchain. In this way, the communication, reward system, educational courses will be available for each user. It can replace a huge amount of departments and create a unique educational space. As a student, I can confirm that it will really improve the educational system and increase the quality of education.

It will provide the system with improved verification procedures, re-duce the fraudulent claims of unearned educational credits. Also it creates transparent data storage and universally recognized credentials and records

Human Resources management

Human resources management is another field that demands much manual work and huge information records. It happens because HR specialists have to verify each applicant's references, educational background and employment history.

On the one hand, blockchain technology applied in HR management al-lows HR specialists to get access to the needed and relevant information about job applicants (the kind of confirmed details about their education and previous job experience or any criminal issues), as

well as to make sure that employment history isn't falsified. On the other hand, individuals can manage their personal data in the desirable way that allows preventing misrepresentation.

One of the example is a project aimed in increasing the quality of the recruitment process calls ChronoBank [28]. It focuses on developing recruitment for short-term jobs. HR-managers and potential workers have an opportunity to send and get payouts through the decentralized framework that does not demand any third parties.

In a result, the system allows to get control over the needed and available data, get access to verified candidate records. It is also good at accelerating the recruitment process and making smart job contracts and decentralized payments.

The list of fields where blockchain can be introduced and become beneficial is much wider. However, we would like to reveal the biggest one in order to show how one technology can completely change and simplify common processes.

Despite of all mentioned benefits and advantages, Ukrainian entrepreneurs are staying away from implementing this technology. Why it happens like that and what prevents them from visible improvement of their business let us consider forward [21].

We can explain this resistance with a few factors:

- Major part of assets and profit is circulating in a black market. It's obvious that Ukrainian entrepreneurs don't want to make their companies transparent because everybody got used to hide their financial results and pay taxes.

- The lack of transparent and fair taxes regulation. The key role in improving business environment is government acceptance and transformation. At the every beginning, the authorities should create appropriate laws and regulations for taxation system.

- Absence of appropriate law basement in terms of blockchain. In order to implement such a systems it must be approved and regulated by local laws. So, again the government should create an accurate and clear law basement.

- Costs of implementing. Entrepreneurs don't want to spend money on redecorating the whole persistent system. However, as soon as they realize an obvious possible benefits, they might change the opinion.

Conclusion. So, blockchain technology is digital architecture of blocks where in electronic way all the desirable transactions are committed and saved. It allows to create automatic system for company's performance. The data which is once coded in the system can't be easily changed. The access to the data can have one user of chain

in any appliance. The main principles of technology are transparency, smart-system, automation and cost saving.

The main advantages and disadvantages were also considered. What about the advantages, there are:

- Greater transparency
- Enhanced security
- Improved traceability
- Increased efficiency and speed
- Reduced costs

On the other hand, there are some disadvantages, such as:

- Lack of regulation
- Power consumption
- Lack of flexibility
- Difficulties with eliminating errors

Despite of existing disadvantages, in compare the value of benefits that technology provides with, the scale of cons is not so weighty. As the company saves much more money, optimize the performance, gets a competitive advantage and maximize its profit.

If we look at fields where the technology can be implemented, frankly speaking, it is possible everywhere. The most popular and beneficial field is finance. However, in other fields it also gives an exceptional result. Blockchain can be implemented in insurance, law enforcement, public government, education, healthcare, etc. Moreover, there are decent quantity of companies in each of the listed fields, which have already implemented such a technology in their companies.

According to our investigation, there are some facts that can really prevent entrepreneurs from implementing blockchain. There are black market, the lack of law basement and taxation regulations and huge costs on implementing.

However, as soon as Ukrainian entrepreneurs realize the benefits gathered from such a revolutionizing technology, we are sure, they will consider its implementing. It will be possible just with the government's support and appropriate law basement.

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