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IMPLEMENTATION BLOCK CHAIN TECHNOLOGY IN BANKING SYSTEM

RATHOD VIKAS THAU [1], ASST.PROF. V. KARWANDE[2]

ME Student, Department of Computer Science & Engineering, EESGOI , India[1]
HOD, Assistant Professor, Department of Computer Science and Engineering, EESGOI,India. [2]

Abstract: ***In public cloud storage system protecting the data and controlling the data access is a challenging issue. People's lives have been transformed by the rise of digital technology. In today's environment, the banking sector is vulnerable to fraud and cyber-attacks. Because today's banking system is based on centralised databases, an attacker can easily breach any of these databases, compromising all of the bank's customers' information and data. The vulnerability of today's banking system can be lessened by re-building it on top of block chain technology, which will eliminate the centralised database architecture and decentralise data over the block chain, minimising the risk of a database being hacked. Because block chain transactions are validated by each and every node in the chain, transactions will become more and more safe, making the overall financial system faster and more secure.***

Keywords: *Secure Hash Algorithm(SHA); Blockchain Technology; Distributed database; Cryptocurrency; Consensus; Security and Protection.*

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I INTRODUCTION

Traditional databases are managed by a single entity, which has total control over the database, including the capacity to tamper with the recorded data, suppress otherwise acceptable data updates, and fraudulently add data. For most use cases, this is not a problem because the organization that maintains the database does so for its own benefit and thus has no incentive to falsify the database's contents; however, there are other use cases, such as a financial network, where the data being stored is too sensitive and the incentive to manipulate it is too appealing to allow any single organization to have complete control over it. Even if it were possible to ensure that the responsible organization would never make a false update to the database (an assumption that is already too much to expect for many people), a hacker might still get in and modify the database to their own goals. Making the database public and allowing everyone to store a redundant copy of the database is the most apparent approach to ensure that no one entity can change it. By comparing their copies of the database to those of others, everyone may be confident that their copy is complete. As long as the database is static, this is adequate; but, if modifications to the database must be made after it has been distributed, a consensus problem arises: which of the entities retaining a copy of the database decides which modifications are authorized and in what sequence those modifications occurred? If any of the entities may make modifications at any moment, the redundant database copies will rapidly go out of sync, and no one will know which copy is accurate. If all of the entities agree on one entity to make changes first, and the others copy from it, that entity gains the ability to censor modifications it doesn't like. Furthermore, if that one entity vanishes, the database will be stuck until all of the other entities can band together to find a successor. All of the entities may agree to take turns making modifications, with all of the others copying the modifications made by the entity whose turn it is, but who chooses who gets a turn when?

II LITERATURE SURVEY

Blockchain is a new technology that is attracting the attention of central banks and has the potential to disrupt the financial system. However, there appears to be a divide in research effort between practitioners and academics. This work examines and maps that gap by looking at trends in

peer-reviewed research contributions on Distributed Ledger Technology (DLT) use-cases for central bank services, operations, and functions using thematic categorization of academic literature. In addition, this paper summarises the potential and problems that central banks face as a result of blockchain adoption in each of those use-cases.The paper use a Systematic Mapping Study methodology to attain this purpose. The report provides a detailed statistical and thematic analysis of research maturity and researcher types, with a focus on the sorts of central bank use-cases that are being explored for blockchain adoption. Our study adds to a better understanding of where the most and least attention is focused, allowing academics, practitioners, and combinations of the two to identify gaps and possibilities. The findings indicate that the study topic is a relatively new subject.It confirms the disparity between the depth and volume of research provided by industry and academics, with the former leading the way. Our analysis also discovered that the use-cases that require the greatest investigation are: 1) Central Bank-issued Digital Currency (CBDC), 2) Regulatory Compliance, and 3) Central Bank-operated Payment Clearing and Settlement Systems (PCS); relative minimal participation in the areas of 4) Assets Transfer/Ownership, and 5) Audit Trail. [1].

To handle financial transactions, distributed banking platforms and services bypass centralised institutions. M-Pesa, for example, offers a distributed banking service in developing countries, allowing people without bank accounts to deposit, withdraw, and transfer money. The current distributed banking systems do not support auditing of distributed banking transactions for accountability because they lack transparency in monitoring and tracking distributed banking transactions. This paper proposes a blockchain-based distributed banking (BDB) scheme to address this problem, which makes use of blockchain technology's inherent properties to record and track immutable transactions.BDB provides distributed financial transaction processing, but its design qualities, simplicity, and computing efficiency set it apart from cryptocurrencies. We create a BDB prototype utilising smart contracts and undertake tests to demonstrate BDB's efficacy and performance. To emphasise the key differences and showcase the BDB's greater computing efficiency, we compare our prototype to the Ethereum coin.[2].

Banking systems can upgrade from their old techniques to a digital, immutable, distributed ledger that can be deployed via Blockchain thanks to ever-evolving technologies. Blockchain Technology is a peer-to-peer network that may be used to solve the challenge of keeping track of and documenting transactions in a financial system.Transparency, robustness, auditability, and security are all features of blockchain. This study seeks to implement these features in a distributed banking system based on blockchain, which will be comparable to existing methods. It will also cover the constraints of blockchain implementation as well as its future potential. [3].

In recent years, blockchain has gotten a lot of attention in research and development for a variety of businesses. Nonetheless, innovations that affect banking have the potential to destabilise the global economy for economic reasons, but they have garnered less scholarly attention. As a result, the impact of blockchain technology on the banking industry is thoroughly examined. Scopus and Web of Science are used to retrieve relevant material, and bibliometric approaches are used.While the majority of previous papers have focused solely on bit coins, a broader framework is being developed that will synthesise interdisciplinary thematic areas for advancement; thus, the current work is unique. In light of technology, law, and management, a few practical and theoretical implications for stakeholders are discussed [4].

To protect information about banking transactions, such as transfer amounts, card details, names of participants, and so on, Blockchain technology without tokens is being used. This is an important topic because the digital economy is becoming an increasingly important part of modern life. The information is processed and then passed through the databases of banks and payment systems, where it is potentially accessible to the attacker.The article examines the security mechanisms of distributed databases, proposes a solution based on Blockchain technology to maintain the uniqueness of information in them without the use of tokens, and makes recommendations for incorporating Blockchain technology into modern banking systems. [5].

The majority of banks now provide a wide range of online services to their customers, and our case study will concentrate on domestic and international banking transactions. By providing these services, these banks consume sufficient time to conduct bank transactions from one bank account to another, some of which take more than a week, while operating under a security system that does not fully respect operators' privacy and at the mercy of third-party services. Unfortunately, payment systems (such as SWIFT, SEPA, and union pay) have limitations for international transactions and other banking exchange services.they will set up a storage and bank exchange platform based on a private and confidential blockchain to address these issues of third-party trust, exaggerated latency, payment of high transaction fees, and problems of theft and falsification of banking information. A number of authorised users will be able to hold and operate nodes that will support the network on this platform. There is no system in the world

that connects banks, currencies, and financial institutions without the involvement of a trusted third party. These sworn users in our case are banks.The presence of a trusted third party, which is a third entity through which various transactions and banking information must pass, will be eliminated by this platform. Our platform will first eliminate third-party trust, then promote user-to-user transactions before storing bank transaction data in the blockchain. Our blockchain platform will enable users to conduct secure and confidential transactions at a lower cost and without the risk of a foreign exchange ban, as is the case with banks. [6].

The Blockchain is an encrypted database that stores information statistics, or, to put it another way, it's a virtual ledger of any transactions, contracts, or other events that must be independently recorded. One of the most important features of Blockchain is that this virtual ledger is spread across a large number of computers and isn't always guaranteed to be stored in a single location. The blockchain chain has already begun disrupting the financial services industry, and it is this technology that underpins bitcoin transactions.The paper's goal is to investigate the impact of blockchain technology on the financial sector. There's no doubt that the rest of the world is watching to see how this promising technology will influence or shape the banking industry's future. Blockchain improves data storage and transmission security, provides a decentralised and transparent network infrastructure, and lowers operational costs significantly. Even in a regulated industry like banking, these remarkable characteristics make blockchain a very promising and in-demand solution. [7].

Due to mismanagements from other parties in the payment system, a distributed payment system based on payment tokens using Blockchain technology protects the consumer from identity theft by unauthorised usage of his payment card details (PAN, CVV). Furthermore, the proposed payment system's security and privacy are bolstered by a private Blockchain consortium. The security of this payment system is enhanced by introducing special nodes that verify and validate transactions in order to detect and block fraud attempts. This consortium consists of a private Blockchain called Bank Authority that acts as the interoperability domain, as well as two other private Blockchains that each serve as the acquirer Bank and issuer Bank, respectively. Furthermore, only the transaction hash is recorded in the consortium's Blockchain, and only the Banks involved in a transaction will have access to its details, in order to keep the payment system confidential and protect the economic interests of all the Banks in the system.[8].

Intends to depict a blockchain transaction on a peer-to-peer network, illustrating the shift from an outdated banking technology to a newly developed network and solution. The transaction by blockchain system and methods will be clarified in this paper. The paper's main focus is on the various associations with transactions, and it concludes with a highly praised transaction system and the smooth operation of the entire working and levelled system. The blockchain is an additional layer that runs on top of the existing Internet protocol stack, adding a new entire table of protocols and generating consensus from other users or participants.The advanced data isn't duplicated; rather, it's dispersed across multiple blocks, which come together to form blockchain. In today's world, blockchain technology is regarded as the safest way to conduct transactions.[9].

The RTGS (real-time gross settlement system) is the backbone of the interbank payment system. Financial institutions have been forced to implement inter-bank payment systems (IBPS) with higher levels of throughput, security, and stability due to the explosive growth of large-value wholesale payments. This promising method of orchestrating IBPS makes use of blockchain technology, which has been successfully used to provide distributed trust and confidentiality for a variety of financial service applications. However, blockchain isn't a panacea for IBPS, which faces a slew of issues related to high-value transactions.Financial institutions expect a decentralised system with better confidentiality, instruction settlement finality, liquidity saving mechanisms, and more efficient gridlock resolution methods in addition to a simple migration from traditional RTGS to a blockchain platform. We present an end-to-end IBPS prototype based on the Hyperledger Fabric enterprise blockchain platform in this paper. For interbank payment business, the prototype supports gross settlement, gridlock resolution, and reconciliation. This prototype has been proven to provide a higher level of payment settlement service, according to preliminary research conducted by the Ubin Project.[10].

III. SYSTEMS ARCHITECTURE

In the proposed system, the typical bank design, which comprises on a centralized database, would be eliminated in the suggested system. The data will be dispersed widely over the block chain, making banking institutions decentralized. This will not only make data more secure, but it will also decentralize authority. There are two advantages to the transaction method outlined above. To begin with, it will speed up transactions by eliminating the intermediary procedures that are now used in regular transactions, and it will also make it almost difficult for an individual to hack the system since it will demand a massive amount of computing power that no one possesses.

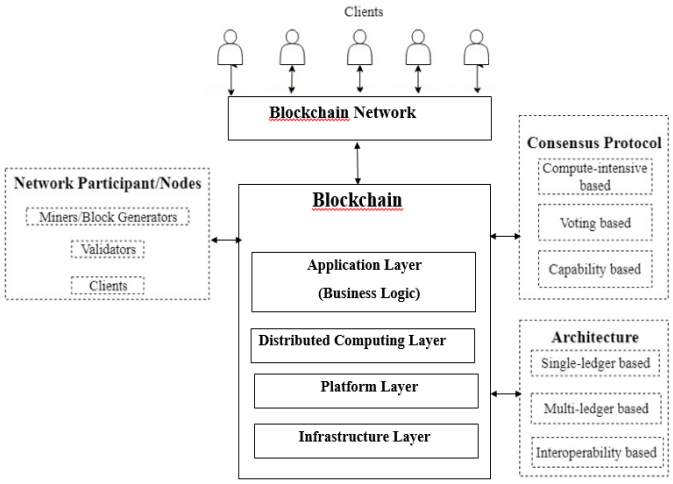

Figure No 3.1: System Architecture

IV EXPERIMENTAL RESULTS

Performance The simulation was conducted to assess the performance of the existing and proposed work, taking into account the blocks in size 10, 20, 30, 40 in which the delay and output were computed and the comparison of the current and the proposed System was made. The graphs below indicate changes in current and proposed systems.

1. Delay(ms):Delay is the time that a node takes to construct and validate a new block in a block chain. In the present method, the time spent by miners to construct and validate the blocks is higher than in the proposed method. This is because human intervention is necessary in the present system. The delay in milliseconds is computed here.

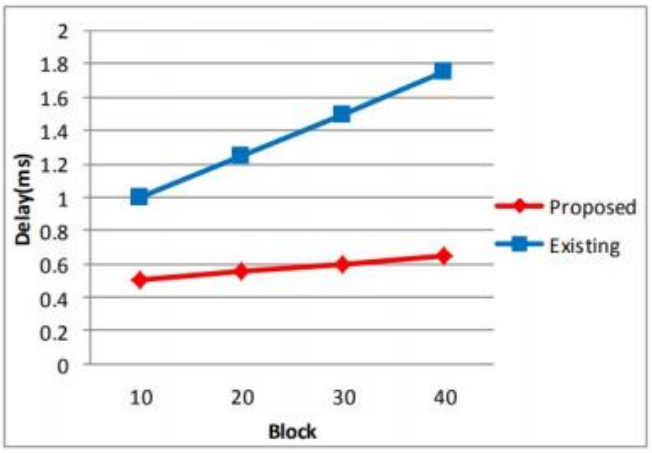

Figure No 4.1: Delay Comparison for Validating Block in Blockchain.

2. Throughput: the measurement of the rate of validation of blocks in the network by nodes. In the present system, people are miners who need more time to validate and build a new bloc because they have to resolve the mathematical difficulty. Nodes consume less time than the present system in the proposed system.

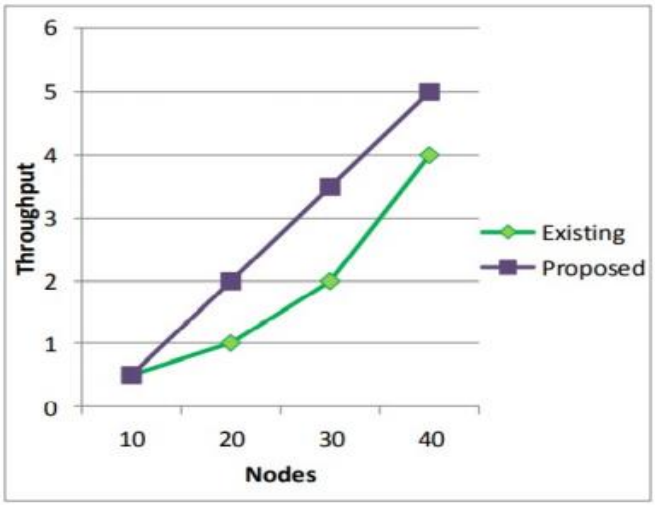

Figure No 4.2: Throughput comparison in the Blockchain.

V CONCLUSION

The proposed system designed to The technology presented is aimed to deliver safe data and a reliable financial system. The data will be disseminated in significant part throughout the block chain, which will decentralise banking systems. This not only secures the data, it also removes the decentralisation of authority. By implementing a block chain in banking system distribution, one may eliminate fraudulent database modification sources. We use SHA-256 algorithm,too.The hash algorithm is the most renowned of Secure hash for creating the hash value for a specific block which is further used for validating the same block.

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