
Disruptive innovation in financial services industry: Blockchain

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ABSTRACT

The global financial system serves billions of customers and circulates trillions of dollars a day. But the system isn't flawless, added cost due to fees and delays, intermediaries, creating discord through inessential and arduous paperwork, and paves way for illegal activities. This all adds cost, ultimately bearing the burden on consumers. But the solution to this concern has arisen: Blockchain. A blockchain is "a decentralized ledger that maintains transaction records on many computers simultaneously. Once a group or a block of records is entered into the ledger, the block's information is connected mathematically to other blocks, forming a chain of records permanently which cannot be altered." Blockchain technologies are being called as the next big disruptive innovation in the financial services industry. Though we're in the nascent stage of development of this technology. As with other new technologies, blockchain is undergoing a phase of invention and experimentation and a lot of legalities have to be resolved to facilitate the universal adoption of these technologies. Even though Blockchain technology was initially developed for cryptocurrencies as the public transaction ledger, however, beyond cryptocurrencies, this technology has been considered for myriads of other applications as it imparts unique benefits including anti-tampering, security, decentralization and transparency. In this article, we outline the ethical challenges, ways to capitalize the blockchain technology and its benefits to the financial services industry.

KEYWORDS: Anatomy of blockchain Use cases of blockchain, Benefit to the economy, challenges and institutional voids in implementing.

1. INTRODUCTION

Since the beginning finance industry has been acting as a middleman in providing financial services. It has always been welcoming to the new technologies, adapting their working style to provide better services. Financial services industry today depends profoundly on the technologies to perform their everyday operations. Although ever evolving the industry is often criticized for being inefficient, expensive and non-transparent.

Blockchain technology is said to be revolutionary as it is an answer to most of our financial woes. Financial services industry is heavily paper based and very much prone to scams and errors. Blockchain offers transparency, immutability, speed, traceability and security that makes it the most disruptive innovation in the field of financial services industry.

2. BLOCKCHAIN TECHNOLOGY

Blockchain has the potential to be the foundation of record-keeping systems worldwide in the future, but it was launched 10 years ago. It was created by the unknown persons who are behind the technology of cryptocurrency bitcoin under the pseudonym of Satoshi Nakamoto. Blockchain is the technology behind the cryptocurrencies just like internet is the technology behind e-mail. Although created for cryptocurrency, experts all over the world are realising its disruptive ability to bring a change in various industries such as finance, health and government institutions.

2.1. Anatomy of blockchain

A blockchain also known as Distributed ledger technology is a decentralized, immutable, ordered ledger that stores a record of transactions in a network. Following are the three important components in Blockchain: blocks, nodes and miners.

Blocks

Multiple blocks make a blockchain and each block consists of three basic components:

- The data (record of the transaction) in a block.
- A nonce which consists 32-bit whole number. The nonce is generated randomly when a block gets created, which further generates a block header hash.
- The hash is linked to the nonce which is a 256-bit number.
- When the first block is created in the chain, a cryptographic hash is generated in the nonce. The data in the block is time-stamped and tied to the nonce and hash forever, unless it is mined by miners.

Miners

New blocks are created through a method called mining done by Miners. Each block has its unique nonce, hash and also the reference of the previous hash in the chain, making mining a block difficult on large chains. The nonce is 32 bits and the hash is 256, creating four billion possible nonce-hash combinations to be mined before the correct one is found. A special software is used to solve a highly complex math problem to find the nonce that generates an accepted hash. A new block is created when miners find the nonce. Changing a block in the chain needs re-mining not just one block but all the blocks after it, making it extremely difficult to hack the blockchain technology (immutable). A block is considered mined when it is approved by all of the nodes on the network and the miner gets financially rewarded.

Node

A single person or any organization cannot have ownership over the chain as it is a distributed ledger connected through nodes in the chain which makes decentralization one of the most important attribute of the blockchain technology. Nodes are any kind of device that stores the copies data of the blockchain. All the nodes have their copies of data of the blockchain. Any newly mined block must be algorithmically approved to be updated, trusted and verified (Proof-of-Work). This makes blockchain transparent, all the actions in the ledger can be checked and viewed. Each participant receives a unique identification of alphanumeric number that shows their transaction.

3. USE CASES OF BLOCKCHAIN IN FINANCIAL SERVICES

Blockchain is said to be disruptive in the finance industry giving rise to new business models and practises such as accounting and auditing. To avoid disruptive surprises or missed opportunities, decision makers throughout the industry must come up with ways to capitalize the blockchain technology. Blockchain has the potential to radically reduce the infrastructure cost, speed settlements, improve product offerings and increase speed for banks. The most popular use cases of blockchain technology are as follows:

Smart Contract

A digital contract which is embedded with an IFTTT (if-this-then-that) code, making the contract self-executable to verify, validate, capture and enforce agreed upon terms between multiple parties without the need for any intermediaries. Smart contracts can reduce the commercial contracts disputes as the contracts cannot be altered. It can be used for various situations, such as insurance premiums, smart property, legal processes etc. As per the 2019 economic survey there were 3.5 crores cases pending in the lower courts, of these an estimated 20% cases are related to commercial disputes. This resulted in India ranking as far down as 163rd on contract enforcement, as published by the World Bank.

Digital Identity

The blockchain captures attributes as ID or biometric data. The customers have to go through the verification process once and can then use it to perform transactions throughout the world. It protects your identity by encrypting it and securing it from spammers and marketing schemes. It can help the financial users to share the identity data with other minus the risk and can also sign documents digitally.

Interbank Transactions

According to CEIC data, India's RTGS interbank transactions was ₹1.4 crore in the month of February, 2021. Each transaction required banks to communicate with each other. With distributed ledger Real-time interbank fund verification would unify banks and leading to quicker wire transfers at a lower cost. Blockchain is the suitable technology for the automation of Cash flow oversight.

Cross border transaction and remittance

Cross-border transactions are costly, time consuming and prone to money laundering. Consumers send \$180 trillion in cross-border payments each year. Sending money outside India costs 3-3.5% rupees per transaction. The blockchain could go a step further by enhancing security, transparency, and affordability. Blockchain-powered payment services reduce the time and charges on cross border payments to less than one percent.

Record sharing and Storage

Blockchain adoption in the finance industry could save the industry \$8 billion – \$12 billion per year, which is 30% of the infrastructure costs of the world's eight global banks. Paper-based storage systems raise the recordkeeping costs for financial institutions by 60-70% of retail banks' records management costs. This would reduce operating expenses for processing departments by as much as 25 percent. The blockchain is digital, thus cheaper to maintain. It records data in a decentralized way, providing easy accessibility and maximum security. Blockchain also cuts off the chance of complete data loss that comes with paper-based recordkeeping as the data is stored in a shared manner.

Know-your-customer (KYC)

KYC procedures cost digital companies ₹120-₹200 per customer. For a finTech company like MobiKwik that has around 65 million users, it would the cost the company ₹78,01,300 crore. As blockchain is a shareable yet secure financial ledger, it may help in storing and sharing KYC related data without burning a hole in the pocket.

Anti-Money Laundering (AML) and Counter-Terrorist Financing (CTF)

According to UNODC, every year around 2-5% of global GDP or roughly \$800 billion to \$2 trillion USD is laundered globally. Adoption of decentralized ledgers would ensure that no suspicious customer is overlooked. Investigations would take less time and become cheap. As the data is distributed across the network on multiple nodes, tampering with the entire decentralized data is virtually impossible.

Trade finance

The World Trade Organization estimates that 80-90 percent of world trade relies upon trade finance. Creating faster, more reliable payment structures with blockchain technology is imperative for bankers and their customers. Financial institutions act as the intermediaries between a buyer and a seller. A letter of credit is issued to the seller which becomes valid when the products are received by the buyer. Such processes usually take 3 days for settlement or more if it is a weekend. According to Asian Development Banks briefs, September 2019, the unmet trade demands estimated to cost as much as \$1.5 trillion USD. Blockchain technology reduces the cost and time of record keeping while keeping the process transparent, smooth and secure. Potential application of the blockchain technology in the financial services industry are boundless, from storing client data to conducting cross-border payments, self-executing smart contracts. According to the recent study conducted by Santander, Oliver Wyman and venture capital investor Anthemis, it is estimated that the “blockchain technology could reduce bank’s infrastructure cost by \$15bn-\$20bn a year from 2022”. Even though some argue that banks may become obsolete after the adoption of blockchain technology as it cuts down on the need of intermediaries, in the book, “The Blockchain and the New Architecture of Trust”, author Kevin Werbach states that, “It is not usually helpful to focus on what aspects of existing markets will be disrupted by new technologies. Important technologies are more likely to integrate into the system than replace it. Some firms will fail to make the transition and some new ones will take hold, over the long run, every disruptive innovation that eliminated some forms of intermediation also created new forms.”

4. IMPACT OF BLOCKCHAIN ON THE ECONOMY

In India, blockchain solutions have found the most acceptance in not only banking, financial services and insurance industry but the public sector for use cases such as land title registry, vehicle lifecycle management, farm insurance and electronic health record management. PwC’s Time for trust, a report on blockchain, it is estimated that in 2030, blockchain could boost global GDP by \$1.76 trillion. Blockchain’s economic impact on Indian economy is measured to be \$62.2 bn by 2030 which is less than one-sixth of what it will be in the US and China.

“China has a blockchain policy and even a state-sanctioned blockchain infrastructure project called Blockchain-Based Service Network (BSN). Whereas, India currently lacks any such project or policy,” Ashish Singhal, CEO and Co-Founder, CoinSwitch Kuber

“Identity and credentials”	\$5 bn
“Provenance and traceability”	\$41 bn
“Securitisation and payments”	\$13.2 bn
“Agreement thresholds and disputes”	\$1.2 bn

5. KEY CHALLENGES & INSTITUTIONAL VOIDS

Blockchain technology is in the experimental phase and has not yet fully developed. Adoption of blockchain technology comes with its own sets of challenges as with any other new technology. Following are some of the key challenges:

- Establishment of regulatory compliance and transparency for meeting rules such as Anti money laundering rules (AML).

- As the data is decentralized, it raises the question that who will be accountable during crisis which can lead to an economic problem.
- Privacy of the data is another issue to think about as the data is accessible to all or at least permissioned participants. Ensure secrecy of transactions and ID with respect to distributed ledger.
- Blockchain does not have any national or international rules. Legal aspects of blockchain are still unclear.
- Create pricing strategy related to the transaction fees.
- Develop and implement distributed processing with regards to trading, clearing and settlement.
- Blockchain offers cost efficiency in the long run but the high initial capital costs could be a road-block, which is a major concern for banks.

6. CONCLUSION

This article states the fact that the financial services industry is on the verge of a new financial age using a new disruptive technology based on blockchain. Blockchain has the power to fill the existing gaps in the financial industry, although much work is to be done in the adoption of this new technology. Financial industry should think about the long-term benefits of blockchain to stay ahead in the competition. Blockchain has been under scrutiny since the last two decades, with industries around the world studying and contemplating about the abilities of the technology and where it is going to reach in the coming years. Blockchain is the new buzzword on every investor's tongue around the world due to cryptocurrency, it stands to make businesses and governments' operation more efficient, cheap and accurate, reducing the middlemen. As we step in the third decade of blockchain, the question is not "will" the companies adopt the blockchain technology, but it is a question of "when."

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