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The prospects of cryptocurrencies in Azerbaijan and world financial markets

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Abstract

Today cryptocurrency market is very actual topic for discussing and debating. Even some experts claim that, investigating this area can be compared to making a research Internet in 1990s. Because the future of these virtual currencies is still uncertain. This thesis is aimed to clarify basic ideas of cryptocurrencies to readers and give some suggestions for improvement sector.

It consists of two chapters: first theoretical and second practical parts. In the first section of the dissertation concept of blockchain technology, main futures of bitcoin and other altcoins, including pros and cons of trading with cryptocurrencies on exchanges is covered. Moreover, the second part starts with approach of states and corporations to this innovation, possible regulation and taxation opportunities, then situation of Azerbaijan is presented to reader. In the latest part future scenarios of cryptocurrencies is predicted.

The paper seeks to answer the question: *Must cryptocurrencies be accepted as a meaning of payment, property or investing tool?* It is hoped that this paper will be beneficial for Finance students and whom interested in cryptocurrencies as well.

Key words: *blockchain, cryptocurrency, bitcoin, altcoins, exchanges, ICO*[1]*, regulation, taxation.*

[1] Initial Coin Offering

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Introduction

One of the most discussed theme in 2017 was price boom of Bitcoin. After gaining value from 1000 USD to 20000 USD during just one year won not only economists', but the all people's interest. Everyone started to talk and give prognosis about future of this first virtual currency. All of them happened at the time when I was looking for actual topic for my bachelor diploma thesis, so I had already found my subject which I would research it during one semester: *The prospects of cryptocurrencies in Azerbaijan and world financial markets.*

One of this thesis purposes is arguing against some misperceptions and differing bitcoin and blockchain, explaining pros and cons of other altcoins and etc.The name of thesis is determined so, because future fate of cryptocurrencies is unknown and is getting popular day by day. Of course Azerbaijan can not remain beyond in this global financial issues. Although previous research and books about this theme are not so much, I hope online sources will be helpful for writing my dissertation. Before entering into the topic I would like to give a brief information why I have chosen this the newest and not well explored theme. The reason is so that, blockchain – fundamental technology of cryptocurrencies is so new that it is open to research and innovations for applying different sectors. The main aim of thesis is finding answer that: *in future cryptocurrencies will be asset or medium of exchange?*

After 2008-09 "mortgage crisis" in United States of America it is observed that former monetary system does not already response the requirements of economy of new World. Even today it is not known whether this person or

group of first coin- Bitcoin exists or not. Bitcoin started to be famous since end of 2016 when the number of online stores accepted it as a medium of exchange, then the law to accept bitcoin as a legal payment method came into force in Japan, and Russia has announced that it will legalize the use of cryptocurrencies such as bitcoin. As a result the value of bitcoin started to go up significantly and attracted attention of people and media in a short time. Both rising value of bitcoin 100K times for 8 years and making money transfer easier caused to analyze this technology deeply by specialists. Some features of cryptocurrencies, being decentralized, having transparency, anonymous nature, making transfer funds easier and quicker, charging minimal commissions, avoiding annoying procedures carried out by banks made them well known within short period of time. The volatility of these currencies are too high, it makes them profitable and risky. Most of buyers and sellers of Bitcoin at the moment are speculators.

One of the main disadvantages of fiat money was risk of inflation. By contrast, cryptocurrencies do not have this kind of risk because of having upper limit in advance. For instance, Bitcoin emission will continue till reaching 21 million, as of march 2018, there are nearly 17 million bitcoins in circulation. On the other hand, it appears deflation problem. Additionally not having officially recognition by states, renewal feature when physical store (hardware) ruins, long security success history and having hacking, speculation risk are main threats to Cryptocurrencies for today. While saying “Cryptocurrency” most of people just remember Bitcoin, but actually there are 1600 other coins (Altcoins) and each of them has unique characteristics and implications. For example, the concept of Siacoin is creating storage for data that is more reliable and lower cost than traditional cloud storage providers. Rest of them also has got specific technology which refers to blockchain technology too. These features formulate demand to these cryptocurrencies by investors. The more money is invested, the higher price goes up. It means trust of investors

plays crucial role on valuation of cryptocurrencies. As a result, news related with cryptocurrencies can impact on prices so much. Lastly, prohibition of advertisements on social media (Facebook, Twitter, Linkedin etc.) caused a dump in market. As seen, this topic is rather wide and to be needed research it.

For covering theme fully, dissertation is divided into 2 chapters, including 3 paragraphs for both of them. First chapter is called Theoretical and Conceptual Framework and will consist of theoretical information about blockchain technology, smart contracts, bitcoin, altcoins, opportunities and threats of exchanging cryptocurrencies in markets. However, second Research chapter will cover practical knowledge on the positions of states and corporations, Azerbaijan situation and prognosis about future of cryptocurrencies: ” medium of exchange, investment tool or store of value?” . I believe in bitcoin is not able to be medium of exchange for today. As J. P. Morgan CEO said “money which has high volatility (more than 50% value changing within a day) can not become currency of any country”. We can only invest in cryptocurrencies as a commodity yet. But it does not mean they will be only investing tool forever, time by time they will substitute paper money and blockchain technology bring about fundamental variations in job structures.

Chapter 1.Blockchain and its applications

If anyone interested in cryptocurrencies, first word which he will hear is Blockchain. It is a technology stands behind of these new virtual currencies. At the heart of Bitcoin's system is the blockchain that it uses to store an web ledger of all operations had been made with bitcoins or other coins. Carrying out a data structure for open ledger that is exposed to limit hacker threat and copy by all computers with bitcoin software. Many experts see this blockchain is not only in financial system but also important uses in technology, alternative energy sector, online voting,crowd funding, smart contracts and in the other sectors. Blockchain start-ups are also topic which is needed to analyze. Each of them serves for one blockchain-based companies publish whitepapers which cover main details of these start-ups.

The basic idea behind this technology is that being decentralized, distributed, and having open ledgers which allow people who either do not know or trust each other for sharing data in a trusted book where any kind of information can be stored. The capability of increasing efficiency, transparency and reducing third party, hedging costs are main features of Blockchain technology in the financial sphere. One of the last and most sophisticated application of this technology is *smart contracts*, at the same time blockchain has got other applications which can also benefit for the financial sector. As seen this technology has many advantages to disrupt the current financial system, However blockchain is in initial stage of development of itself. The most fundamental hypothesis is that this evolutionary technology makes some jobs unnecessary for future, such as audit, accounting, web-money transfer function of banks and so on. However, some practitioners argue that blockchain technology likely to take advantage of the changing job structure

in a proper way. In this section I will try to cover main fundamental features and its implications briefly, because Blockchain is a very wide technology.

1.1 Blockchain technology. Smart contracts

This technology came to life under the pseudonym Satoshi Nakamoto. The founder of the bitcoin, Nakamoto published his study "Bitcoin: a Peer-to-Peer electronic cash register system" in 2008 [2]. The author of this study is still unknown today, but it is thought to be a hacker or a group of hackers. As an initial decentralized[2] open ledger, bitcoin won the interest of millions all over the world. After price boom it turned into billions. However, the success of bitcoin comes from the cryptographic technology that underlies it, namely blockchain technology [3]. The technology of bitcoin has recently been a very actual topic for researchers, even more discussed than bitcoin itself.

Cryptography

It is accepted that encryption of data can carried out in three types; unkeyed, symmetric-key and asymmetric-key (figure 1).

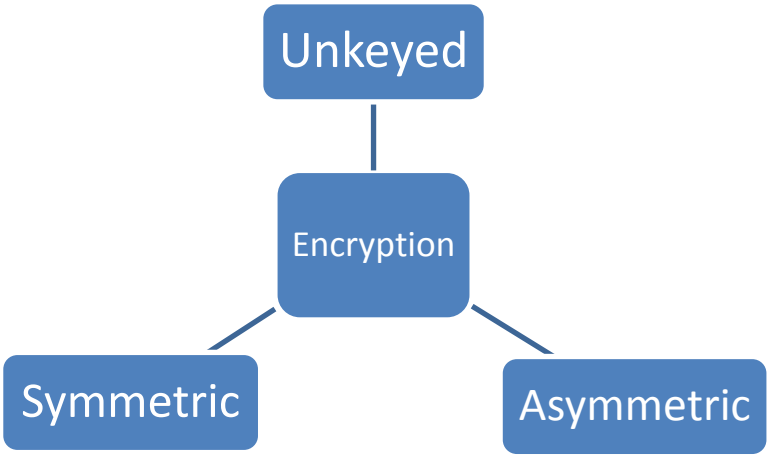


Figure 1. Types of encryption

[2] The Economist (2015)
[3] Pilkington (2015)

Unkeyed natives- are first type of functions which does not utilize a key to code a message. For instance, hashing. The most important part to understand essence of blockchain is *hashing*. A hash function, as being one-way function, just spends so little resources to measure it, but with many efforts, probably an impossible amount- this process is called -*mining*. If the length of hash is longer, the possibility for outputs increases efficiently **Symmetric-key** natives utilize a similar key for encryption and unscrambling; **Asymmetric-key** cryptography utilizes the arrangement of an open key and a private key (not equivalent to each other) which are both required for coding and decoding.[4]

Fundamentals of Blockchain

The blockchain is a system which collects all data of carried out transactions and transit in a distributed register and is not controlled by whoever member of the chain, however, established by several participants. This allows people who either do not know or trust each other for forming a reliable registry where the information is recorded. The right of property, cryptocurrency exchange information (buying/selling/margin trading) and other any type of intangible data can be stored in these blocks. The three fundamental characteristics of the blockchain are being shared, solid and open enroll. At first, the sharing a key through a protected channel was a thought of Ralph C. Merkle who proposed it in 1978. Moreover, we can summarize all of them and can define blockchain like:

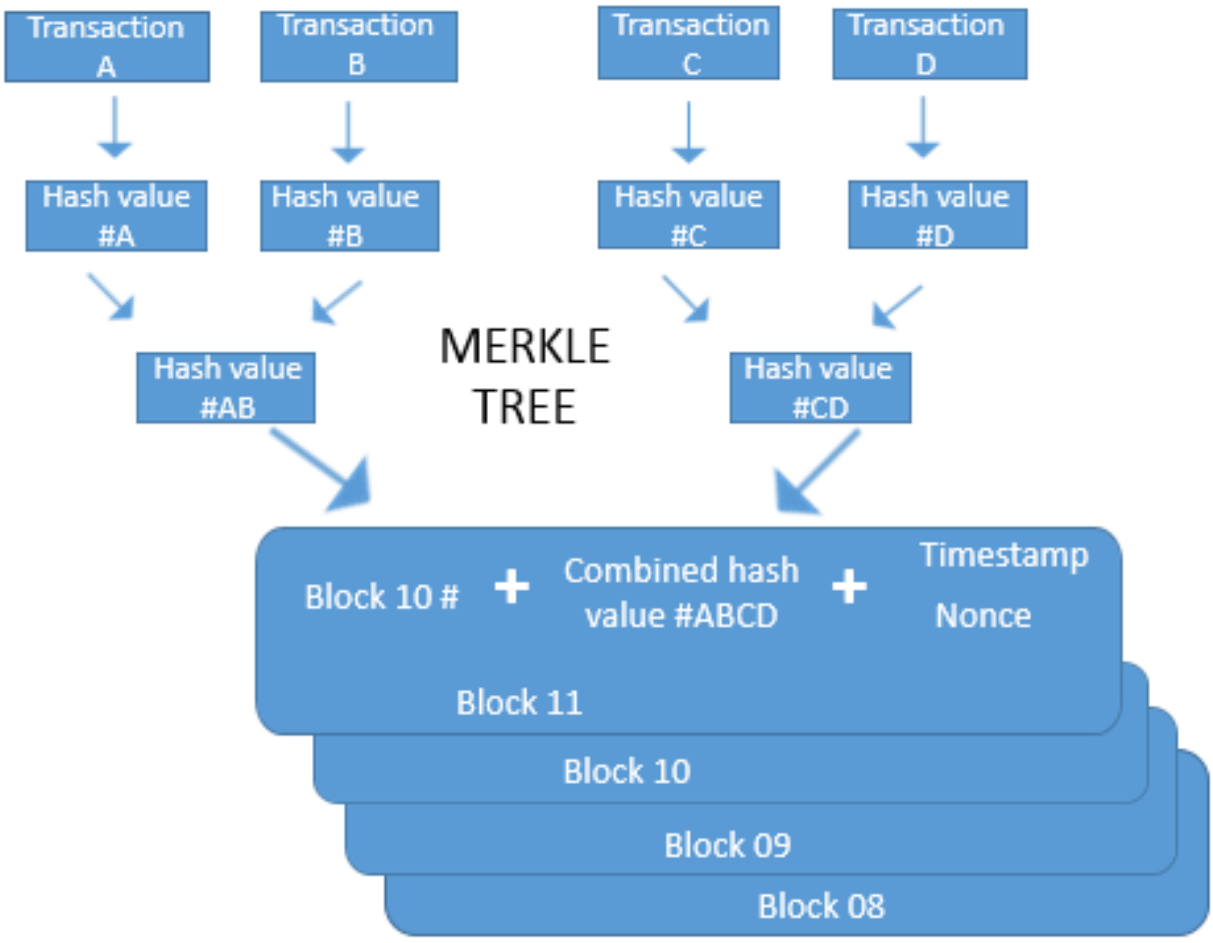
"Blockchain technology is briefly explained a public, distributed and trusted ledger, which is available for everyone. Tamperproof means that when a piece of information is put in to the blockchain, it cannot be tampered with unnoticed. Technically any kind of intangible information of value can be put

[4] Jonatan H. Bergquist- "*Blockchain Technology and Smart Contracts"*

in to the ledger. The blockchain technology does not require any trust between its users, which allows making transactions without a third party."[5] It is a kind of digital intangible system which records and validates all transactions in a translucent and safe way, ignoring the need for intermediaries, such as brokers, banks, and increasing trust with the helping of its highly translucent mechanism. IBM- International Business Machines, proposes definition saying that a blockchain is a shared, immutable ledger for recording the history of transactions[6]. Blockchain technology is being improving in private and public sectors day by day . The basic idea of blockchain technology is that it is accessible to all, but is still not controlled or owned by any user. The innovation works by means of a distributed system, which depends on a huge number of "hubs", eg. Personal Computers, all over the world. The hubs can go back and forth however they see fit the system. The new squares are conceived as a result of mining procedure by particular hubs, or as such miners. These miners work secretly cooperating and attempting to explain math puzzles (calculation), which makes new blockchain squares. This creation isn't as basic as it might appear. It finds a way to finish and confirm another puzzle. The channel contains all accepted transactions since the birth of the blockchain and the information is available to everyone at any time. Each participated computer in this distributed blockchain mechanism is called a *node*. There are full information of all carried out transactions and shared data in each node. If transactions are successively are occurred, they are added to blocks. At once no more than one block can be added, and for adding each new block must hold a mathematical proof that validates the prior blocks. That is why they have connected with each other chronologically.

[5] Aalto University research formal definition of blockchain technologies
[6] *"What is a blockchain*?" www.ibm.com

Each transaction has an identification code, called *hash*, that contains the original information of the transaction. The hash estimations of exchanges that are gathered in a square are consolidated in a framework called "Merkle Tree" (see Figure 2). This consolidated hash esteem is included the header of another square alongside other data, for example, the hash of the past piece and a timestamp. The past hash in the new square guarantees that the pieces are not debased and third people duping. On the other hand, the timestamp proves that the data has existed at that moment.



Source: The Economist (2015)

Figure 2.Merkle tree

For finding right solution miners look through billions of possible solutions to and when that solution is found, the finder announces it to the others who are

member of the network. Alternate mineworkers check the arrangement and in the event that it is correct, they affirm it and refresh potential square in like manner. Validation of 2 other miners is enough for awarding with bitcoins. That is the magnificence of the blockchain - the confusion is difficult to comprehend, however easy to check. The sum was 25 bitcoins per square mined in 2015. In the event that somebody was attempting to renew current history, that member should know that how to explain great degree difficult math puzzles to make another piece. It cements blockchain security. Nakamoto underlined in his examination that changing the historical backdrop of a square requires re-trying every one of the pieces after it. Subsequently, history and chance make swindling is to a great degree troublesome. Blockchains are not just restricted to bitcoin. A wide range of elusive resources can be enrolled and exchanged to blockchains. Blockchain innovation could be connected to the capacity of data. A few uses of the innovation have been built up to date. As an example we can give several successful start-ups in blockchain-based securities exchange markets, blockchain-based land registers and corporate smart contracts.

Smart contracts

Related with blockchain concept, Smart contracts are published on a basis of blockchain and can receive or execute operations with any conditions. That means that these operations may be ignored or request some unique terms to perform. The creation purpose of these smart contracts is for acting as *computerized transaction protocol* which carries out conditions of agreement and cryptographer Nick Szabo coined firstly. According to Szabo, real smart contracts should have some features, like *observability, privacy, verifiability* and *online enforceability*:

Visibility means that participants in the contract should be able to see each other’s performance of the terms of the contract, or to be able to prove the

fulfilment of their own terms to other participants[7]. *Verifiability* of moves made by the rationale in the agreement, a Point-Of-Sale screen is demonstrating the sum should be paid to the customer. *Online enforceability* alludes to verifying that the terms of an agreement are being satisfied. The measures that can be taken so as to accomplish this can be ordered into proactive and responsive ones. Proactive measures look to make it actually difficult to break terms or to permit either gathering to drop out of the agreement ought to there be a legitimate rupture on another part. Responsive measures dissuade pernicious conduct through notoriety or authorization, yet additionally by recouping potential resources after break of agreement. Keen contracts additionally should be irrefutable, or auditable, ought to there be a contention. Ultimately, shrewd contracts ought to be as private as could be allowed, implying that data and control of information engaged with a smart contract should just be accessible to members if essential. The *Ethereum* stage is a general blockchain, with a virtual machine - EVM[8] to run smart contracts. Since the earth exists just on the blockchain as a virtual machine, the smart contracts are totally disengaged from arrange, document framework or different procedures on the hub machines. A high-level, Turing-finish dialect was made to compose keen contracts with on Ethereum. The proposed engineering of the arrangement of these contracts depends on the outline guideline of having diverse sorts of agreements to perform distinctive classes of undertakings.

The key concept of these contracts is that terms and data can be put into an agreement and if the terms work out as expected, then the agreement is executed quickly. There are a few sorts of smart contracts, they consequently pay profits to their partners when a specific level of benefit is accomplished. Smart contracts alter the way contracts are finished up today by making them

6 Aalto University research *"The blockchain technology and its applications in the financial sector"*
7 ETM- stands for Ethereum Virtual Machine

less expensive, ignoring intermediaries and making them trustworthy. Blockchain innovation can be utilized as a part of the plan and organizing of securities markets. The highlights of blockchain innovation that enables markets to be outlined recently, contrasted with the present stock exchanging[9]. Blockchain securities are in fact in light of smart contracts. The innovation enables financial specialists to put information and exchanging rules in their blockchain securities. These exchanging standards may incorporate certain conditions, for example, value limits. In the event that terms are satisfied, the exchange runs consequently. In the event that conditions don't work out, security does not change proprietorship. Other character for blockchain securities is that it gives a chance to investors contact with each other directly without experiencing an intermediary, such as broker, dealers. Most exchanges are by means of an outsider in the present securities advertise. Thus, we can not surely decide that how blockchain innovation will influence long term business markets.

Blockchain innovation can be utilized to actualize an open and sacred database for property registries. This could especially benefits in nations where property records are inadequately protected. Land registers incorporate data on property rights, for example, enrolled spaces and land interests. They increment security of registry information from multiple points of view. From one viewpoint, a blockchain-based land registry expands security since it rolls out it difficult to unlawfully improvement responsibility for rights, which is normal in degenerate nations. At the same time these properties are able to utilized as guarantee. A high-esteemed assurance expands the chance of getting a credit, which builds the likelihood of contributing which is essential feature for contributing in the economy.

8 Malinova and Park (2016)

1.2 Bitcoin and other altcoins

Bitcoin

The blockchain technology's most well-known application in the world is *Bitcoin*. It must be undelined that blockchain technology is more noteworthy than bitcoin, because bitcoin is just first issued coin, its possible collapse can not be evaluated as end of this technology. Blockchain innovation comes from the original white paper, (Nakamoto, 2008), outlining how the cryptographic money Bitcoin could be developed. Bitcoin tackled an essential issue in the field of electronic cash called twofold spending, i.e. utilizing the same electronic coin to pay for numerous things. Regularly this is understood through a central regulator, for example, a bank or another trusted party, however Nakamoto proposed a period stamp server, which guarantees all exchanges are showing up sequentially in the database. ***Bitcoin-*** is a virtual currency based on the blockchain technology, which enables bitcoin to function as a medium of exchange without involving a trusted intermediary, such as a bank. Virtual currencies are alternatives to fiat currencies and can be used in the same way as cash.[10]

Bitcoin is the most famous and currently used virtual currency. P2P[11] is a system of cash which does not rely on trust in one central monetary authority and allows anonymous, untraceable and untaxable operations. Bitcoin was firstly mentioned in 2008 in a self-published article written by an anonymous person or group who passed under a pseudonym Satoshi Nakamoto. In the article Nakamoto described Bitcoin like payment mechanism which is decentralized cryptocurrency with peer-to-peer access. There is a thought that Nakamoto created Bitcoin as response to the global 2008-2009 financial or mortgage crisis in USA in 2008. Even before bitcoin, the idea of a digital

9 Definition given by The Guardian (2018)

10 P2P stands for-Peer-to-peer network

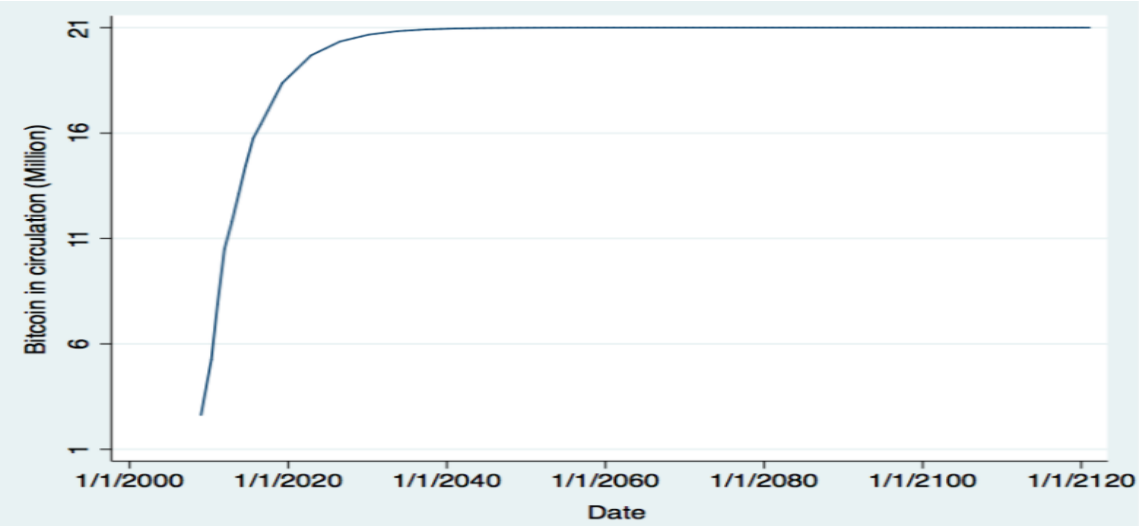
currency was not something new. *David Chaum*, pioneer of cryptographic protocols, wrote the first article where presented an anonymous payment system using blind signatures. Since then, cryptographers have published several scientific papers attempting to increase the safety and efficiency of hypothetical digital currencies. Some of these ideas came to life in the forms of independent digital currencies - *Digicash, E-Gold* and so on. However, the lack of decentralization, transparency and security ultimately led to the disappearance of all these efforts. After the release of the code with open source Bitcoin, first 50 BTC were mined by Nakamoto himself to demonstrate the method to online observers. An initial real world cryptocurrency transaction was realized in May 2010, when *Laszlo Chaniez*, a programmer living in Florida, sent 10,000 BTC to a volunteer in the United Kingdom, who then ordered two pizzas, which cost him 25 USD. Today, 10,000 BTCs have value of nearly 8 million USD.

Its popularity was caused by the fact that Bitcoin is global, anonymous, has low transaction costs, accounts can not be frozen and there are no preconditions or arbitrary restrictions. In 2012, several Bitcoin start-ups, such as Coinbase, began to appear. They were aimed at assisting non-technical users in meeting with Bitcoin. Coinbase created an online technology-friendly bitcoin wallet that allows users to buy bitcoins in exchange for USD, and then store them online there. The first Bitcoin ATM was launched in Vancouver[12] in 2013. This ATM allowed customers to display their bitcoins in Canadian dollars, and it also allowed them to deposit the Canadian dollars as Bitcoin then fast transforming into their wallets. At present there are 2765 Bitcoin ATMs in 67 countries of world. The mainly used ATM models are "Lamassu", "Satoshi 1,2" and "Genesis". In addition, several well-known retailers began accepting Bitcoin as a means of payment on their websites, such as

11 Canada

Overstock.com, Reddit, Wordpress, Microsoft, Expedia, Virgin Atlantic, Reeds Jewelers Inc. and etc.

In a decentralized monetary system, no central authority can regulate monetary base, so monetary policy will be ineffective. Bitcoins are created by "miners" around the whole world, in contrast to traditional system where central banks execute this function. A new bitcoin is created when the "miner" detects the block. The number of bitcoins halves per block, every four years. It is assumed that this algorithm with decreasing volume will copy the speed with commodities like gold extraction. The number of coins that can ever be existed is 21,000,000. At the time of this writing, there were about 16,983,000 bitcoins in circulation of individuals and legal entities. If current protocol of bitcoin[13] will be same,it is currently estimated that 99% of all bitcoins will be mined by 2040 [14] and the remaining 1% will be mined over the next 80-100 years (Figure 3).



Source: coinmarketcap.com

Figure 3: Amount of bitcoins in circulation

Practitioners suggest that 78% of all bitcoins were saved on accounts that never made transactions. This means that only 22% of existing bitcoins were

[13] SHA256
[14] www.Bitcoin.com

in active circulation. When the price of bitcoin decreases, mining becomes less profitable and some “miners" are forced to leave their business. When there are fewer miners, the network is automatically configured to reduce difficult cryptographic problems and, that is why, it makes mining profitable again. Up to two in third of all bitcoins (60%) are being mining in China and these miners have chosen their location wisely. Sichuan mountains are suitable place for mining in China, because of being cold region and having cheap electricity fee compared to other countries, on average fee is 5- 7 cents per kWh. There are list of the best place on the planet for mining and getting cryptocurrencies:

Iceland-quickly turns into “a mountain paradise”. This country offers cool temperature and an existence of cheap geothermal energy for powering rigs. The unique feature of Iceland is also that mining companies are using 100% renewable energy and minimizing bad environmental effects of this process.

Canada - the best place in the North America for mining and can compete with other ones crediting to the low electricity fee ,cool climate and high-speed of Internet.

Georgia is one of the most profitable places for mining cryptocurrency in the world. In addition to the widespread use of cryptocurrencies in the country, Georgia entered into a partnership with the *BitFury*[15] to provide a platform for blocking the creation of a register of land property rights, and Georgia became the first country to record land names using the tech-blocks in the world. While costs BitFury for electricity is kept secret, the average cost of electricity in Tbilisi is about 0.08 USD per kWh. Georgia with low taxes does not pay and low cost of electricity.

14 The hugest Bitcoin mining company

The cheapest energy providing country in the world, ***Russia*** is less focused on by environmental side and President Vladimir Putin has requested in full use the resources of country efficiently. In addition, the Kremlin offered the giving "remaining" – power as a subsidy to the miners.

Bitcoin is completely divisible and countable. At the moment, the current selected level in code of this coin is 8 decimal, thus, the smallest unit is 0.00000001 BTC and called *satoshi*. However, one of the problems is that the price of Bitcoin is relatively high when in comparison with mainly consumed goods and services. If I bought a Big Mac in Mc Donald's that costs 3.99 USD, it will be equal to 0.0009 BTC at today's[16] prices. This creates confusion for the consumer and makes the comparison of prices quite difficult. One possible solution in the future is to start using smaller units, such as milli-bitcoins (mBTC) or micro-bitcoins (μBTC).
It is appropriate to talk about Bitcoin's weaknesses, because with the lack of *intrinsic value*-its value is only based on the trust and readiness of people continue to use it. At the same time the price of bitcoin is determined by investors' demand accordingly. Despite the fact that the bitcoin itself can not be detected in accordance with security experts, third-party purses and exchanges are subject to hacks or even scammers. Bitcoin platforms are attractive to hackers because of the high price of them, anonymity, and the lack of regulation by government bodies. It was especially so in the early days of bitcoins, because these third-party platforms were not as transparent and safe as it is now. Security was a serious problem in the early days, and the investors' conscious trust re-influenced the price movement is quite accurate. The most essential hacking was *Mt. Gox case*, which were processing more than 70% of all BTC operations at that time. It went bankrupt in 2014 and said

15 On the writing time (19.04.2018)

that 850,000 BTC, was worth about 480 million USD, were abducted by hackers. Mt. Gox customers lost savings and remained without compensation. Not only savings, but also trust in Bitcoin is lost either and this led to lower prices. Since the insolvency of Mt. Gox in early 2014, there were two more hacks, which led to the theft more than 19,000 BTC from Bitstamp exchange in 2015 and 120,000 BTC from Bitfinex in 2016. The price fell by more than 10% in both these instances, but they recovered fairly quickly. Because it is difficult to avoid hacking, most commonly used exchanges store their virtual currency in the offline store (hardware) and save only a small percentage of funds on the Internet. Foundations which are stored on the Internet, are often insured, which means that customers do not take any risks.

Altcoins

At present, there are hundreds of alternative cryptographics (called Altcoins in the Blockchain community) who are trying to benefit from weak sides of bitcoin, as well as innovation, adding new features. Bitcoin disadvantages now include long terms of verification, a relatively high fee, power inefficiency, non-exchangeability and manipulation by invisible hands. Nevertheless, The minority of these Altcoins is used on a regular basis. In the moment of writing, there were 4 cryptocurrencies that had a market capitalization more than 10 billion USD–Bitcoin, ETH, XRP, BCH. [17]

Ranking	*Name*	*Market Capitalization*	*Price (in USD)*	*Circulating supply*
1.	*Bitcoin*	$139 252 673 779	$8 197	16 986 425 BTC
2.	*Ethereum*	$52 484 921 003	$530	98 912 258 ETH
3.	*Ripple*	$27 965 873 667	$0.71	39,122,794,968 XRP

16 Ethereum, Ripple, Bitcoin Cash

4.	*BTC cash*	$15 125 646 383	$885	17,081,687 BCH
5.	*Litecoin*	$7 838 309 885	$139	56,154,908 LCH
6.	*EOS*	$7 221 972 292	$9	802,920,049 EOS
7.	*Cardano*	$6 822 786 393	$0.26	25,927,070,538 ADA
8.	*Stellar*	$6 607 579 730	$0.35	18,569,223,741 XLM
9.	*NEO*	$4 665 544 000	$71	65,000,000 NEO
10.	*IOTA*	$4 603 624 827	$1.66	2,779,530,283 MIOTA

**figures are taken from livecoinwatch.com*

Figure 4: Market indicators of top 10 cryptocurrencies

Unique features (technology) of each of these top10 cryptocurrencies have made them so high trusted by investors. we would like to mention 4 of them randomly chosen :

Ripple (XRP)- gives one special application to transmit cash internationally utilizing the energy of blockchain. By joining Ripple's developing, worldwide system, money related establishments can process their clients' bank payments at anyplace on the planet in a split second, dependably and cost-adequately. Banks and payment suppliers can utilize the computerized resource XRP to additionally minimize their expenses and access new markets. There are more than 100 customers of Ripple all over the world and offices in London, Luxembourg, New York, Sydney and New Dehli.
It is assumed that Ripple is aimed to substitute SWIFT[18] in banking sector. Trades between numerous monetary currencies can happen immediately without any central operator to check them. Afterward, clients can pull back Ripple from their balances
XRP's general esteem market value to increase almost $150 billion and made its founder- Chris Larsen , one of the richest person on the planet.

17 Society for the Worldwide Interbank Financial Telecommunication

There are not miners in the set-up of XRP; all of the existing 100 billion coins of Ripple had been made when the whitepaper of network launched in 2012. Its founders kept one in fifth and gave the rest to the public placement. Ripple uses a novel accord calculation to approve exchanges, and it suggests that customers utilize a rundown of recognized, confided in members to approve their exchanges. This causes difference a distinct difference to Bitcoin, where anybody can turn into a miner. Ripple can settle 1,000 operations for each second, contrasted and Bitcoin's seven, and its exchange expenses are much lower. Five brand-name organizations now test Ripple's technology: American Express ,Banco Santander, MoneyGram International, Deloitte and SBI Holdings.

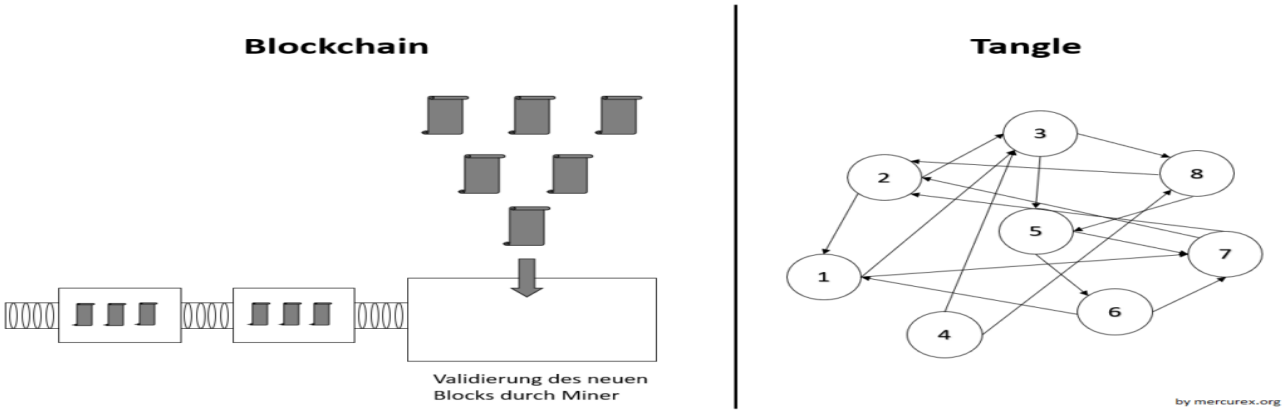
Stellar (XLM)-Stellar is a mechanism that associates banks, their payment systems and individuals. Coordinate to move cash rapidly, dependably, and at almost no cost. The ability to send data is carried by different system of servers, rather than being executed through sole one central authority. This shows that, the system of Stellar does not depend on only single organizer. The thought is to have however many free servers take an interest in the Stellar system as could be expected under the circumstances, with the goal that the system will at present run effectively regardless of whether a few servers fail. Like a traditional record, the Stellar record records a list of the number of balances and done transactions happened in every record on the system. Any member is able to manage software of a Stellar server. These servers shape a decentralized Stellar system, enabling the record to be decentralized as generally as could reasonably be expected. The servers match up and verify the record by an instrument known as consensus. For instance, you need to send 5$ payment to your partner. The greater part of these servers should submit that you do in reality claim $5 worth of credit on the system, then they will stamp the exchange as valid. This whole procedure

of coming to agreement on the Stellar system happens within each 2-5 seconds.

IOTA (MIOTA)-There are 4 main pros of this coin which differ it from other similar Blockchain cryptocurrencies:

-Decentralized; Flexible; Low cost; Accountable

IOTA uses the 'Tangle' which is known as a DAG[19]. Unlike Bitcoin the Tangle uses a blockchain architecture to maintain its accounting. To sum up, the problems of flexibility and high transaction fees facing by Bitcoin and most coins solved by Tangle system (figure 5). The carrying out transaction and verifying it doubled. This eliminates the dedicated miners and makes the system completely decentred, so those who make transactions are the only actors that can affect the system, while in bitcoin the miners do not 'use' the system, but that simply enable it to work. In blockchain cryptocurrencies the greater number of users, the slower speed of the network. However in IOTA, the more users participate, the quicker the transaction speed of the network increases. It also eliminates the need for users to pay the "miners" for doing the job test, because they already do it themselves. Therefore, there is no fee to carry out a transaction.



Source: www.mercuri.org

Figure 5: Difference between Tangle and Blockchain.

18 Directed Acyclic Graph

To participate in this network, a participant simply needs to perform a small amount of computational calculations. This work that verifies two previous transactions. Instead of creating a hierarchy of roles and responsibilities in the network, each actor has the same incentives and rewards. To perform a transaction in the entanglement, you must validate two previous transactions with the reward of doing so being the validation of your own transaction for a subsequent transaction. With this "pay it forward" validation system, there is no need to offer financial rewards. The transaction with IOTA is and always will be completely free.

Siacoin (SC)- is one of the popular coin type in cryptocurrency market. The distributed storage industry is high competitive and organizations like Sia are planning to put a product in the monopoly of other well-known cloud applications, for example, Dropbox, Amazon S3, and Google Drive. So also, any individual who needs to utilize Sia cloud needs to pay Siacoins to a host. Sia can possibly upset a multibillion dollar industry, to be specific the capacity of the world's documents in a way that is more practical, more secure, and more private than any other time in recent memory. With no requirement for a national bank of separates on which to store information, and by using blockchain innovation to take into consideration shared document store. Sia is able to totally reform the current storage industry.

1.3 *Cryptocurrency exchanges. Opportunities and threats.*

Mainly exchanges and wallets are confused by most people who are unknown in cryptocurrency sphere. *Exchanges*- are purchase, sale and trading area of cryptocurrencies, but *Wallets* are online /offline storage device of cryptocurrency. However some portals are used for both exchange and online wallet purposes, such as *cex.io*. We personally use this portal for both

buy/sell operations and saving purchased coins. Formally, exchanges give administrations to purchase and sell virtual forms of money and other advanced resources for national and different digital currencies, such as BTC,XRP, BCG[20] and etc. Exchanges assume a fundamental part in the cryptocurrency economy by being a commercial centre for trading, liquidity, and pricing. Three types of services are presented by cryptocurrency exchanges:

- Order-book exchange-service that matches buy/sell orders of clients through a trading motor automatically;
- Brokerage service-benefit that provides clients advantageously buy/offer digital forms of money at a given cost
- Trading platform- platform which give a chance to work leveraged trading and cryptocurrency derivatives (options, forwards);

Exchanges give a chance to clients wishing to purchase or offer wishing cryptocurrency that have existed. There are some numerical facts about cryptocurrency exchanges:

- The exchanges are the first founded and remains the biggest portion due to both the number of organizations and employed people in this sector;
- 73% of little exchanges only offer 1 or 2 listed digital money, while 72% of big exchanges give a trading opportunity at least two coins: BTC is listed by all exchanges (100 %), respectively by ETH (43%) and LTC[21] (35%) ;
- Large exchanges and four national currencies (USD, EUR, JPY ,CNY) is accounted for huge part of worldwide cryptocurrency trading volumes;

19 Bitcoin Gold –another cryptocurrency
20 Litecoin

- Both large exchanges (80%) and little exchanges (69%) use external security outsourcing, however bigger ones carry out internal security measures more than smaller ones;
- National-to-cryptocurrency payments (Fex: USD to BTC) constitute the biggest proportion (66%) of aggregate turnover of exchanges ;
- National-to-national money payments (Fex: USD to CNY) are second and cryptocurrency-to-cryptocurrency payments (Fex: BTG to XRP) are third one, represent 27% and 6%respectively;

Totally Exchanges were one of the first institutions to form in the cryptocurrency industry: the first exchange has been established in mid of 2010 as a task to be able to trade BTC and price it according to demand and supply . Today USD is the main widely used national cash on exchanges, following EUR, CNY,JPY. It happened after regulation of Chinese exchanges in early 2017.Not only in a number of offered coins, but also due to provided services large and small exchanges differ from each other significantly. While 72% of little exchanges has specialized in one sort of services, a same percent of big exchanges are giving numerous sorts of exchange services, such as order-book exchange, trading platform and brokerage service. Officially 1,157 representatives are employed by total exchanges, which make this sector the biggest employer in the cryptocurrency industry.

OPERATIONAL CHALLENGES AND RISK FACTORS

Cambridge Financial Analytics state that the big exchanges note that they mainly deal with administrational challenges, on the other hand 52% of little exchanges have a formal government permit or authorisation contrasted with just 35% of huge exchanges. For the most part, little exchanges tend to rate

dangers higher than extensive exchanges. The most worthy risk factor for little exchanges and second most outstanding difficulty for big exchanges is security issues that could result in fully lost assets (Figure 6). Another finding states that emerges is that large exchanges rate challenges which acted by regulation of states is the most outstanding risk to their tasks – a factor that is evaluated extremely low by little exchanges. Little exchanges appear to have impressive challenges with either getting or keeping up saving money connections with banks , while large exchanges seem to control this risk factor under control of them. Additionally small exchanges are considerably more worried about cheating than larger exchanges, which recommends that they are either directed more often than huge exchanges or just that fraud has progressively a more extreme money related effect because of the their limited turnover size and equity capital.

Respondents Scored these Categories on a 1 - 5 Scale

1: Very low risk | 2: Low risk | 3: Medium risk | 4: High risk | 5: Very high risk

Lowest average score — Highest average score

	Weighted average	Small exchanges	Large exchanges
IT security/hacking	**3.70**	3.93	3.17
Deteriorating banking relationships	**3.45**	3.79	2.67
Fraud	**3.08**	3.50	2.08
Regulation (in general)	**3.08**	2.89	3.50
Competitors/business model risk	**2.88**	3.00	2.58
Reputation risk	**2.88**	2.93	2.75

Source: Cambridge Alternative Finance Centre [22]

Figure 6. Operational risk factors rated by exchanges

Cryptocurrencies are computerized carrier resources if once exchanged can not be recovered. For example, a sender has addressed coins by mistaken,

21 Global Cryptocurrency Benchmarking Study

the payment can't be pay back unless the beneficiary chooses to do as such. The high volatility in prices of virtual money made exchanges a rich source for hackers as they handle and store huge amounted accounts. Various occasions have prompted the loss of exchange client stores. Exchanges where misfortunes happened were caused to bankrupt and client stores were never compensated. Exchanges fulfil several internal security measures to check getting and confine proper access to secret information. Statically, order-book-only exchanges (i.e. transactions not locked in in brokerage service or trading platform) spend two times a greater amount of their budget on security rather than brokerage services or transparent trading platforms. One of the internal security actions is **2FA**[23], these type exchanges protect their system with the assistance of external security suppliers, including outer code commentators, multi-signature wallet and specialist organizations. Multi-factor verification is an entrance control technique that gifts access to a PC framework just if the requester can supply different 'components' (e.g., secret word and a special one-time sent token).The most generally utilized frame in daily life is two-factor verification which requires the client to give two factors in order to prove himself/herself. Large exchanges give an opportunity optional 2FA for about all client activities. While the provision of it is for the most part an optional security service which offered to security-cognizant clients, 2FA is often requested by exchanges for internal transactions. Even a few exchanges likewise show that they are utilizing three-factor validation - ***3FA*** [24] for access to all systems and devices, for example, YubiKeys

Cold Storage

92% of exchanges announce that they are utilizing some kind of cold storage (i.e., creating and keeping keys offline) to protect both client and their

22 two-factor verification
23 three-factor verification

organization funds. Just 8% are not using any kind of cold storage systems, in contrast, they keep funds in wallets which are accessible only on the internet. These figures are nearly the same for both little and expansive exchanges. More and less, exchanges keep 87% of aggregate funds in cold storage for better security purposes. 33% of custodial exchanges show that the formal security audit incorporates *a proof-of-reserve* - system to demonstrate whether the exchange has adequate assets; more often than not auditable by clients, too. A few exchanges remarked that they would routinely have reserves audited and affirmed by auditing firms, however that there would not be sufficient client requests for a mandatory proof-of-reserve to legitimize the expenses and problems of executing such a system. Non-custodial exchanges don't carry out a proof-of-reserve audit, because they don't control client reserves. Each large exchange that executes a proof-of-reserve audit show that external supplier (external audit company) was used, However, numerous number of the exchanges that don't utilize an external for proof-of reserves, instead of it they give cryptographic proof of reserves which can be easily verified by the client.

Today not only cryptocurrencies, but also different exchanges compete with each other for owning bigger market share. It is assumed that, the higher *trading turnover* exchanges have on a given trade, the more believed exchange is it on the market by investors. It can be utilized as an valuable indicator for analyse of exchanges in the market. Almost all of exchanges publish regular data about their financial conditions. Both the BTC versus USD and the BTC against other digital money *prices* can give a helpful thought regarding the market state at the given time. If the values are going up with huge volumes [25], it implies capital inflows to the market. In contrast,

25 This is called *pump* as crypto term

huge fall [26] in values of cryptocurrencies together with big trading volumes indicates the cash is run out from the market. These rules can be experienced both on the capital, commodity markets and on the cryptocurrency markets as well.

These exchanges charges so little fee (0-0.25 %) for each transaction from investors. However, cryptocurrency exchanges earn millions of US dollars from just *Listing* of coins by companies. There are some examples of main used cryptocurrency exchanges:

Binance- it costs up to 1 million USD for listing in this market. Its certified matching system processes 1 400 000 orders just per second and this feature makes Binance one of the fastest exchange in the world. The market where 122 coins are traded is second largest exchange because of bitcoin turnover (311 626 BTC per day). Additionally, being safe stability, high liquidity, performance activity and multiple coin support makes Binance is one of the competitive exchanges among its competitors.

Bitfinex is a market that gives propelled exchanging devices, for example, edge exchanging, short deals and liquidity swaps to purchase or offer *Bitcoins, Litecoins* and *Darkcoins*. Bitfinex was propelled in 2013 and inside a brief timeframe wound up one of the biggest trades regarding exchanging volume (USD). The stage is at present in a beta testing step and is hoping to include new and propelled highlights going ahead. The general population behind Bitfinex are extremely jumpy (as they call themselves) about the security issues. They store 99.5% of the advantages in chilly stockpiling and just 0.5% is in wallets to take into account advantageous stores and withdrawals.

Bitstamp- is Bitcoin based Slovenia exchange and founded by *Nejc Kodrič* and *Damian Merlak*. The trade offers exchanging utilizing limit orders where a pre-decided price can be set for purchase and offer requests. Bitstamp has

26 This is called *dump* as crypto term

earned a solid fame in the Bitcoin world because of its efficiency and transparency.

Cex.io- Set up in 2013 as the main cloud mining supplier, CEX.IO has turned into a multi-practical digital money trade, trusted by more than a million clients including me. Cex.io offers cross-stage exchanging opportunities by means of site, smartphone applications, WebSocket, giving access to high liquidity order-book for top money matches available. The trade has built up a multi-level record framework with singular way to deal with every client, from Bitcoin learners to professional traders . Overall scope, different payment alternatives, and every minute of every day bolster are joined by time-demonstrated stage steadiness that ensures security of funds and information.

Chapter 2. States. Corporations. Cryptocurrencies

2.1 The positions of states and corporations

It should be noted that banking and financial activity, which in many ways resemble activities carried out by participants in the crypto-currency market, have always been subject to specific regulation [27]. The regulation of works on in regards to the utilization of cryptocurrencies represent new problems for both States and international regulative organizations, such as IMF[28], FinCEN[29] given the new challenges appeared by this innovation. Cryptocurrencies are such kind of technologies which makes it relatively difficult to distinguish its clients. A few countries have issued data and regulation guidebooks on the usage of cryptocurrencies, but these activities don't give conclusive answers with respect to how this instrument ought to be

26 Yazbeck, 2007, page 179
27 International Monetary Fund
28 Financial Crimes Enforcement Network

dealt with and how organizations keen on their utilization ought to do as such yet.

Since there are no standards with respect to the usage of Cryptocurrencies in global trade, it is significant that governments and global organizations express their ideas attentively, because these virtual money types can be used by individuals and organizations as a medium of exchange in future. The maker of the Bitcoin framework [30] indicates that the budgetary framework in view of trust in financial operators is excessively delicate, uncovering society all in all to the dangers inalienable in such a domain, in this way, the digital money was made taking into account finish goal to accomplish an unmistakable objective: to advance disintermediation in the execution of business exchanges on the Internet (usage of a fiscal flexibility), that is, to make it feasible for merchants and purchasers to do their exchanges autonomously, without requiring monetary foundations, in a sheltered and quick way.

The cryptocurrency, plays out an indistinguishable capacity from the instruments typically used to encourage global trade in the cutting edge world. The effect produced by this new innovation originates from the way that virtual cash addresses the issues of present day business without being a piece of the managing an account arrangement. In a setting where there is clear lawful uncertainty and an absence of close regulation, we are looked with a high risk circumstance before figuring out which administrative procedure is proper for market, we should check what sort of market will be controlled, all things should be considered issue has been tended to in different wards.

29 Nakamoto (2009)

The investigation of digital currency payment regulation created by EFAA[31] in 2015. CFTC[32] has also weighed in with its view, stating in 2015 that Bitcoin and other cryptocurrencies are “commodities” [33].

In the BFAs[34], the digital money could be changed over openly into fiat money and the other way around, with no sort of obstacle in the execution of such transaction. For this situation, virtual monetary forms can be successfully used to purchase and offer products and enterprises. So as to keep away from any sort of speculation by members in the cryptocurrency showcase and to take all preferred advantages of the beneficial outcomes created by this new innovation, States should issue regulations regarding the matter, even with the goal that the negative impacts of the usage cryptocurrencies can cause in the economy and worldwide foundations, as delegates of the premiums of the satisfies, especially those keen on the modernization and harmonization of standards on global entrepreneurship , it must act so as to secure both the wellbeing of the economy and the market members.

Theoretically, the previously mentioned virtual cash plans (figure 7) could affect value dependability and national financial arrangement seeing that they could influence the interest rate of national bank through controlling of inflation and with the regulation of money supply with the helping of open market operations. That is from the minute a parallel coin begins to compete with the national currency of country, the usage of the compulsorily national cash is decreased and all the arranging completed by the administration organs to control the cash supply is lessened. When over, these administrations may influence price stability if:

30 European Financial and Administrative Authority
31 Commodity Futures Trading Commission
32 Commodity Exchange Act - section 1a(9)
33 Bidirectional Flow Arrangements

A- they considerably change the amount of cash available for use;
B-affect the speed of cash turnover, the calculation of fiat money in existence through money aggregates [35];
C-there is a connection between virtual monetary forms and the genuine economy;
This is the thing that occurred in China[36], virtual money presented by Tencent, one of the nation's best broadcast communications administrators. Individuals began utilizing credits issued by the organization, that could be exchanged for correspondence benefits, cash, what created the need of State intercession considering finish goal to forbid the training and implement the utilization of the state issued money.

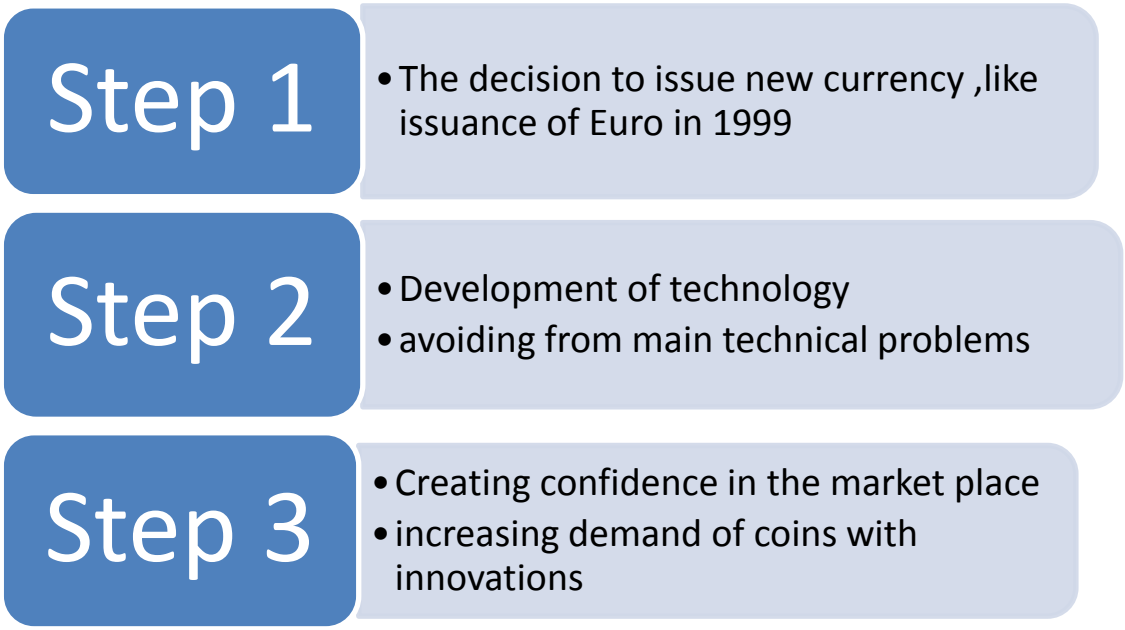


Figure 7. Implementation of cryptocurrency

Self-regulation is assumed an essential part in situations in which the State has not yet showed or experiences issues showing itself, this is the principle manner by which digital money has been accepted nearer globally. Self-

34 M1, M2, M3 and others
35 with the Q-coin case

regulation majorly affects the cryptographic money showcase as national administrative bodies have not yet issued applicable choices regarding the matter. In this way, keeping in mind final goal is to create more prominent, trustworthy market to the members by themselves. Such norms are essential with the goal that the utilization of digital currency winds up acknowledged and all over the world. As the cryptocurrencies, in despite of their extraordinary points of interest, don't have great trust by national and global bodies, organizations and individuals because of high volatility, being completely new technology and legal uncertainty. Additionally, can be used in tax evasion, financing terrorism and money laundering in a negative way. Firstly, each organization that participate as middle person or is associated with an exchange that makes usage of cryptocurrencies must have a consistence program and a cash laundering avoidance program, regardless of if these are not required by law or in contrast. The selection of a compelling consistence and tax evasion counteractive action arrangement significantly diminishes the likelihood of usage of cryptocurrencies for illicit exercises, which are mentioned above. This sort of market association can be accomplished locally, through the issuance of State or globally regulative acts, through the issuance of proposals by worldwide substances. The United States government presented Senate bill 1241. It tries to give the meaning of a monetary establishment to incorporate, "prepaid access gadgets, advanced monetary forms or any computerized exchanger or tumbler of computerized cash." Additionally, it criminalizes the purposeful take of proprietorship or control of records. These changes, could, thus, reinforce the control the central government has over computerized dollars. Bitcoin and different cryptocurrencies are not named a money, nor are they taxed thusly. As of now in the United States, the IRS[37], alongside most different countries,

36 Internal Revenue Service

subject cryptographic money ventures to capital additions tax, as it is considered "property." [38]

The execution of these computerized monetary standards isn't as far away as it appears – Russia as of late reported the issuance of the *CryptoRuble* in January, setting its place as one of the main advanced cash race among top countries. Furthermore, the FED[39] is preparing its special DLT[40], China has focused on creating and actualizing DLT too and Venezuela is hoping to release its own oil-based cryptographic money.

The execution of these advanced monetary forms will extraordinarily profit for enterprises, less spending cash and time with prompt operations. Moreover, not at all like regulations forced by the legislature to expand controls, the control of these advanced monetary forms will be taken by the FED and the advantage is with the partnership. Because the regulation of this market, securing it from unlawful transactions (money laundering ,drug trade, tax evasion and etc.) will be the most beneficial first for crypto entrepreneurs and exchanges in a long term.

Customers and different organizations are taking a gander at the fate of directing business in advanced currencies, however are giving careful consideration to evolving enactment, taxation and the making of computerized monetary forms by nations. Regardless of the movement, with the reception of computerized monetary forms, exchanges will be quick and safe. At present, banks works for the most part have two days to settle operations, a large number of which are done by hand. In any case, when the exchanges will be computerized, the days used to need to carry out transactions will be no more as now. As governments hope to use blockchain advancements to discharge computerized monetary forms, money related innovation suppliers are doing likewise to furnish enterprises with the product

37 www.coindesk.com
38 United States Federal Reserve
39 Distributed ledger technology

and procedures they have to stay aware of advanced cash exchanges. Eventually, enterprises need to work to viably oversee present and future money exposures at the quickened speed of advanced cash exchanges; this must be finished by utilizing end-to-end mechanization as far as budgetary procedures. On the off chance that one doesn't robotize and get ready for what is coming in 2018, they will be deserted and aggressive edges will be littler for the individuals who don't computerize the procedure.

Outstandingly, FinCEN issued direction in 2013 in regards to the treatment of people who utilize digital money or make a business of trading, accepting it as payment and transmitting with them. FinCEN took the situation in such direction that, contingent upon the sort and degree of exercises included, such people might be considered as MSBs[41] and needs be are required to agree to FinCEN's regulations that require keeping up a hostile to illegal tax avoidance, programme on anti-money laundering, in addition, meeting enrolment and different detailing requirements. FinCEN recognizes "*clients*" of digital currency who may utilize cryptocurrencies to buy products or pay for services and "*exchangers*" who organize trading of cryptocurrencies. These MSB rules are related with exchange owners, not with customers. Those individuals burning through cash to purchase merchandise and ventures are not subject to FinCEN's regulations, but a bank or other third people (brokers, dealers) who encouraging the trading of genuine cash, holding stores of genuine cash, and others are subjects to these regulations.

Convertible cryptocurrencies has to been taxed like property. It is noted that each taxpayers must account cryptocurrency firstly , then report gain or loss emerging from a trading of cryptocurrency for national currency or other alternative assets, such as gold, oil, silver etc. The notice provides that “if the fair market value of property received in an exchange for virtual currency exceeds the taxpayer’s adjusted basis of the virtual currency, the taxpayer

40 Money Service Businesses

has taxable *gain*," and correspondingly, "the taxpayer has a *loss* if the fair market value of the property received is less than the adjusted basis of the virtual currency"[42]. The IRS addresses the federal tax treatment of convertible cryptocurrency and states that, "for federal tax purposes, virtual currency is treated as *property* [43]. Most of the tax experts agree that considering convertible cryptocurrency as property income tax purposes is logical.
Involvement of Central Banks in the cryptocurrency industry is another major challenge. Large use of cryptocurrencies worries them, since it decreases their regulating opportunities to control money supply and keep under control inflation. Some believe that such central authority can stabilize cryptocurrencies and prevent a market crash, while most Central Banks try to avoid such assets due to them still being in development and current instability. Reputation and credibility are highly valued in Central Banks, whose independence is usually fragile. As a result, these institutions are usually very conservative when it comes to pioneering new ideas. Yet the question is not completely out of the table. There are examples of some countries:
Well-known commercial banks- *Bank of England* and *Riskbank of Sweden* are searching ways for launching their unique cryptocurrencies. An upside of digital currencies managed by central banks can directly inject the currency into the economy, rather than through financial sector, which would make monetary policy more effective. View of different central banks on digital currencies varies greatly.
-On September, vice president of ECB[44] Victor Constancio called Bitcoin an instrument for speculation and compared it to *tulip bulbs*, referring to the trading bubble of the Netherlands in 17th century.

41 www.coindesk.com
42 Commodity Exchange Act (page 25)
43 European Central Bank

-Bank of *Japan*, which is one of the friendliest countries to the cryptocurrencies, says that they are studying the situation, but the bank has no plan to create digital currencies in the near future.
-A major oppose to the cryptocurrencies is the central bank of *India*, which blamed cryptocurrencies as a channel for money laundering and financing terrorism. Use of digital currencies is a violation of law in India at the moment.
-Central bank of *Bolivia* has also opposed these currencies and banned the usage of Bitcoin and all altcoins that are not regulated by the government.
-Another South American country, *Ecuador* joined Bolivia in banning the Bitcoin 3 months later. *Kyrgyzstan, Bangladesh* and *Nepal* have also banned the use of the digital currencies.
-At the individual and technological levels, *Israel* is unsurprisingly leading country in Blockchain innovations (mainly start-ups) in the world. Taxation-wise, the Israeli government did not recognize it as a currency in 2017 as a base for taxation. This means that miners would have to pay 17% VAT (nobody mines here anyways) and they had have to pay 25% capital gains tax when sell it. They must report at the end of each month prepare monthly report and pay proper tax within next 30 days[45].

2.2 Future of blockchain in Azerbaijan

Today Azerbaijan is a part of global economy. Each new changing, innovation affects the country and its economy more or less, including cryptocurrencies. These virtual forms of money won the interest of public after pump of bitcoin in 2017 in Azerbaijan and it continues even today in a growing tendency. As a young, democratic republic, Azerbaijan is eager to apply the blockchain technology in different areas of both governmental and corporative industry and provide welfare of individuals and organizations. As a prove, Azerbaijan government has invested 60 million Azerbaijan manat to form mining farms in

44 Israeli news agency

the country. It shows that the country tries to not to miss benefits of innovation in financial industry.

Moreover, Azerbaijan is one of the countries which decided not to legitimate cryptocurrencies as a meaning of payment tool. The head of CBA[46], Mr. Rustamov stated that “the CBA does not recognize cryptocurrencies as a legitimate means of payment **.**CBA will monitor international trends in cryptocurrency and blockchain regulation before developing a regulatory framework for various distributed ledger technologies . The Central Bank intends to help in studying this technology and its future use in the financial and banking sector of Azerbaijan, and in the future in public services for the population. Therefore, we have already started negotiations with leading consulting companies. I think that at the first stage, we must create stable technological and legislative infrastructure, and then start introducing this technology [47] .Actually, this statement can be evaluated as hopeful for the first approach of government representative. Because expecting of accepting cryptocurrencies as medium of exchange in country suddenly is illogical and far from realism. Because it noted that, If there should be an occurrence of mishandle of natives' trust, by methods for making different "organizations" under the name of regulating virtual currency systems and electronic cash turnover are the acts which will be at risk for the appropriate articles of the Criminal Code of AR[48] with related to fraud. Preparing of legislature on the control of activities with digital currencies will make Azerbaijan one of the world pioneers in this area. The practitioner indicated that the CCEG[49] is eager to help the preparation of such legislation in Azerbaijan. While working on this law, there are 2 main issues in which the discussions go on around them. Firstly, the legislation will come into force for whom, whether

45 Central Bank of Republic of Azerbaijan
46 news.bitcoin.com “Azerbaijan rejects crypto as means of payment”
47 Republic of Azerbaijan
48 British Research Centre for Citizenship, Entreprise and Governance

investors or intermediaries. On the other hand, regulation of flow of foreign currencies is tricky issue for Azerbaijan. Because after 2015 devaluations the country is more sensitive about in these issues.

Recently, new platform is established in Azerbaijan by named BAC [50] which is founded by one the well-known IT specialist and head of AIF [51], Osman Gunduz. BAC will busy with research and development of blockchain technology in the country working altogether with finance and IT specialists. Main aim of platform is working on suggestions related with cryptocurrencies and blockchain, determining implementation areas, organizing trainings, seminars and consultations. BAC also plans to support companies or groups which intend to blockchain start-ups, getting funds through ICOs in the future.

AzCoin

On the other hand, Azerbaijan government plans to release first cryptocurrency of Azerbaijan – *AzCoin* and it is expected that this cryptocurrency will be part of Azerbaijan Republic financial-credit system. Fundamental purpose of AzCoin co-founders is to enhance the welfare of world countries in a globalization procedure, upgrading borderless and unhindered access to another epoch, making services easily and improving standard of living conditions. Making new borderless cash in Azerbaijan for minimizing Government costs, launching exchanges amongst local and worldwide base online systems, contemporary payment mechanism without support of third parties and to prepare youthful experts in the national computerized money are the fundamental vision for the State. The "AzCoin" is not a medium of exchange or option to the fiat money and coins at present utilized, and can't be utilized as an payment tool until formally approved by the Authorities. At the same time it is noted by our legislature that “The

49 Blockchain Azerbaijan Centre
50 Azerbaijan Internet Forum

circulation process of monetary currency is the only part of the functions of the Central Bank “. [52]

The "AzCoin" will be considered the part of new payment instrument soon . Up to this time, phones, manual adding machines, printing machines have been utilized as a part of the world, however, now they all changed to smartphones, scientific calculators, laptops and these sorts of different gadgets developed so quickly that demonstrated the coming time of electronic cash. The "AzCoin" framework is right now being created as a pilot project and is furnished with algorithmic grouping, and additionally other basic specialized help components will empower it to be actualized later on. Being first state-backed cryptocurrency among CIS[53] is predicted for AzCoin, as well. At present, its system works like a pilot project and AzCoin is one of the first stages of its development. In contrast to other digital forms of money the "AzCoin" is a piece of a budgetary arrangement of the State, which is the e-payment device between citizens (buyers and sellers) that manage because of government act . This project will encircle various sectors and all regions of Azerbaijan. The process of releasing AzCoin missed the launching deadline[54], because of not having legal act in this context. However, it is expected that, this state-backed cryptocurrency will continue to be launched in public of Azerbaijan and the whole world.

2.3 Future fate of cryptocurrencies

There are 4 possible scenarios can happen in cryptocurrency market:

- The FED and other most central banks could release their own state-based cryptocurrencies;

51 Law about Central Bank
52 Commonwealth of Independent States
53 24.10.2017

- Large organizations, for example, Amazon, Walmart and Starbucks may issue advanced coins that motivate trust and increase wide usage by public;
- Main retailers will start to accept cryptocurrencies as payments in their transactions and usage of coins on a daily life will be massive;
- The worst one for governments: if trust is lost in government-based, or fiat, monetary standards, a cryptocurrency will come into force. That might be a hazard in places like Venezuela, as well as in the U.S., where budget deficit is huge;

International Monetary Fund director Christine Lagarde predicted last fall. "Virtual currencies might just give existing currencies and monetary policy a run for their money. Citizens may one day prefer virtual currencies, since they potentially offer the same cost and convenience as cash — no settlement risks, no clearing delays, no central registration, no intermediary to check accounts and identities," she said.[55]

On the off chance that a cryptocurrency went about as a dependable, generally acknowledged store of significant worth, individuals could stop their connections to their banks. The future of coins will rely vigorously on the government. It is forecasted that blockchain technology will impact on banking sector significantly. They will lose money transferring, storage and other similar services which can be done through cryptocurrencies. But it is undeniable fact commercial banks will remain in financial industry for a long time.

JPMorgan Chase, Bank of America and Citigroup restricted buys of digital forms of money. In the interim, the SEC and remote governments have taken action against introductory coin contributions. What's more, recently, *Alphabet ,Facebook* and *Twitter* have prohibited cryptocurrency

54 IMF publication

advertisements [56]. Everything began before the end of last year, as the market started an exceptional spike in cryptocurrency esteem that in the long run prompted an aggregate market capitalisation of over $830bn toward the beginning of January. Early financial specialists were riding high, and the increases appeared to be boundless. Since that time, the market has returned to earth, losing billions of dollars of significant worth all the while. At the season of this composition, the aggregate cryptocurrency showcase capitalisation remains at simply finished $430bn. These decisions can be evaluated in two forms: firstly, on average prices of coins lost their values and capitalization of market reduced for a short term. Secondly, this decision is mainly for ICO news of companies which cheat consumers with fake information, as a result, trust for cryptocurrencies decreases. That is why, these decisions can be appreciated better for this sphere in a long term. Deutsche Bank worldwide credit strategist Jim Reid put this stunning feature on a November report: *"The Start of the End of Fiat Money*?" Reid contended high obligation levels will keep the Fed and other national banks excessively accommodative, putting fiat monetary forms in danger [57]. We should not forget that virtual forms of cash are a generally youthful advancement. It needs corrections and giving definition to terms of it on legislature.

For predicting where the cryptocurrencies are going, it's important to take a look through where the market has been recently, yet additionally how it touched base there. While the reasons for the brilliant ascent in cryptocurrency costs toward the end of last year are far from being obviously true, an accord has conformed to two variables – *media* factor and *permission on trading bitcoin futures in US stock exchanges*. High growth speed of prices of bitcoin won the interest of people who are eager to earn easy money through speculation. However, most of them even do not know

55 www.bloomberg.com

56 www.investors.com

the essence of this technology- *blockchain.* Another issue of late is extremely high volatility of these money standards. The instrument which has monthly volatility more than 50% can not be national currency of any country. Because it can cause collapse of financial system of each country, even US, EU and Japan.

To sum up, bitcoin and different digital forms of money enhance versatility and comfort so maybe later on one of these cryptographic forms of money could sensibly compete with current medium of exchanges. The more people or institutions believe in future of cryptocurrencies, the quicker will be improvement of this technology.

Conclusion and suggestions

Finishing the thesis I would like to summarize all main concepts mentioned previous parts and give some suggestions for future development of this area. As mentioned in introduction, the main purpose of the research was finding answer the question whether must cryptocurrencies be considered as means of payment, property or investment tool? Each possible scenario is discussed and final result was that accepting cryptocurrencies financial intangible asset for the first time by legislative authorities of states. Because high volatility, risk circumstances and lack of hedge funds ignoring other choices. Additionally, blockchain technology is so wide that, its scope is not only limited with cryptocurrencies, it is applied so many sectors with ignoring third parties, double costs and providing transparency. For instance, African country- Sierra Leone carried out blockchain- based elections in 2018 [58]. At the same time, it is started to execute this technology in health, music and tourism industry successfully.

There are some suggestions here which can be helpful for improving this sector in Azerbaijan and in the world totally**:**

- Firstly, definition of all cryptocurrency terms should be presented in legislative acts of all countries;
- It's suggested to recognize this virtual currencies as an asset (property) for the first time officially, this will increase trust by people;
- Taxation issues should be solved as basis of gain/loss from trading commodities;

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- For this purposes, cryptocurrency exchanges ought to be registered on government authorities and linked with them. If this is provided, calculating total turnover, market capitalization will be possible;
- On the other hand, personnel datas of exchange customers should be sent to state security and international investigation (FinCEN) organizations for avoiding from money laundering, tax evasion and financing terrorism;
- ICOs can be accepted as an alternative to IPOs[59] to fund projects of companies, their whitepapers are equivalent to traditional emission prospectuses. The number of discussions, trainings with corporative organizations must be increased;
- User safety can be enhanced by implementing educational programs for citizens about the features of cryptocurrencies and their misuse, at the same time, advantages of blockchain technology is shown to people;
- Advertisements which is consist of fraud, cheating content have to be banned not only in social network, but also from mass media;
- In Azerbaijan case, the first step is preparing and coming into force of legislation about cryptocurrencies, then launching AzCoin in cryptocurrency market as a first state-backed coin in the world;
- The government can attract huge mining companies to Azerbaijan with offering tax exemptions to them, Georgia experience can be learned. Because electricity prices is lower than average world price and climate is suitable for it. This measure can convert Azerbaijan hub of "black gold" [60] to "virtual gold" centre;

In conclusion, the cryptocurrency market looks like new discovered island, which ones are adapted new rules, they will be permanent residents of it.

59 Initial Purchasing Offers
60 Azerbaijan oil is known as black gold

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