



Blockchain Technology: An Approaching Game Changer in Financial Service Industry

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ABSTRACT

There is prevalent conformity that the technology has powerful potential to herald a new age of efficiency in the financial service industry. Blockchain is undeniably one of the most talked-about technologies in the present financial service industry. Blockchain has the potential to provide extraordinary transaction security through cryptography that avoids costly mainframes, data centers and other intermediaries for online financial transactions. Banks and other financial service organizations have already experimenting with cryptocurrency and Blockchain technology. It is expected that Blockchain have major impact, especially on financial services industry due to its ability to reduce transaction costs. Financial services firms have also entered the blockchain space as investors, with corporate venture capitalists becoming the most active investors in bitcoin and blockchain technology. With this article I have made an attempt to present the concept of Blockchain technology and its essentials, impact of Blockchain technology on the financial services sector.

Keywords: *Bitcoin, Blockchain, Cryptocurrency, Distributed Ledger System, Fintech, Financial Service Industry, Digital Money.*

1. INTRODUCTION

In the present era of electronic and mobile banking, money is transforming from something we hold in our hand to electronic digits we move around the internet. Electronic or digital forms of money are rapidly replacing the traditional paper money and coins. The emergence of innovative digital financial technologies have challenged traditional players in the banking and financial services sector by demonstrating new ways

to deliver value across the entire financial value chain. Blockchain has become a buzzword in the financial services industry, attracting billions in venture capital investment from some of the largest firms across the financial services landscape. Currently the most prevalent blockchain application in the financial industry is the Bitcoin Blockchain. For instance, digital wallet AliPay is adding a bitcoin option for its customers. Visa has partnered with an enterprise blockchain infrastructure to build Visa B2B Connect and to facilitate international financial transactions for their corporate clients. In India, the legalization of bitcoin is a hotly-contested policy issue between the Ministry of Finance, which would like to tax it, and the Reserve Bank of India, which has declared bitcoin illegal and in breach of anti-money laundering provisions. The Indian situation is an example of how distributed ledger technology has the power to act as a disrupter, but also as an enabler to market players, changing business models and influencing the governance of the global financial system.

The Blockchain is a secure transaction ledger database shared by all parties in a distributed network, which records and stores every transaction that occurs in the network. It creates an irrevocable and auditable transaction history. Blockchain could reduce the friction created in financial networks when different intermediaries use different technology infrastructures and it also reduces the need for intermediaries to validate financial transactions. This distributed ledger technology has potential to shrink duplicative recordkeeping, remove reconciliation, curtail the errors and facilitates faster settlement, in turn leads to less risk and lower capital requirements. Blockchain

will change the game in financial services, at many levels.

About Blockchain

Majority of the players in financial sector already have a grasp of concept such as bitcoin and other cryptocurrencies. These concepts work on the Blockchain technology, which is a digital, distributed transaction ledger with identical copies maintained on each of the network's members' computers. All parties can review previous entries and record new ones. Transactions are grouped in blocks, recorded one after the other in a chain of blocks. The links between blocks and their content are protected by cryptography, so previous transactions cannot be destroyed or forged. This means that the ledger and the transaction network are trusted without any central authority or a middleman.

The Bitcoin payment system and the underlying Blockchain technology were invented by Satoshi Nakamoto and released it as open source software in 2009. His idea was to produce a currency that was independent from the control of any central authority and electronically transferable with very less transaction cost. Since then worldwide usage of Bitcoin and other cryptocurrencies has been increased dramatically, now globally there are more than 500 cryptocurrencies available for online trade and commerce.

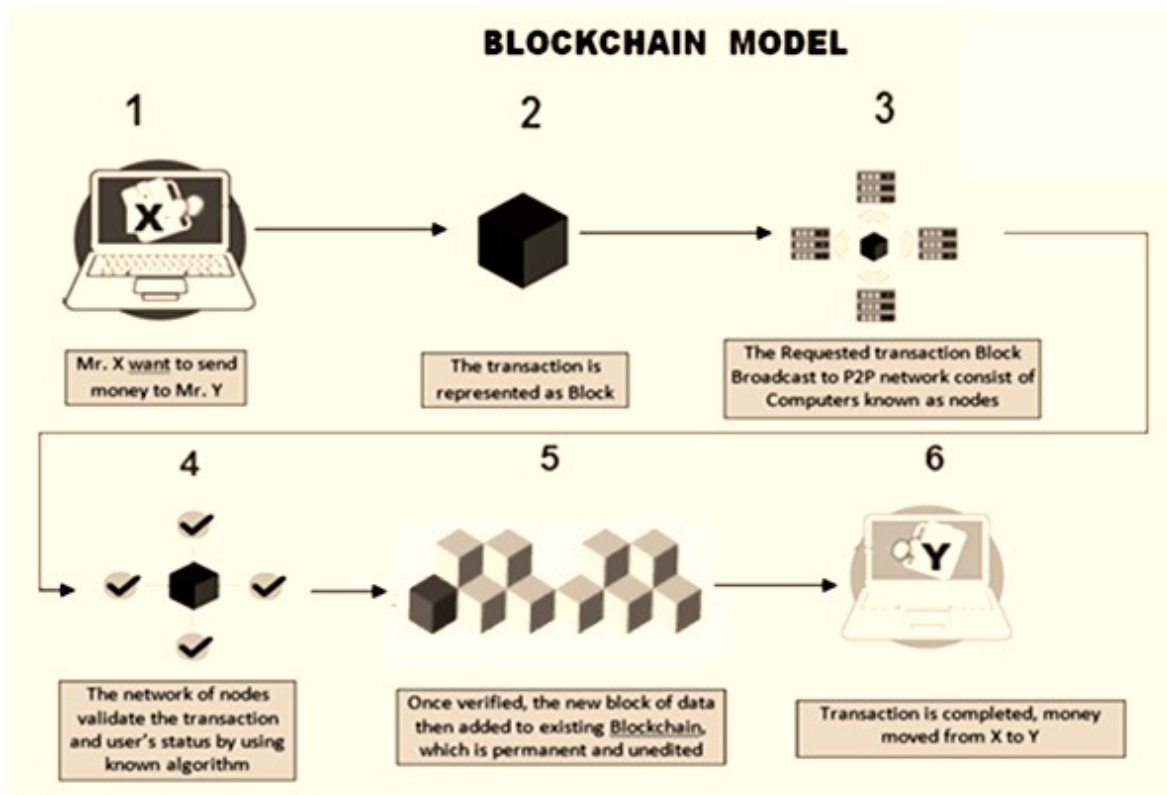
Blockchain was initially developed as the technology behind crypto-currencies like Bitcoin. Bitcoin and blockchain have acknowledged widespread awareness over the recent past years, and many people are considering the possible breadth of application of these new technologies. These technologies work together to create a ledger of records arranged in data objects called blocks and linked together through encryption. These blocks provide a framework for digital currencies to conduct secure online transactions. It is a massive globally distributed ledger running on millions of devices. Blockchain has the capacity of recording anything of value like money, equities, bonds, titles, deeds, contracts, and virtually all other kinds of assets, which can be moved and stored securely, privately, and from peer to peer. Under this technology trust is established not by powerful intermediaries like banks, rating agencies and government bodies, but by network consensus,

cryptography, collaboration, and clever code. For the first time in the world, two or more parties who may not even know each other, can create agreements, make transactions, and build value without relying on intermediaries, to verify their identities, to establish trust, or to perform the critical business contracting, clearing, settling, and record-keeping tasks that are foundational to all forms of trade and commerce.

2. Essentials of Blockchain Model

Blockchain technology works on the following prerequisites.

1. Distributed Database - Each party on a Blockchain has access to the entire database and its complete history. No single party controls the data or the information. Every party can verify the records of its transaction partners directly, without an intermediary.
2. Peer-to-Peer Transmission - Communication occurs directly between peers instead of through central node. Each node in the network can store and forwards information to all other nodes.
3. Transparency with Pseudonymity - Every transaction and its associated value are visible to anyone with access to the system. Each node, or user, on a blockchain has a unique 30-plus-character alphanumeric address that identifies it. Users can choose to remain anonymous or provide proof of their identity to others. Transactions will occur between the blockchain addresses.
4. Irreversibility of Records - Once a transaction is entered in the database and the accounts are updated, the records cannot be altered, because they're linked to every transaction record that came before them ("chain"). Various computational algorithms and approaches are deployed to ensure that the recording on the database is permanent, chronologically ordered, and available to all others on the network.
5. Computational Logic - The digital nature of the ledger means that blockchain transactions can be tied to computational logic and in essence programmed. So users can set up algorithms and rules that automatically trigger transactions between nodes.



In essence, Blockchain is a decentralized, consensus based, tamper proof data structure that provides a shared public ledger open to all, and it makes Bitcoin transactions more secure and inexpensive. Some of the emerging Blockchain technologies are discussed below.

1. **Ethereum** – It is an important player and new platform launched on 30th July, 2015. That takes the Blockchain concept further a step by creating an open model for secure, decentralized, generalized transaction ledger. It enables to facilitate, verify, execute and enforce the terms of a smart contract (commercial agreements). Ethereum is aiming to create a new universe of programmable contracts powered and secured by its own proof-of-work blockchain.
2. **Ripple** – It is developed and maintained by Ripple Labs, California. It is an open source payments protocol for free and instant exchange of any form of money or value. It is Real Time Gross Settlement System, Currency exchange, and remittance network which is built upon a distributed open source internet protocol, consensus ledger, and native currency called XRP(ripples).
3. **BitShares** – This is a decentralized financial platform with current market capitalization of 10.8

million dollars. This Blockchain technology enables the users to transfer of price-stable cryptocurrencies, decentralized asset exchange, collateral bond market, industrial performance and scalability, recurring and scheduled payments etc.

4. **Counterparty** – This is an open-source platform with current market capitalization of 2.5 million dollars, which allows the creation of P2P (Peer to Peer) assets and applications on the Bitcoin Blockchain. This technology provides users with a decentralized digital currency exchange. Also allows the users to create their own virtual assets, to issue dividends, to bet and contract for price difference etc.
5. **Factom** – This is a general purpose data layer Blockchain, which enables the developers to create digital assets on the top of Bitcoin Blockchain. This is useful for assets other than currency, it provides a faster and cheaper way to develop Blockchain based financial applications.

3. Impact of Blockchain on Financial Service Industry

Blockchain or distributed ledger technology is just such a disruptive and possibly game-changing innovation. Blockchain has the ability to boost efficiency and reduce costs in a wide variety of areas, to name a few, funds settlement, trade finance,

KYC/identity management initiatives and collateral management etc. However its impact on business strategy will be even more significant.

1. **International payments and transfers:** The global payments sector is gigantic, yet slow, costly, error prone and not completely traceable. Blockchain can improve cross border payments by speeding up and simplifying the process, while reducing costs significantly and cutting out many of the traditional middlemen. At the same time, it would make money remittances more affordable. Until now, the costs of remittance were 5-20%. Blockchain technology could reduce the costs to 2-3% of the total amount and provide guaranteed, real-time transactions across borders.
2. **KYC compliance and internal operations:** One of the major applications of blockchain technology will be in back office functions and internal operations such as reconciliation or clearing processes. Financial institutions across the world are responsible for complying and reporting on a number of requirements from their local regulator. Know Your Customer (KYC) is a key requirement here but the process can be incredibly time consuming and also lack of automated customer identification. Blockchain technology could provide a digital single source of information allowing for the seamless exchange of documents between banks and external agencies. This would likely result in automated account opening, reduced cost, all whilst maintaining the privacy of data that is legally required.
3. **Smart Contracts:** When banks and financial institutions are using smart contracts, it will improve contractual performance and transaction settlements, as smart contracts executed automatically once certain pre-set conditions have been met. It is important that those smart contracts are firmly rooted in law and comply with any regulatory compliance. Especially complex financial asset transactions can benefit from Blockchain, due to automatic settlement using smart contracts under the control of an incorruptible set of business rules.
4. **Reduction of Frauds:** Financial intermediaries such as banks, stock exchanges and money transfer agencies suffer from online economic crime every year. Most banking systems around the world are built on a centralized database that is more vulnerable to cyber attack because it has one point of failure rather than many, once hackers breach the one system they have full access. The blockchain is essentially a distributed ledger where each block contains a timestamp and holds batches of individual transactions with a link to a previous block. This technology would eliminate some of the current crimes.
5. **Blockchain and capital markets:** Blockchain technology can simplify and streamline the entire trade process and provide an automated trade lifecycle where all parties in the transaction have access to the exact same data about a trade. In this scenario, the technology would substantially reduce infrastructure costs, enable effective data management, transparency, faster processing cycles, and minimal reconciliation, even cut out some of the middlemen such as brokers. NASDAQ and the Australian Securities Exchange are already exploring blockchain solutions to reduce costs and improve efficiencies.
6. **Insurance in smart way:** Creating insurance policies as smart contracts on the blockchain is an ideal use case for insurance. It offers complete control, transparency and traceability for each claim and could lead to automatic pay-outs. Blockchain technology would also improve risk modelling for the sector, break down the existing silos and significantly reduce fraudulent claims by capturing the origin and ownership of diamonds, paintings, homes, cars and other assets to be insured.
7. **Trade Finance:** Digital transformation of the trade finance and supply chain is one of the most exciting opportunities for smart contracts and blockchain. Existing supply chains are complex, slow, distributed; involve many parties across the world. Smart Contracts on the blockchain automatically executed subject to the pre defined conditions, to transfer titles to goods and money. As a result there is no need of banks to provide Letters of Credit, drastically reduces costs by cutting out the middlemen and creates a trusted network of assured authenticity and origin of goods being supplied.

4. Conclusion

The fact is, it is time to change for financial institutions and get benefit from the possibilities of distributed and decentralized networks and technologies. Blockchain, or distributed ledger platforms offer a lot of benefits for financial institutions. Blockchain is best suited for environments where there is shared information and distrust or a need for validation between two parties. The good news is that more financial institutions are interested in blockchain and are working to understand, thinking through where it could be used, whether blockchain completely changes or is just an addition. Being early adopters of distributed ledger technology across the ecosystem may provide them with a competitive advantage but it may also upset their ongoing business interests. The most valuable distributed ledger innovations may not be developed in isolation; there is a need for teamwork among participants, exchanges, regulators and governments. There is an assurance that distributed ledger or Blockchain technology associated initiatives will be called on to deliver in a sustainable fashion, whether in the form of creating a market or offering cost savings through greater transparency and efficiency.

References:

1. The Economist, "The end of the cash era", Feb 2007.
2. Banking on Blockchain: Charting the Progress of Distributed Ledger Technology in Financial Service, Finextra Research Ltd, London, U. K, January 2016.
3. Cryptotechnologies as Major IT Innovations and Technical Change Agent, EBA Working Group on Electronics and Payment Alternatives, May 2015.
4. Sarah Todd, "Banks Can Cherry-Pick the Best Bits from Bitcoin", American Banker, April 2015.
5. Paul Snow et al., "Business Process Secured by Immutable Audit Trails on the Blockchain", Nov 2014, www.factom.org.
6. Bradley Cooper, "The Blockchain's Future Opportunities", Sept 2015, www.mobilepaymentstoday.com.
7. Tim Swanson, "Consensus as a Service: a brief report on the emergence of permissioned, distributed ledgers system" Apr 2015.

