I.T Technologies

Cryptocurrency (hoang)

What does it do?

Cryptocurrency is digital and/or virtual currency used online and through digital means. There are many types of cryptocurrency. The most popular of which is known as Bitcoin.

However, there are other types such as Ethereum, Tether and even the social media company, Facebook, is working on its own currency called Libra.

Cryptocurrency, specifically Bitcoin is decentralised by design, meaning no one individual or company is in charge of or overseas bitcoin, but rather it transmits its data and information through decentralised peer-to-peer transmission.

 Bitcoin is acquired through buying it on an exchange using “real money” (cash), earning it as means of payment in substitution for “real money” or earning it through a process called “data mining”. Transactions are verified by nodes spread across all over the world to validate its authenticity as a transaction. Transactions are then placed into a “block” which has a file size of 1mb. Blocks can have as little as 1 transaction (unlikely) or upwards of thousands of transactions. Transactions and blocks are verified through a 64-digit hexadecimal code, known as a “hash”. An example of a hash is: 0000000000000000057fcc708cf0130d95e27c5819203e9f967ac56e4df598ee. Blocks are verified by their hash as it verifies the block prior and uses a code that has never been used before. This verification process is put in place to prevent users from “double spending” (double spending is where users spend the same token twice). If a hash has been used in a prior transaction, it is then declined as a valid transaction.

 Data mining is a process in which individuals or groups of individuals use powerful computing machines to verify Bitcoin transactions and as a result are (at the time of writing) rewarded with 12.5 bitcoins. Data miners use their computers to have unlimited guesses at getting the right hash code and verifying a block, miners are typically rewarded with bitcoins. At the time of writing, the reward for finishing a block is 12.5 bitcoins, but every 4 years, the reward is halved. Sometime in May 2020, the reward for finishing a block will be halved to 6.25 bitcoins. The reward is “halved for every 210,000 blocks, or an average of 4 years” [Investopedia]. Bitcoin mining difficulty is also dependent on the number of miners that are present. More miners means the difficulty ramps up and less miners means the difficulty obviously decreases. Currently, the chances of mining a block’s hash is roughly one in 13.69 trillion.

 The process of block chaining is more secure against hackers as a result of being a decentralized system. Information is not kept in one centralised location or server like traditional payments like Visa or Mastercard, but rather an unknown number of nodes across the globe. These nodes take blocks of information and they all verify said block to ensure its validity to prevent fraud or hackers. It's almost impossible for any one individual or group or individuals to take down all or most of the nodes as they are all scattered worldwide. Transactions are also near impossible to hack or become compromised as each transaction generates a hash that also depends on the previous transactions hash as well. Nodes inspect these hashes to make sure nothing has been changed. If a transaction is approved by majority of the nodes it is put into a blockchain which also depends and references the previous blockchain. Blockchains also update every 10 minutes meaning that a specific blockchain references a blockchain prior to itself and is then referenced in the following blockchain. This referencing system makes it incredibly difficult to hack, compromise or otherwise alter. The drawback of blockchains is that they possess very little data. One block contains only 1mb of information.

## Impacts within society

With so many companies using centralised information servers to hold their information, hackers can access a plethora of information if they are able to hack through a company's firewalls and defences. On the topic of currencies, major financial services ‘Mastercard’ and ‘visa’ store their information in a centralised location/server. The benefit of this being that there is a higher storage capacity with traditional servers. However, Blockchains promote better privacy compared to the two major finance services. While blockchains are decentralised, information stored and used by such chains is not owned by any company. While a transaction made by a Masercard can often be transferred to the United States into a server, transactions and information generated with bitcoin is added into a blockchain through hash functions and timestamps, thus a centralised datapoint is no longer used and hackers have a harder job at infiltrating information.

Blockchains design in which each block references the previous makes it very difficult for hackers to tamper with or otherwise compromise information and data. In an article by the Washington Times, ‘The Pentagon’ in 2017 started trialling the blockchain technology for its own security and cyber defences. Block chain technology is a much more secure and safe method of data transfer and the implementation of which in more parts and sectors of the world would make hackers ability to infiltrate information much more difficult.

Cryptocurrency could theoretically make a much more universal form of currency across the world. Although it difficult to imagine a world where the main form of currency is crypto, it is being implemented and adopted by more companies and businesses. As more and more sectors adopt the method, transactions and their respective currency becomes more universal with the use of crypto and removes the need for conversion rates within transactions and makes international trade much easier.

With the ability to earn money through data mining, many people are adopting the method to earning their income. From individuals with their computers at home to full blown server warehouses dedicated to mining 24/7.

In day to day life, more and more companies and even small businesses now accept bitcoin as an official form of payment for goods and services. If crypto were to be more heavily implemented in day to day life, our information and data would be more secure using blockchains.

However, as it currently stands, much of the public do not know about or fully understand blockchains and cryptocurrency. Although its gaining popularity, it is unlikely that it will replace the worlds current cash currency anytime in the near future. However, those who do use cryptocurrency can experience the benefits of better security, easier international trade and make transactions without transaction fees.

Cryptocurrency also allows people to invest in it to turn a profit from buying and selling currencies. In its earliest stages, bitcoin was as cheap as a few hundred dollars (USD) and at its highest peak reached around $13,860USD in December 2017. Many individuals capitalised on its rapid popularity and were able to turn a massive profit by selling their bitcoin at its peaks.

REFERENCES:

COINTELEGRAPH, n/a, *‘How blockchain technology works. Guide for beginners’* , viewed 21st April 2020, <<https://cointelegraph.com/bitcoin-for-beginners/how-blockchain-technology-works-guide-for-beginners>>

Hong, E, 2020, Investopedia, *‘how does bitcoin mining work?’,* viewed 21st April 2020, <<https://www.investopedia.com/tech/how-does-bitcoin-mining-work/>>

Rudden. J, 2020, statista, ‘*Bitcoin price index from July 2012 to march 2020’* , Viewed 22nd April 2020, <<https://www.statista.com/statistics/326707/bitcoin-price-index/>>

Boylan.D, 2017, Washington Times, *‘Pentagon eyes bitcoin blockchain technology as cybersecurity shield ‘,* Viewed 24th April 2020, <<https://www.washingtontimes.com/news/2017/aug/17/pentagon-eyes-bitcoin-blockchain-technology-as-cyb/>>

Gazdecki. A, 2018, Forbes, ‘*Five ways blockchain could change the world’*, Viewed 24th April 2020, <<https://www.forbes.com/sites/forbestechcouncil/2018/09/07/five-ways-blockchain-could-change-the-world/#4332c5e373d7>>

Joshi.N, 2018, Allerin, *‘4 Benefits of using blockchain over traditional data security technologies’* Viewed 24th April 2020, <<https://www.allerin.com/blog/4-benefits-of-using-blockchain-over-traditional-data-security-technologies>>

Mastercard, 2020, Matercard, *‘Mastercard-Global Privacy Notice*’, Viewed 24th April 2020, <<https://www.mastercard.com.au/en-au/about-mastercard/what-we-do/privacy.html>>