

Blockchain –A decentralized ledger

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Abstract- Blockchain technology is revolutionizing the digital world bringing a new perspective to security, resiliency, and efficiency of systems. It offers a secure way to exchange any kind of good, service, or transaction. Blockchain will enable more agile value chains, faster product innovations, closer customer relationships, and quicker integration with the IoT and cloud technology. The blockchain is much more than the foundation of cryptocurrency or the digital currency, bitcoin. It opens the door for the scalable digital economy from a centralized one. This paper gives an overview of the blockchain technology and its wide range of applications in the financial world.

Key Words: Blockchain, Cryptocurrency, Bitcoin, Digital currency, Centralized

1. INTRODUCTION

A blockchain is a cryptographic, decentralized ledger comprising a digital log of transactions shared across a public or private network.

Using this technology, participants can confirm transactions without a need for a central clearing authority. Potential applications can include fund transfers, settling trades, voting, and many other issues.

The blockchain is used to securely exchange digital currency, perform deals and transactions. Each member of the network has access to the latest copy of encrypted ledger so that they can validate a new transaction. Blockchain ledger is a collection of all Bitcoin transactions executed in the past. Bitcoin is a peer-to-peer permission-less network which allows every user to connect to the network and send a new transaction to verify and create new blocks.

2. WORKING OF BLOCKCHAIN TECHNOLOGY

The blockchain is made from a network of so-called computing nodes where each node is an administrator of the blockchain and joins the network voluntarily. However, each one has an incentive for being a part of the network i.e, the chance of winning Bitcoins.

These nodes are called as mining Bitcoins and each one of them is competing to win Bitcoins by solving some computational puzzles.

2.1 Cryptocurrency and Blockchain

The three principal technologies that combine to create a blockchain are as follows:

- 1) Private key cryptography
- 2) A distributed network with a shared ledger and

- 3) An incentive to service the network's transactions, record-keeping and security.

The following gives us a detail of how these technologies work together to secure digital relationships.

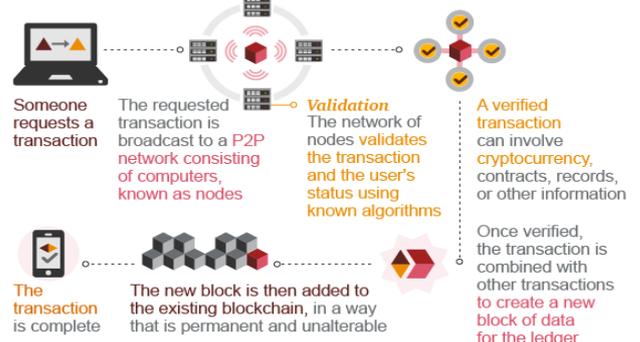
Let us consider, two people wish to transact over the internet. Each of them holds a private key and a public key. The main purpose of this component of blockchain technology is to create a secure digital identity reference. Identity is based on possession of a combination of private and public cryptographic keys. The combination of these keys can be seen as a dexterous form of consent, creating an extremely useful digital signature. This digital signature provides strong control of ownership.

The cryptographic keys are combined with the network to form useful digital interactions . The process begins with one person A taking their private key, making an announcement , in the case of bitcoin, that you are sending a sum of the crypto currency and attaching it to the public key of person B. The block that contains a digital signature, timestamp and relevant information is then broadcast to all the nodes in the network. The type, amount and verification can be different for each blockchain. It is the blockchain's protocol that determines whether it is a valid transaction or not, or if it is a valid creation of a new block. The process of verification can be tailored for each blockchain. The protocols and incentives that are needed can be created when enough nodes arrive at a consensus on how transactions ought to be verified.

Blockchain can also be called a method for recording information and exchanges carefully. Each record is a square connected sequentially together into a chain.

A piece of at least one new exchanges is gathered into the exchange information part of a square. Duplicates of every exchange are hashed, and the hashes are then matched, hashed, combined once more, and hashed again until the point when a solitary hash stays there.

How it works



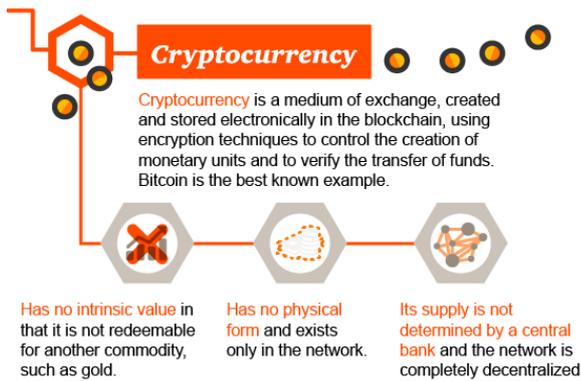


Figure 1: Working of Blockchain and Cryptocurrency

3. ROLE IN FINANCIAL SERVICES

Financial institutions are constantly looking for new technology and innovation. The financial industry has been among the first industries to seize upon the efficiency savings that its distributed ledger technology could deliver. Building trust between customers and businesses in digital transactions is very important. Blockchain works to optimize financial transactions and improve trust with highly secure business networks on blockchain, both at scale and globally.

Its current use is mostly to be seen with in the bitcoins, a virtual currency created with the blockchain technology. Banks, asset managers, insurers and technology firms are keen to experiment the new technology. Their initial trials focus on areas of trade finance, payment settlements and reconciliation. Here are some of the main features of the future use of blockchain in the global financial services industry:

1) To speed up and simplify cross border payments, blockchain technology is used. The transfer of value has always been an expensive and slow process. The widespread use of blockchain technology, together with updates to compliance regulations, will enable central banks to substitute their own regulated, blockchain-based digital currencies for notes and coins. Hence, there is less reliance on cash.

2) Blockchain technology is the future of share trading. Share trading will soon be impacted by blockchain technology. Utilizing this technology allows for greater trade accuracy, and a shorter settlement process. Blockchain will cut the cost of the daily checking and rechecking of ownership and transactions. Blockchain projects due to their digital nature reduce and eliminate settlement times, ensuring the timely and secure processing of these operations.

There will be financial regulatory overhaul. Financial industry rules may need a worldwide update, along with reforms to broader data protection regulation. Regulators want to encourage innovation but without upsetting stability.

3) It gives the benefits of smart contracts

One of the most promising applications of blockchain technology is the smart contract. It can execute commercial transactions and agreements automatically. It also enforces the obligations of all parties in a contract without the added expense of a middleman. Within 20 years, embedded smart contracts could transform how bank accounts work and how insurance pays out. The first widespread changes to retail financial services involving blockchain may take place in emerging markets, where banking, investment and insurance penetration rates are low.

4) It improves online identity management

Users are able to choose how to identify themselves and who will be informed when identity management is moved to blockchain technology. They still need to register their identity on the blockchain somehow, but after that, they can re-use that identification for other services.

5) Blockchain technology offers loyalty and rewards

Blockchain technology offers benefits like transparency and traceability of transactions. This will help banks and an insurer to create a more captivating loyalty and a reward program that fits 24/7 performance management and enhances engagement.

Transparency: The data put away in blockchain will be noticeable to clients, retailers, providers and they will be capable see the item source, regardless of whether the items are made through tyke work or if any hazardous or concealed parts are available.
Loyalty: Blockchain can patch up the unsteadiness framework by putting away the encoded client information, coupons and rebates and making the information accessible to every one of the stores giving further investigation on client records.

6) Authenticity and anti-counterfeiting: One can utilize blockchain to approve the item realness so clients can stroll through the records on the items and abstain from forging, along these lines expanding the client certainty about the item quality. A reliability guarantee on blockchain will likewise give clients a chance to see all their data in a single place over the retailers. Bank-backed blockchain projects include secured global currency exchange rate speeds and increased transaction security, Collaborative blockchain networks will be closed to outsiders, to ensure that information does not land in the wrong hands and to prevent hackers from disrupting financial stability.

4. CONCLUSION

The innovation is as yet advancing with a great deal of degree for various spaces and businesses and is set to change the world. In spite of the fact that blockchain is the innovation behind Bitcoin, however its utilization isn't constrained to monetary area as it were. The use of

blockchain technology in real life is still limited. While interest in applying the technology is growing, the widespread implementation may take years. An all-encompassing financial blockchain is unlikely to emerge from current projects.

Retail industry will begin receiving the rewards of blockchain through enhanced straightforwardness of items, more productive store network administration, better faithfulness administration framework, enhanced client profiling, battle against forging and so on prompting expanded consumer loyalty and higher net revenue for retailers. Using distributed-ledger technology could help financial services providers lower the worldwide cost of cross-border payments, securities trading and compliance in the coming years.

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