Blockchain and Cryptocurrency

Definition of Key Terms:

Blockchain

A blockchain is a shared distributed database or ledger between computer network nodes. A blockchain serves as an electronic database for storing data in digital form. The most well-known use of blockchain technology is for preserving a secure and decentralized record of transactions in cryptocurrency systems like Bitcoin. The innovation of a blockchain is that it fosters confidence without the necessity for a reliable third party by ensuring the fidelity and security of a record of data. The way the data is organized in a blockchain differs significantly from how it is typically organized. In a blockchain, data is gathered in groups called blocks that each includes sets of data. Blocks have specific storage capabilities, and when filled, they are sealed and connected to the block that came before them to create the data chain known as the blockchain. Every additional piece of information that comes after that newly added block is combined into a brand-new block, which is then added to the chain once it is full. A database usually structures its data into tables, whereas a blockchain, as its name implies, structures its data into chunks (blocks) that are strung together. When used in a decentralized way, this data structure creates an irreversible chronology of data by design. When a block is completed, it is irrevocably sealed and added to the timeline. When a block is added to the chain, it receives a precise timestamp.

Cryptocurrency

A cryptocurrency, also known as a crypto-currency or crypto, is a type of digital currency that operates as a means of exchange over a computer network and is not supported or maintained by any one central organization, such as a bank or government. A digital ledger, a computerized database that uses strong encryption to secure transaction records, regulate the production of new coins, and confirm the transfer of currency ownership, is where individual coin ownership records are kept. Despite its name, cryptocurrencies are not thought of as currencies in the traditional sense. Although they have received a variety of classifications, including those of commodities, securities, and currencies, in reality, cryptocurrencies are typically seen as a separate asset class. Some coin maintenance schemes employ validators. A proof-of-stake model requires owners to pledge their tokens as security. In exchange, individuals receive control over the token in proportion to their investment. These token stakes typically acquire more ownership over time through network fees, newly created tokens, or other similar compensation systems. Cryptocurrency is often not issued by a central body and does not exist in tangible form like

paper money. In contrast to a digital currency controlled by a central bank, cryptocurrencies often employ decentralized control (CBDC). A cryptocurrency is typically seen as centralized when it is minted, generated before issuance, or issued by a single issuer. Each cryptocurrency operates using distributed ledger technology, often a blockchain, which acts as a public database of financial transactions when used with decentralized control. Traditional asset classes with moderate exposure to cryptocurrency returns include stocks, commodities, and currencies, as well as macroeconomic variables. Bitcoin was the first decentralized cryptocurrency, and it was first made available in 2009 as open-source software. More than 9,000 other cryptocurrencies were available on the market as of March 2022, more than 70 of which had a market valuation greater than $1 billion.

The emergence of Blockchain Technology:

Blockchain has the potential to grow to be a bedrock of the worldwide record-keeping systems but was launched just 10 years ago. It was created by the unknown persons behind the online cash currency bitcoin, under the pseudonym of Satoshi Nakamoto.

Brief Timeline

1991

A cryptographically secured chain of blocks is described for the first time by Stuart Haber and W Scott Stornetta

1998

Computer scientist Nick Szabo works on ‘bit gold’, a decentralized digital currency

2000

Stefan Konst publishes his theory of cryptographically secured chains, plus ideas for implementation

2008

Developer(s) working under the pseudonym Satoshi Nakamoto released a white paper establishing the model for a blockchain

2009

Nakamoto implements the first blockchain as the public ledger for transactions made using bitcoin

2014

Blockchain technology is separated from the currency and its potential for other financial, and inter-organizational transactions is explored. Blockchain 2.0 is born, referring to applications beyond currency

Types of Cryptocurrencies:

Bitcoin

Public-key cryptography is used by Bitcoin, the first decentralized cryptocurrency in the world, to record, sign, and send transactions across the Bitcoin blockchain without the intervention of a centralized authority. Under the alias "Satoshi Nakamoto," an unidentified computer programmer or group of programmers introduced the Bitcoin network in January 2009. The network is a peer-to-peer electronic payment system that transfers money over the internet or serves as a store of value similar to gold and silver using the cryptocurrency known as bitcoin. Since each bitcoin is made up of 100 million satoshis, which are the currency's smallest units, each bitcoin can be divided up to eight decimal places. This implies that anyone can buy a little portion of a bitcoin for as low as one dollar. The price of bitcoin is notorious for being extremely unpredictable, yet despite this, it has grown by an astounding 9,000,000 percent between 2010 and 2020 to become the best-performing asset of any type (including stocks, commodities, and bonds) over the previous decade. As Satoshi Nakamoto mined the bitcoin genesis block, the first ever block on the Bitcoin blockchain, at the beginning of 2009, 50 BTC entered the market at a price of $0.00.
Up until the first halves event in November 2012, fifty bitcoins per block (produced once every ten minutes) entered circulation. Halvings relate to the issuing system for bitcoin, which Satoshi

Nakamoto incorporated into the source code. The number of new Bitcoins hitting the market is effectively automatically reduced by half every 210,000 blocks. The price of BTC first matched that of the US dollar in February 2011. The achievement attracted more investors to the market, and over the following four months, the price of bitcoin grew steadily until it reached a high of nearly $30. Early in 2013, the market leader Bitcoin had bounced back from a protracted negative trend and briefly surpassed $1,000. But it took an additional four years for the price of bitcoin to rise above $1,000 once more due to events like the infamous Mt Gox attack, China's announcement of its first crypto ban, and other circumstances. However, once that threshold was crossed, the price of bitcoin shot up sharply throughout 2017 until BTC peaked at its all-time high. Over the course of 2018, the whole cryptocurrency market fell into a bear market dubbed the "crypto winter," which lasted an entire year. It wasn't until December 2020 that bitcoin surpassed that historical level and climbed another 239 percent over the following 119 days to a new all-time high of $64,799 that it finally surpassed that historical level.

Ethereum

The native coinage of Ethereum, called ether, can be used to transfer and receive value internationally without the involvement of any third parties. Ethereum is a blockchain-based software platform. However, it is capable of much more than that. By enabling programmers to construct their own unique apps, Ethereum was created to increase the utility of cryptocurrencies. It was first proposed in 2013 by Russian-Canadian computer programmer Vitalik Buterin. These Ethereum-based "decentralized applications," or (DAPPS), are self-executing in contrast to conventional apps since they make use of smart contracts. When specific criteria are satisfied, smart contracts, which are code-based programs recorded on the Ethereum blockchain, automatically perform specific tasks. This could involve lending money after receiving collateral in a defined wallet or sending a transaction when a specific event occurs. All decentralized applications (DAPPS) developed on Ethereum and other blockchain platforms are built on top of smart contracts.

Digital Currency the Future of Global Trade:

Cross-border payments can settle as quickly as the same business day or as late as five business days. When confirming the sender and recipient's information, such as for anti-money laundering and countering terrorism funding (AML and CTF) objectives, human interaction is frequently necessary. As a result, the amount of time that the sending and receiving institutions' business hours overlap as well as whether they use the same message standards affect how quickly payments are processed. Money might be sent and received instantly and continuously for digital currencies that rely on decentralized ledgers. Foreign exchange regulations and future regulatory compliance requirements for suppliers of digital currency services may have an effect on the pace.

The $1.7 trillion global trade financing gap has a significant negative effect on SMEs since they frequently lack documented financial records with banks. In order to underwrite loans for imports and export, public ledgers of digital currencies could be utilized to share payment and financial history. To do this, strict privacy regulations would have to be put in place at the same time.

De-risking puts up barriers for nations with significant AML and CTF risks that want to engage in international trade and may raise transaction costs for buyers and sellers there. While digital currencies do not contribute to lowering the risks associated with AML and CTF, they might offer substitute payment options that would re-connect local consumers and businesses with global buyers and sellers.

Feasibility of Blockchain:

The goal of the introduction of cryptocurrencies was to transform the financial system. But there are costs and benefits to every change. The theoretical ideal of a decentralized system with cryptocurrencies and its actual execution diverge significantly at the current stage of cryptocurrency development.

Some advantages and disadvantages are as follows:

Advantages

In terms of money, cryptocurrencies represent a brand-new, decentralized paradigm. In this system, transactions between two parties are governed by trust rather than by centralized intermediaries like banks and financial institutions. In light of this, a system based on cryptocurrency eliminates the chance of a single point of failure, such as a major bank, causing a chain reaction of crises to occur all over the world, similar to the one that was brought on in 2008 when American institutions failed. With the use of a trusted third party like a bank or credit card provider eliminated, the direct movement of money between two parties is made easier by cryptocurrencies. Public keys, private keys, and other incentive schemes, like proof of work or proof of stake, are used to secure such decentralized transfers. Cryptocurrency transfers between two transacting parties are quicker than traditional money transfers since they don't employ third-party intermediaries. An excellent illustration of such decentralized transfers is flash loans in decentralized finance. These loans can be executed instantly and are used in trading because they are done without supporting collateral. Investments in cryptocurrencies can be profitable. Over the past ten years, the value of cryptocurrency markets has surged, reaching approximately $2 trillion at one time. Bitcoin had a market value of more than $550 billion as of May 2022. One of the most well-known use cases for cryptocurrencies is being tested in the remittance

industry. At the moment, cryptocurrencies like Bitcoin act as intermediary currencies to speed up international money transfers. So, fiat money is exchanged for Bitcoin (or another cryptocurrency), sent across international borders, and then exchanged back for the destination fiat currency. This technique simplifies and lowers the cost of the money transfer process.

Disadvantages

Cryptocurrencies are essentially pseudonymous, despite the fact that they advertise themselves as being anonymous. They leave a digital footprint that can be analyzed by organizations like the Federal Bureau of Investigation (FBI). This makes it possible for governments or federal agencies to monitor the financial activities of regular people. Criminals are increasingly using cryptocurrencies for undesirable tasks including money laundering and illegal transactions. It is already widely known about Dread Pirate Roberts, who operated a narcotics trade on the dark web. Additionally, cryptocurrency has grown to be a favorite among hackers who utilize it for ransomware operations. The wealth of cryptocurrencies is supposed to be divided among multiple parties on a blockchain, making them theoretically decentralized. Ownership is actually very concentrated. Cryptocurrencies are essentially pseudonymous, despite the fact that they advertise themselves as being anonymous. They leave a digital footprint that can be analyzed by organizations like the Federal Bureau of Investigation (FBI). One of the fallacies of cryptocurrencies is that anyone with a computer and an Internet connection can mine them. However, mining well-known cryptocurrencies use a lot of energy, perhaps as much as entire nations do. Due to the high energy costs and unpredictable nature of mining, the industry is now dominated by huge corporations with billion-dollar annual revenues. A study from MIT found that 10% of the country's miners account for 90% of its mining capability. Although the blockchains that power cryptocurrencies are very secure, other crypto storage spaces like exchanges and wallets are vulnerable to hacking. Over the years, numerous cryptocurrency exchanges and wallets have been hacked, sometimes leading to the theft of "coins" valued at millions of dollars. The price of cryptocurrencies traded on open marketplaces is unstable. Bitcoin's value has fluctuated sharply, reaching a high of $17,738 in December 2017 and a low of $7,575 in the months that followed. Thus, some economists think that cryptocurrencies are a bubble or craze that will pass quickly.

The legality of Cryptocurrency:

Governments or monetary authorities provide fiat currencies their legitimacy as means of exchange. For instance, the Federal Reserve backstopped each dollar bill. But neither a public nor a private entity is backing cryptocurrencies. As a result, it has been challenging to argue for their legal standing in many financial jurisdictions around the globe. The fact that

cryptocurrencies have generally operated outside of the majority of the current financial infrastructure does not assist the situation. The use of cryptocurrencies in regular transactions and trading is impacted by their legal status. The Financial Action Task Force (FATF) suggested in June 2019 that the Travel Rule, which mandates AML compliance, be applied to wire transfers of cryptocurrencies. El Salvador was the first nation in the world to accept Bitcoin as legal money for financial transactions as of December 2021. The regulation of cryptocurrencies in the rest of the globe differs per country. Bitcoin is recognized as legal property under the Payment Services Act of Japan. Exchanges that deal in cryptocurrencies in the nation are required to gather client data and wire transfer information. Within its boundaries, China has outlawed cryptocurrency trades and mining. In December, it was said that India was developing a framework for cryptocurrencies. The European Union has legalized cryptocurrencies. The use of cryptocurrencies in derivatives and other products will require them to be recognized as "financial instruments." The European Commission published the Markets in Crypto-Assets (MiCA) legislation, which defines guidelines for businesses or vendors offering financial services utilizing cryptocurrencies, in June 2021 for the rest of the world. On the Chicago Mercantile Exchange, the largest and most complex financial market in the world, crypto derivatives like Bitcoin futures are offered. According to the Securities and Exchange Commission (SEC), Ethereum and Bitcoin are not securities.

The United Nations:

With the mission of "saving children's lives, defending their rights, and assisting them in realizing their potential from early infancy through adolescence," the United Nations Children's Fund (UNICEF) is a sizable nonprofit that operates in more than 190 nations and territories.
UNICEF manages a variety of funds with the goal of launching initiatives to carry out this purpose. The UNICEF Innovation Fund, one of these programs, offers $100,000 USD in equity-free money to support open-source ideas that benefit children and the entire world. Eight open-source blockchain start-ups will get money for their initiatives, according to a June 8, 2021 announcement from UNICEF's innovation fund. These initiatives started in a range of nations in Africa, Asia, and Latin America, and aim to address challenging global development issues and promote financial inclusion. The UNICEF press release can be seen here, and it includes a list of the 8 sponsored projects. UNICEF founded the UNICEF CryptoFund in October 2019 in response to the promise of cryptocurrencies and technology. With the help of this fund, UNICEF is able to accept, hold, and distribute cryptocurrencies like Bitcoin and Ether to open-source software start-ups that are working to find solutions to problems affecting kids and teenagers.
On the subject of its effects on the environment, cryptocurrency frequently receives a bad rap. However, the UN has acknowledged that blockchain technology can help fight climate change. The United Nations published an essay on June 20, 2021, outlining their view that blockchain can aid in the development of a more sustainable global economy and have a part to play in the

fight against climate change: "In recent weeks and months, the negative environmental impact of cryptocurrencies like Bitcoin has received much journalistic coverage, and their volatility has also been identified as a cause for concern.”However, the UN is of the opinion that those working to combat the climate issue might greatly benefit from blockchain, the technology that underpins these virtual currencies and help create a more sustainable global economy. This assertion gives blockchain-based technology a lot of legitimacy because the U.N, an organization with 193 member nations, is very influential in efforts to combat climate change and international development. Given the vast scope of the United Nations and its philanthropic organizations, it is impressive and heartening that they have embraced blockchain technology and cryptocurrencies as a means to further their purpose. Given that many of the UN's initiatives have only been introduced in the previous few years, the UN and blockchain are still in their infancy. It will be interesting to see what occurs next and how the UN uses innovation and blockchain and cryptocurrencies to further social good.