Block Chain Technology–An Enabler of Innovation in Business processes

Nidhi Mathur,
Associate Professor
Jaipuria Institute of Management
Address: Block A, Gate No-2, Shakti Khand 4, Indirapuram,
Ghaziabad, Uttar Pradesh 201014
*nidhi.mathur@jaipuria.edu.in

Received: *22.12.2020,* ***Accepted:*** *29.12.2020*

Abstract:

Block chain is a technology that possesses potential of changing the way of transactions conduction in day to day life. This application of Block chain technology is not only limited to virtual currency or the crypto currencies but has a wide application in all the aspects or environments where there is any kind of transaction involved. Block chain based applications are gradually increasing in the commercial environment each day and covers number of areas/ sectors be it the financial service, or supply chain or medical industry and the most important Internet of Things (IoT).However, the Block chain technology faces challenges like scalability and security issues which needs to be addressed. The purpose of this paper is to explore the possibility of Block Chain technology in various financial applications and commercial applications. The paper also focused on the prospects of Block chain technology in developing economies with special reference to Indian economy.

Keywords - Block chain, Crypto currencies, Innovation

1. INTRODUCTION

Block chain is a database solution which is a distributed ledger. It maintains a data record list continuously increasing with increasing nodes which are included / participating in it and is confirmed. The data is recorded in the form of a public ledger, which includes information of every completed transaction.

Block chain is a decentralized solution where there is no involvement of the third party or any intermediary. The detail of each transaction which is completed in the Block chain is made available to all the nodes in it. This attribute of block chain has created more transparency in comparison to centralized transactions where a third party is involved.

Block chain, like the Internet, is an open, global infrastructure that allows companies and individuals making transactions to cut off the role of middleman, and thus reducing the total/overall cost of transactions and the time lapse of working through third parties. The technology of block chain involves distributed ledger and consensus process structure as basic component.

In the block chain structure a digital ledger including all the transactions is allowed to be created and then shared among all the computers distributed on a network. The ownership of the ledger is not controlled by any authority but it shared with all the users of the network and it is viewed by all users. The leading sector to incorporate the Block chain technology is the financial sector and it has applied the technology not

only in building business models but also it has paved the way for companies in the health care logistics and supply chain and entertainment where the technology has been very actively used. These companies have applied the technology in product movement coordination, maintaining database through e health records and secure management of the content of entertainment industry.

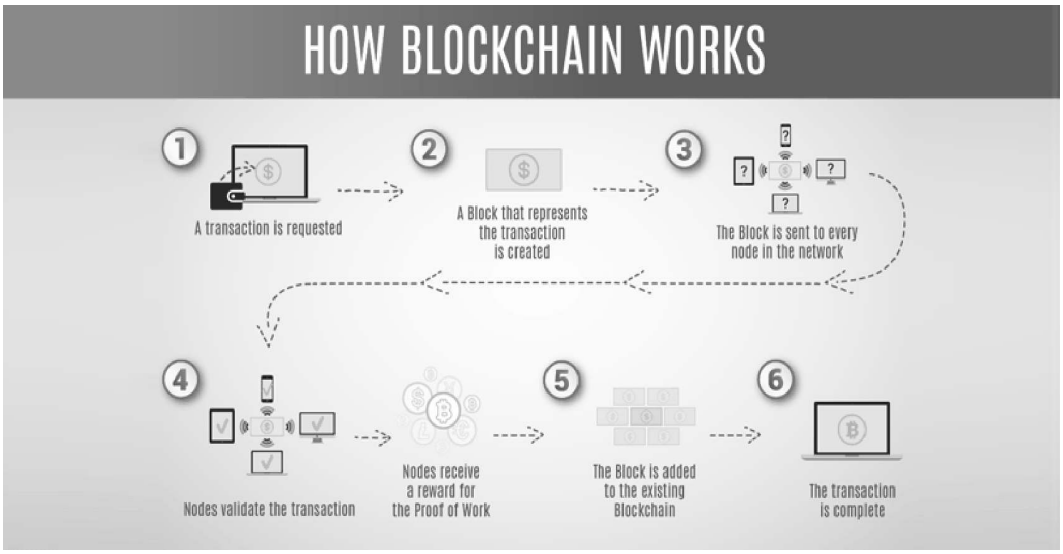

Figure 1 : Block Chain Architecture, Source: www.intellipaat.com

2. SUPPLY CHAIN APPLICATIONS OF BLOCK CHAIN TECHNOLOGY

Block chains are, potentially, a disruptive technology for the design, organization, operations, and general management of supply chains.

The technology of the Block chain provides information which is reliable, traceable and also guarantees there the authenticity of information have created scope for application of this technology in modern supply chain management where there can be smart contractual relations without any trust issue. The block chain technology has highlighted the five important dimensions of the product which are relevant to supply chain namely the nature of product (what is?), the quality of product (how?), the quantity of product (how much?), the location of the product (where it is?) and owner of the product (who owns it at any moment of time?).

In this way, it can be said that the technology of block chain has eliminated the requirement of a trusted central authority operating and maintaining these systems and allows the customers to inspect the custody and transactions uninterrupted chain starting with the raw materials to the point of sale or end sale. This information is recorded in ledgers as transactions occur on these multiple block chain information dimensions; with verifiable updates.

Smart contracts, as written rules stored in the block chain, can help to define network actor interaction amongst each other and within the system. Smart contracts impacts the data sharing network among the various supply chain participants and enable continuous improvement for process. Understanding the full implications of block chain technology in the supply chain will require trans disciplinary efforts.

There is a need to develop an interaction between professional organizations and academia so that

standards for performance measurements can be prepared and applied on the implementation of block chain technology.

3. APPLICATIONS OF BLOCK CHAIN TECHNOLOGY IN FINANCIAL SECTOR

Block chain was originally developed as the technology behind crypto currencies like Bit coin. It is an elaborated and a globally distributed ledger which can run on millions of devices and can record any data of any value. The financial assets like bonds, debenture, equity derivatives and any type of virtual assets can be transferred and recorded with safety and privacy between the parties. This is possible only because there is no involvement of various intermediaries like financial institution various governments, but by different network consensus, cryptography, collaboration, and clever code.

It is first time in the history of human that the transactions can be materialized between any two parties who are unknown to each other and can have trusted relationship without the involvement of any external intermediary.(such as banking institutions, rating agencies, and various government bodies) which were earlier involved in the verification of identity and act as an bridge to build trust among the parties involved to carry out business transactions Block chain systems are enabled to perform the functions like contracting among parties, clearing and settlement process, and record-keeping with various attractive features for different banking and financial service markets.

These systems are flexible which can operate in any decentralized systems and network where there is no requirement of central server and does not have any single point of failure. This is because they operate using distributed open source protocols and possess integrity where there is no need to trust a third party to execute the transactions.

The Public block chain systems are transparent inherently, as all the variations are visible to all the parties involved. The functionality of blockchain technology also allows applications and users to operate with a high degree of confidence because transactions are unchangeable—they cannot be reversed or resequenced. In general, block chain systems are uniquely able to ensure that contracting parties all have accurate and identical records.

The benefits of block chain for financial service can be summarized as below:

- Secured transactions
- Avoiding information leakage
- Reduction in transaction time
- Removal of transaction intermediaries
- Reduction in risk of fraudulent practice and cybercrime
- Observe real time transactions

Block chain could defeat various complex intermediate functions in the industry:

- Identity and reputation of customers

- Payment and remittances value
- Savings Value
- lending and borrowing function
- Capital Markets and stock exchanges
- Insurance and risk management
- Auditing and tax functions.

The potential of block chain can be very diverse for the developing economies. It can be explored as a technological advancement for various sectors of economy, but the challenge is to build trust for implementation.

4. RECENT DEVELOPMENTS IN BLOCK CHAIN TECHNOLOGY IN INDIA

Block chain, a seemingly unassuming data structure, and a suite of related protocols, has recently caught the attention and spurred efforts of a number of domestic firms. The Institute for Development and Research in Banking Technology (IDRBT) has taken the initiative of exploring the applicability of BCT detailing the technology, concerns, global experiences and possible areas of adoption in the financial sector in India. To develop and gain a first-hand experience of the implementation of the Block chain technology, the Institute has also formulated a Proof-of-Concept (PoC) on the applicability of Block chain technology to develop a trade finance application to provide banking solutions. The results of the PoC have been quite encouraging, giving comfort and confidence in the implement ability of BCT in the Indian financial sector. The PoC provided a good insight into the workings of the Blockchain eco-system demonstrating the following key aspects:

- Transparency in various events which are triggered by counter parties'
- Complete transparency of various events triggered by various counter-parties
- Tamper proof and Immutability
- Automated flow of transaction which is triggered by the occurrence of specific events.
- A Privately distributed ledger system.

The various stages that how Block chain technology can be implemented in Indian banking can be summarised as follows:

i. The usage of Block Chain Technology (BCT) for Intra bank usage by setting up a private Block chain so that internal operations can be efficiently completed. The setting up of internal block chain system will be helpful in training human resources and also enable the banks to efficiently manage assets and facilitate cross – selling.

ii. The Inter-bank usage of Block technology (BCT) through Proof-of-Concept implementation and the

testing may be done in the following given order of increasing application complexity as the stakeholders involved in the process are high in the transactions.

Centralization of KYC: Secure and distributed databases of client information should be created and shared between institutions will help in reducing duplicity of efforts in customer on boarding. The Secure codification of account details will enable more transparency and efficiency in transaction surveillance and will also simplify the audit procedures.

Cross-Border Payment Systems: The most important and effective use of the Block chain technology can be visualised in the cross border payments where the real time settlements will help in reducing the operational and liquidity cost. The transparency and immutable data will minimize the fraudulent transaction occurrences, while the smart contacts will help in eliminating the risk of operational errors as they are able to capture the obligations from the financial institutions thus ensuring that appropriate funds are exchanged. Block chain transactions allow generate a direct interaction between the beneficiary banks and the sender institution or bank which reduces the overall transaction cost and low value transactions can be done.

Syndication and disbursement of loans: The syndication of loans process can be benefited by the Block chain technology by automation of underwriting activities and the details which can be stored on the distributed ledger. The KYC (Know Your customer) requirements can also be automated and enforced in real time basis for better process execution and cost reduction.

Trade Financing: In the trade finance sector Block chain technology can help in developing tools for better enforcement of the AML system (Anti money Laundering system) creating competitive advantages for financial institutions. The technology will help in automation of services like LC (Letter of credit) creation, documentation and payment process which will help in minimizing the cost and creating better customer experience

Capital market Process*:* The Block chain technology can bring out the best advantage in the clearing and settlement process of the capital market thereby reducing the trade errors, eliminating risk and also providing a streamlined process for back office support resulting in shortening of settlement times.

The Block chain technology can be applied in the Banking and Financial service sector (BFSI) in supply chain finance, discounting of bills, servicing of securities, monitoring of accounts and MMS (Mandate management systems. In the Block chain system all the parties can view live transactions which make it different from traditional system of transaction where the documents are to be authorised and transferred physically. An important feature of this technology which has created convenience is that the records cannot be tempered and changed to rectify, each transaction change have to be introduced as fresh entry in the ledger and it has eliminated the need of financial messaging through papers. This feature has resulted in more convenient way of cross border remittances. A few banks in India have successfully implemented the Block chain technology in their operations in specific areas of trade finance and international remittances for the retail customers. It was reported that these banks are looking forward for its potential use on large scale for operational efficiency. Examples - SBI, Axis Bank, ICICI Bank, etc.

5. CONCLUSION

Industry is looking forward to produce system efficiencies, creating innovative technologies to produce in order to strengthen customer relationships in global environment with the help of the effective use of mobile, IoT (Internet of Things)enabled techniques, using social media, analytics and cloud computing

technology to generate models for better decisions. Block chain offers a unique and secure way to transact or exchange any kind of goods, product service or idea. The Block chain technology is initially established in the financial sector and this has helped in getting insights and recommendations which can be applied in various other industries which included supply chain, health care, customer relationship management where security and transformation play a key role for advancements. The application of block chain will help in enabling better value chain which is agile with more and more product innovation resulting in effective CRM systems and also integrating the latest technologies as IoT (Internet of Things) and cloud technologies in system development. As the Block chain technology allows immediate contracts, engagements, and agreements with inherent, robust cyber security features there is a lot of potential for developing economies to adopt these technologies and foster more secure and efficient systems to keep a pace with the developed nations in the commercial world. The Block chain technology can help these economies by enabling them to meet the technological challenges and build an environment of trust and security.

REFERENCES

Abeyratne, S. A., and R. P. Monfared. 2016. "Blockchain Ready Manufacturing Supply Chain Using Distributed Ledger." *International Journal of Research in Engineering and Technology* 5 (9): 1–10.

Application of Blockchain Technology in Indian banking and financial sector by IDRBT-January 2017.

Adams, R., B. Kewell, and G. Parry. 2018. "Blockchain for Good? Digital Ledger Technology and Sustainable Development Goals."In *Handbook of Sustainability and Social Science Research*, 127–140. Cham: Springer.

Robert Handfield Ph.D. (2019). Is block chain living up to It's promise? thoughts on how companies need to begin exploring blockchain. Raleigh: Newstex. Retrieved from http://search.proquest.com/docview/2253987549?accounted=178845

Underwood, S. (2016). *Blockchain beyond bitcoin. Communications of the ACM, 59(11), 15–17.* doi:10.1145/2994581

Yli-Huumo, J., Ko, D., Choi, S., Park, S., &Smolander, K. (2016). *Where Is Current Research on Blockchain Technology?—A Systematic Review. PLOS ONE, 11(10), e0163477*