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### **ROLE OF BLOCKCHAIN TECHNOLOGY IN THE DEVELOPMENT OF GLOBAL INFORMATION TECHNOLOGY AND FINTECH MARKETS IN THE CONDITIONS OF GLOBALIZATION**

*The article proposes approaches to assessing the effectiveness of the blockchain technology use in the contemporary world economy. Authors` own definition of the term "FinTech" is suggested in the article. International cryptocurrency market capitalization is estimated. The role of cryptocurrency exchange and Bitcoins in the emerging multipolar currency system in the era of digital development is analyzed. Distinctive features of cryptocurrency exchange are shown. The main problem with protection of cryptocurrencies on cryptocurrency exchanges is identified. The role of blockchain technology in development of global information technology and FinTech markets in the future is estimated in the article.*

**Keywords:** *Global Information Technology Market, Financial Technology Sphere, Digital Development, Currency Exchange, Cryptocurrency, Blockchain, FinTech, Bitcoin.*

There is no universal definition for the term “FinTech”, every expert or financial analyst can give their own definition depending on the field of their interests. We are going to explain this term by giving its short explanation. Cryptocurrencies are the most current trend in global economy as for 2018 year showed the skyrocket cryptocurrency market capitalization to more than 820 billion US dollars. But the high volatility of this market makes it almost useless for regular transactions as the price for currency can change drastically over small period of time.

First of all, FinTech is a shortened term taken from financial technology sphere. This term combines companies or their projects that use modern innovative technologies and provide financial services or other services that can be combined with finance and technology, for example, usage of Blockchain technology in FinTech. Analysis is based on J. Abadi, M. Brunnermeier, C. Catalini, J. Gans, S. Sharf papers and research. The main idea of those papers is that Blockchain technology will eventually lower the cost of transaction to almost zero value, thus making them free and instant. This will remove regular currencies from global economy and remove government monopoly for money issuing. Opposing ideas are that cryptocurrencies will coexist with regular currencies and will be used for internet transactions only.

New participants of this sector usually provide products or services that are user-friendly and include innovative technology ideas which are more efficient or secure. These companies are commonly startups or use a crowdfunding model for their development.

What about Blockchain in FinTech? Blockchain technology has captured the “minds” of mankind in 2015: it attracted people by possible options of using the globally distributed, cryptographically-protected, open data registry in different sectors of the economy, not only by startups, but also by large financial and technology companies.

Blockchain is compared to the Internet of the 90s; this means that the opportunity to excel at the expense of bringing new technology utilizing Blockchain is extremely profitable. Many global corporations are trying to create working prototypes of Blockchain systems and applications that can be used in different spheres of our life. The best startups and products attract investors. Some of them are issuing their own cryptocurrency and tokens.

Experts can say that new FinTech companies utilizing Blockchain technologies are a new reality of global economy - they are more transparent, efficient and appealing. What is happening in the global FinTech market? Explosive growth of P2P financial services,

emergence of “social” banks and the development of crypto-economics are the trends that cannot be overlooked. Our task is not just to keep track of trends, but also create opportunities for young people and fresh start-ups to familiarize and apply new technologies, to solve business problems and develop innovative products.

So how can Blockchain solutions be used in FinTech sector? The technology of distributed registry or Blockchain technology, first used in the creation of Bitcoin, is one of the most significant innovations of mankind. It will create a global market and everyone will have direct access to it. This global market will be as universal and common as the Internet. Every asset and instrument in this market can be exchanged for any other with minimum expenses. Ability to pay for anything in one click, fast transactions, maximum security - these are future implementations of Blockchain FinTech solutions.

Through a clever combination of cryptography and incentives, the blockchain - the distributed public ledger recording every bitcoin transaction - could be used by any participant in the network to query and verify the state of a particular transaction in the digital currency. Thanks to market rules designed to incentivize the propagation of new, legitimate transactions, to reconcile conflicting information, and to ultimately reach consensus at regular intervals about the true state of the ledger in an environment where not all participating nodes can be trusted (e.g. as during a malicious attack to the network), Bitcoin was the first example, at scale, of costless verification. It was also the first example of how a secure network could be bootstrapped without investments by a selected set of ‘network operators’, but by relying instead on the individual incentives of every participant in the network. As of November 2016, with a market capitalization of approximately 12 billion US dollars, Bitcoin was not only the most diffused and secure cryptocurrency, but also an example of how, as the cost of verification and networking drop dramatically, new types of transactions, intermediation and business models become available. Now as for June 2018 – total cryptocurrency market capitalization is approximately 280 billion US dollars and it reached it top in January 2018 with more than 800 billion US dollars.

According to the Forbes statistics, there are over 10 thousand FinTech start-ups and this number is only rising. During 2010-2015 years annual volume of venture business investments in this sphere had grown to almost 20 billion dollars. The increase is over ten times more. Despite such great news these start-ups are only 1 percent of the US financial sector[4]. How can investors utilize these ideas for their advantage?

First of all, Blockchain solutions in FinTech offer transparency and efficiency, which are achieved through cryptocurrency usage. The possibility to exchange or transfer money from one country to another within seconds is very attractive. Unfortunately, real life isn't that easy. The level of technology is not sufficient enough to cover growing global economy needs in mobility and innovation.

The key question here is “What cryptocurrencies will take a monopoly of the market basing on its transaction costs and how fast the transactions are being approved.

It is often argued that “tech giants” that operate centralized platforms are the rent-extracting monopolists of the 21st century. In the tech space, platforms such as Alibaba record users’ credit histories and retailers like Amazon maintain ratings for vendors[1,2].

Still, the most demanded segment in FinTech that utilizes Blockchain is the payment segment. This segment includes FinTechs that offer cryptocurrency solutions as an alternative solution to typical money or provide exchange services for online payments in cryptocurrency. By using Blockchain FinTechs are able to issue decentralized cryptocurrencies that can be easily exchanged into legal means of payment or fiat money, in addition, this is done without any intermediaries. The best-known cryptocurrency utilizing Blockchain technology in the FinTech sector is Bitcoin. However, its huge market capitalization was not able to put aside regular currencies.

What is Blockchain and how it can be used in FinTechs? With current technology all transactions can be registered and stored by a huge number of servers simultaneously, thus, giving extra safety to the whole system. This also makes falsifications almost impossible.

The other problem of cryptocurrencies and Blockchain technology implementation in FinTech is their uncertain legal status. Governments are only considering the opportunity to approve legal status of cryptocurrencies and possible usage of Blockchain solutions in their FinTech sectors.

However, there are already several implementations of Blockchain technology solutions in Government's FinTech sector - such as Sweden's central bank, the Riksbank, intent at a national cryptocurrency e-Krona launch. They have a good chance to succeed in it. The Sweden government is trying to build its own official Blockchain cryptocurrency to be more competitive in growing FinTech sector. Customers will be able to use e-Krona to make small transactions, thus, changing from real-world currency to digital cryptocurrency. E-Krona will use Blockchain technology for storing its accounts on different flash cards or maybe centralized or decentralized database for those purposes. Definitely this will bring more ideas of Blockchain technology implementation in FinTech.

Blockchain or decentralized ledger can also bring more anonymity to cashless society (Sweden society is almost a perfect example). This can help cryptocurrencies attract more and more investors, as they can provide the same level of anonymity as regular cash. Now centralized intermediaries (banks) cannot provide their customers with sufficient level of data and asset security, but Blockchain technology can, and this makes FinTech sector even more attractive.

Interesting examples of Blockchain usage in FinTech are that other "official" governments issued cryptocurrencies. Most of those solutions were made by cryptocurrency enthusiasts from different countries such as Iceland, Spain, China, Russia, Estonia, Senegal, Israel or even Ecuador. As you can see, many governments are considering the opportunity to create their own cryptocurrency or utilize other Blockchain technologies in their FinTech spheres.

Another interesting example is Auroracoin. It was released in March 2014, positioning itself as a replacement for Icelandic Krona. The idea of this cryptocurrency was simple: first 10 million coins should be distributed by Iceland national registry among all people of Iceland - the rest from regular mining. This Blockchain idea was brilliant as national currency was depreciating every year. Unfortunately this FinTech solution was not fully implemented.

Those solutions had much in common - all of them were made by cryptocurrency enthusiasts that wanted to help their respective countries to switch from central bank issued currency mechanism to the Blockchain FinTech one.

Sadly, some of those solutions were outright scams - like Spaincoin.

Unfortunately, there are still some skeptical opinions claiming that Blockchain FinTech technology is not ready to be used in the payment system. The Swift's, Global transaction payment system, experts believe that huge progress is needed before payment system can be used to process international banking transactions. Blockchain technology must undergo a modernization, before trusting it the implementation of cross-border transactions between global banks amounting to several billion dollars daily. Swift specialists came to this conclusion after testing new global interbank messaging Blockchain network.

SWIFT, as a part of a FinTech transformation process, is responsible for more than half of all international money transfers in the world. This corporation had completed work on a "proof of concept" test system using Blockchain. 34 banks had participated in that project.

This example showed that a lot of most famous financial institutions of the world are implementing Blockchain complex approaches and technologies in an effort to improve the efficiency of their work. The current position of the Swift coincides with the similar opinion

of other world leading banks and financial regulators: “Blockchain technology is too early to use”. A lot of work is already done and they are not going to stop.

Unfortunately there are serious troubles with ordinary exchanges now - they are centralized structures, thus, are more vulnerable than the blockchain system. Despite they are based on some sort of security protocols technology the amount of computers in their network is not so big as in regular blockchains such as Bitcoin or Ethereum.

Centralized exchanges are very attractive for hackers, thus, your funds and money on their accounts are also vulnerable. Hackers just need to access one or two servers and crack one firewall and get access to banking accounts. Of course this is a hard job but very possible, especially with current level of IT technologies.

Also, their security measures are obscured and you never know will they be able to do something in case of hacker attack or not. Plus they can ignore your troubles if they want to. Operating a regular centralized exchange is like to go on thin ice. You can never know what can happen.

The role of cryptocurrency exchange and Bitcoins in the emerging multipolar currency system in the era of digital development is growing every day, this also includes the global currency system. It is becoming increasingly popular use of electronic money systems, and so-called money substitutes and of course cryptocurrency exchange because without them you cannot trade cryptocurrencies.

Money substitutes - cryptocurrencies substitutes the official forms of money in circulation by business entities for the purpose of making payments. The common property of money substitutes is the fact that they function as a means of payment, but do not serve as a store of value and do not determine the proportion of the exchange of goods (Does not function as a measure of value). The main reason for the appearance of money substitutes is considered official currency shortage, which, as a rule, is the result of an excessively tight monetary policy aimed at the elimination of negative inflation expectations.

One of the types of money substitutes is cryptocurrency, and its most common form - Bitcoin. In a relatively short time of existence of Bitcoin it is already widespread.

Cryptocurrency exchange and currencies accept payment for goods and services, as well as freely converted into electronic and real currency in most countries of the world. Cryptocurrency exchange system - is peering payment system which uses the specific name - for example BitShares DEX, Coinffeine, and OpenLedger, which is a virtual currency not having any material support. Cryptocurrency exchange is a form of exchange currency market that is created and operated electronically.

The basic idea of both cryptocurrency and its exchange platforms was the invention of an independent monetary system that would apply to growing digital market, with a minimal cost required. It is clear that this currency and cryptocurrency exchange is fundamentally different from all previously created electronic currencies and payment systems. It is not tied to any physical asset or the official currency, and the price of the digital coins and altcoins - governed solely by cryptocurrency exchange market supply and demand.

The principal elements of the payment system is program - client, which is open source and an electronic purse. The other important link in cryptocoin is of course cryptocoin exchange where you can sell or buy any cryptocurrency.

Cryptocurrency exchange is working as a link between two parties that are going to make a deal. Operation is confirmed in that case if the participant has the necessary amount of currency for its fulfillment. There are many online resources offering the creation, exchange and sell of cryptocurrencies Bitcoins. Here there are some examples Coinbase (USA), Localbitcoins (Finland), Bitquick (USA), CoinCorner (Isle of Man), Bitrix (USA) and HARO (USA)[3].

Price on the cryptocurrency exchange Bitcoin depends entirely on the supply and demand balance, it is not regulated by anyone. Neither the sharp increase or a sharp drop is not limited,

as is the case on the stock exchanges by stopping trading. All transactions are done in a decentralized network, the cryptocurrency exchange is entitled to charge cryptocurrency from both sides and add its commission. Despite this the whole global cryptocurrency system depends on a centralized cryptocurrency exchange for a high extent.

The growing popularity of cryptocurrency exchange largely determines its distinctive properties. Distinctive features of cryptocurrency exchange are:

1. Easy registration, anyone can participate in the network;
2. The absence of human factor and all transactions are tightly controlled by the system;
3. The payment system is adapted for use on the Internet;
4. The absence of extra intermediaries, digital money is sent directly between users and cryptocurrency exchange service;
5. Security and increased anonymity because there is no evidence of direct transactions between you and a counterpart, everything is done through cryptocurrency exchange;
6. Inability to block transaction, freeze money in the user's purse or roll back the transaction when it has been already committed;
7. No controlling body cryptocurrency price is determined solely by market supply and demand for each cryptocurrency;
8. The speed and minimum cost during the transaction (not always).

But one of the most important features of the cryptocurrency exchange system is its decentralization. All transactions are done on a special node, and your wallet is also situated on them. These features peer to peer networks. The English phrase peer to peer just means from partner to partner (P2P), that is, participants of transactions have equal rights and duties.

Therefore, banks, tax, judicial and other public authorities can not affect any transaction participants of the cryptocurrency exchange system. We must state this again there is no third party involved in this trade.

But there's always one key point that really matters. It is the speed of transactions, login time, approval and verification of your account and deposit monitoring. This is the case when you want to operate Bitcoins - and your transaction can take a couple hours to be approved - or else you have to pay a huge commission.

Sometimes because of high demand at cryptocurrency exchange the transactions can be put on hold and new registrations will also be closed - this is all because of blockchain instability issues and problems with it. But if you don't touch Bitcoins than you are going to be ok.

But the good point here is that you can send a huge volume of cryptocurrency via p2p connection. Also, government authorities will have big problems with associating you with your anonymous cryptocurrency wallet. This is good and bad issues both - because of such level of anonymity criminals might use crypto coins or cryptocurrency exchange in their advantage.

New decentralized cryptocurrency exchanges are being developed now to give us the opportunity to touch cryptocurrency market and join a huge crypto family.

Despite problems in this segment it is still developing and there are several outstanding solutions that can help exchange cryptocurrencies fast and safe.

Bitsquare is decentralized cryptocurrency exchange that also contains the blockchain system and its own type of currency. This is a symbiosis of cryptocurrency and cryptocurrency exchange approaches. Looks promising, but let's go on.

Bitshares & Openledger are also developing solutions that offer cryptocurrency exchange and also have their own currency units. They are essentially one solution because work on the same blockchain, but Openledger is a web-based version of Bitshares.

NXT offers its cryptocurrency and ability of one-way exchange onto it. There is no asset-to-asset trade.

CounterParty DEX is also interesting because this system is based on smart contracts. This protocol works as an escrow for transaction purposes.

Today there is great need for decentralized cryptocurrency exchanges that would allow users to exchange their cryptocurrency fast, safe and with great anonymity.

But there are still problems with protection of your cryptocurrencies on cryptocurrency exchanges, because DAO was hacked and a lot of altcoins were stolen from the wallets.

The mechanism of cryptocurrency exchange is pretty straight forward. Cryptocurrency exchange operator gives a bid and ask price for each cryptocurrency available and this two quotes usually differ. The difference between them is operators margin to keep administer accounts and may be personal if any. If you want to change regular currency such as dollars or euros for cryptocurrencies - this is also doable via cryptocurrency exchanges and you would only need a credit card or a bank account to do so. After you agree on a transaction cryptocurrency exchange will execute a contract and you will pay for your cryptocurrencies, afterwards they will be sent to your cryptowallet.

As cryptocurrency is not 100% legal in all countries of the world you may also encounter severe troubles if you try to use them. But that is seldom.

One more important thing you ought to know about cryptocurrency exchange is that all blockchain transactions are irreversible. Once you schedule a deal, had made a transaction - money cannot be brought back. So keep this in mind if you want to exchange cryptocurrency and think twice before sending money. And if someone had sent funds to the wrong crypto wallet than you won't be able to recover them.

Regular transactions are processed during short period - may be up to 15-30 minutes, but sometimes when blockchain system is overloaded with transactions you will have to wait for it to process. Also, some cryptocurrency exchanges can be attacked by hackers, this not to get access to their transactions, but to hinder its speed.

Cryptocurrency exchanges are developing very fast as well as blockchain technology, may be one day we all going to use only blockchain cryptocurrencies in our life.

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## РОЛЬ ТЕХНОЛОГІЇ БЛОКЧЕЙНІВ У РОЗВИТКУ ГЛОБАЛЬНОГО РИНКУ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ ТА FİNTECH РИНКУ В УМОВАХ ГЛОБАЛІЗАЦІЇ

*У світовій науковій літературі немає універсального визначення терміна "FinTech", кожен експерт або фінансовий аналітик дає своє визначення в залежності від сфери своїх інтересів. У статті авторами запропоновано власне визначення терміну "FinTech". У статті виявлено вплив криптовалют на світову економіку, що постійно посилюється, оскільки на початку 2018 р. капіталізація ринку криптовалют досягла більш ніж 820 млрд. доларів США. Але висока волатильність цього ринку робить криптовалюти дуже ризикованими для звичайних транзакцій, оскільки ціна на валюту може різко змінюватися протягом невеликого періоду часу.*

*Перш за все, "FinTech" - це скорочений термін, прийнятий у сфері фінансових технологій. Цей термін об'єднує компанії чи їхні проекти, які використовують сучасні інноваційні технології та надають фінансові послуги або інші послуги, які можуть бути об'єднані з фінансовими та технологічними цілями, наприклад, використання технології "Blockchain" у "FinTech". Результати проведеного дослідження ґрунтуються на роботах Дж. Абаді, М. Брюннермейера, С. Каталіні, Дж. Ганса, С. Шарфа.*

*Головний результат цих досліджень полягає в тому, що технологія Blockchain з часом знизить вартість транзакції майже до нульового значення, тим самим зробивши їх безкоштовними та миттєвими. Це дозволить усунути звичайні валюти зі світової економіки та усунути державну монополію на випуск грошей. Протилежні ідеї полягають у тому, що криптовалюти будуть співіснувати зі звичайними валютами та зможуть використовуватися лише для інтернет-транзакцій.*

*Нові учасники цього сектору, як правило, пропонують продукти або послуги, які є зручними для користувачів, і включають інноваційні технологічні ідеї, які є більш ефективними або безпечними. Ці компанії зазвичай є стартапами.*

*Технологія Blockchain вийшла на світовий ринок в 2015 році: вона приваблювала інвесторів можливими варіантами використання глобально розподіленого, криптографічно захищеного, відкритого реєстру даних у різних секторах економіки не тільки за рахунок стартапів, але і великими фінансовими та технологічними компаніями.*

*У зв'язку з тим, що криптовалютні біржі разом з технологією блокчейнів розвиваються дуже швидко, цей сегмент світового ринку привертає увагу вчених та потребує постійного дослідження.*

**Ключові слова:** глобальний ринок інформаційних технологій, фінансова технологічна сфера, цифровий розвиток, обмін валют, криптовалюта, блокчейн, FinTech, біткойн.

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## THE INFLUENCE OF THE ACTIVITIES OF MNCs ON THE DEVELOPMENT OF THE WORLD ECONOMIES

*The article considers the theoretical aspects of the transnationalization processes development, determines the influence of TNCs on the economic development of*