

# BLOCKCHAIN TECHNOLOGY, A SOLUTION TO CURRENT BANKING PROBLEMS

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## **Abstract**

*Blockchain is the artificial intelligence of price discovery and crypto coin, the price discovery tools. This paper is to study about the concept of block chain and the application of same in the banking and financial sector of the economy. "The block chain is an incorruptible digital ledger of economic transaction that can be programmed to record not just financial transactions but virtually everything of value"- Don & Alex Tapscott, authors Blockchain revolution 2016. Present financial system suffers with many flaws viz. Frauds and scams, data redundancy, data pilferage and many more. Blockchain technology can overcome these problems through its secured cryptography technology and various algorithms with its own currency. This research gives the brief insight about how the application of blockchain technology in this field can help.*

**Keywords:** Blockchain technology, Cryptography, Cryptocurrency, Artificial intelligence, financial sector.

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## **Introduction**

Block chain technology was invented by Satoshi Nakamoto (2008). Block chain is shared distributed ledger which stores business transactions in form of a permanent unbreakable chain which can be accessed by all parties in a transaction. By design, block chain is defiant to modification of data. It is managed by peer to peer network collectively adhering to a protocol for inter node communication and validating new blocks. A block chain is a list of increasing records known as blocks which are linked using cryptography. Cryptography is the study and practice of techniques for secure communication in the presence of third party. Use of Cryptography in block chain ensures confidentiality, data integrity, authentication and non- repudiation. It is based on mathematical theory and computer science practise; cryptographic algorithms are designed around computational hardness assumptions making such algorithm hard to break by any third part. It is theoretically possible to break this system but not practically feasible.

Cryptocurrency is the currency which is used in block chain technology. It is a digital asset designed to work as a medium of exchange which uses strong cryptography for secure financial transaction, control the creation of additional unit and verify the transfer of asset. It uses de-centralised control which works through distributed ledger technology which is block chain. There are over four thousand altcoins (alternative for bitcoins and other cryptocurrencies).

Bank is a financial institution that accepts deposits and grants loan. Banking sector in India has undergone some major reforms since independence. A committee was setup in year 1988for computerization in banking sector, under the chairmanship of Dr. C. Rangrajan. The main aim of this committee was to improve consumer service, bookkeeping & MIS reporting.. The concept of "conventional banking" has shifted to "convenience banking". Now Indian banks are more customers oriented and introduced many services such as ATM's, NEFT (national electronic fund transfer), RTGS (real time gross settlement), ECS(Electronic clearing services) and much more.

## **Objective**

- To study the concept of block chain technology with its benefits.
- To explore problems of current Indian banking system& application of block chain technology in banking sector

## **Research methodology**

This is an explanatory study based wholly on the secondary data collected from books, journals, newspapers and official websites. The area of study is Indian Banking system. Convenience and judgement method have been used, which comes under the non-probability method of sampling.

### **The review of literature**

Since 2008, Blockchain technology had been the interesting and most demanding topic of research.

Satoshi Nakamoto (2008) in his white paper proposed “a peer-to-peer version of electronic cash which would allow online payments to be sent directly from one party to another without going through a financial institution or third party”. This emerged as a foundation for the most popular blockchain application i.e. bitcoin.

Melanie Swan (2015) explains that the “blockchain is a decentralized public ledger that can be used for the registration, inventory, and the transfer of all assets in finances, property as well as in intangible assets such as votes, software, health data, and idea”. He considered the theoretical, philosophical, and societal impact of cryptocurrencies and blockchain technologies.

Svein Ølnes (2015) studied the “potential use of the blockchain technology to enable governments to utilize the secure, open, distributed and inexpensive database technology”. It was emphasised that Bitcoin could be a promising technology for validating many types of persistent documents in the public sector.

Yli-Huumo J, Ko D, Choi S, Park S, Smolander K (2016) extracted 41 primary papers from scientific databases and studied the current research, drawbacks and the future perspective of blockchain technology from the technical point of view. The statistics shows that 80-percent of the research is only on Bitcoin as compared to other blockchain applications. Most of the studies are focusing on benefits of blockchain technology. However, many of the Blockchain scalability related challenges have been left unstudied.

J. Leon Zhao, Shaokun Fan and Jiaqi Yan (2016) gave an overview of blockchain technology research and development. The study showed that the widespread use of Bitcoin in the financial and business sector will open new ways for business innovations and research.

The Institute for Development and Research in Banking Technology (IDRBT), established by the Reserve bank of India (2017) has conducted an extensive research to explore the applicability of blockchain technology in Indian Banking and Financial Industry. The white paper explains all the aspects of blockchain like concepts, advantages, applications, challenges and future of blockchain technology in Indian Banking Sector.

### **Concept & benefits of blockchain**

Like the name indicates, a blockchain is a chain of blocks that contains information. They have a property that once some data has been recorded inside a block chain it becomes very difficult to change it. Block has three components i.e. Data, hash and hash of previous block. Data stored inside a block depends on the type of blockchain for example; bitcoins contains details about a transaction such as sender, receiver and amount of coins. A block also has a hash which works as a finger print for authentication. It identifies a block and its component which is always unique just as fingerprint. Once a block is created its hash is being calculated, changing something inside a block will cause the hash to change. The third element inside each block is the hash of previous block, this effectively creates a chain of block and this technique makes a block chain so secure.

#### **Current problems in Indian banking system**

- **Frauds and scams** because of ease of alteration in previous transaction.
- **Cost of overheads** and transaction is high.
- **Data pilferage and data leakage** are biggest concerns because of cloud computing and third parties intermediaries.
- **Difficult to locate** the origin of data.
- **Data processing speed is limited** and slow because of usage of traditional Database management system.
- **Current financial system** can take up to a week to settle payments.
- **Transfer of money** to another country or an international transaction is **expensive, slow and full of bureaucracy**.
- **Data duplication and data redundancy** is present which leads to wastage of storage capacity and multiple administrators cause serious problems of manipulating the data.

#### **Significance of block chain is as follows;**

- It **reduces the transactional cost** for banks by reducing losses due to fraud and saves there conciliation cost for banks.
- It improves speed of processing the transaction a minimal human intervention is needed for decision making which **makes the bank efficient**.
- Blockchain is based on cryptography which **replaces third party intermediaries**.

- It **brings transparency** in business transactions it provide detail of origin of data in the area of payment.
- It helps to maintain irreversible record of transaction which brings **security to the data** stored.

#### **Application of block chain technology in banking system**

- **Digital currency**  
Cryptocurrency can be used as a standard currency in Indian banking system as they use cryptography which is more secure and will help to check the creation of additional unit of currency. Popular currencies being used are bitcoin, ethereum, litecoins, ripple etc.  
It will help to curb identity theft as user will have control over their transactions and also save merchants from fraudulent transactions because the transaction cannot be reversed once executed and do not possess any personal information with them. By using a single currency international payments will be a lot easier since there will be no involvement of any central authority.
- **Trade finance**  
Currently transaction through the letter of credit is time consuming & complex. It can be made simpler, if all conglomerates, shippers, manufacturers and custom authorities are on block chain network the information can be shared by exporter, importers and their respective bank at this network.
- **Capital market**  
Various intermediaries are involved in capital market transactions; they need to update their ledger after every transaction which makes the whole process time consuming and costly. Block chain has the potential in minimising the cost and time consumption. It can also be applied to Initial public offering (IPO) of shares; NASDAQ has successfully completed and recorded a private security transaction for chain.com.
- **Trade and security services**  
By storing data of all the parties on block chain KYC can be done faster and economical. It will bring transparency; reduce credit exposures, real time matching of transaction and prompt settlements. It will also help in reduction of margin and collateral requirement by eliminating intermediaries.  
It can also be applied to custody and security services. Securities can be issued on blockchain platform which will make it simple for accounting and administration of securities because of automatic processing of subscription and redemption.
- **Monitoring of consortium of accounts**  
Prevention of diversion of funds is one of the most important applications of block chain. The end use of funds can be tracked by lender as the transaction made by borrowers will also be recorded on block chain network. It will lead to reduction in NPAs because bank can track the end use of funds. All the information related to movement of fund will be available to all group members and will strengthen the monitoring mechanism.
- **Know your customers(KYC)**  
The increasing cost of compiling with anti money laundering (AML) and Know your customer (KYC) norms. Each bank performs these functions separately for every customer, block chain will help to keep the database centralised which can be accessed by all banks to perform these functions. All the information will be available to bank in real time which will lead to reduction to fraud and non performing asset (NPA). It will help in reducing cost and duplication of effort.

#### **Conclusion**

Block chain has the potential to transform the banking sector and perturb the prevailing traditional businesses models & making them obsolete in future. A database of client information which is secured and distributed needs to be developed and shared by different banks, it will help in reducing time efforts and money involved in interbank transactions. To evolve as a cashless society India needs digitalisation through block chain technology. In years to come block chain will evolve as a immense

force in revolutionising banking system making transaction more secure, faster, transparent and cost effective. Block chain is already being used to settle cross border remittances by Axis bank and Kodak Mahindra. Yes bank has also successfully implemented a block chain transaction for Bajaj electrical. SBI is the first bank in establishing the financial block chain consortium of ten commercial banks, IBM, Microsoft, Skylark and KPMG in 2017, which completed its first project in June 2019 enabling its member to share KYC, AML and combating financing of terrorism details in block chain. Block chain is the not only the future of banking system but also for other sectors.

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