BASED UPON BLOCK CHAIN AND ITS CONTEXT

Dr. Vipin Jain*

*Professor,

Department of Finance & Marketing, Faculty of Commerce, Management & law,
Teerthanker Mahaveer Institute of Management and Technology,
Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, INDIA
Email id: vipin555@rediffmail.com

ABSTRACT

Blockchain is the technology that can lead in the next few decades to major commercial advances. It may change our business knowledge and reshape our economy. Blockchain is a decentralized and distributed ledger system to offer transparency, data security and integrity, since it is not tampered with or counterfeited. The bulk of this Blockchain study focuses on the use of cryptocurrencies, like bitcoin, and very little research has been done in other settings or industries to utilize Blockchain technology. It may be used for many reasons in government, banking and finance, accounting and management of business operations. It is more than just cryptocurrencies. Therefore this study focuses at evaluating and investigating Blockchain Technology's potential and challenges and their future applications. A broad variety of published researches have therefore been carefully evaluated with their addition to the knowledge corpus of the Blockchain. Therefore, this study is a good foundation on which practitioners and academics will improve their usage in Blockchain in future.

KEYWORDS: *Blockchain Technology, Financial, Network, Smart Contracts, Security, Transactions.*

1. INTRODUCTION

Blockchain technology is a new technique for the gathering and storing of information that is used on many devices and numerous nodes. One of the most important aspects of Blockchain is the so-called Ledger that resembles a relation database. A block list of encrypted digital documents is Blockchain. In a linear chronological sequence, each block is then connected to the next block using a cryptographic signature. The final block includes a replica of the previous transactions. In order to validate or authenticate transactions by removing a need for a third party, all participants using the network computer have to be connected to the shared block or head (Fig. 1)[1].
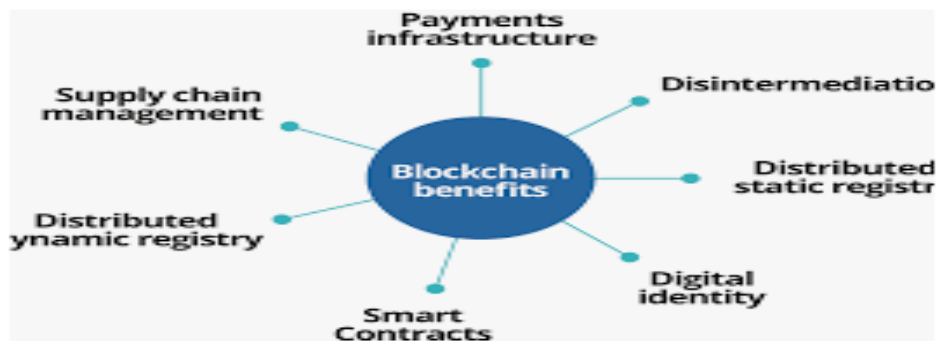
Fig. 1: Context Setting On Blockchain.

Blockchain is used to protect and share data in a new and unique manner. The removal from the dispersed network of a central facility showed that non-intermediaries or intermediary services progress significantly towards a direct transaction. Blockchain can thus never be changed or removed alone amongst system members by agreement. The distributed database cannot be hacked, changed or damaged in the same manner as the conventional central database with a user controlled access mechanism[2], [3].

That is, the data remains unaltered and after being recorded on the blockchain, no one, no system administrator can modify or delete it. Each block of data is temporally labeled with a digital signature. Blockchain Technology, including value for money, goods, property ownership, and medical data or voting, may be utilized in virtually any kind of transaction. Blockchain does not require transmission of data, stores all transaction data and calculates the state from the project's directory. Since Blockchain is a distributed system, it does not operate via a single control center with a central control or authority, it has no single failure point. Consequently, with a blockchain database, a business does not have to monitor security for an expert in information technology[4].

It is worth emphasizing that Blockchain is a relatively new technology, despite these possibilities. As a consequence, only a tiny proportion of cases use the technique. Bitcoins' most efficient application of Blockchain technology may be a demonstrated example and proved to be a viable option to build an ecosystem without trust and central authority. This article was focused mainly on the theory and gathering of facts. Data and soil theories were gathered in various methods. For example, there have been thorough scans of published works, books, academic journals, conferences, technical reports and the searches of a variety of databases employing keywords. The goal of this research is to provide an overview of the current or future practical applications of the Blockchain technology[5].Thus author provide a thorough literature research in the following section, to identify existing Blockchain applications and explore future practices.

Blockchain Technology is an ever-expanding, cryptographically connected and secure collection of data known as blocks. In general, a previous block hash code of encryption, a time stamp and transaction data are provided in each block in order to preserve such transactions. Nakamoto has developed and distributed transaction or event information recording methods. Blockchain or Distributed Ledger Technology (DLT). Open, secure, decentralized, efficient and cost-effective transactions are recorded[6].

Therefore Blockchain Technology offers: distributed leader, information management decentralization, data security, transparency and integrity, forgery control, efficiency, low cost, flexibility, programmable features and no danger of centralized failure in the database. The most significant ones are: Blockchain; Public Blockchain; Private Blockchain; (hybrid Blockchain). Each type has its benefits and limitations to suit the needs of different applications[7].

In particular,

- Public Blockchain allows everyone to handle a transaction that is transparent and anonymous. A fully decentralized Public Blockchain, like bitcoin. There being no primary failure point, the system works on the basis of a user consensus. Nevertheless, without finding the participants, public blockchain is susceptible to system attack, for example, and an attacker could rebuild and properly chain the blocks modified;

- Private blockchain, privacy in transactions, publicly inaccessible data, but Members known. Without an invitation or authorization to a participant, the member may not read or write the blockchain on a private network. Big companies with authorizations issued by numerous Blockchain users usually employ private Blockchain. For example, a Blockchain private network, such as customers, workers and providers and a hybrid Blockchain Consortium, may be utilized for this Bank;

- The consortium Blockchain is a hybrid concept for Blockchain. The use of that architecture allows companies or organizations to transfer data using their own Blockchain networks between consortium members such as banks, institutions and other enterprises.

2. LITERATURE SURVEY

F. Glaser et al. highlighted in the paper that the introduction of Bitcoin in 2009 brought not only Cryptocurrencies and new financial digitization, especially in the payments sector, but also a new generation of creative and digital currencies-built technology. In general, decentralized contracting systems may alter the nature of how businesses, organizations and people are formed and interact with each other. Decentralized consensus systems, decentralized applications and intelligent contracts provide the conceptual and technical foundation for the creation of predetermined, incorruptible protocols and agreements for human behavior and connection. But the methods and implementation are extremely complicated and practitioners and researchers from other disciplines are challenging to identify and access these ideas, not acquainted with encryption, networking or decentralized networking. Crypto 2.0 defines and evaluates new technologies to overcome this breach by creating a wide taxonomy of decentralized consensual systems, allowing researchers and practitioners to take up a further degree of innovation beyond cryptocurrencies[8].

T. Ahram et al. presented in the article that Efficiency, innovative goods and intimate relationships between consumers globally have been created through proper use of the mobile Internet of Things (IoT), social media, analytic and cloud technologies and the digital world to give models for improved decision making. Blockchain has lately launched and changed a fresh viewpoint on digital systems safety, resilience and efficiency. Bitcoin, although initially popular, is more than a basis of cryptocurrency. It provides a secure method to exchange any type of products, services or transactions. Increasingly, industrial growth relies on dependable connections, but increasing regulation, cybercrime and fraud have hampered development. In

order to address such issues, Blockchain will enable more flexible value chains, quicker product developments, better customer interactions and faster integration into IoT and cloud technologies. Further With a trustworthy contract followed up without the involvement of third parties and that cannot contribute direct value, Blockchain offers decreased trading costs. It allows smart contracts, obligations and agreements with robust, inherent cyber security protections. This article aims at breaking down the ground in many industrial situations where the usage of Blockchain technology is demonstrated and verified. Using International Business Machines (IBM) Corporation Blockchain a healthcare chain application is defined and built. The concepts may then be applied to a variety of businesses including banking, government and manufacturing[9].

3. BLOCKCHAIN TECHNOLOGIES APPLICATIONS

This section covers numerous practical uses of Blockchain Technology in a variety of areas. The following categories classified applications in intelligent contracts, the government, the financial sector, the accounting and the management of business operations. A smart contract is a contract-funded electronic protocol. Single but designed to operate in the gates of environment in Blockchain Intelligent contracts are a regular contract. Thus, in the IT sector, such agreements are usually called intelligent contracts. The aim of a smart contract is to guarantee the performance of a party's commitments. The aim is to eliminate Blockchain intermediaries for third-party transactions. This third party maintains and carries out contracts historically and builds confidence amongst all parties concerned. Intelligent contracts can thus avoid moral hazard issues, such as strategic default, and reduce verification and enforcement costs significantly[10].

A significant area in which Blockchain is used in the creation of completely automated, free-of-human intelligent contracts is its application. Smart contracts automatically enable repeated transaction activities or specified relevant transactions. The contractual agreements between the contracting parties should be checked, executed and enforced automatically through Blockchain. These agreements are termed Smart, because they may be implemented or executed partly or completely.

Some of the intelligent contract applications in Blockchain are:

➢ *Management of contracts* - Management of contracts for businesses verifying contractual information that may be of considerable value to organizations of every type, particularly in the technical and construction sectors, Blockchain Technology provides a solution. This would enable businesses to improve the performance of their supply chains, evaluate suppliers and achieve better values and shorter periods using Blockchain technology for contract administration.

➢ *Entertainment* - Blockchain enables a transparent transfer of royalties in real-time distribution to all those operating in the music and movie industries.

➢ *Healthcare* - The health sector has used Blockchain technology previously. Intelligent contracts may be used to keep tabs between medical payers, providers and pharmaceutical companies. Intelligent contracts for each payer and every provider may be created and then maintained in their digital records by healthcare professionals.

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- *Insurance* - The insurance industry of Blockchain Technology is new and over $2 billion is anticipated to be spent on fraud and compliance each year. The entire value chain utilizing Blockchain technology has tremendous potential. Certain insurance products may be automated using smart contracts. Capturing the identity and rules for customers may minimize mistake, ignore and detect fraud.

- Blockhain Internet of Objects (IoT) is a networked Internet system, mechanical or digital computers, things, animals, or people with unique identities that may transmit data from human to human or from human to computer across a network. It enables data to be gathered and transferred, sensors, software and language shared.

- Students anticipate to reach 20.4 trillion of IoT devices by 2020. By using this amount of devices in the future, the System may reveal weaknesses such as network security, performance, and cost. Blockchain Technology deals with the aforementioned issues and improves IoT connection. The device network will allow smart contracts to be executed smoothly, securely and autonomously only if the specified conditions have been satisfied. It promotes greater automation, cheaper transfers that do not need transactions, scalability or security from third parties, because all devices may be controlled by Blockchain with one interface.

4. BLOCKCHAIN TECHNOLOGY FOR IMPLEMENTING E-GOVERNMENT

E-government constructing using blockchain technologies, cryptocurrency instruments and smart contracts is feasible. An intelligent agreement with a variety of ways of interactions and processes between people and the State may create a distributed directory with legally allowed data. The source code minimizes the danger of unauthorized changes and guarantees that the contract algorithm is carried out in all stages and network nodes alone. This will enable the use of Blockchain technology, fraud prevention, confidence-building between public opinion and the state, and the enhancement of public sector performance for state papers, E-voting, public procurement auctions and registrations.

Blockchain's current efforts are being launched in different nations, such as the US, China, the United Kingdom, Sweden, the Netherlands, the United Arab Emirates and Estonia, to explore its potential in the public and government sectors. Researchers have shown that certain potential advantages, such as confidence and openness, are especially important to developing nations because they are more prone to corruption, fraud and lack of trust than wealthy ones.

Finally, e-government using Blockchain technology and intelligent contracts will be made feasible. Bureaucracy by Blockchain Technology will be substantially decreased, the paperwork will be omitted, transaction costs will be cut, officials completely controlled and fraud eliminated, and thus business performance will be improved in the public sector.

5. BLOCKCHAIN TECHNOLOGY FOR FINANCIAL INDUSTRY

Blockchain is a significant technology which may decrease transaction costs and reorganize the economy substantially. Harvard Business Review stated that Blockchain Technology is accomplishing what the Internet has made financial institutions available to the media. Blockchain was originally developed as the backbone of Bitcoin, the most popular digital decentralized money in Nakamoto. Blockchain has the ability to solve a broad range of data,

information and money exchange issues, which are especially helpful to financial operations and organizations. Blockchain may be used by financial organizations and banks to manage sensitive information and offer safe, low-caste, minimal risk services. Scholars highlighted Blockchain's significance in financial settlements and increased dependability of financial reporting. Similarly, analysts claimed that Blockchain technology is capable of altering economic sectors and many benefits that lead to reduced transaction costs.

The main platforms of Blockchain development in the financial sector are now hyper leaders, the open-source industry consortium that was established by the Linux Foundation. Ethereum has been established in 2013 as a customized platform. By February 2018, there was over $400 billion in market capitalization for over 1,500 cryptocurrencies, including approximately $150 billion in value for Bitcoin. Finally, in contrast with current infrastructures and legacy systems of financial institutions, Blockchain Technology has reached promise. Blockchain solves the problems of many financial sectors and significantly improves the performance of its business, for example trade finance, intelligent assets, payments and intelligent contracts.

6. BLOCKCHAIN TECHNOLOGY AND REAL TIME ACCOUNTING

Compared with other businesses, some of whose advancements in Blockchain technology are substantially impacted, the digitization of the accounting system is still at an early level. The use of Blockchain improves the audit efficiency, as the auditors raise the potential of their accounts by lowering maintenance costs, ensuring an exceptionally secure environment and reconciling books. Blockchain provides audit traceability, automated accounting and reconciliation, monitoring of asset ownership and authentication. Blockchain Technology may give a help to accounting by providing an interlocking accounting system in particular by putting the company's transactions directly into a shared register. Since all entries are disseminated and sealed, actions are virtually impossible to alter or delete. Similarly, all entries are electronically and encrypted when authorized by a notary. Furthermore, any accounting information with a time stamp may always be recorded using Blockchain technology to avoid changes. The entire Joint Company Register is then accessible to customers, suppliers, shareholders, bank creditors or any other interested party. Accounts, balance sheets or income statements may therefore constantly be made accessible, and nobody has to depend on the firm's quarterly financial statements that enhance the company's business performance. For security, all transactions with an encrypted hash code are numbered, with a unique 64-digit alphanumeric signature for each transaction. The hash code unaltered and displays the transaction, therefore ensuring greater security. Blockchain would therefore offer extra data security and authenticity in so far as data saved in a Blockchain cannot even be changed by the system administration. Therefore today the core of accounting and auditing is redefined by Blockchain Technology.

7. DISCUSSION

Despite the enormous potential benefits of Blockchain for e-government, accounting, banking and many other technologies, literature offers a variety of problems and limitations that need to be addressed. The difficulties and barriers address technical issues such as usability, interoperability, security, computing efficiency and Blockchain Technology storage capacity. Many research have highlighted cyber security problems and dangers. Experts stated that the blind trust, safety and performance of Blockchain developers are significant difficulties and disadvantages for Blockchain Technology. Blockchain Technology also fails to comply with

international laws and norms. Furthermore, because to the increasing need for interoperability across major businesses, like banking, technology has to be compatible with many existing systems. The link with current systems is a major issue because existing systems and processes cannot be removed completely and substantial modifications required to adapt to existing conventional systems. Moreover, Blockchain Technology isn't suitable for big transactions because of the complicated verification procedure. All transactions in Blockchain Technology will require a cryptographically hash code, a 64-digit alpha numeric signature, requiring significant computer power and time expenditure digitally to identify each transaction. In addition some academics believe that the value for Blockchain adoption should be examined carefully in public or private services, since the cost of the development, operation and maintenance of Blockchain technology may exceed the benefit. However, the immature nature of the technology itself highlights all current technical difficulties with the usage of Blockchain technology. This may be viewed as something common in all new technology presentations. In conclusion, Blockchain's adoption could lead to organization, including strategic, structural and cultural changes. This transformation requires the involvement and dedication of its members in order for the organization to survive and to improve its performance and efficiency.

8. CONCLUSION

Blockchain Technology offers great value and promise for addressing data integrity issues, increasing transparency, improving safety, avoiding fraud and guaranteeing theoretical confidentiality of assessments. Blockchain Technologies is an area in which Blockchain technology may bring about change in banking, accounting, electronic government, insurance, entertainment, trading platform, healthcare, internet, law firms and others. Blockchain Technology has a great potential, since technological innovation and applications may offer economic and social benefits, to create new solutions in accordance with the industry where it is utilized. However, implementing Blockchain technology in many sectors could be extremely expensive. Company investments must move or migrate old systems. Initially, if organizations embrace Blockchain technology, businesses will have to build a single platform to handle such a hybrid architecture of application, combining Blockchain and conventional systems. They must therefore improve awareness of Blockchain Technology's value, potential and dangers. The technique was thus only applied in a restricted number of circumstances to such systems. Therefore, Blockchain Technology cannot replace outdated systems or old applications quickly. However, Blockchain may definitely be a further application to existing systems and could lead to the creation of new systems in the near future. Finally, more research in this area of Blockchain Technology is required to further improve the maturity of the sector, since it is still on the exploratory stage and many technical and legal problems are still unsolved. Therefore, this study is a good foundation on which practitioners and academics will improve their usage in Blockchain in future.

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