



DIGITAL CURRENCY BASED BANKING SYSTEM USING BLOCKCHAIN TECHNOLOGY

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Abstract: Banking institutions have essentially become the only source of confidence for online commerce in order to carry out electronic payments. With a peer-to-peer electronic cash system, payments might be performed online directly between parties without going through a banking institution. But, if a trustworthy third party is still required to prevent double spending, the main benefits of digital signatures are lost. So, using block chain technology to construct hash functions, we may implement a Bit Coin-based financial system in this project. Bit coin is a form of digital currency that is not supported by the central bank or government of any nation. The building blocks of safe data are these bit coins. In order to safely validate each transaction, it is necessary to send this data from one person to another while also verifying the transaction with money. The P2P network tracks and validates the exchange of digital currency between users. Bit coin is more secure than other currencies in terms of cryptographic implementation, and it is difficult to carry out fraudulent transactions. In a Bit coin transaction, the block chain will connect all users connected to the network, and each time a transaction is entered, the network will broadcast it to other users after it has been validated. The network will also have a copy of every transaction. The network will group transaction data into blocks and broadcast them throughout the network rather than preserving any transactions in the block chain. Every single block in this chain links to the one before it, and the genesis block is the first block in the chain. Since peer-to-peer networks and a consensus mechanism are used in block chain systems, there is no chance of data alteration.

Keywords: Blockchain Technology, Transparency, Reshaping the future of Banking, Decentralization.

I. INTRODUCTION

The nodes, or members, in a public or private computer network share the ability to update a blockchain. One of the most popular technology developments today is the blockchain, which is a type of distributed database or ledger. This is what is known as distributed ledger technology, or DLT. Blockchain-based financial systems that use digital currency are gaining popularity. Blockchain technology uses a decentralised, distributed ledger to securely and openly record transactions. This technology is perfect for digital currency-based banking systems since it enables safe and quick transactions without the need for middlemen like banks. Blockchain-based digital currencies like Bitcoin, Ethereum, and Ripple are all readily available. Because to their inexpensive transaction costs, quick transaction times, and anonymity, these digital currencies have grown in popularity. Users can hold and conduct transactions using these digital currencies thanks to the several blockchain-based banking systems that have been built.

The MakerDAO platform, which is based on Ethereum, is one example of a blockchain-based financial system. DAI, a stablecoin that is linked to the value of the US dollar, can be held and used for transactions by users thanks to MakerDAO. You can make payments, make loans, and conduct other financial operations using this stablecoin. Another illustration is the use of the Ripple blockchain, which enables cross-border payments by numerous banks and financial organisations. Blockchain technology from Ripple enables quick and secure transactions with quick settlement times. In general, blockchain-based banking systems based on digital currencies have the potential to completely transform the financial sector. Everyone with an internet connection is able to use these systems, which provide quick, secure, and affordable transactions.

It is simpler to track assets and record transactions in a corporate network thanks to the decentralised, unchangeable blockchain technology. There are two types of assets: tangible (such a house, car, cash, or piece of land) and intangible (intellectual property, patents, copyrights, branding). The business world depends on information. Fast and accurate delivery is preferred. Due to its real-time, shared, and completely transparent nature, blockchain technology is the greatest delivery method for that data accessible only to users who have been granted permission to join a network, transparent data is saved on an immutable ledger.



The ability to trace orders, payments, accounts, and production is one of the many features of a blockchain network. You can also witness every facet of a transaction from beginning to end because everyone has access to the same version of the truth, which boosts your confidence and presents you with fresh opportunities.

The technical framework and protocols known as distributed ledger technology (DLT) permit concurrent access, record validation, and record updating throughout a networked database. Blockchains are based on the DLT technology, whose infrastructure makes it possible for users to see any changes and the people who made them, lowers the need for auditing data, ensures data reliability, and restricts access to only those who actually need it.

Businesses and governments have been using the idea of distributed computing for many years. Paraphrase: In the 1990s, it became possible for several computers and users in different locations to solve problems. Ledgers are now much more capable thanks to developments in data science, computing, software, hardware, and other fields of technology. Increased communication via intranet and internet protocols made it possible to gather, analyse, and utilise a lot more data. It is vital to have someone verify the modifications, though, as there may now be numerous people with access to the data.

Using the Ethereum blockchain, a company called MakerDAO is creating technologies for borrowing, saving, and creating a stable coin. It has developed a protocol that enables anyone to lend themselves money in the form of the stablecoin DAI if they have ETH and a MetaMask wallet. Users can generate a given number of DAI by locking up a certain amount of ETH in MakerDAO's smart contracts; the more ETH that is locked up, the more DAI that can be generated. Users only need to repay their DAI loan and any associated costs when they're ready to access the ETH that served as collateral for the loan. A foundational component of the decentralised financial system, or "DeFi" as the young people call it these days, has been developed on Ethereum by MakerDAO.

II. LITERATURE REVIEW

In 2021, blockchain technology in the financial sector, including digital currency-based banking systems examine the potential benefits of blockchain technology, such as increased security, faster transactions, and lower costs, and highlight the challenges and limitations of implementing this technology. The paper also discusses the potential impact of blockchain technology on various financial applications, such as payments, lending, and asset management (S. Alqassem, et al.,)

A. Mehta and D. Sharma (2019) explores the potential of blockchain technology to increase financial inclusion in the global south, that blockchain-based banking systems can provide access to financial services to people who are currently underserved by traditional banking systems. The challenges faced by traditional banking systems in providing financial services to the unbanked population in the global south and how blockchain technology can address these challenges. In the case of India, where the government has launched several initiatives to promote financial inclusion using blockchain technology.

In 2020, digital money, including digital currency-based banking systems using blockchain technology was developed by S. Mannan, et al., the evolution of digital money, from the emergence of credit and debit cards to the rise of crypto currencies. The potential benefits of digital currencies, such as lower transaction costs, increased security, and faster transactions. The challenges faced by digital currencies, including regulation, scalability, and interoperability.

The potential impact of crypto currency, blockchain, and decentralization on the future of banking argues that blockchain-based digital currency systems could disrupt traditional banking systems by providing faster and cheaper transactions, greater security, and increased transparency. The benefits of digital currencies and blockchain technology for both consumers and financial institutions, including lower costs, increased efficiency, and improved risk management. The challenges and risks associated with implementing blockchain-based banking systems, such as regulatory issues and security concerns. The paper concludes with a discussion of the potential implications of digital currencies and blockchain technology for the future of banking and finance. (N. Szabo., 2018)

"Digital Currency and Blockchain Technology" by S. Nawaz, et al. (2020), digital currencies and blockchain technology, including their use in banking systems. The benefits of digital currencies and blockchain technology, such as increased security, faster and cheaper transactions, and greater transparency. The challenges and limitations of implementing blockchain-based banking systems, including regulatory issues, scalability, and interoperability. The digital currencies and blockchain technology on various financial applications, such as payments, remittances, and asset management.



Li, X, et.al., developed blockchain-based digital currency system for a high-performance and secure banking system in (2021). The challenges of implementing a digital currency system, such as scalability and security, and propose a solution using blockchain technology. It presents a detailed description of the proposed system architecture, including the design of the blockchain-based ledger, smart contract deployment, and transaction management, the security mechanisms in the system, such as encryption and authentication, and evaluate the system's performance using simulations. It includes the potential applications and benefits of the proposed system in the financial industry.

Bashir, I. et.al., uses the blockchain technology for digital banking transformation and identify key themes related to the adoption of blockchain technology in the banking sector, including increased security, reduced costs, improved transparency, and enhanced customer experience. It also highlights the challenges and limitations of implementing blockchain-based banking systems, such as regulatory issues, technical barriers, and interoperability, the potential applications of blockchain technology in various financial services, such as payments, lending, and asset management. The future of blockchain technology in the banking sector and the need for collaboration between industry stakeholders to realize its full potential. (2021)

It is relevant to the broader topic of blockchain technology's potential applications in the financial industry, including supply chain finance. To address key objectives of supply chain management, such as transparency, security, and efficiency in blockchain technology. The framework for understanding the use of blockchain technology in supply chain management and discusses various blockchain-based solutions that have been developed for this purpose. The challenges and limitations of using blockchain technology in supply chain management, such as scalability, interoperability, and legal issues. (Kshetri, N. 2018)

A blockchain-based digital currency system for peer-to-peer transactions in mobile banking was developed by Wu, X. (2021), the architecture of the system, which consists of a blockchain network, a consensus mechanism, a digital wallet, and a mobile application. Which explains, how the system can enable secure and efficient peer-to-peer transactions between users without the need for intermediaries such as banks. The benefits of using blockchain technology for mobile banking, such as improved security, transparency, and accessibility.

An overview of cryptocurrency and blockchain technology, including their history, key features, and applications. The advantages of using cryptocurrency, such as its decentralization and security features, and explain how blockchain technology enables the secure and transparent transfer of digital assets. The challenges and limitations of cryptocurrency and blockchain technology, such as their volatility, scalability, and regulatory issues. A discussion of the potential future of cryptocurrency and blockchain technology and their impact on various industries, including banking and finance. (Kaur, M. et.al., 2020).

III. PROPOSED METHODOLOGY

- Blockchain, a ground-breaking technology that is reshaping numerous industries, was miraculously introduced to the world with Bitcoin, its first contemporary use.
- Blockchain can be characterised as a data structure that stores transactional records and upholds decentralisation, security, and transparency.
- By 2020, the following major trends will have a significant impact on banking: artificial intelligence, blockchain innovation, process mechanisation, and digital security.
- More than 50,000 Blockchain-based undertakings have surfaced over the past two years.
- In India, banks are some of the most experienced and significant financial intermediaries. Since progress, the financial division's operation has seen a few notable adjustments.
- Blockchain technology is an additional innovation that relies on numerical, cryptographic, and financial standards to maintain a database between various members without the need for an outsider or focal specialist.
- Blockchain is no longer restricted to digital currencies like bitcoin; it is a changeless record with a single adaptation of reality for every exchange.

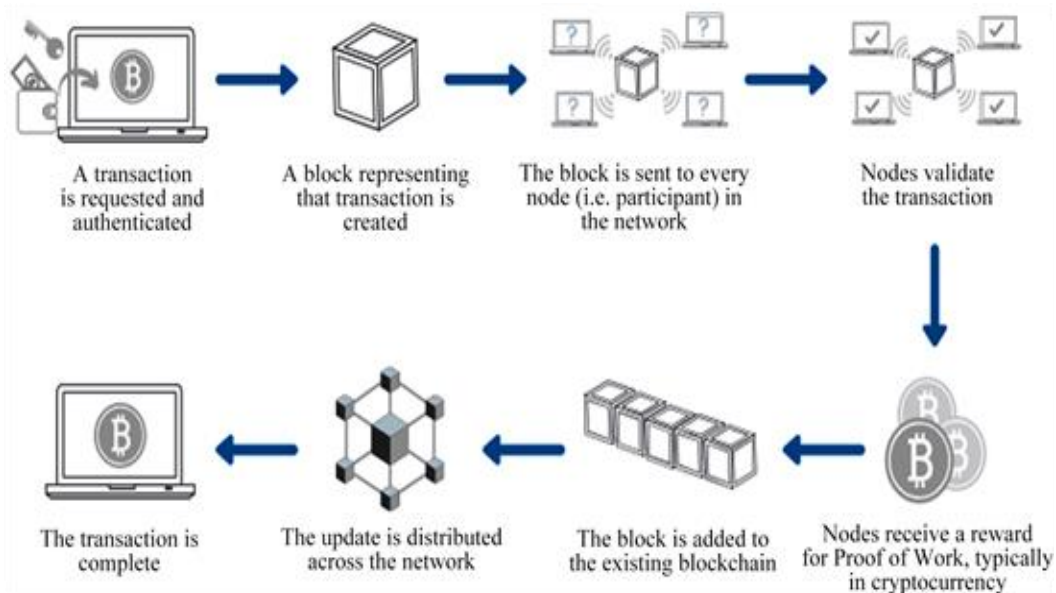


Fig:1, DIGITAL CURRENCY BASED BANKING SYSTEM

IV. CONCLUSION

The project that was undertaken greatly aided in learning about Blockchain Technology in the Banking Sector. A very important and efficient bank application is blockchain. It is a huge topic, and it would be impossible to cover everything in a limited amount of time. The data recorded on the blockchain, however, is tamper-proof and cannot be modified because every effort has been taken to cover the majority of the critical features that use encryption and digital signatures. Finally, it was decided that the banking industry should use blockchain technology. In India, banks are among the oldest and largest financial intermediaries. The development of blockchain technology might have a significant impact on how transactions are planned and confirmed, resources are improved, money is managed, and a variety of different organizations are affected.

REFERENCES

- [1] Alqassem, S., El-Emary, I. M., & Mahmoud, Q. H. (2021). Blockchain-Based Financial Transactions: A Comprehensive Review. *IEEE Transactions on Industrial Informatics*, 17(3), 1863-1873.
- [2] Mehta, A., & Sharma, D. (2019). Blockchain and Financial Inclusion: A Case of the Global South. *The Journal of Developing Areas*, 53(3), 153-167.
- [3] Mannan, S., Zaman, M., & Karim, M. A. (2020). The Rise of Digital Money: A Literature Review. *Journal of Electronic Commerce Research and Applications*, 40, 100971.
- [4] Szabo, N. (2018). The Future of Banking: Cryptocurrency, Blockchain, and the Decentralization Revolution. *Business Horizons*, 61(4), 537-542.
- [5] Nawaz, S., Asad, M., & Khan, A. (2020). Digital Currency and Blockchain Technology: A Literature Review. *International Journal of Advanced Science and Technology*, 29(9), 1437-1451.
- [6] Li, X., Chen, Y., Wang, X., & Shi, W. (2021). A blockchain-based digital currency for a high-performance and secure banking system. *IEEE Transactions on Industrial Informatics*, 17(4), 2975-2984.
- [7] Bashir, I., Abbas, H., & Othman, M. (2021). Blockchain technology for digital banking transformation: A systematic literature review. *Journal of Digital Banking*, 5(4), 349-365.
- [8] Kshetri, N. (2018). Blockchain's roles in meeting key supply chain management objectives. *International Journal of Information Management*, 39, 80-89.
- [9] Liu, J., Li, X., Hu, W., Li, J., & Wu, X. (2021). Blockchain-based digital currency system for peer-to-peer transactions in mobile banking. *Journal of Systems Architecture*, 117, 102017.
- [10] Singh, J., & Kaur, M. (2020). Cryptocurrency and blockchain technology: An overview. *Journal of Theoretical and Applied Information Technology*, 98(22), 3952-3