IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 7, January 2023

A Study on Blockchain Technology

P. Sinha, R. Chaurasiya
Shri G.P.M. Degree College of Science and Commerce, Andheri, Mumbai, Maharashtra

Abstract: *The newest and most innovative technology in the current economy is the blockchain. In essence, a blockchain is a publicly accessible database that keeps track of all completed digital transactions and events that are shared amongst involved parties. In a commercial network, it offers provenance, immutability, and finality for the transfer of value. Real-time value exchangeis made possible, cutting expenses and errors. based on a network consensus model, in which cryptography provides the confidence between the parties to a transaction. The purpose of this study is to provide a brief explanation of blockchain technology, its possibilities, and its limitations from the standpoint of upcoming security research on commercial transactions.*

Keywords: *Blockchain*

I. INTRODUCTION

Blockchains are not the only kind of distributed ledgers; not all of them use blocks or chain transactions. The blockchain is an unbreakable digital ledger that can be configured to record almost anything of value, including financial transactions. It is used to track economic transactions. Authors Don and Alex Tapscott, Blockchain Revolution 2016. A blockchain, which was first composed of the two terms "block chain," is an ever-expanding list of digital information stored in packages known as blocks that are connected and encrypted by cryptography. These "blocks" of digitally recorded data are kept in a linear sequence.

Every link in the chain has data (like a bitcoin transaction), is timestamped, and has a cryptographic hash. The hashed data blocks build upon each other and the block that came before them in the chain to ensure that all The entire "blockchain"'s data has not been changed or tampered with.

A series of consecutive blocks is called a blockchain. A block is a collection of data that has been combined and organized through mining so that it can fit inside of it. A timestamp and cryptographic hash are used to identify each block. In order for blocks to build a chronologically ordered chain from the first block ever generated in the whole blockchain—also known as the Genesis Block—to the freshly formed block, each newly formed block will contain a hash of the previous block. The network is expanded and maintained by repeatedly going through this process. This implies that neither the government nor any financial institution has any authority over this decentralized ledger. In actuality, anyone with access to it strong internet access. In addition to virtual currencies, a lot of businesses are utilizing blockchain technology, including messaging apps, cloud storage, ride-sharing, critical infrastructure security, etc.

APPLICATION OF BLOCKCHAIN

There is potential for blockchain technology to have an impact on numerous industries. The most promising applications are those in which it is currently costly, time-consuming, and necessitates the involvement of one or more centralized organizations to transfer value or assets between parties.

a) Financial Services :

A blockchain infrastructure that facilitates the issuing and transfer of private securities is being tested by a number of global stock exchanges. Furthermore, a number of banking groups are evaluating use cases related to cross-border payments, trade financing, and other banking procedures. both industrial and consumer.

b) Consumer and Industrial Products:

Businesses in the industrial and consumer sectors are investigating the use of blockchain technology to digitize and trace the beginnings and past of transactions in a range of commodities.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 7, January 2023

c) Life Sciences and Health Cara:
In order to protect the integrity of electronic medical records, medical billing, claims, and other records, healthcare organizations are investigating the usage of blockchain technology.

d) Public Sector:
Blockchain is being investigated by governments to facilitate asset registries, including those for real estate and company stock.

e) Energy and Recourses:
Smart-grid technology based on Ethereum is being developed to enable consumers to trade excess energy as digital assets. All organizations keep track of information and struggle to reconcile data with counterparties, therefore blockchain technology could be applicable to all of them.
Regarding how blockchain will affect the audit and assurance profession, there are still a lot of unanswered questions, including how quickly it will do so. CPA auditors of companies that use blockchain to record transactions are already being impacted by it, and usage of the technology is anticipated to accelerate. Blockchain technology will not, however, take the place of financial reporting and financial statement audits anytime soon. A company's foundation, audited financial statements are essential to debt and equity financing, capital market participation, mergers and acquisitions, regulatory compliance, and the smooth and efficient operation of the capital markets. Estimates and other management claims are included in financial statements; many of these claims are difficult to calculate or summarize in blockchains.
Furthermore, the process of Additionally, the independent auditing procedure for financial statements strengthens the trust that is essential to the capital markets system's smooth operation. Any deterioration of this trust may lead to fines, penalties, or the loss of assets, as well as harm to an organization's reputation, stock price, and shareholder value. Financial statement users anticipate that CPA auditors will apply their professional skepticism to conduct an independent audit of the financial statements. CPA auditors determine if they have a reasonable assurance that there are no serious misstatements in an entity's financial accounts, whether as a result of fraud or error. Blockchain technology is not anticipated to take the place of these audit findings on financial statements..
However, because blockchain technology may affect their companies' IT infrastructure, CPA auditors must keep an eye on its advancements. In order to audit the intricate technical risks connected with blockchains, CPA auditors will need to collaborate with experts and understand the fundamentals of blockchain technology.
Furthermore, CPA auditors need to be aware of ways to take use of their clients' blockchain technology adoption to enhance data collection during the audit.

BASIC FEATURES OF BLOCKCHAINS:
Understanding how a blockchain works from a technological standpoint is only useful when constructing or troubleshooting one. To grasp the potential of blockchain technology, you must first understand the properties of a blockchain. It should be noted that not all of the qualities listed below will apply to all blockchains.
The above presentation gives the information needed to understand the essential properties and principles of blockchains. These are as follows:

• Privacy:
Blockchains do not store personal information and instead utilize private/public encryption to authenticate users who conduct transactions. It is not possible to mine blockchains for personal information that could be sold to third parties for a profit.

• Transparency:
All blockchain metadata and information is available in real-time to all nodes and users. It is not possible to conceal or redact blockchain data.51 Distributed transparency is thus feasible, but it raises new concerns.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 7, January 2023

• Pseudo-anonymity:
Nodes and users are not required to give names or personal information in order to participate in the network. However, complete anonymity is not attained because tracing people to network activities is possible, which can lead to their identities being revealed.

• Integrity:
This has two effects. To begin with, data integrity: it is nearly impossible to modify or fabricate blockchain blocks. This is also known as immutability. Second, user integrity: on the blockchain, metadata about transactions performed by a node and/or end user are recorded and can be traced to the user performing them. Users are not permitted to deceive the network or attempt to complete an invalid transaction.

• Security:
All players, whether nodes or end users, must use cryptographic tools and public/private keys while using blockchains.Distributed trust and governance: The blockchain successfully avoids the requirement for a centralized trusted authority. Instead, trust is distributed throughout the network. The same is true for governance mechanisms, where diverse types of users and nodes have the same 'political' leverage in theory.

BLOCKCHAIN LIMITATIONS:
Due to a number of issues, blockchain technology is still in its infancy and may not be widely adopted in the financial industry or other sectors. These can be summed up like this:
a) Scalability: The Bitcoin blockchain can now only add a new block of transactions roughly every ten minutes. This corresponds to fewer than five transactions per second, which is far smaller than the numbers recorded by conventional transactional networks.
b) Block size: The short block size specified by the initial Bitcoin source code led to the above outcome. Each block can have a maximum size of one megabyte, which can hold 2,200 transactions. Although there has been discussion about increasing block size, no decision has been made as of yet.
c) High costs: Miner nodes conduct proof of work algorithms on expensive, complex hardware. As a result, while all nodes in theory possess the software needed to mine the network, only a limited number of nodes may participate in this process successfully. Nakamoto's idea of "one-CPU-onevote" has been abandoned since most nodes cannot afford the hardware and electricity required to participate in this process.s
d) Cryptography: The average Internet user is not likely to adopt the usage of cryptographic tools in the near future, as their application is still in its early stages.
e) Complexity: The general public seems to find blockchain technology almost unintelligible, and the technical jargon around them does not make matters any easier. It seems that only a select handful are familiar with the technology.
f) Environmental impact: The aforementioned also serves as evidence of the inefficiency of work in terms of energy resources. According to some energy usage estimates, by the spring of 2017, Bitcoin's annual electricity demand was equivalent to that of 280,000 US households.

METHODOLOGY:
Blockchain technology works by creating a distributed ledger of transactions. This ledger is shared across a network of computers, and each computer has a copy of the ledger. When a new transaction is added to the ledger, it is verified by all of the computers on the network. Once the transaction is verified, it is added to a new block. This block is then added to the chain of blocks, creating a permanent record of the transaction.

II. CONCLUSION

Due to its vast facilities in most systems across various industries, blockchain technology has become one of the most beneficial and flexible concerns for our society today. Despite this, the technology is still relatively new, and its significant application is still a little explored issue in practice. Because of its various advantages, today's Blockchain technology promises us a bright future for information technology free from fraud and deceit. Although there are many

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 7, January 2023

obstacles to overcome, the benefits of using the because a lot of challenging issues that are upsetting and inhibiting systems from functioning properly can be solved with the aid of this new technology. In this paper, we have covered the fundamentals of blockchain technology as well as security concerns.

REFERENCES

[1]. Synopsy article - https://www.synopsys.com/
[2]. AWS website article - https://aws.amazon.com/what-is/blockchain/?
[3]. Google Schlor article by Craig Gentry
[4]. Science Direct
[5]. Scintific reports - https://www.nature.com/articles/s41598-023-38078-w
[6]. Built in Article - https://builtin.com/blockchain
[7]. What is block chain technology by IBM - https://www.ibm.com/topics/blockchain