

Block Chain in Banking Industry – A Revolutionary Technology

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Introduction

The 21st century is all about technology. With the increasing need for modernization in our day-to-day lives, people are open to accepting new technologies. Our banking transactions, our shopping, our communications, etc everything is done online today. And everything we do online is recorded and that includes the exchange of value, every digital transaction; goods and services, and so on. From using a remote for controlling devices to using voice notes for giving commands; modern technology has made space in our regular lives. Technologies like augmented reality and Internet of Things (IoT) that have gained pace in the past decade and now there's a new addition to the pack i.e. Blockchain Technology. The revolutionary technology impacting different industries miraculously was introduced in the markets with its very first modern application Bitcoin. Bitcoin is nothing but a form of digital currency which can be used in the place of fiat money for trading. And the underlying technology behind the success of crypto currencies is termed as Blockchain.

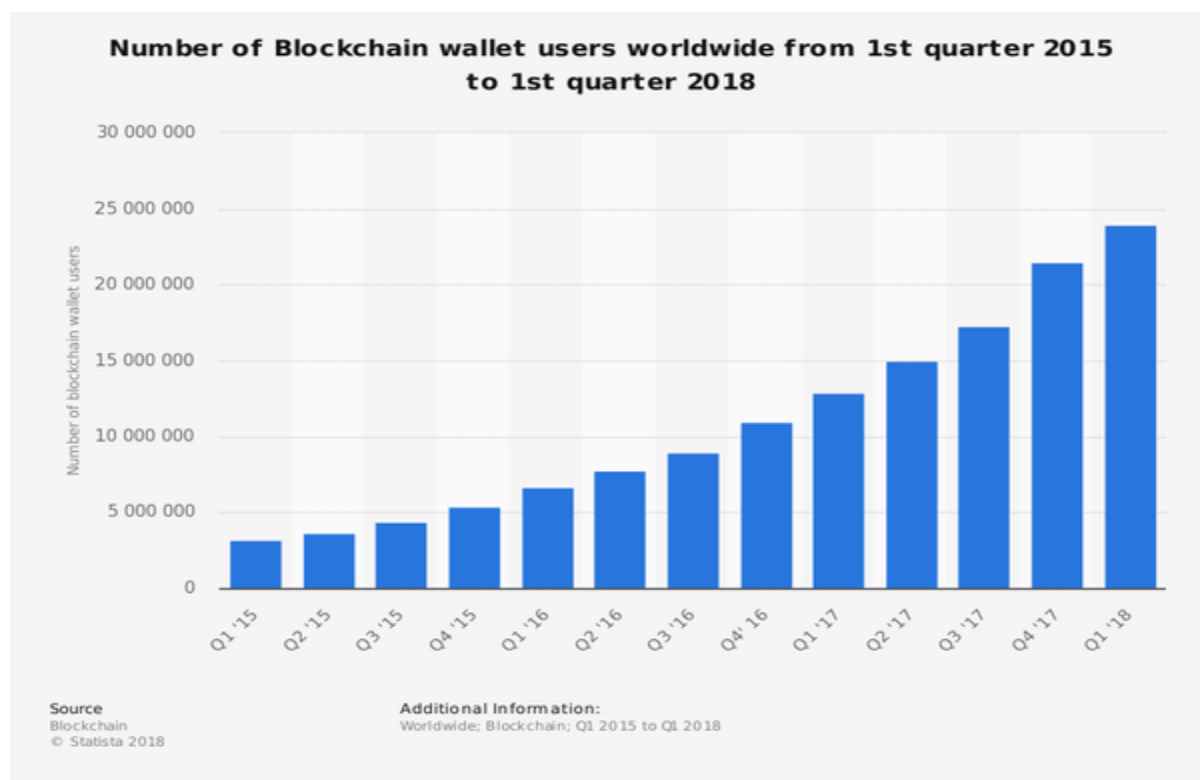
Emergence of Blockchain Technology

Since its inception blockchain has created successful ripples in the business world. But year 2017 is special in a sense that in this technology has seen a phenomenal growth.

Rise of *Bitcoin* value by 1,700% is a testimony showing increased confidence of people in a blockchain powered system. That's why many companies are now embracing this technology to make their business processes more streamlined. In fact, majority of fortune 500 companies are now accepting and adopting it quickly to create a better future. As per many analysts by the year 2025, 55% of healthcare applications will depend on blockchain.

The size of blockchain industry is expected to touch the figure of 1000\$ billion by the end of 2018. That's why many government agencies are now planning to invest in it to harness its benefits.

In short it has the potential to alter the course of traditional way of trading. Quest to explore new possible opportunities is pushing progressive non-financial businesses to find new ways to utilize it. But this is just a beginning and many more such advancements are expected in coming days.



Block Chain Technology

Imagine you and your gang are on a trip. Its midnight, you are sitting in front of a campfire and you begin to play a game. A game of storytelling. You have begun the story with a sentence, your friend is reiterating your sentence and adding up his part, then the other player, then another one. Nobody knows where it will end, all you care is the chain of sentences which are creating a beautiful story. If a person is not able to reiterate and add his own sentence, the story would end, the chain will fall. No matter who is adding up now, the story can certainly be traced back to the very first sentence. New sentences are nothing without the reference to old sentences. That precisely is 'Blockchain'. Your friend added a sentence on top of your sentence that was a 'block'. Everyone approved your sentence because it referred to the old sentences that is a shared ledger.

The Blockchain is a technology based on the virtual digitized decentralized network with "blocks" of information. When you add any information in the network (e. g. transaction), you add it in all computers in the network. But if another user in this network adds his information and make a new block after yours, you can't modify your block. However, you can edit your block if you make it editing from all computers in the network and make similar changes in one moment only. It makes Blockchain one of the best technology for saving and structure information.

A "block" is a collection of data and each piece of data is added to the blockchain by connecting one block after another in a chronological way, much in the same way a row of a spreadsheet follows another row. Blockchain is a ledger which is immutable i.e once something is written in it, It cannot be changed or removed. This ledger stores information, which can be anything from transaction information to persons details.

Platforms of Block Chains

A Blockchain works on three technologies:

- Private key cryptography
- A decentralized network
- An incentive to service the network

Once a transaction happens on a blockchain it sends it to a decentralized network of nodes, in the chronological order in which transactions occurred. The network's algorithm ensures that each transaction reaches to every node available on the network.

There are several thousand nodes that make up the blockchain network. Once the majority of nodes reaches to the decision that all the transactions which were recently done are unique then the same transactions are cryptographically sealed and a block is created. This new block gets linked to previously created blocks to create a chain of the accepted time stamped transaction, thereby saving a verified record of every transaction done.

Cryptographic keys (Private key cryptography)

Every user on the blockchain possesses a combination of private and public cryptographic keys. This creates an extremely useful digital signature, facilitating user ownership

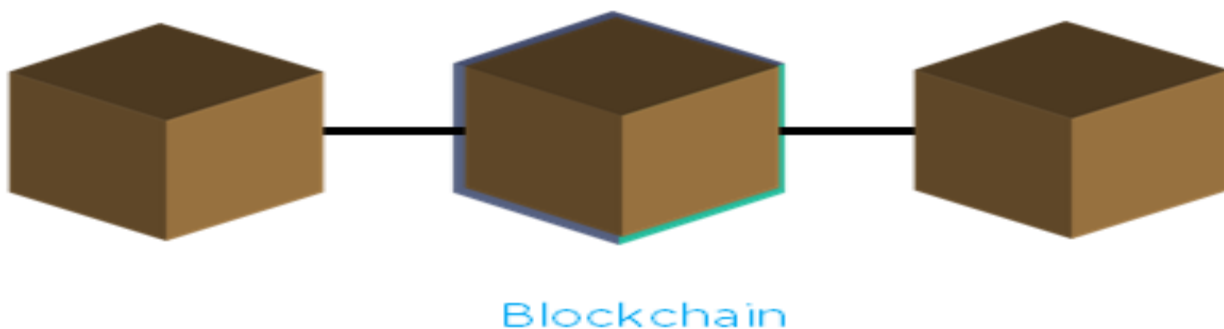
Safety and security on Blockchain(A decentralized network)

Safety and security on blockchain come from its decentralized network. The network is constituted of thousand blockchains available on the network of thousands of nodes agreeing on the authenticity of transactions. This ensures that the transactions are recorded without bias and are resistant to hacker's attack.

Mining(An incentive to service the network)

Blockchain rewards the participating nodes to create a consensus-building process. Every time a new block is settled and committed to the chain, blockchain randomly rewards one node with a fixed bounty. This process is called mining. Blockchain is a distributed database of immutable records called blocks, which are secured using cryptography.

Recorded in chronological order



A block is a record book which contains the details of transaction data.

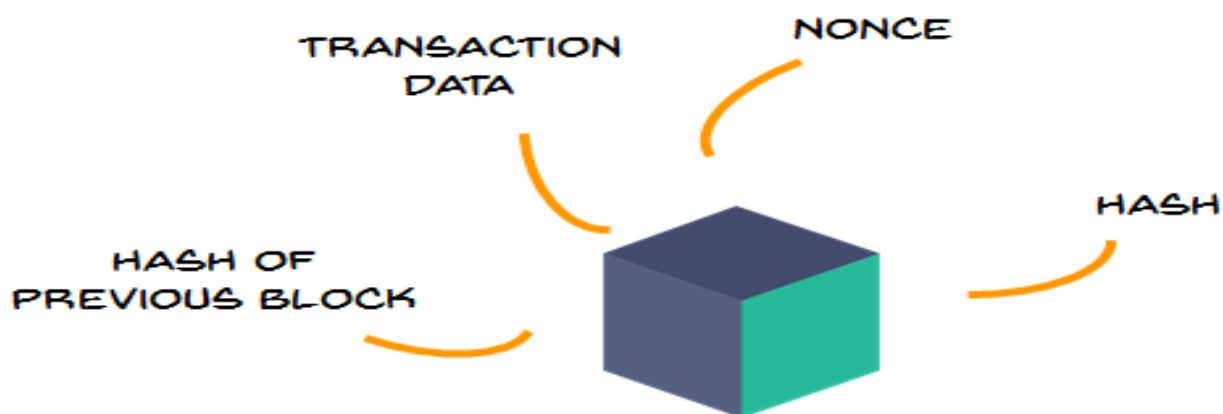
A block consist of four details, they are,

Hash of previous block: It holds the hash value of the previous block.

Transaction Data: Transaction data holds the details of several transactions.

Nonce: A nonce is a random value which is used to vary the value of hash

Hash: A hash is a alphanumeric value which is used to identify a block.



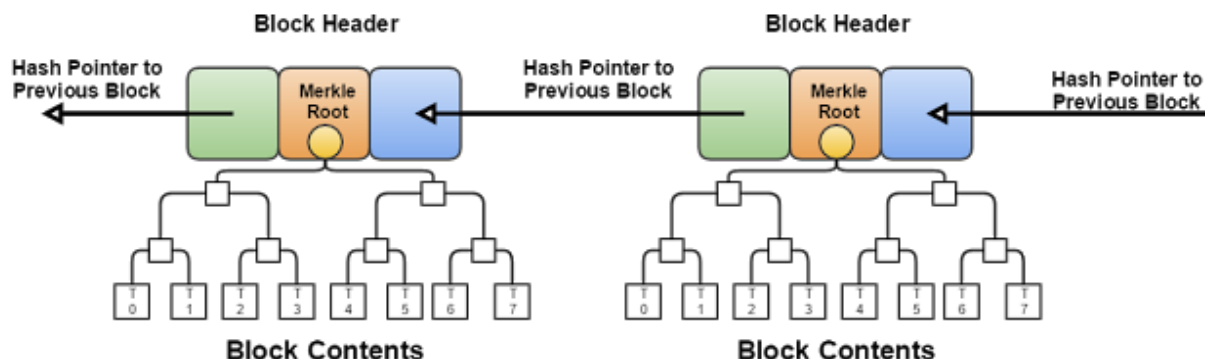
Block Chain and Banking industry

Ever since the beginning of time, people have been trying to simplify uncertainty of various institutions by finding better-advanced alternatives. One such breakthrough was banking system which revamped the contours of informal economy and blockchain is expected to be another such path breaker. The technique was originally described in 1991 by a group of researchers and was initially intended to timestamp digital documents in order to ensure that they stay untampered. However, the idea went mostly unused until it was adopted by Satoshi Nakamoto in 2008 to create a digital crypto-currency Bitcoin. And ever since there has been a global upheaval exploring its potential avenues.

As the name implies Blockchain is an open infrastructure with blocks of information linked together containing references to the previous block. It is a decentralized and distributed system like a public ledger that stores a registry of assets and transactions in a peer to peer network. For each blockchain transaction, people all over the world maintain their copy of records. These copies contain detail about every transaction which thus helps in validating the system. At the core of it, Blockchain creates a shared reality across non-trusted entities through an unforgeable network. The system is held together by a form of technology known as cryptography which is used to ensure that data does not get counterfeited.

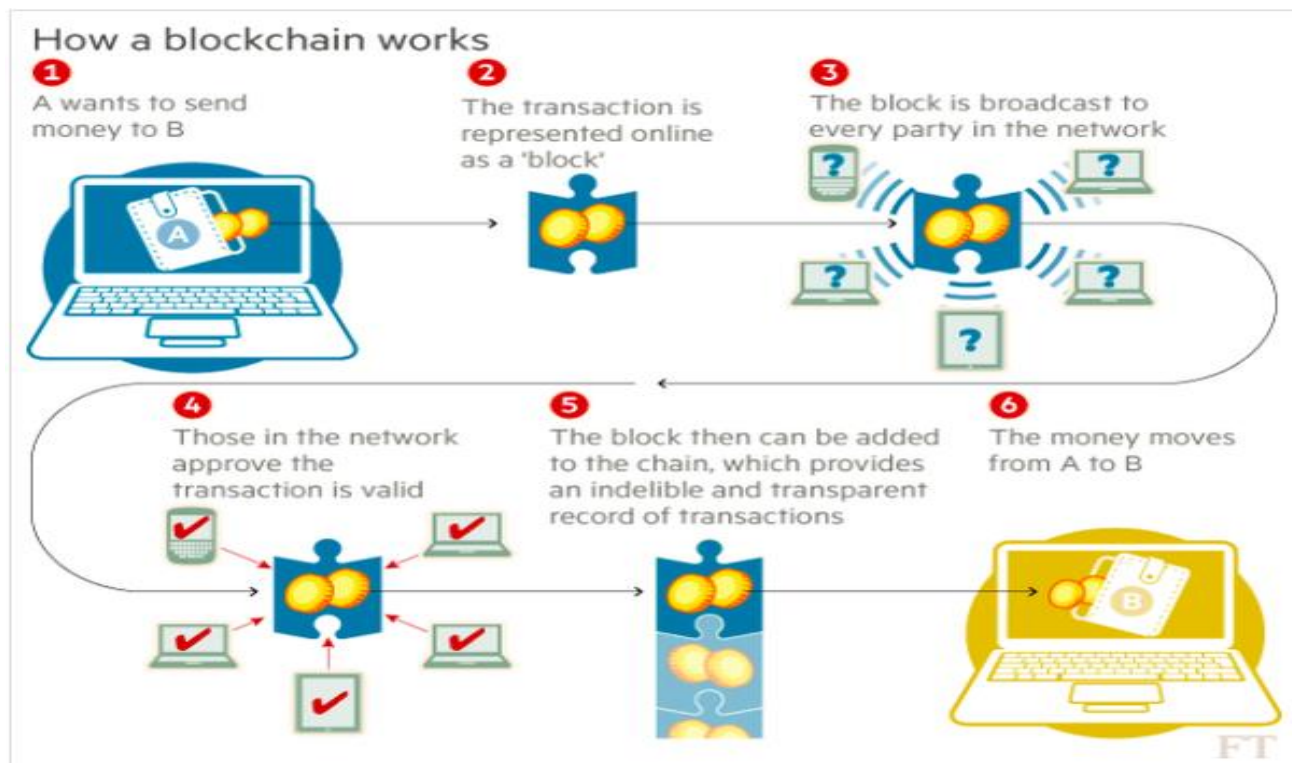
Source: quora.com

A Representation of the Bitcoin Blockchain



As complex and confounded as the system sounds, the adumbration of it can be done rather easily. Each block in a blockchain consists of data, the hash of the current block and hash of the previous block. The type of data in a block depends on the network that it is a part of for e.g. in a bitcoin network, this data consists of the sender's and receiver's information along with the amount being transacted. Hash of any block can be thought of as its fingerprint which is exclusive to that block. Any changes made in the block are reflected in its hash. Hence whenever any change is made in the hash, it creates a discrepancy in the blocks following it, thereby making the changes detectable. So if anyone wants to make an illicit transaction then he will have to tamper with all the blocks in the blockchain, redo their proofs of work and take control of more than 50% of the peer to peer network and then only he can make his activity acceptable.

Hence having such an infrastructure ensures greater security with almost negligible chances of forgery. Also, the decentralization guarantees lesser chances of the system collapsing altogether. And since there is no middleman involved, the fee for subsequent transactions also gets significantly slashed. But since nothing so convenient is ever completely one-sided, just like that the Blockchain system has downsides too. Where on one hand the biggest asset of blockchain is its decentralization, it is also believed to be its biggest drawback also causing more volatility in the system. Other disadvantages include higher transaction time and circumlocutory procedures.



Source : quora.com

Merits of Block Chain in banking industry

1. Transparency

One of the reasons why your business should use this technology is about its open source structure. It means that other users of the network can read and confirm (or unconfirm) the information. The essential thing of being open source is that it can't save logged data without majority Blockchain network users.

2. Decentralization

Next prime blockchain reason is lack of a central data hub. Instead of running a massive data center you save your information in decentralized net, where any user can read, check and (un)authorize any of your actions.

3. Faster transaction settlements

Blockchain technology works 24 hours a day, seven days a week, which means blockchain-based transaction process is quicker. When you send transaction to traditional banks, it's a common thing for transactions to take days to be completely settled. This is due to protocols in bank transferring software, as well as the fact that financial institutions are only open during working/business hours, five days a week. You also have financial institutions located in various timezones all around the world, which delays processing times, but it's not about blockchain.

4. User-controlled networks

This advantage is rather a consequence of the decentralization of the network. Instead of holding a third party for data processing, stakeholders decided to control each other and decide what to do next. For example, the inability to achieve 80% consensus on the update, tied to the bitcoin block, lies in the fact that more than four months ago it was necessary to develop a plug into two separate currencies (bitcoin and bitcoin in cash).

5. Reduced transaction costs

As you remember, blockchain allows you to execute transactions without the need for a third party, which is often a bank or a central server. Since the intermediary is absent, then you do not need to keep it, which allows you to get rid of impressive expense items.

Limitations of Blockchain technology

- 1. Higher costs:** Nodes seek higher rewards for completing Transactions in a business which work on the principle of Supply and Demand
- 2. Slower transactions:** Nodes prioritize transactions with higher rewards, backlogs of transactions build up
- 3. Smaller ledger:** It not possible to a full copy of the Blockchain, potentially which can affect immutability, consensus, etc.
- 4. Transaction costs, network speed:** The transactions cost of Bitcoin is quite high after being touted as 'nearly free' for the first few years.

5. **Risk of error:** There is always a risk of error, as long as the human factor is involved. In case a blockchain serves as a database, all the incoming data has to be of high quality. However, human involvement can quickly resolve the error.
6. **Wasteful:** Every node that runs the blockchain has to maintain consensus across the blockchain. This offers very low downtime and makes data stored on the blockchain forever unchangeable. However, all this is wasteful, because each node repeats a task to reach consensus.

Conclusion

To sum up, there are lots of opportunities with Blockchain technology and its immeasurable potential for improving the quality of service provision improving the confidentiality and integrity of data at the same time. Transparent transactions, full accounting of data are just first step towards a better digital and sustainable world. It is estimated that errors occur in around 10% of equity trades. This results in manual human intervention, which drives up the transaction costs of equity trading and increases the amount of time required to clear an equity transaction. These problems multiply (both legally and logistically) when market makers deal with cross-border transactions. A decentralized ledger that logs and verifies trades would eliminate many of these problems, and the asset management industry would reduce a great deal of its operational risk thanks to the prospective applications of the blockchain within asset management.

Blockchain is a new name in the world of technologies but it is definitely the one to last. Even in the early stages, the technology has gained huge popularity starting with their very first application of cryptocurrencies. More areas of applications are being discovered and tested with each passing day. Once the technology is adopted and accepted on a global level, it'll transform the way we live today. While some industries have already started adopting blockchain in their businesses, many are still exploring the best possible ways to start with.

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