**Blockchain**

Miran Ražnatović

Faculty of Information Technologies,

University “Džemal Bijedić”, Mostar, B&H

[miran.raznatovic@edu.fit.ba](mailto:miran.raznatovic@edu.fit.ba)

[miranraznatovic@gmail.com](mailto:miranraznatovic@gmail.com)

***Abstract* — Blockchain is the technology, first heard about in 2008. It is said that the man or the group named “Satoshi Nakamoto” which remains unknown to this day. It was first implemented in 2009. This is the tecnknology that is mostly linked with Bitcoin. To this day Bitcoin is the biggest user of this technology. What is known about this cryptographic decentralised technology is that it is on the rise where some say that the future is bright for Blockchain others say that it is not to be trusted.**

***Keywords*** — Blockchain, Bitcoin, Cryptocurrencies, Decentralization, Transparancy

# **I INTRODUCTION**

# ***„Blockchain is as signifiacant now as the Internet was 25 years ago“*** (Thomas Reuters)[[1]](#footnote-1)

The easiest way to describe blockchain is using our knowledge based on databases. Blockchain is the database that holds “database of records” or “public ledger of all transactions or digital events” which are actually shared and worked on among the people inside the system or so called “Participating parties”. The transactions are verified by the people or participants in the system where majority rules. Most interesting thing about the Blockchain system is once we upload any information it can never be deleted. The system has a trail of every information that was ever inside, “ record of every transaction ever made“. The analogy used is of “a cookie jar” meaning that you can steal information from a hidden and secure place but, with blockchain you are actually “being observed by thousands of people.“.[1]

Basically blockchain is a type of database, but the main difference is the way it's structured.

The technology of blockchain is keeping the databases of groups, or so called “blocks”. The “blocks” are limited with storage capacity and when the storage room runs out, or the “block” is filed, they get “chained onto the previously filled block“. Using this system “blocks” are formed in “chains “, thus the name “Blockchain”. New data and information is always formed this way and the recursion keeps repeating and “blocks” are being added to the “chain”. [2]

„Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.“ [3]

A picture containing diagram

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*Figure 1 : How Blockchain Works*

Diagram

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Figure 2:Blockchain Diagram: Here’s a basic architectural representation of a blockchain

# **II** **Bitcoin**

***“Blockchain is the tech. Bitcoin is merely the first mainstream manifestation of its potential.”*** (Mark Kenigsburg)[[2]](#footnote-2)

A man or a group of people named “Satoshi Nakamoto” released a research paper back in 2008. This was the first time that term “block chain” technology was mentioned. “Satoshi Nakamoto” metioned, now the worlds most famous digital cryptocurency - Bitcon, for the first time and It was “using new peer to peer financial system”. Due to the 2008 market crash, people were not delighted the system of “centralized banks“ which were controlling all the finances. They decided to try the new decentralized “block chain” system, which later grew into on word - “Blockchain”. The best thing about the system, which everyone loved, was that there was no “middle man” in any type of transactions. The two parties were the only ones involved in the financial exchange of any tipe.[4]

Bitcoin got “on the market” in 2009 when it was actually worth 0$, in 2010 “Bitcoin's price never topped $1” and the price was just 0.39$. [17]

In little more than 10 years of its existing, it became the most widely used cryptocurrency with its following growing each day. In recent years it has seen the biggest value growth. In 2017 the price skyrocketed to 19.783,21$ per “coin”. [4]

The author or the authors of the paper, named “Satoshi Nakamoto” chose to and still remain anonymous to this day.

Few months after the paper was released, an open source program was released “that began with the Genesis block of 50 coins”, where it was given to anyone on their free will to install the program and give the new decentralized “peer-to-peer network” a chance. With bitcoin becoming more popular, we can tell that the plan worked. [1]

Mark Kenigsburg said : „Blockchain is the driving force behind all of this, an entire industry. Bitcoin was the very first example of what blockchain technology can do, it’s a true manifestation of a technology that not only creates its own money, it’s a technology that has created a cultural movement and a technological revolution.“[5]

Graphical user interface, chart, application, table, Excel

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Figure 3: Bitcoin price: Would you have bought Bitcoin at this point?

A. The Dark Side

With acknowledging the new decentralized system, where the two people could “transfer funds” with no middle-man, the only barrier was ones ethics. Very quickly as in all things new, people on the other side of the law saw an opportunity. Because of the “anonymous nature of decentralized blockchains and the cryptocurrencies that rely on them” they became the “preferred financial instrument” for everyone that wanted to engage in any type of criminal activity.

Soon after, the new “dark websites” started taking place in the web. They are not easy to find on the web we know and require special knowledge to get to them. On the “Dark web” there are endless opportunities to engage in all criminal activities of any kind, buy any type of weapons, even the 3D models for printing your own guns, fund terrorist organisation, drugs, torture and even order the assasinations. These sites are still active to this day.[8]

There are three biggest issues that are linked to the Bitcoin and all of them are based on the fear of getting into supporting something that is very much linked to a lot of illegal activities.

1. First one is that the “potential legitimate investor” would not want to engage in any type of bussines that has any type or kind of illegal activities linked to their name. And bitcoin is too diverse.
2. Second reason is that some countries made cryptocurrencies illegal or have limited their use which does not sit well with the market which corresponds to “preventing market growth”.
3. Third one is that of “lack of regulation in this market” which as said is used to support illegal activities and think that centralised systems are better then decentralized.

Diagram, venn diagram

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Figure 4: Countries where Bitcoin is illegal

“The digital currency market is one of the largest unregulated markets in the world, with about 2,000 different currencies worth about $250 billion and a daily turnover of $60 billion. The best-known digital currency, Bitcoin (BTC), is also the most popular with a higher market value than all other digital currencies combined.” [6]

Chart, line chart

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Figure 5: Estimated percentage of illegal bitcoin users

The percentage of illegal bitcoin users has started to decrease.

# **III** **Decentralization**

The banks as I mentioned have a centralized type system, while with blockchain “decentralization refers to the transfer of control and decision-making from a centralized entity” independent from any form of needing the middleman for any type of interaction which can create a bigger independent network. With the decentralized system the goal is to increase the trust between the two parties and disclude the imposed “authority or control over one another”. [7]

Diagram

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Figure 6: Centralized and Decentralizes systems

# A.Advantages and Disadvantages

[8] Some of the advantages of decentralization are :

1. Fraud Prevention,

2. Protection from Government Meddling,

3. Faster Transaction Times,

4. Increased Financial Efficiency and

5. Effective Store of Value

And the disadvantages are

1. Crime,

2. Volatility and

3. Storage issues

[9] says that there are two category decisions in making a blockchain system.

Protocol – level decisions and

Mining – level decisions.

Protocol – level decisions are “the ones that are automatically made by the set of protocols implemented in the client software.”,

and Mining – level decisions are “the decisions that cannot be made by the blockchain protocols and are related to how a new block can be constructed.”

He concludes that - “Both of them are critical to the security, stability and operability of a blockchain system.”

Diagram

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Figure 7: Blockchain in e-learning

# **IV** **Transparency**

***„Trust is like the air we breathe—when it’s present, nobody really notices. When it’s absent, everyone notices.“*** (Warren Buffet) [[3]](#footnote-3)

As said with the cookie jar analogy [1] everything is in “public eye” and in “plain sight”.

That is with the “concept of shared ledgers” that has made a hiding or counterfeiting the transaction almost impossible. Everything is public, logging, storing a ledger “maintained by public consensus” and with an “immutable digital signature“.

That’s what makes the blockchain one of the most transparent systems. [10]

And it is noted that this has a potential to assure security in new ways, and that the system which is designed on the blockchain include a public data record of any data tampered with. All of that would help with stopping manipulation and hacking. [10]

„To be clear, blockchain-based applications do not typically require that private data or content is exposed for everyone to see; rather, the transactions involving that data are public. In one sense, I believe it's the transparency of the blockchain that enables privacy and security“

To distance themselft, from the blockchain transparancy being able to get all the data and informations, it’s said that the it’s not typicall to share or expose the “private data or content” [10]

[11] The blockchain technology has a possibility of usage in some of the parts in all the governments in the world. And with the transparancy as a possiblity, some of the branches that can benefit are:

1. Accounting
2. Elections
3. Storing ID records
4. Having provable fairness

Another famous cryptocurrency that has gained fame is Ether. Ether is the nativ cryptocurrency token of the Ethereum. Ethereum offers smart contracts functionality, and without transparency it could not be implemented. It’s main purpose is to make any transaction between the two parties that don’t know each other and/or don’t trust eachother possible without trouble.

[16] With growth of decentralizationised blockchain technology, financial departments may decide to choose this system due to the transparancy for easier way of crime detection.

A.The Benefits

Efficiency – Transparancy embedded in the blockchain technology helps a lot to the employers where they are free of “the need for multiple levels of manual checking“ which results with time efficency and saving money. “It automatically broadcasts each transaction to trusted users within the network, and a timestamp is forged when any changes or alterations are made.”

Compliance – With blockchain technology, as said before, nothing gets deleted, it makes it perfect in situations “of record keeping for financial transactions”. ”Audit trail” is always available. Implementing this can significantly improve and “strengthen organizations compliance position.”

Confidence – in the future through blockchain technology it will be difficult for criminals and “would-be fraudsters” to use. This, along with the transparancy, will increase its usage and widen the market. [16]

# **V** **Blockchain Future**

With blockchain technology it’s main funcionality of “faster and more secure payment and transaction system” has got the banks and the centralized system of banking on thin ice. Most people would gladly choose to pull their own strings when it comes to their finances. But others “point out that the unstable value of cryptocurrencies” is not to be trusted like stock market, and its growth can only be speculated. They think that the reality is somewhere between these two positions where cryptocurrencies can help improve some “useful functions” and improve value of economy and it can still remain “highly unstable”. They add that it can possibly help in the future, and It can help scholars to further their knowledge and can be used in “studying and shaping the market in the future”. With this method there is a possibility for criptocurrencies to evolve and eventialy become different from what we know them today. But first we need to learn how to use this technology.[12]

[13] lists some firms using blockchain that may be the new trendsetters. One of them is “Axoni, which just launched a new equity swaps platform with Goldman Sachs and Citigroup as early users, Coinbase, which is focusing on institutional investors, and Ripple, the payments company whose founders created the XRP cryptocurrency, now being used in 10% of Moneygram transactions from the U.S. to Mexico.”

Another one is Chainalysis which started as a tool for helping track down crime using blockchain technology, in 2018 they presented “the product that helps financial institutions comply with know your customer and anti-money laundering rules” based on cryptocurrencies. Another one is Everledger which was developed for tracking “raw materials source”. They begane with diamonds, to make sure they are not coming from illegal areas and illegal mining. They have now expanded and have a contract with U.S Department of Energy for tracking cobalt.[13]

The cryptocurrencies are currently on the rise, as of 2017 when Bitcoin price jumpet to all time high of 20.000$, and the Initial Coin Offering(ICO) had an average return of over 10x and it has “surpassed the traditional” Venture Capital(VC) funds.

[14] Some bitcoin enthusiasts predict that by 2030 all government currencies are “inevitably crypto”. With stating that old-school ways like fiat alternative are inevitable to be replaced by cryptocurrencies, where “cryptocurrency is more efficient, provides reduced settlement times, and offers increased traceability.” [14] notes that many of the governments with high inflation will turn to Bitcoin. Current situation in Zimbabwe, with Zimbabwe dollar, which has a issue with ” staggering inflation of 500,000,000,000%” and a lot of citizens had already turned to Bitcoin instead of trying to fix the issue with their currency. Current value of Zimbabwe dollar(ZWD) is very high with 1USD equaling to 361.900ZWD.

The biggest predicition that everyone is noting is that in the future, when we become masters in this technology and everyone learns it, that its inevitable to be a success and the newer genereations to come will fix all the issues with current limitation like “scalability, privacy controls, toolset maturity, and interoperability.”

“Governments that have failed to create a successful cryptocurrency will turn to “stable coins” as their virtual currency of choice.”[14]

These are the possible usages of blockchain within the insurance industry:

“1. Blockchain ensures integrity of personal information, offering full control to the insurer.

2. Blockchain enhances trust among all parties involved in an insurance contract or claim.

3. Smart contracts enable transparency in claims management. At the time of submission, blockchain checks the validity of the claims.

4. Blockchain helps detect and prevent fraud.

5. Blockchain can help develop efficient actuarial models, based on the most updated information.

6.Blockchain reduces operational cost by automating insurance processes. ” [15]

[14] also boldly claims that todays top firms in the world that were built with “brick-and-mortar” , such like Google, Amazon, Apple, Microsoft etc. will “in the future blockchain era, trillion-dollar firms will be replaced by trillion-dollar tokens — tokens that support a decentralized ecosystem of entities that together fulfill the role of the mega corporation. “

# **VI Conclusion**

Just like all things that come over night and get big fast, this can possibly be the next biggest thing or one of the biggest flops in tech industry since the Dot-com bubble. Currenty it has potential to do great things and help a lot of people and poor countries, but with its growth not being linked to something concrete it’s currently not the best market to be in, and the current widely spred illegal activities doesn’t actually display a better picture for its growth. Blockchain technology maybe has a potential to prevent crime, help bring decentralization and transparency to new level without espionage and information gathering. If it solves one of its biggest problems like current crime rate and cryptocurrency usage in illegal activities, it can become so widely used and helpful.“

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