



# The Synergy of Blockchain Technology with the Financial System

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## ABSTRACT

Blockchain technology, which is referred to as the foundation of bitcoin is gaining massive attention these days. It serves as an immutable ledger that allows the transactions to take place in a decentralized manner. In this paper we discuss about the blockchain technology, its evolution towards sustainable development for various cryptocurrencies like bitcoin, ethereum, ripple, lifecoin etc.. An exhaustive comparison has been drawn on different blockchain types based on some parameters. Since blockchain is in great demand these days its applications in various areas has been also discussed in detail.

**KEYWORDS:** Blockchain, Bitcoin, Consensus Protocol

## I. INTRODUCTION

Blockchain technology was first projected by Nakamoto (2008) in the perspective of a peer to peer crypto currency titled – "Bitcoin. These findings laid down the potential of a new peer-to-peer technology which does not require any central authority or bank and the network alone manages the transactions as well as bitcoin distribution amongst various users. 1 Nowadays, Blockchain technology is used for the creation of many crypto currencies like bitcoin, etherium, bitcoin cash, lifecoin etc. by the convention of a digital decentralized ledger over a Peer-to-Peer (P2P) network. Blockchain emerged as the underlying technology of the digital cryptocurrency has recently attracted great attention from the tech giants to manufacturers. 2 Every participant can do the changes with ledger by following various blockchain protocols. 3 Magnetism of blockchain lies in the fact that it does not require any intermediary central

authority or third party for transactions over peer-to-peer network.

Blockchain has transformed the way of financial transaction by the use of its immutability, transparency, anonymity, security and decentralization features. The World Economic Forum (WEF) in 2019 predicted that the mind-boggling initiatives are also happening allied to digital currency and economic addition. India's Reliance Industries announced that its mobile subsidiary Jio will turn its 300 million users into the world's largest blockchain network whereas Facebook proposed Libra, the crypto asset that could turn the social media giant into the world's largest retail bank overnight. In addition, People's Bank of China declared that they are also ready to launch a sovereign digital yuan for international use. 4

Consequently, a huge number of companies as well as countries in the related markets have invested in the blockchain sector, escalating the financial support and participating in international

growth research. This paper provides an overview of the concept of blockchain technology, a comparison amongst various types of blockchain has been drawn. Here we also examines the use of blockchain and its prospective to transform the financial system through facilitating the global fund transfer, smart contracts, decentralized banking ledgers and digital possessions.

### Types of Blockchain

There are three main types of blockchain namely Public, Private and consortium. Public or Permission-less blockchain provides accessibility of read and write to all the users of a network without acknowledging their identification. Whereas in case of Private or Permissioned blockchain read/write accessibility is given only after approving the user identification. In case of Consortium/Federated blockchain every participant can read the data but only the authorized ones can make the changes.<sup>5</sup> A comparison is drawn amongst them by identifying the distinguished parameters in the table below:

Parameters	Types of Blockchain		
	Public Blockchain/Permission-less	Private Blockchain/Permissioned system	Consortium/Federated Blockchain
Managed by	No One	Single Organization	Group of Organizations
Accessibility	All participants on the network can perform read and write operations	Authorized participants are pre-approved for read/write operations <sup>[6]</sup>	All participants can read the data but only a few authorized ones can write
Security & consensus	Complex due to openness	Relatively Simple	Simple
	Wide due to their	Limited to the maintaining	Created for

Usage	massive decentralization and openness	organization	group
Managed by	No One	Single Organization	Group of Organizations
Accessibility	All participants on the network can perform read and write operations	Authorized participants are pre-approved for read/write operations <sup>[6]</sup>	All participants can read the data but only a few authorized ones can write

## II. APPLICATION AREAS OF BLOCKCHAIN

Blockchain is radically shifting the outlook of numerous industries due to transaction freedom. There are many areas where blockchain is doing wonders but we are categorizing it on few budding sectors:



Source: Blockchain Potential Applications & Disruption<sup>8</sup>

**Smart Contracts:** Smart contract is fundamentally the business logic which can be formulated by using any programming language.<sup>7</sup> They also guarantee secure and validated transactions with blockchain based cryptocurrencies. Smart contracts enables:

- Digital Rights
- Wagers
- Escrow



Digital Currency: Digital currency or cryptocurrency has revolutionized these areas broadly:

- E-commerce
- Global Payments
- Remittance
- P2P Lending
- Microfinance

Record Keeping: By the usage of decentralized digital ledger of blockchains data storage comes to an great ease, therefore becomes major savior in these crucial domains:

- Healthcare
- Title Records
- Ownership
- Voting
- Intellectual Property

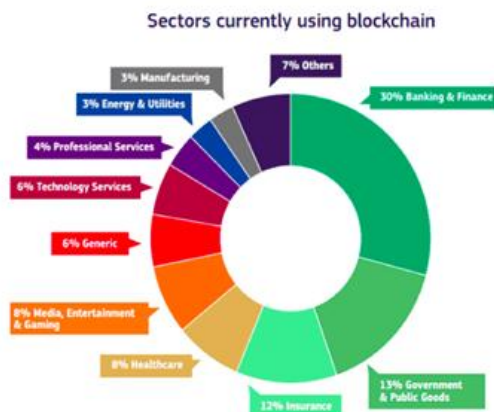
Securities: The security feature of blockchain helps in these fields:

- Equity
- Private Markets
- Debt
- Crowd funding

Derivatives

### III. BLOCKCHAIN AND THE FINANCE SECTOR

As stated earlier, Blockchain can be referred to as a distributed ledger technique wherein all the members participating in the network share transaction information between parties. The concept of Blockchain technology is gaining wide importance in all realms which have been stated already. The graph given below clearly states that Banking and Finance sector is heavily utilizing the Blockchain technology.



Source: <https://blockgeeks.com/guides/blockchain-and-finance/>

Sectors Currently using Blockchain are:

- Manufacturing-3%
- Energy and utilities-3%
- Professional Services-4%
- Technology Services-6%
- Generic-6%
- Media, Entertainment & Gaming-8%
- Healthcare-8%
- Insurance-12%
- Government and public goods-13%
- Banking and Finance-30%
- Others-7%

It can be clearly said that blockchain is revolutionizing the finance sector. This technology, which is based on the distributed ledger origin led by first cryptocurrency. Bitcoin, is already emerging as a new flow of finance. With the spread of introduction of distributed ledgers centered on financial institutions, closed distributed ledger technology is expected to lead innovation of future finance in terms of reliability, stability and efficiency.

#### Areas where blockchain is helping the Finance Industry

Although blockchain can be applied at several places in the finance sector but according to an article three specific areas have been identified:

Faster Cross Border Payments: This is the biggest problem which the banking sector is coming across. A typical money transfer takes 2-5 working days on an average. By using Blockchain, settlements become user optimized and help in saving substantial amount of time. Since this technology removes the need for middle men as the transactions are settled instantly.

Cheaper KYC: An article [7] stated that banks spend a major amount on KYC Compliances. This is due to ever changing regulation policies and strict methods followed by certain banks. By using Blockchain's KYC Protocol intra and interbank exchange of data turns easier. Because blockchain is not owned by a central repository anyone can upload the information and share it with anyone.

Trade Finances: This is another area which can be affected by using Blockchain. Blockchain uses the concept of smart contracts and helps in

reducing the time taken to complete the transaction.

### Comparison of Traditional Banking, Internet Finance and Blockchain

Banking industry is a major component in the Finance Sector. A study was carried out by author in [9]. He identified certain parameters and on the basis of them he compared traditional banking, Internet banking and Blockchain in banks.

**Table 2** Comparison of traditional banking businesses, Internet finance businesses, and blockchain + banking businesses

	Traditional banking businesses	Internet finance businesses (FinTech 1.0)	Blockchain + banks (FinTech 2.0)
Customer experience	Uniform scenarios	Rich scenarios	Rich scenarios
	Homogenous service	Personalized service	Personalized service
	Poor customer experience	Good customer experience	Good customer experience
Efficiency	Many intermediate links	Many intermediate links	Point-to-point transmission, disintermediation
	Complex clearing process	Complex clearing process	Distributed ledger, transaction = clearing
	Low efficiency	Low efficiency	High efficiency
Cost	Large amount of manual inspection	Small amount of manual inspection	Completely automated
	Many intermediate links	Many intermediate links	Disintermediation
	High costs	High costs	Low costs
Safety	Centralized data storage Can be tampered	Centralized data storage Can be tampered	Distributed data storage Cannot be tampered
	Easy to leak users' personal information	Easy to leak users' personal information	Use of asymmetric encryption, Users' personal information is more secure
	Poor safety	Poor safety	Good safety

As stated above the parameters for comparison have been identified as Customer Experience, efficiency, cost and safety. It is clearly evident that Blockchain technology can significantly provide a positive effect on the banking sector as compared to traditional and internet banking.

### IV. CONCLUSION

Blockchain has shown its potential for transforming conventional business with its key characteristics: decentralization, persistency, and anonymity and audit ability. In this paper, we present an inclusive overview on blockchain technology; various types of blockchain were compared by identifying few illustrious parameters for them. Application areas where blockchain is doing revolution has been discussed and afterwards the percentage in each sector is been plotted. Furthermore, the impact of blockchain over the financial sector has been portrayed.

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