IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 4, April 2022

A Comprehensive study on Block Chain and its use in Business

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ABSTRACT: ***Blockchain technology has the potential to significantly alter our corporate environment and will be very influential over the next few decades. It has the potential to alter our economic structure and the way we see corporate operations. Since it cannot be altered or falsified, blockchain is a decentralized and distributed ledger system that attempts to provide transparency, data security, and integrity. Only a small portion of current research on blockchain technology is geared toward examining its use in contexts or industries other than cryptocurrencies like Bitcoin. The majority of current research on blockchain technology is focused on its use in cryptocurrencies like Bitcoin. Blockchain technology is more than simply bitcoin it has a number of uses in business process management, government, banking, and finance. As a result, this paper makes an effort to look into and examine the possibilities and difficulties associated with present and potential Blockchain Technology implementations. As a result, several published research were thoroughly examined and assessed according to how they added to the body of knowledge on Blockchain.***

KEYWORDS: ***Bitcoin, Blockchain, Cryptocurrencies, Data Security, Technology.***

1. INTRODUCTION

The ideas of bitcoin and blockchain were initially suggested in 2008 by Satoshi Nakamoto, who detailed how associated with specific and an open distributed ledger may be merged into a digital currency application. At initially, bitcoin's extraordinarily high volatility and many governments' views regarding its complexity slowed its expansion slightly, but the benefits of blockchain, bitcoin's underlying technology, drew increased attention [1]. The distributed ledger, decentralization, information transparency, tamper-proof architecture, and openness are some of the benefits of blockchain. Blockchain development has been a gradual process. Blockchain is now classified into three versions depending on its applications: Blockchain 1.0, 2.0, and 3.0. In the Appendix, we go through the three generations of blockchain. Blockchain technology has been used for more than just digital money and banking; it has also been used in health care, supply chain management, market monitoring, smart energy, and copyright protection [2].

Cryptocurrency is now a catchphrase in both business and academics. Bitcoin has been one of the greatest successful cryptocurrencies, with its capital market surpassing $10 billion in 2016. Transaction in the Bitcoin network may take place without the involvement of a third party using a specifically built data storage structure, and the key technology used to develop Bitcoin is blockchain, which was initially suggested in 2008 and deployed in 2009. Blockchain may be thought of as a public ledger, with all committed transactions recorded in a series of blocks. The chain expands as additional blocks are regularly added to it [3]. For better security and blockchain consistency, asymmetric encryption and distributed consensus techniques have been employed. Decentralization, persistence, anonymity, and auditability are all fundamental aspects of

ISSN PRINT 2319 1775 Online 2320 7876
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blockchain technology. With these characteristics, blockchain may significantly reduce costs and enhance efficiency [4]. Blockchain may be utilized in a variety of financial services, including digital assets, remittance, and online payment, since it enables payments to be completed without the involvement of a bank or an intermediary. It may also be used in other domains like as smart contracts, public services, the Internet of Things (IoT), reputation systems, and security services. These industries benefit from blockchain in a variety of ways [5]. To begin with, blockchain is unchangeable. Once a transaction is stored on the blockchain, it cannot be altered. Blockchain may be used to attract clients for businesses that demand great dependability and honesty. Furthermore, since blockchain is distributed, it can prevent the single point of failure problem. When it comes to smart contracts, once they are placed on the blockchain, they may be performed automatically by mining.

The two primary architectural methods for software systems are centralized and distributed. The nodes of a centralized software system are dispersed throughout and linked by a single central coordinating node. On the other hand, a distributed system has many interconnected nodes without a single point of control [6]. A distributed system has several advantages, like enhanced processing power by pooling the computing capacity of all linked nodes, better dependability from not having a single point of failure, and so on. However, a distributed system has a number of disadvantages, such as communication costs and security problems caused by unreliable nodes abusing network access. Blockchain, however, may be thought of as a component of a distributed software system's implementation layer. Blockchain technology may be used to achieve and preserve the data integrity in distributed systems.

Additionally, blockchain might be seen as a wholly peer-to-peer network made up of individual nodes. In peer-to-peer networks, the main integrity threat is posed by dishonest and malevolent peers. Due to the possibility of the existence of unknown peers with uncertain dependability and trustworthiness, each node tries to take advantage of the system for its own benefit [7]. Therefore, blockchain technology is required to address these pressing issues. Nakamoto created Bitcoin as the first and most well-known cryptocurrency, along with the blockchain. It permits trustless and reliable transactions without the need for centralized administration, even when users lack mutual trust or the network contains unreliable users. Since then, blockchain technology has garnered a lot of interest for its decentralized transaction ledger capabilities, which may be used to register, confirm, and transfer payments or contracts. Additionally, blockchain technology has been used for purposes other than monetary operations, such as in the fields of healthcare, utilities, real estate, and government.

Since the blockchain framework created for Bitcoin is portable and expandable, they are determined to be possible. Blockchain's first focus was on integrating cryptocurrencies with traditional banking and financial institutions [8]. Financial institutions may perform their financial operations directly amongst themselves without the need of centralized authorities or middlemen thanks to the innovative banking environment that blockchain technology enables. Every transaction has to be verified with the consent of at least 50% of network participants. This indicates that nobody using the blockchain would be able to change any data without the consent of everyone else using it. This paper's goal is to present and examine information on blockchain technology and its existing use cases. The document categorizes the literature's books published journals, conferences, technical reports, etc. in great detail. Several works have been done in the

ISSN PRINT 2319 1775 Online 2320 7876
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review research concerning blockchain technology. However, the majority of studies have not taken into account a thorough examination of cryptocurrency applications.

2. DISCUSSION

The financial advantages of blockchain have been thoroughly investigated in earlier studies. Understanding how blockchain technologies affect an organization's organizational structure, method of operation, and management style is crucial for particular enterprises. Determining whether blockchain can address market failures caused by information asymmetry and if it can improve market effectiveness and social welfare is crucial for the market as a whole. Further academic study will be necessary to comprehend the processes through which blockchain affects business and market efficiency. This article recommends that blockchain technology developers pay more attention to privacy and security concerns. Even if all blockchain transactions are private and encrypted, there is always a chance that the information might be compromised [9]. There is a belief in the security industry that no physical interaction can ever be guaranteed to be completely secure. Therefore, the problem of how to communicate transaction data while still safeguarding the confidentiality of individual information is especially crucial for both academic research and social practice.

If you haven't been living under a rock, you've probably heard of "Blockchain." It seems to be turning into one of the hottest terms of the year. However, many people no longer understand what a blockchain is or how it operates. Put yourself and a friend in the position of moving money from one account to another. You visit your bank and ask the teller to transfer some money from your account to your friend's account. This is recorded by the bank on their own systems. Both the accounts of the sender and the recipient must have this record updated. Although the process may seem straightforward, it must be overlooked that this data may be compromised. Transaction records may be readily modified or edited, as seen in Figure 1.

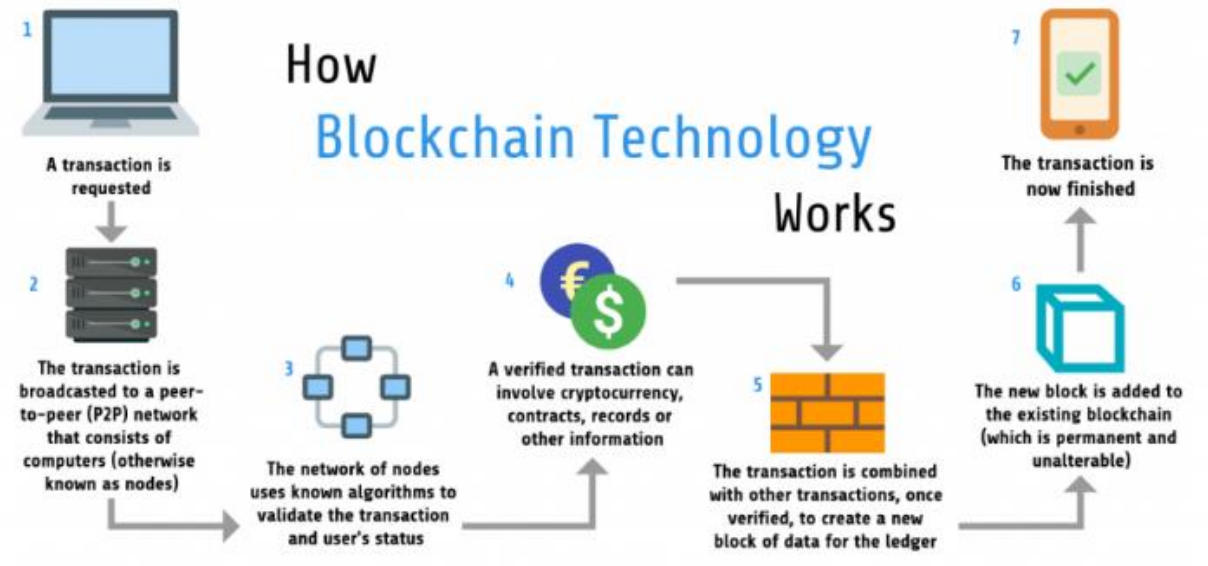

Figure 1: Illustrate the working process of the block chain technology [Medium].

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The marketplaces for cryptocurrencies and initial coin offerings have expanded quickly. They raise a lot of intriguing issues, such how to handle virtual money. Although the bulk of earlier study focused on factors influencing the success of ICOs, we think that future studies will examine how to control cryptocurrencies and the ICO market. Many conventional financial institutions were interested in blockchain technology because of its success in digital currency applications before 2015. Blockchain is now more than capable of satisfying the demands of the banking sector in 2019 thanks to its ongoing self-reinvention. We think that blockchain technology has the potential to be used widely in a variety of financial sectors, including banking, capital markets, online finance, and others. Deep blockchain technology and financial integration will remain a fruitful research area [10]. The sharing economy is often described as a peer-to-peer activity where people exchange products and services. Business sharing might play a significant role in the new sharing economy in the future. As a result, creating blockchain connections may start to become popular. These links will make it easier to integrate the supply-chain management, payments, and identity authentication procedures in commercial enterprises. Additionally, they will make it possible for businesses and sectors to instantly share information and coordinate data.

Blockchain technology is a cutting-edge computer protocol that is used to digitally record and store data across many computers, or nodes. The so-called "Ledger," which resembles a database schema, is one of the most crucial components of Blockchain. A block, or collection of recorded digital transactions, is what makes up a blockchain. Then, using a cryptographic signature, each block is "chained" to the following block in a sequential, chronological sequence. The most recent transactions since the previous block was added are replicated in the blocks. As a result, the shared block, or ledger, is connected to every user of a network of computers to authenticate or confirm transactions, doing away with the requirement for a third party. Blockchain is utilized in a novel and distinctive method to distribute and safeguard data. Direct operations between non-intermediaries or intermediary services are assumed to take the place of a central instance in the dispersed network. Therefore, a transaction can never be changed or erased and Blockchain can only be updated by agreement of system users. Its distributed database lacks the user-controlled access mechanism of a conventional, centralized database, making it impossible to hack, alter, or otherwise interfere with it.

In other words, the data cannot be changed or removed from the ledger after it has been added to a Blockchain. This includes system administrators. Considering that each data block has a time stamp and is connected chronologically by a cryptographic signature. Much any handling different value, including those involving money, products, property ownership, medical information, or even votes, may be made using blockchain technology. Blockchain eliminates the need for data transfer since all relevant transaction data will be maintained on the ledger and used to determine the project's progress. There is not a point of failure since Blockchain is a decentralized database without a centralized authority or point haccp and is not overseen by a single control center as there could be with system management. Therefore, theoretically, an IT specialist would not be required to keep an eye on the integrity of a blockchain database in an organization. It's critical to stress that Blockchain is a fairly young technology despite these potential. As a consequence, the technology has been utilized in a limited number of situations. An established example would be Bitcoins, the most successful use of blockchain technology that has shown its viability as a means of establishing trust in an environment devoid of a centralized authority.

ISSN PRINT 2319 1775 Online 2320 7876

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Block chain, an emerging technology that is transforming multiple sectors, has drawn a lot of attention from the research community due to its wealth of advantages and the several study possibilities it has opened up in different industries. There is a need for research studies that study a thorough examination of the present body of knowledge in this sector due to the recent quick development of blockchain research publications. A few review articles have been released to fill this demand, reporting on the most recent developments and difficulties with blockchain technology from various angles. However, Web of Science (WoS) has not been used as a literature database in any bibliometric analyses of the state of the art in blockchain. Consequently, a comprehensive bibliometric examination of the present body of knowledge in blockchain research would be required.

3. CONCLUSION

The four main qualities of blockchain decentralization, persistency, anonymity, and auditability—have shown their potential to revolutionize established industries. We provide a thorough introduction of blockchain in this essay. We begin by providing a general review of blockchain technology, including its architecture and salient features. The common blockchain consensus algorithms are then covered. We looked at and contrasted these procedures in various ways. In addition, we outlined a number of difficulties and issues that might obstruct blockchain growth and outlined some current solutions. Also suggested are some potential paths for the future. Applications based on blockchain are becoming more prevalent now, and we want to investigate them in-depth in the future.

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