



# Application of Block chain in an Indian Banking Sector

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**Abstract** - The objective of the research paper is to conduct a research on an impact of blockchain on banking sector through cryptocurrency. The object of research is technology advancement and its economic exploitation. In order to figure out the platform, the initial point of this research is an analysis of how the technology operates and functions after that the benefit for business and economic transaction are analysed and afterwards the research deals with an impact of new technology on banking, above all on financial functions. The hypothesis is that blockchain has achieved a great impact on banking sector, also it has the potential to thoroughly modify only the financial and banking sector but also the way we buy and sell our interaction with the authorities as a way of authenticating the holding from the authorship. Using the available data and hypothesis of knowledge from the fields of technology, economics, finance, and politics, 4 scenarios were set up for the future of basic technology. The scenario combined with trend analysis in order to prove the starting hypothesis with high reliability, authenticated and accuracy. Banking progressively detect the power of this technology to exploit the benefits of the Fourth Technological Revolution. The research conclusion shows that the technology being checked already has a deep impact on the banking sector, that it is in the starting phase of modifying many industries, with the possibility that they will change them automatically in the next five to ten years.



## INTRODUCTION

A Blockchain is a digital, immovable, dispersed ledger that sequentially records transactions in real time. Blockchain technology has the potential to completely reform the universal financial industry by offering the numerous opportunities of how people transact with money and values.

The essential for each subsequent transaction to be combined to the ledger is the respective consent of the network participants normally called nodes, thereby creating a continued system of control with respect to manipulation, errors, and data quality, control, direction.

Blockchain is a chain of blocks – each is being a storehouse that stores information referring to a transaction and links to the earlier block in the same transaction. These connected blocks form a sequential chain providing a pathway of the basic transaction.

Generic copies of all information are shared on the Blockchain. Participants separately validate information without a consolidate authority. In fact, if one node fails, the remaining nodes continue to act or operate, with ensuring no disruptions.

A transaction on Blockchain can be accomplished only if all the parties on the network collectively approve it. However, consensus-based rules can be edited to suit multiple situations.

Blocks constructed are cryptographically fixed in the chain. This means that it become absurd to delete, edit or copy already created blocks and then put it on network, after that creating the true

digital assets and assuring a high level of durability and trust. Moreover, the decentralized storage in a Blockchain is known to be very failure-contrary.

Even in the event of the deficiency of a huge number of network participants, the Blockchain still remains accessible, eradicate the single point of failure. Data stored in a Blockchain is enduring.

### Types of block chain: -

#### 1. Public Blockchain

Public blockchain are open-source. Anyone can participate in this blockchain, means anyone can participate in the transaction aided by the Blockchain, every participant can see what blocks are getting added and therefore anyone can participate in the consensus process i.e. the process of what blocks get added to the chain and what the current state is simply.

#### 2. Hybrid blockchain

By actually occupying a unique place within the blockchain ecosystem in that it is a hybrid blockchain, which means that it combines the public blockchain privacy benefits that gives businesses significant flexibility to choose what data they want to make public and transparent and what data they want keep private.

#### 3. Permissioned or closed-loop Blockchain

The distinction in an acknowledged blockchain as compare to the public blockchain is that the right to certify the transaction is provided to only very little pre-selected nodes. The right for reading the blockchain may be public, or may be restricted to the participants.

#### 4. Private Blockchain

Private blockchain simply says, write permissions are restricted to one organisation. Major applications include database management, auditing i.e. specific area of single entity. To provide the right to read or validate to public is not needed here.

## LITERATURE REVIEW

Blockchain technology is a new technology which is based on numerical and economic assumptions for managing a database between numerous members without the demand of any central authority. It is an assured distributed database, tamper evident, wherein the efficacy of a transaction can be verified by parties in the transaction. Each group of these transactions is assigned to as a "block". A Block records some or all of the current transactions and goes into a blockchain as a permanent record once it is ended. The benefit of Blockchain is that financial transactions no longer need any central authority and are instantly validated, cleared and settled. Blockchain technology emerge to be an innovation which ensures a major change for capital markets and other financial services. The blockchain is going to disturb the banking industry in coming years.

The World Economic Forum predicted that by the end of 2017, most of the banks would start projects related to the blockchain. In the past few years, Fintech start-ups functioning on Blockchain has got the venture capital funding of more than \$1.4 Billion. During the same period, more than 2500 patents have been registered and over 90 Central Banks are currently emerged in discussions on blockchain globally. Moreover, the current statistics show that 69-percent banks are examining with blockchain. The above statistics justify the evolution of the technology whose first figures were defined at the time of global financial crisis or subprime crisis in 2008.

### **BLOCKCHAIN IMPLEMENTATIONS IN BANKING:** -

#### **Corda based implementations**

This platform is created by a union of banks and is conform towards implementations within banking industry. Corda is more of an appropriated ledger platform Than a conventional blockchain platform.

#### **Hyperledger Fabric based implementations**

Hyperledger Fabric is an acknowledged blockchain platform, enhanced to support privacy requirements. It is helpful for banks for security assurance.

#### **Quorum/Enterprise Ethereum implementations**

Ethereum is a general function blockchain platform. Quorum and Enterprise Ethereum projects are expected to increase efficiency towards setting up a permissioned network with increased capabilities for "privacy" and "scalability". Quorum discharged is available when Enterprise Ethereum is a work in progress.

### **RESEARCH OBJECTIVE:** -

To know the awareness about blockchain in banking sector.

The overview of blockchain technology with its benefits emphasizing on the applications of the technology in the Indian Banking Sector.

To figure out the applications of the technology in the Indian Banking Sector.

To study the insight of various challenges and global perspective of blockchain technology in Banking Industry.

To study the impact of blockchain on banking industry through cryptocurrency.

## RESEARCH METHODOLOGY

### **Research design**

**Descriptive Research:** -The descriptive research is a research performed to describe characteristics of a population or phenomenon being studied. In this project the descriptive research to identify the cause of the insight of various challenges and global perspective of blockchain technology in Banking Industry.

### **Data collection:** -

#### **Secondary data**

In this research paper secondary research data collection method is used, the data has been collected through books, journals, newspaper, magazines and online websites.

### **LIMITATION:** -

The limitations of the study are those characteristics of design or methodology that impacted the interpretation of the findings from the research.

1. Sample size may not complete representative the entire population.
2. Entirely relying on the data that has been provided by books and online websites through secondary research data.
3. A failure to use a random sampling technique significantly limits the ability to make broader generalizations from results.
4. Less geographical ability.
5. Man Power limitation.
6. Lack of direct communication by individual's perspective.
7. Lack of time to study the broader concept.

### **Key features of the blockchain:**

#### **Near real-time updates:**

Based on formation policies, the information on the blockchain nodes are renovated in close to real-time. The transactions can be globally legalized once they are part of the chain.

#### **Chronological and time-stamped:**

Blockchain as the name depicts is a chain of blocks each being a repository that stores information connecting to transactions and also link to the previous block. These connected blocks form a chronological chain providing a stream of the underlying transactions. Moreover, the blockchain can be constructed to also keep information about transaction chains, that could establish either (i) the source of inputs, or (ii) the linking between numerous hops in a business process beyond entities.

#### **Distributed ledger:**

Identical transcript of the information is shared on the blockchain. Participants independently approve the information without a centralized authority. Even if one node be ruined, remaining nodes continue to operate, assuring no/low disruption to business. Furthermore, the decentralized storage in a blockchain is known to be failure-opposing. Even in the event of failure of a large number of network participants, the blockchain remains accessible, eliminating the single point of failure.

#### **Cryptographically sealed:**

Blocks are cryptographically fixed in the chain, which means that it becomes impossible to delete, edit, reedit or copy already conceived blocks and put it on the network, through creating true digital assets. This ensures high level of durability and trust. Data stored on blockchain are immutable, inevitable and auditable.

#### **Programmable and enforceable contracts:**

A transaction on the blockchain can be accomplished only if all the anxious parties' consent – consensus rules can be designed to suit various business scenarios.

**The salient features discussed above can enable the banking network to exploit blockchain technology for:**

#### **Guaranteeing Results of Business Processes:**

Distributed shared ledger along with programmable and accomplishable contracts in blockchain provide this feature.

#### **Improving Data Integrity and Finality:**

Cryptographically fixed ledger with chronological and time-stamped transactions in blockchain provide this feature.

#### **Providing a Shared View:**

Near real-time updates connected with distributed ledger provides shared view.

#### **Validating Business Rules:**

Programmable and enforceable contracts provide the system to enforce and validate the shared business rules.

#### **Assessment framework in banking sector: -**

Banks across the country have successfully entered collaboration with particular firms (Fintech) and/or consulting firms to create proof-of-concepts and scrutinize various potential use-cases. This involves the sincerity of banks towards the Blockchain technology and its excitement to understand how Blockchain can directly address and resolve few problem points in the current state process of banking sector.

#### **1. Major issues that banks face today**

Today the Indian banking industry is faced issues and problems such as increase in costs of operations, increasing susceptibility to fraudulent invasion on centralized servers and challenges in assuring transparency. All this, firstly because most of the banking transactions are from opening customer accounts to make it global payments it may require comprehensive manual processing and documentation, it includes costly intermediaries and is time consuming as these transactions need to be certified by various participants at various stages in time causing the delay thereby resulting in almost lack of fraud and deceit proof real time solution.

#### **2. What are banks looking for?**

Banks are regularly exploring new ways to execute transactions earlier for an enhanced customer service, while assuring cost efficiency in its operations and ensuring transparency to customers and regulators. For this, Blockchain probably provides a solution for banks as it intrinsically helps eliminate intermediaries, maintain immutable log of transactions and also facilitates real-time performance of transactions. This could potentially reduce the TAT for banking transaction, diminishing costs of manual work, and leading to enhanced.

#### **3. The Blockchain Fit Assessment Framework**

On the Basis of above discussed matter of what are the current pain points of Banking Industry and advantages of blockchain, a Blockchain Assessment Framework is created or developed to assess whether a particular process or use-case is the rightly assessed for a Blockchain based solution. For a process or a use-case to classify as Blockchain-fit, majority of the questions produced in the framework need to be answered in the affirmative. As we can see from the blockchain framework, each of the interpretation factors uncovers a pain point in the current stage process, which could be determined by a feature of the Blockchain solution. The resulting impact of implementing a full-fledged solution.

Banks follows Cheque Truncation System for clearing the transaction. The Indian Banking system also attained wide consent of Online Banking, Mobile banking, Debit cards, Credit Cards, Prepaid cards, etc`.

The key innovations that will reshape the future of banking sector by 2020 are artificial intelligence, blockchain technology, robotics process mechanization and cyber-security and business intelligence. The Banks are extended on digitalization through the application blockchain technology, which is the most innovative and being considered as a universal force of disruption. The blockchain technology will flare the fourth Industrial Revolution across the world.

Application of Blockchain Technology Blockchain technology can be applied across various industries in India and Industry leaders are reshape the applications of blockchain as per their industry essentials.

Some use cases of blockchain technology and their appropriateness with respect to the banking sector are discussed below:

#### **Digital Currency:**

Cryptocurrency acts as a channel of exchange through the use of cryptography to make the transaction more secured and safer and to administer the creation of additional units of currency. Some of the top popular cryptographic currencies are Bitcoin, Ethereum, Ripple, Litecoin, etc. Cryptocurrencies helps to overcome the identity theft as users have command over their transactions. It protects the operator from the risk of fraud and misrepresentation as the transactions cannot be reversed once completed and do not detach any personal info with them. It also allows to send and receive money anywhere across the globe at any point of time without the concern of central authorities. The transactions are instantly verified and are visible to all the participants. The transaction cost involved for converting into the edict money is very low. However, digital currencies have some constraints. The requirement for digital currency is increasing continuously. This will be led to high volatility, fraud and risk in digital currency.

#### **Supply Chain Financing:**

Small and medium-sized enterprises (SMEs) faces a lot of problems in accessing credit due to shortage of plentiful collateral and credit history. Blockchain can raise supply chain finance by providing greater protection, security, efficiency and better decision making. As per the Global Trade Review, numerous institutions including Standard Chartered Bank, DBS Bank, and InfoComm Development Authority of Singapore are establishing a blockchain-based invoice trading platform. Monitoring the Banking sector transaction.

#### **Consortium Accounts:**

The most important applications of blockchain technology is to prevent the deviation of funds. The use of funds is not tracked by the lender as the borrower makes multiple transactions of moving funds from one bank to another. Blockchain technology helps in supervising of end use of funds of a borrower funded by a consortium of banks. It will lead to a reduction cutback in non-performing assets (NPA) as the banks can monitoring on the end use of funds. The information with respect to a movement of funds is made feasible to all group members and it also helps in strengthening the monitoring structure.

#### **Know Your Customer (KYC):**

Banks are very concerned about the increasing cost that they have to bear up to adhere with Anti-Money Laundering (AML) and Know Your Customer (KYC) norms and regulations. The KYC process has to be executed individually by each and every bank and financial institution. Recently, banks have to transmit the KYC data to the central authority that can be accessed by banks to execute due diligence for existing or for a new customer. The duplication of efforts would be vanished by blockchain technology. All the updates of clients will be accessible to all banks in near real-time. It will help in a reduction of frauds, risk and non-Performing Assets (NPA) with which Indian Banking Sector is seeking over a period of time. Top banks of India like ICICI Bank, Yes Bank, Kotak Mahindra Bank and Axis Bank are continuum recognizing the enormous potential of Blockchain.

#### **Impact of covid-19 on Indian banks in digitization: -**

Indian banks (both public and private) which are already online with some core banking functions will target on a complete evolution by digitization of all their functions, processes and systems. Legacy Indian banks and financial institutions will also look at association with the new entrants and fintech. Such necessity-driven partnerships will drive innovation and jointly obtain the benefits of the huge customer base of the banks and the new technologies of the fintech.

#### **The COVID-19 situation will not only stimulate the adoption of technology, but will revive focus on the following four areas of banking:**

**Embracing neo technologies** – In the impact of the pandemic and economic ambiguities, developing technologies will play a key role in speeding up transactions and reducing costs for banks. Indian banking sector has already executed the role of technology in achieving the reach and scale. Forecast higher rates of adoption of microservice architecture by dropping vertically integrated stacks, APIs, containerization, cloud computing, AI and blockchain. These technologies will play critical roles in digital transformation of Banks and Financial Institutions and re-frame digital delivery of services.

**Channels of digitization** – The 2017 global Findex report by the World Bank says that India is residence to the world's second largest unbanked population at 190 million adults without connecting to a bank account. With increased penetration of mobile and Internet, the fundamental focus would to accelerate technology enabled digital financial involvement.

The business focus would also be to create continuous shift in customer preference from visiting bank branches to using digital channels. Banks will enable its customers to interact over multiple computerized and digital channels to offer the excellent channel mix. Banks will consider important aspects such as demographics, access to internet, last mile connectivity, customer banking behaviour patterns etc. to enable adequate adoption by the Indian banking consumers.

**Security, privacy and customer trust** – According to RBI, for the financial year 2017-18, India's banking sector witnessed a spike in cyber frauds and fix the losses at \$ 13.7 million. With increased use of cashless and digital economy, it will be crucial for the banks to implement secure structures and systems. Some of the obvious cyber risks include financial frauds, money laundering, data loss, identity thefts and privacy ruptures.

Banks need to take forceful steps to identify both internal and external system susceptibility. They should be technically strengthened by accurate KYC, strong customer authentication (SCA), financial grade APIs, firewalls, smart networks, etc., for secure and logical transactions. Robust banking solutions and cyber security actions help safeguard against mischievous attacks.

**Policy and compliance** – The focus should be on increased digital payment infrastructure, exclusively in rural India, with an objective to create a financial ecosystem for the unbanked and underbanked population of our country.

From a security and privacy standpoint, India is already on its avenue to introduce the Personal Data Protection bill (PDP) on the edges of GDPR in the EU. This bill protects personal information of consumers including conscious financial information. It would be in the best interest to implement rigorous penalties on wrong entities found in violation of the bill.

The COVID-19 impact on the global and Indian financial systems will be extraordinary and multi fold. It is important to take the long view and preferred accordingly. For Indian banks particularly, flexibility, driven by digital agility, is a way to achieve purpose and success on the other side of COVID-19.

## CONCLUSION: -

Banks has successfully executed a blockchain transaction for Bajaj Electricals to logging vendor financing. The State Bank of India (SBI) has become the first Indian bank in constituting a financial Blockchain consortium of ten commercial banks, IBM, Microsoft and KPMG in 2017. Infosys and TCS are establishing blockchain solutions in areas such as anti-money asset registry and loans syndication. The blockchain is going to bring a revolution in the Banking

Sector. It has the capabilities to disrupt the traditional business models and make the existing systems obsolete and non-functional. A secured, distributed database of client information should be executing and shared by different banks which will guide in decreasing time, effort and cost in interbank transactions of the banks. In a bid to growth towards the cashless society, this is a suitable time for initiating suitable efforts towards digitizing the Indian Rupee through blockchain technology.

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