

## **CRYPTOCURRENCY: A COMPARATIVE STUDY**

Medhansh Choubey

Shaheed Rajpal Dav Public School, Dayanand Vihar, Delhi

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### **ABSTRACT**

This paper covers the emerging rise of a virtual currency, Cryptocurrency, which is fast gaining popularity amongst investors. Virtual currencies like Cryptocurrency provide a gateway for decentralised finance. There are many types of Cryptocurrencies, for instance, Bitcoin, Litecoin, Ethereum, Dash, Zcash, Ripple. This paper explores how they function through blockchain technology, how investors have control over them and non-fungible tokens. Non-Fungible Tokens are being used to sell digital art and trade goods in contemporary times. Decentralisation is the singular most important reason why bitcoin is nearly impossible to kill.

**Keywords:** Finance, Virtual Currency, Cryptocurrency, Blockchain, Decentralisation, Investing

### **Introduction**

Cryptocurrency is a hot topic in the current times. Virtual currency did exist earlier but it has gained newfound importance now. Cryptocurrency is a type of currency which uses digital files as money. It is decentralised. This means that no entity controls it. It's secured by cryptography which makes it next to impossible to counterfeit or double spend. Popular examples of cryptocurrency are Bitcoin or Ethereum.

Many cryptocurrencies are decentralized networks based on blockchain technology. Blockchain is a ledger database, or record-keeping technology. These blockchains keep track of the existence of cryptocurrencies. It stores information differently than a typical database. Blockchains store data in blocks, and chain them together. When that block is filled up with data, it's chained onto the previous block. So it stores the information chronologically, or in the right order. Since it's decentralized, no one person or group has control over it, but rather all users collectively retain control. The data entered into blockchains is permanent and irreversible. For cryptocurrencies, this means transactions are permanently recorded and anyone can view it.

Cryptocurrency is both legal and secure. Since cryptocurrencies are usually built on blockchain

technology and these blockchains are decentralized, the information is added chronologically and it's very difficult to alter the contents of a block unless the whole group agrees. Each block contains its own "hash," which is a math function made of letters and numbers, a timestamp, and hash of the block before it. If any data were to change inside the block, the hash would change, too. For instance, if a hacker tried to change the blockchain, and changed a single data block, it wouldn't align with everyone else's copy. Everyone else could cross-reference their own copies with each other, and would easily see it's fraudulent.

Cryptocurrencies face criticism for a few reasons, including illegal uses, exchange rate volatility, and infrastructure vulnerabilities. On the flip side, it receives credit for its portability, divisibility, inflation resistance, and transparency. Overall, it's important to look at cryptocurrency laws per country for specific information. Taking Bitcoin for example, it was legal in February 2020 in the United States, Japan, the U.K., and most developed countries. In the U.S., the Internal Revenue Service (IRS) refers to cryptocurrency as "virtual currency," and issued guidelines for taxpayers. The IRS also states virtual currency transactions are taxable by law just like transactions in any other property. Taxpayers transacting in virtual currency may have to report those transactions on their tax returns.

## **Background**

### **Where Did Cryptocurrencies Come From?**

Cryptocurrency existed as an ideal way before any of the technology existed to build it. Crypto's technical start dates back to the 1980's. An American cryptographer named David Chaum invented an algorithm that web-based encryption uses today. The "blinding" algorithm provided secure, unalterable information to exchange between users. This paved the beginning of electronic currency transfers.

As the years progressed and electronic payment transfers evolved, a 2008 white paper published by Satoshi Nakamoto described the first modern cryptocurrency – bitcoin. In early 2009, Nakamoto released Bitcoin to the public. By 2010, other cryptocurrencies started appearing, as well as the first public trading of bitcoin.

The field of cryptocurrencies is expanding. In early 2021, more than 4,000 cryptocurrencies existed. Many different types of cryptocurrencies exist for different types of investors, as well as business and trading needs. For example, some cryptos may offer a faster transaction confirmation time, or provide solutions for blockchains to work together easier.

### **Types of Cryptocurrencies**

Cryptocurrencies like Bitcoin and Ethereum have a growing track record of holding and increasing in value over time, though recent dips have wracked the market, while lesser-known cryptos are considered much more speculative and unpredictable. PutinCoin and Whoppercoin belong to a category of cryptocurrencies marked more for their absurdity than their potential as either an investment or cryptocurrency, they are evidence of how unique different types of cryptocurrencies can be. There are many types of cryptocurrencies and they all use a different technology along with separate approaches to trading using digital currency.

### **Bitcoin**

The first cryptocurrency to emerge was Bitcoin (BTC), it is based on the SHA-256 algorithm. This digital commodity was conceptualized in a whitepaper written in 2009 by a pseudonymous writer who went by the name Satoshi Nakamoto. Over the span of Bitcoin's first four decades, the market cost of one Bitcoin has shrunk from under \$0.01USD to over \$250USD. The highly volatile cost has generated Bitcoin an attractive investment choice for dealers trying to profit from market speculation, while at the exact same time the industry volatility has made long term investors and daily users hesitant to participate for lengthy amounts of time.

A single Bitcoin can be spent in fractional increments that can be as small as 0.00000001 BTC per transaction. The smallest increment of a Bitcoin is popularly known as a Satoshi, named after the original whitepaper author. The protocol allows for incremental trades in the event the value of BTC rises to the point at which micro trades will become commonplace. The gain in the value of BTC is expected because there's a limitation to the amount of Bitcoin that will ever be created. When the Bitcoin blockchain is finished, users can simply circulate the coin that still exists in the community.

Bitcoin is currently the most reliable of all Cryptocurrencies, as it is the oldest, and has become the topic of mainstream media coverage because of rapid market changes and also an innovative technical concept. At the time of writing, Bitcoin could be interpreted as being the 'gold standard' of cryptocurrency since all alternate cryptocurrency market costs are matched into the price of BTC.

### **Litecoin**

Litecoin (LTC) makes use of the Scrypt encryption algorithm, as opposed to SHA-256. One of the goals of Litecoin would be to have transactions confirmed at a faster speed compared to the Bitcoin network, as well as make use of an algorithm that has been resistant to accelerated hardware mining technologies like ASIC.

The entire amount of Litecoin that's available for mining and circulation is four times the quantity of Bitcoin, meaning there will be quadruple the quantity of Litecoin accessible to Bitcoin. Litecoin was recently used to perform a cross chain atomic swap which allows users to swap cryptocurrencies directly through the use of a smart contract and without the need for a third party such as an exchange.

### **Ethereum**

Ethereum is a platform that enables smart contracts and distributed applications (DApps) to be built and operate with no downtime, fraud, interference or control from a third party. Throughout 2014, Ethereum had established a pre-sale for ether that had obtained an overwhelming response. The applications on Ethereum are conducted on its own platform- specific cryptographic token, Ether. Ether is similar to a vehicle for moving around on the Ethereum system, and is sought by mostly developers seeking to develop and operate programs inside Ethereum. According to Ethereum, it can be employed to "codify, decentralize, trade and secure just about anything." Following the attack on the DAO in 2016, Ethereum was split into Ethereum (ETH) and also Ethereum Classic (ETC). Ethereum (ETH) has a market capitalization of \$4.46 billion, second after Bitcoin among all cryptocurrencies.

### **Zcash**

A decentralized and open-source cryptocurrency launched in the second part of 2016, and it really looks promising. Zcash offers privacy and discerning transparency of trades. Thus, Zcash claims to give extra privacy or security where all transactions are recorded and printed within a blockchain, but details such as the sender, recipient, and amount stay private. Zcash offers its users the option of 'shielded' transactions, which allow for content to be encrypted using advanced cryptographic procedure or zero-knowledge proof structure called a zk-SNARK developed by its team.

### **Dash**

Dash (originally known as Darkcoin) is a more secretive variant of Bitcoin. Dash offers more anonymity as it functions on a decentralized mastercode system which produces transactions almost untraceably. Launched in January 2014, Dash experienced a growing fan base in a brief span of time. This cryptocurrency was made and manufactured by Evan Duffield and could be mined using a CPU or GPU. The rebranding did not change any of its technological features such as Darksend, InstantX. It uses a two-tier architecture to power its network.

### **Ripple**

Ripple is a real-time worldwide settlement network that provides instant, certain and low-cost international payments. It is backed by many banks and financial institutions. Ripple “empowers banks to repay cross-border payments in real time, together with closing transparency, and at lower prices.” Released in 2012, Ripple currency has a market capitalization of \$1.26 billion. Ripple’s consensus ledger is a method of confirmation. Ripple does not need mining, a quality that deviates from bitcoin and altcoins. Since Ripple’s structure does not need mining, it reduces the use of computing power, and minimizes network latency. Ripple considers that ‘distributing value is a powerful means to incentivize certain behaviors and consequently currently intends to distribute XRP mostly “through business development agreements, incentives to liquidity providers who offer tighter spreads for payments, and selling XRP to institutional buyers interested in investing in XRP.”

## **Discussion**

### **How is bitcoin blockchain different from a Etherian block chain**

Bitcoin has been in circulation since 2009. Ethereum went live in 2015. Ethereum is certainly faster than Bitcoin. While the Bitcoin blockchain can simply be pictured as a database of accounts (or wallets) with an amount of currency stored in each, the Ethereum network blockchain is a more sophisticated construction, capable of storing computer code – applications – that can use the CPU power going into the network to execute. The currency – Ether – represents this CPU power – so the idea is that Ether will be bought and sold by businesses, governments or individuals to allow them to tap into the vast, distributed resources of the Ethereum network to run their own apps.

### **What is an NFT - non-fungible token**

A non-fungible token (NFT) is a unique and non-interchangeable unit of data stored on a digital ledger. NFTs can be used to represent easily-reproducible items such as photos, videos, audio, and other types of digital files as unique items, and use blockchain technology to establish a verified and public proof of ownership. Copies of the original file are not restricted to the owner of the NFT, and can be copied and shared like any file. The lack of interchangeability (fungibility) distinguishes NFTs from blockchain cryptocurrencies such as Bitcoin. The first NFT project was launched in 2015 on the Ethereum blockchain, and interest grew with the rise of interest in crypto currencies. According to NonFungible.com, sales exceeded \$2 billion in the first quarter of 2021, more than 20 times the volume of the previous quarter. NFTs have drawn criticism with respect to the energy cost and carbon footprint associated with validating blockchain transactions.

### **How is it being used to sell art**

Digital art was an early use case for NFTs, because of the ability of blockchain technology to assure the unique signature and ownership of NFTs. The digital artwork entitled "Everyday's – The First 5000 Days", by artist Mike Winkelmann sold for US\$69.3 million in 2021. The purchase resulted in the third-highest auction price achieved for a living artist, after Jeff Koons and David Hockney, respectively.

Another Winkelmann piece entitled "Crossroad", consisting of a 10-second video showing animated pedestrians walking past a figure of Donald Trump, sold for US\$6.6 million at Nifty Gateway, an online cryptocurrency marketplace for digital art. A 3D-rendered model of a home named "Mars House", created by artist Krista Kim, was sold as a piece of digital real estate on the NFT market for over US\$500,000. Erwin Wurm released a NFT as one of the first already internationally renowned artists in August 2021. The work "Breathe In, Breathe Out" was released by Berlin-based Konig gallery's website MISA 20 years after Wurm's first Fat Car. The sequence shows a loop of a seemingly breathing Porsche 911. According to CNBC, Curio Cards, which fetched \$1.2 million at an auction by auction house Christie's, is commonly viewed as the first NFT art collectible on the Ethereum blockchain.

### **What is DEFI - decentralized finance, how is it useful**

The term decentralized finance, or DeFi, goes back to a Telegram chat in 2018. That's when a group of software developers and entrepreneurs were trying to decide what to call their movement of new-breed financial services that would be automated, built on a blockchain, and capable of stripping out traditional banks. Decentralized Finance is a blockchain-based form of finance that does not rely on central financial intermediaries such as brokerages, exchanges, or banks to offer traditional financial instruments, and instead utilizes smart contracts on blockchains, the most common being Ethereum. It is big business today. A user with a crypto wallet can trade digital assets, get loans, insurance and more. The 2008 bitcoin whitepaper set out the framework for a novel system for digital cash. Decentralisation is a major part of the reason why bitcoin is hard to kill. Since no single party is in charge, it is nearly impossible for somebody to go rogue and change the rules which govern bitcoin.

### **What are the various ways to make money out of your cryptocurrency?**

Cryptocurrency is becoming an investment category that more and more are considering due to the rise of Bitcoin, and other alternatives over the past decade. There are numerous ways to generate income from cryptocurrency, blockchain and Bitcoin. Investing is the most obvious way. Investors buy cryptocurrencies like Bitcoin, Ethereum, etc. with a traditional account or a

Bitcoin IRA. Then, they let it accrue value over time, with the goal of selling it for more than they purchased it. That is, this really only works under the assumption that cryptocurrencies will continue to see their values increase. However, cryptocurrencies are a risky and volatile investment. Therefore, it is imperative to consider that before undertaking this strategy.

Day trading is another way to make money with cryptocurrency, similar to stocks and other securities. Day trading involves buying and selling assets within the same day, in order to try and secure a quick profit. However, this is a risky strategy since it is hard to determine how cryptocurrency values could change on any given day.

Crypto Staking is similar to Fixed Deposits in banks and offers rewards and interests from the platform on which one has staked the assets. Other methods to generate revenue are through mining, earning dividends on Crypto-focused funds, lending cryptocurrency or working for a cryptocurrency company.

## **Conclusion**

In the digital age, cryptocurrency has emerged as a secure, sustainable and novel means of moving and keeping assets. Although it remains embroiled in legal, financial and political scrutiny, a section of society, including major companies, investors and even average citizens have chosen to invest their money in the cryptocurrency market. It is rapidly emerging in countries, though in India, it is going a touch slow. Cryptocurrency is expected to catch on in a few years time; the novelty might be functioning as a deterrent, but once regulations and policy are in place people will be better secure in the knowledge of a security blanket in terms of legislation, policies and legal aid.

The sheer variety available might also be daunting for those wanting to step into the market. Hence it is imperative to have some means to have comprehensible information available to the average person. That will enable a wider usability and access to the market, one not limited to aficionados and experts.

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