



A theoretical understanding block chain technology impact

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Abstract

In today's disrupted world, great difficulties abound-as well as enormous opportunities. Trust is on the line as it navigates the pandemic's uncertainty and complicated circumstances. The COVID-19 pandemic has proved that in today's global economy, resiliency is now a corporate imperative. Explore materials that explain how technology suppliers may work with their clients to help them develop the future enterprise with resiliency and success. It helps assisting clients in mapping physical IDs to digital IDs, allowing them to pursue new business opportunities as part of a larger ecosystem. Digital identity is critical to our digital economy's growth and viability, as well as to every company in every sector. Block chain is a database system that stores and data records in such a way that different companies and individuals can reliably share real-time access to the same data while minimising security, privacy, and control concerns.

Keywords: blockchain, online business, digital transactions, digital identity and data structure

Introduction

Block chain is a data structure made up of data blocks that are arranged in chronological order on a computer network. It has characteristics such as decentralisation, trustworthiness, data sharing, and security, among others. It is widely employed in a variety of sectors, including digital currency, smart contracts, credit encryption, and others. With the advancement of Internet technology, online education, a revolutionary style of instruction, has gained widespread acceptance and popularity. However, there are still several issues with course authenticity, credit and credential validation, student privacy, and course sharing that must be addressed with this style of education. In this paper, based on a survey of the literature and a case study, the author presents the fundamental technological principles and application characteristics of blockchain technology, as well as a solution to the challenges of online education that is based on blockchain technology. In addition to storing learning records in a trusted, distributed manner and providing authentic digital certificates, blockchain technology may also be used to facilitate learning resource sharing through smart contracts and safeguard intellectual property through data encryption. According to the findings of the study, the integration of blockchain technology into online education is a potential trend in the development of online education.

Blockchain is the underlying technology that powers Bitcoin. It works by maintaining immutable distributed ledgers across thousands of nodes, as introduced by Satoshi Nakamoto in 2008. (S Nakamoto 2008). Blockchain is a data management system that has the potential to improve openness and accountability. A blockchain is a distributed record of transactions in which every member of a computer network has access to an identical copy. Members of the network validate the data placed into the ledger, and the data is immutable once it is entered (OECD, 2020). Since the creation of the steam engine, electricity, and information technology, it has been considered a part of the fourth industrial revolution (Chung and Kim 2016; Schwab 2017) [7]. In the

twenty-first century, this disruptive technology will have a profound effect on national politics, institutional activities, commercial operations, education, and our daily lives. It has the ability to transform today's Internet from a "Network of Information Sharing" to a "Network of Value Exchange." Blockchain technology is projected to alter the way business, industry, and education operate, as well as accelerate the worldwide development of the knowledge-based economy. Due to the immutability, transparency, and reliability of all transactions carried out on a blockchain network, this cutting-edge technology has a plethora of possible uses (Underwood 2016) [10].

Blockchain technology addresses several important issues, including scalability, anonymity, and trustworthiness. Blockchain software has the potential to be a fantastic tool for tracking and controlling a large number of connected devices, allowing transactions between connected devices to be shared and processed. As a result of decentralisation, it will also eliminate single points of failure and establish an atmosphere conducive to computer operation reliability. Blockchain technology has the potential to facilitate safe and robust Internet of Things network collaboration among linked devices (Javaid *et al.*, 2021) [4]. In order to effectively deploy blockchain technology in the current environment, it is vital to comprehend blockchain and its value (Javaid *et al.*, 2021) [4].

Blockchain Defined: Blockchain is a shared, unchangeable ledger that makes the process of recording transactions and managing assets in a corporate network much more convenient and efficient. An asset can be either tangible (such as a house, car, cash, or land) or intangible (such as a business) (intellectual property, patents, copyrights, branding).

Virtually everything of value may be tracked and traded on a block chain network, lowering the risk and lowering the costs for everyone who is engaged.

Importance of Block chain

Information is the lifeblood of any organisation. For the best results, the information should be received as soon as possible and calculated as accurately as possible. Block chain technology is a great alternative for delivering that information since it provides real-time, shareable, and entirely transparent data kept on an immutable ledger that can only be accessed by network users who have been granted permission to do so. A block chain network, among other things, can track orders, payments, accounts, production, and a number of other things. You can understand all of the details of a transaction from beginning to end since all members have a single version of the truth, providing you more confidence while also allowing you to take advantage of new efficiencies and opportunities.

Key elements of a Block Chain

1. Distributed ledger technology

All network participants have access to the distributed ledger and its immutable record of transactions. With this shared ledger, transactions are recorded only once, eliminating the duplication of effort that's typical of traditional business networks.

2. Immutable records

No participant can change or tamper with a transaction after it's been recorded to the shared ledger. If a transaction record includes an error, a new transaction must be added to reverse the error, and both transactions are then visible.

3. Smart contracts

To speed transactions, a set of rules — called a smart contract — is stored on the blockchain and executed automatically. A smart contract can define conditions for corporate bond transfers, include terms for travel insurance to be paid and much more.

Benefits of Block Chain

What should be changed: Operations waste a lot of time and money on redundant record keeping and third-party validations. Fraud and cyberattacks are both plausible targets for record-keeping systems. Due to a lack of transparency, data verification may be slowed. Furthermore, transaction volumes have increased dramatically since the introduction of the Internet of Things. All of this has a detrimental influence on the company's bottom line, indicating that a more effective solution is required. This is where the block chain technology comes into play.

1. A higher level of trust

Members-only networks such as block chain allow you to be confident that the data you receive is reliable and timely, and that your confidential block chain records will only be shared with network members to whom you have explicitly authorised access.

2. A higher level of protection

All network participants must agree on the accuracy of the data, and all confirmed transactions are irreversible because they are permanently recorded on the network's servers. A transaction cannot be deleted by anyone, not even the system administrator.

3. Increased efficiencies

The elimination of time-consuming record reconciliations is made possible by the use of a distributed ledger that is shared across users of a network. A smart contract, which is a set of rules

that may be put on the block chain and implemented automatically, can be used to speed up transactions even further.

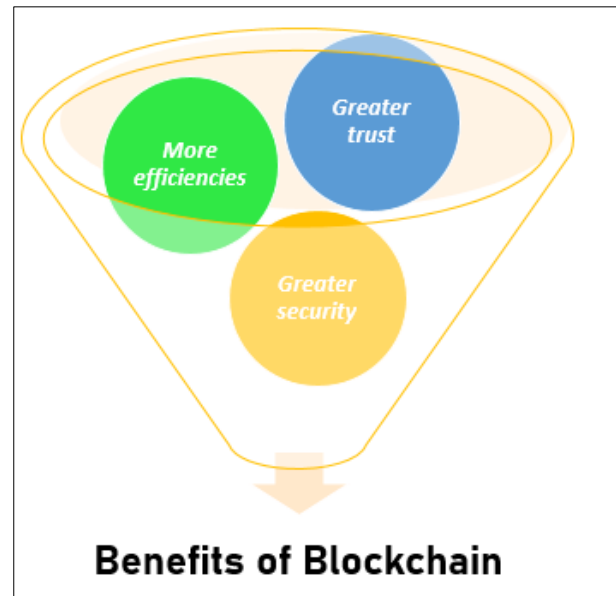


Fig 1

Nature of block chain how it works

As each transaction takes place, it is stored as a "block" of data in the system's database. This type of transaction depicts an asset movement of, which can be either tangible (a product) or intangible (a service) (intellectual). The data block can store any information you want, including who, what, when, where, how much, and even the condition of the data block, such as the temperature of a food shipment. It can also include any information you want, such as the name of the recipient.

Each block is linked to the blocks that came before and after it. As an item is moved from one location to another or ownership changes hands, these data blocks are linked together to form a chain of information. Because the blocks guarantee the exact timing and sequence of transactions, they are linked together with high security to prevent any block from being edited or a block from being introduced between two existing blocks.

Transactions are linked together in an irreversible chain known as a block chain. -Each successive block increases the verification of the previous block and, thus, the overall security of the block chain. This makes the block chain tamper-evident, allowing it to deliver the critical strength of immutability. In this way, the danger of manipulation by a hostile actor is eliminated, and you and other network users may trust the ledger of transactions that is created.

Conclusion

An important aspect of block chain technology is that it is fundamentally a distributed ledger technology that makes use of cryptographic techniques and distributed consensus algorithms to provide the characteristics of decentralisation, traceability, immutability, and currency properties while simultaneously maintaining the characteristics of anonymity and immutability. The fact that it has money-like characteristics has the potential to open the door to a slew of new applications. Since block chain technology helps to reduce risk, eliminate fraud, and provide

transparency in a scalable manner, it has the potential to be extremely beneficial and innovative in a wide range of applications and uses. With block chain technology, there is virtually no end to the number of potential applications that can be found in virtually any industry. To combat fraud in the financial sector, secure patient medical records can be transmitted between healthcare providers, and ledger technology can even be used to track intellectual property in business and music rights for musicians, to name a few applications. A block chain, according to the MIT Technology Review, is intended to allow people, particularly those who do not trust one another, to communicate vital data in a safe, tamperproof manner while still maintaining their anonymity.

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