

A COMPREHENSIVE STUDY OF BLOCKCHAIN TECHNOLOGY IN FINANCE

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Abstract:

In finance blockchain technology has received a lot of attention for maintaining a decentralized and secure record of transactions. The researcher has tried to figure out how blockchain ensures reliability by chaining blocks of transactions together in such a way that altering any block breaks the link with the next block. This paper explores understanding of the term Blockchain technology and aims to demonstrate the use and application of blockchain technology in finance. It also aims to provide detailed understanding of the multidimensional applications of blockchain technology. The study reveals that limited contributions have been made in the financial sector by blockchain technology. It has enormous potential to add to the development of financial services. To achieve the objectives of the study we have used the exploratory method of the research. The paper findings say there is scope of future research as well as adoption of blockchain technology in the financial sector.

Keywords: Blockchain, Finance, technology, application.

Introduction

A blockchain consists of blocks, chains, nodes, and master nodes. A Blockchain technology is known for their vital role in cryptocurrency systems for maintaining a decentralized and secure record of transactions. Blockchain is not just limited to cryptocurrency uses but it can be used to make data in any industry immutable. In 1991 Blockchain technology was first outlined by Stuart Haber and W. Scott Stornetta but it had its first real-world application in 2009 with the launch of Bitcoin. Blockchain technology uses hash algorithms and timestamps to store data anonymously with other participants in the chain. Blockchain ensures reliability by chaining blocks of transactions together in such a way that altering any block breaks the link with the next block. Since then Blockchain uses have exploded through the creation of various cryptocurrencies, non-fungible tokens (NFTs), decentralized finance (DeFi) applications and smart contracts. In terms of applying IT technology during past decade financial service sector has changed drastically. Financial Organizations have found

3733

technologies as a game changer for business in terms of increasing efficiency and cost cutting. This technology helps to maintain the balance between user data, technology and privacy.

While managing trillions of cash the global financial system provides services to billions of people daily. Many fintech options are available today it is very difficult for financial services provider to select the one that would work best for their operations.

Benefits of Blockchain:

- It allows all concerned parties to maintain their own copy of the ledger that is therefore replicated and decentralized.
- It reduces the requirement for a trustworthy third party to enable payments,
- It reduces transaction costs,
- Shortening the duration.

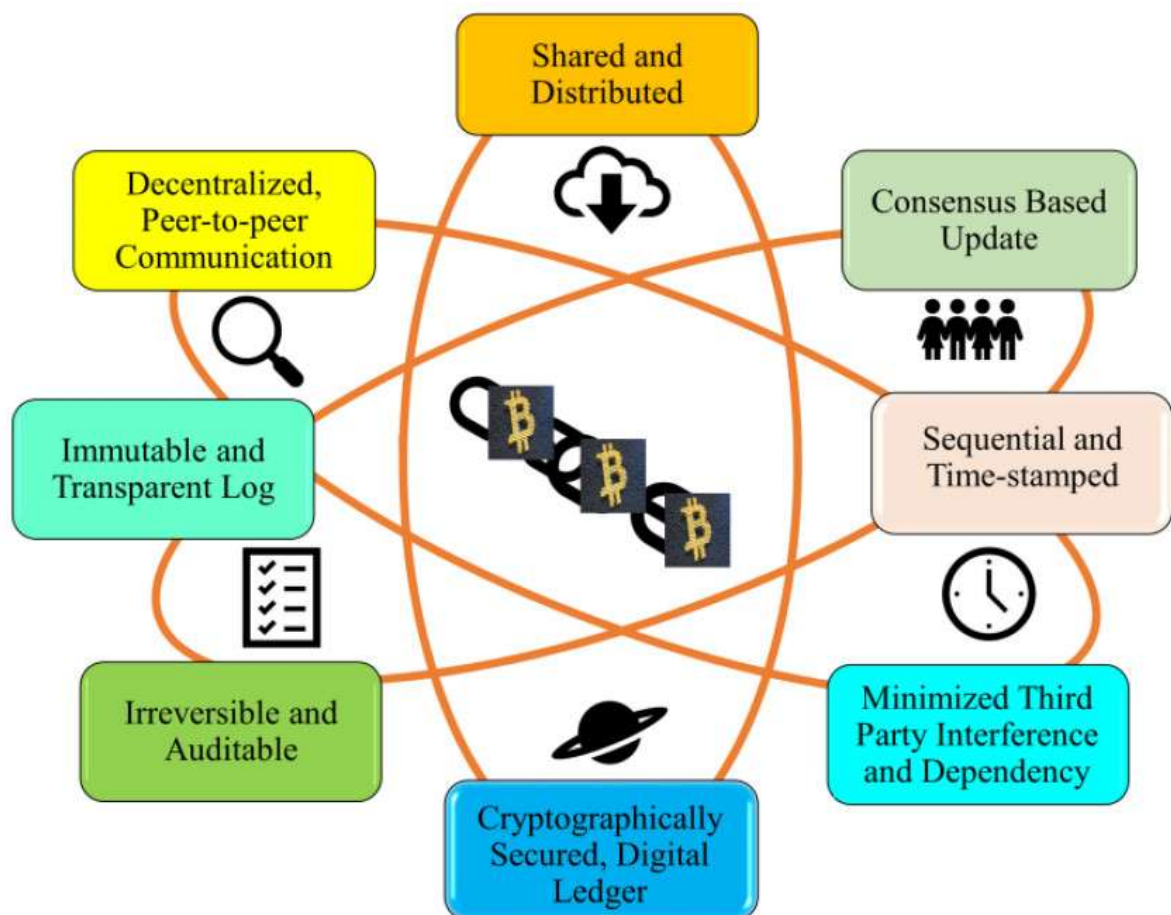


Figure 1 : Blockchain Technology

Industrial and commercial revolutions are projected to be sparked by blockchain while promoting global change. This technology is rapidly changing the way people do business. As the digital world is full of known and unknown cyber threats security is the most important to protect the critical data. The application of blockchain technology has enlarged from digital currency into finance and it has even gradually enlarged into supply chain management, market monitoring, health care, copyright protection and smart energy.

Objective

- To study in brief about blockchain technology.
- To analyze the blockchain technology uses in Finance.
- To understand applications of blockchain technology in Finance.

Research Methodology

The research paper is primarily based on secondary data and it is collected from articles & websites mentioned in the references. The nature of the study is Exploratory. Its main advantage is the depth of observation instead of width of generalization possibilities.

Blockchain Technology

Blockchain technology has most significant impact on the future of finance in its potential to revolutionize payments. It enables transparent and secure transactions without any third-party intermediaries, reducing time delays and transaction fees. By 2018, 91% of banks has invested in blockchain solutions. Around 66% of institutions expect to be in running and production scale with blockchain. For all types of payments around 73% of central bank survey respondents would have requirement of retail CBDCs.

The blockchain technology has several key characteristics that make it exclusively suited to enable trusted and direct interaction between two business trading parties.

Those characteristics include:

- **Cryptographic security.** To read or write to, any private blockchain requires the use of two cryptographic keys. A “public key” which consists of numbers generated at random that lead a user to where the data is stored; a “private key” which resembles a password, permitting access to certain digital assets.
- **Privacy.** Blockchains come in both a permissioned (private) incarnation and public. Through bitcoin, participants could come and go without any permission. However on a permissioned blockchain, companies must be invited to participate which would be used for financial applications.
- **Built-in redundancy.** Blockchain’s decentralized structure means there is no single point of failure as every computer in the network harbors a copy of the database if one fail, there are many others.
- **Process integrity.** Additionally having the correct credentials, once a consensus of participants has validated the information then only users can update the blockchain.

Blockchain Technology and Finance

Blockchain has truly the potential to shake the multi-trillion dollar financial industry to its core. As finance grows progressively more digitized and automated, blockchain will also gets raise its strategic importance. As noted in Crunch time IV: Blockchain for finance: “Business blockchains can operate as standalone solutions, but the value realized increases significantly when they’re combined with other technologies, such as automation or artificial intelligence, to reimagine an entire end-to-end process.”

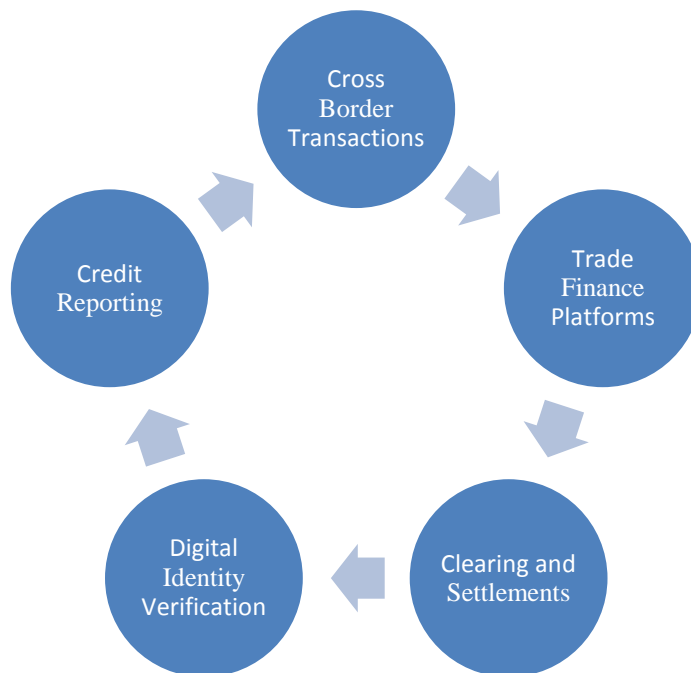


Figure 2: Services of blockchain in financial sectors

Blockchain in Finance Examples

- Smart contracts
- Simplified payment processing
- Upgraded digital identity management
- Advanced trading and investing
- Loyalty and rewards programs

Implementation of blockchain technology in the finance industry has also led to the introduction of decentralized finance, more commonly known as DeFi. It is a form of finance powered by blockchain technology that aims to remove intermediaries from financial services by using smart contracts.

Financial inclusion

Promoting financial inclusion blockchain's low costs give startups a chance to compete with major banks. Because of restrictions like minimum balance requirements, banking fees and low access many people are looking for an alternative to banks. Free from the hassle of traditional banking blockchain provides an alternative that uses digital identification and mobile devices.

Reduces fraud

It stores information in a ledger with transaction information within each block, along with a unique hash that refers to the previous block. Every person receives a copy of the transactions within the network as well. Due to these features, blockchain technology is resistant to hackers, distributed denial-of-service attacks and other types of fraud. The expense of conducting business is reduced without the threat of cyber attacks, helping all parties involved save money and stress.

Use cases of blockchain in finance

- Credit Score
- Invoice Management and Billing Solution
- Fund Investment
- Cross Border Payments
- Lending Platforms
- Financial Record Keeping
- Stock Exchange
- Government Expenses
- Political Funds
- Initial Public Offering (IPO)

Blockchain in financial services can help transform the finance industry by offering multiple benefits. According to KPMG, blockchain can increase efficiency by 40%, reduce errors by up to 95% and reduce capital consumption by up to 75%. Concept of Blockchain in finance is an exciting with the potential to transform the finance industry. Blockchain can help different government entities and financial institutions to improve trust, cut down costs and bring transparency.

Examples of companies using blockchain in finance

- OpenZeppelin
- Ripple
- Mastercard
- Propy Inc
- Uulala
- Veem
- MakerDao
- SoluLab
- Robinhood
- Public.com

Applications of Blockchain technology in Finance

- Fraud prevention
- Banks and other financial institutions
- Calculate credit scores
- Maintaining privacy and confidentiality
- Keeps track of transactions
- Assurance of security and transparency
- Helpful in money transaction
- Boosts stakeholder's confidence in the transaction
- Knowledge sharing and collaboration
- Secure domestic and international payments
- Banking operations
- Improve client affordability
- Useful for international payments
- Minimise expediting of the transfer procedure
- Speedup transaction system
- Enable digital currencies
- Digital currency transactions
- Facilitate trading
- Promotes data confidentiality
- Ease in the Auditing process
- Financial services

- Tokenisation
- Smart contract
- Reduce time and expenses of financial institutions
- Identity management
- Securely store financial transactions
- Traceability of data during the transaction
- Assist in enhancing capital markets
- Increases stock trading transparency
- Maintain financial ledger
- Facilitates communication
- Increase supply chain traceability
- Boosting productivity
- Management of digital asset

Adoption of Blockchain technology will facilitates consumer to rely on banks for conducting transactions involving money transfers. While guaranteeing data integrity digitisation allows complete transaction history and asset provenance in a single shared source of truth. Increased of automation will also increase overall effectiveness in operations.

Conclusion

Blockchain technology has untapped potential to achieve the excellence in Finance industry. It has influence to improve the security and efficiency of financial markets. It has capability to change financial infrastructure of our society. This technology will help to transform the practice of traditional methods. To improve the business financial services should start to explore the implementation of blockchain technology. The study finds out that there is need of academic analysis to understand the mechanisms of blockchain technology influences on corporate sector. The use of blockchain technology can help business to streamline their core business in more transparent and automated way. The financial regulators are examining the advantages and disadvantages of blockchain technology to decide if what implications have on business and consumers and is it appropriate for financial institutions. It has been witnessed from history that new technologies take many decades to realize their full potential but blockchain underlying ideas are powerful and likely to be influential so businesses are looking at this technology towards adapting. Study had its own limitations, the paper only analyses the concept of blockchain technology and its application in Finance. The further study can reveal the adoption of blockchain technology and its services in various industries.

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