Usage Of Blockchain Technology In The Financial Industry

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ABSTRACT

This paper implements Block chain technology for an encrypted database that keeps data statistics to another way, that is a virtual ledger. For any transactions or contracts that must be independently documented. One of Block chain's main advantages is that this virtual record is dispersed across a vast computer networks and isn't necessarily guaranteed to be kept in a same location. The financial services industry has already begun to be disrupted by the block chain network, and it is technology that powers bitcoin transactions. Research on the impact of blockchain technology on the product and marketing sector focus on the applications of digital. Without a doubt, people throughout the world are interested in seeing how this innovative technology will affect or alter banking in the future. Blockchain offers a decentralized, transparent network infrastructure, improves the storage and transmission security, considerably lowers operational expenses. In a regulated area like the banking sector. The technology is a very promising and emerging trend in the day today expectations.

Keyword: - *Blockchain technology, Financial industry, Distributed ledger, Decentralization, Smart contracts, Peer-to-peer transaction, Immutable records.*

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1) INTRODUCTION

The transactions can be recorded and verified electronically over a network of computers using a distributed digital ledger, or blockchain. Using cryptography shields data against fraud and hackers [1]. Block chain it will being referred to as "the new internet" and is predicted to revolutionise enterprises in many industries, but most significantly the financial industry.

In 2008, "Satoshi Nakamoto" created it and blockchain assists in recording all transactions so that they can't be modified later on, helping to ensure the security of the data. Currently, entities maintain their own conventional ledgers to record transactions among themselves. This can occasionally lead to the transfer or exchange of huge amounts of data between firms, which adds to the time and cost involved. Additionally, it increases the inefficiency, expense, and vulnerability of any asset transfers. These flaws can be fixed with the use of blockchain technology's replicated shared ledger concept [2]. Through event-triggered processes, the usage of blockchain-based smart contracts can improve efficiency. Without various go-betweens, most budgetary and credit organisations are unable to finish their work, and their interest drives up the expense of these organisations' administrations. Blockchain implementation will enable the removal of unnecessary arbiters and result in lower-priced services for customers and banks. Banks and other financial institutions will likely implement blockchain technology in the following areas: credit protection, loans, payment, and customer identity framework [4].

1.1 BLOCKCHAIN TECHNOLOGY APPLICATIONS SECTOR OF THE FINANCIAL

The technologies that receives the most attention these days in the sector of financial is blockchain. The regulations for new Bills, online banking, and payments business models technologies are being developed as results of the transition from a centralised technological distributed infrastructure, environment-enabling systems. The financial

services industry is now leading the method of generating experimentation. In order to guarantee agreement, provenances, inviolability, and finality during the cost of assets within the business networks, blockchain has the ability to allow access in the network to share an item of data [11]. The business network frequently uses communications or statistics between participants in order to complete transactions, ignoring efforts to streamline and enhance the connection of their transaction information. Using a shared resource of everyday knowledge, we may model, streamline, and simplify the design of the financial company infrastructure, it has the capacity to address specific constraints of cutting-edge approaches [10].

The benefits provided by this technology may broadly categorized as fee reduction, efficiency and openness.

1.1.1 Saving money

Preventing Fraud:

Because this technology is built on the idea of consensus across transactions and sharing data throughout occurrences, it less the cost of bank reconciliation and prevents losses brought on by documented fraud.

Reduces expenses associated with currency volatility:

The implementation of this technology in cross border bills enables banks and customers to benefit from currency exchange market and obtain premium deals from market participants in a transparent manner [8].

Avoid spending more money on delayed settlements:

This technology makes guarantee that the input message and the financial agreement facts are communicated concurrently in the database of decentralized fee community.

1.1.2 Efficiency

Resilience throughout redundancy is made possible by Blockchain technology's distributed architecture, which enables the permission blocks in the environment to operate the network. Banks and financial institutions, who are all significant contributors to the pricing environment, will successfully join this generation network as participating nodes [12].

Reduced processing time: In the Block chain age, transaction is immediately made known to all nodes that are approving it[13]. Therefore, by reducing the time spent on decision-making across agencies, which leads to lower processing costs and more transparency of decisions for all involved nodes, Blockchain creation can help to speed up the processing of transactions.

Faster settlements: Since many of the documents needed to prove identification are already in a virtual form, this technology can help address the issues associated with managing identities and recognising your customers.

1.1.3 Transparency

Immutable Records: The Block chain era maintains a permanent record of databases events in order of occurrence as a maximum nodes of its structure [14], ensuring the unchanging nature and closure of banking & financial transactions.

1.2 Benefits of blockchain in a financial services sector

1.2.1 On-chain settlement

An innovative system that uses a distributed record is called blockchain. It has the potential to reduce scam rates in this system of multinational banks and also offer on-chain clearance. Block chain may utilized in this banking industry, especially, by giving banks a platform to prevent fraud and offer on-chain clearance to consumers, which also speeds up processing. DLT has the ability to offer an Ethereum blockchain platform. For the authorization of the transaction, the user won't need to trust on a centralized system.

1.2.2 Low transfer fees

For transfer a convinced quantity of cash for international transactions, the consumer will have a clear pricing model. The old method has several intermediaries, which contributes to its expensive transfer costs. The centralized system must be used by the bank to confirm the transactions. Confirming the trades is a laborious operation that takes time. The stage that has been suggested would feature a clear pricing mechanism for cross-border money transfers that will make it simple for users and need them to paying only a little fee.

1.2.3 24*7 Availability

Platform available 24/7 from any location in the world. If additional 75% of the nodes in the distributed network validate the transaction, the procedure is complete, and the consumer on the other side receives the monies. Nodes will be charged a specific amount for block generation and verification.

1.2.4 Transparency

Currently, the banking system modifies the change rate without notifying the consumers, leading to excessive transaction costs. The platform suggested would have a straightforward change rate that the user can easily see for sending money abroad. The user will also be able to look up transactions and conversion rates in his record by doing this.

1.3 Advantages of suggested platform

Advantage on this platform it will only have one database for customer data, which would streamline the KYC procedure for each bank. Due to the automation of the money transfer process, the transaction's turnaround time will be shortened, which advantageous for users sending money to any location in the globe.

2) LITERATURE REVIEW

Blockchain technology is still relatively new, but it is evolving into a solution that will provide corporate networks a significant edge when it comes to the transfer of assets.

The development and significance of blockchain

One of the new P2P digital money systems Satoshi Nakamoto suggests is the use of the cryptocurrency known as bitcoin. There was definitely progress. Government neither creates nor manages virtual currencies, or cryptocurrencies. They have to follow their own set of regulations. The cornerstone for the increasing percentage of blockchains being utilized for transaction authorization was this type of connection, which has grown into the like new block chain era [1]. Without middlemen, money may be exchanged in the blockchain era. Humans transmit money promptly, precisely, and without any issues at ten different times. One of those most ground-breaking and promising technologies ever made. verified to have a size similar to that of the internet or power.

Unfortunately, very few people are aware of the period, although extensive social media coverage is helping. It is one of the most optimistic and hopeful new eras for the future. The foundation of bitcoin is an assigned ledger generation [3]. putting forth a novel way to record, maintain, and transfer records. The visible, secure statistics, which are auditable and blackout-proof, are even more astounding.

The blockchain, a key component of bitcoin

Many people assume that bitcoin and blockchain are the same thing. The technology that underpins bitcoin is called blockchain. Although closely related, they are no longer the same component. The unregulated virtual currency known as bitcoin was first released in 2008 and was developed by Satoshi Nakamoto. Given that no bank or government was engaged in disclosing or monitoring the transactions, blockchain was the ledger solution utilized to securely record and facilitate the use of this new kind of currency. Due to the simultaneous introduction of bitcoin and blockchain, there is sometimes confusion between the two ideas. For instance, the distributed ledger era, which is only utilized for bitcoin, permits the keeping track of transactions all over a user community on a predefined ledger. In the open-source era, records from transactions can be stored as blocks. A series is produced because each block is related to the one before it and contains a recorded in time report of the operations [10]. There is no way to swap or get rid of prior transaction information from the distributed record of transactions since the data kept on the blockchain are visible and irrevocable. This quality and approach may be used to address several inefficiencies in certain goods and industries.

2 THE CONTEXT AND CONNECTED WORK

2.1 Blockchain's operation

The most exciting aspect of the blockchain technology is how it might increase transparency in these processes. Blockchain has the ability to significantly change the transfer of money and also how our systems for trade recognition and governance are organised.

Because everyone of us has the record and it provides a chronological recording of each transaction that's ever occurred, this distributed ledger book is effectively a blockchain [6]. It would also be very hard to edit older exchanges due to the way the pages of the book are bonded.

A blockchain is a decentralised, immutable record of transactions. Since distributed information is shared and stored in several locations, there is no one point of breakdown and it is widely accessible. Immutable describes the idea that it is nearly hard to go back and change records after they are agreed upon and associated by encryption.

Most of the nodes involved in the implementation frequently need to process execute algorithms to access and validate the specifics of the chain's block that is being offered whenever a fresh database or a modification to an old transaction become available in the blockchain [8]. If the maximum nodes concur that the information and signature accuracy, the block is approved and added to the existing linked transactions. The entire group does not record of the addition or update, the record is not always sent to the technology. Blockchain can function as a distributed records the need for a single, centralised entity to determine which databases are acceptable and one are invalid thanks to the decentralized consent version [2].

Every page in the history of transactions is now organised into a square. The square following it is affected by the first square the usage of encrypted hashing. Each completed square generates an exceedingly secure code that, when combined the following pages, forms a network of chunks, or blockchain technology [7]. There are a few prerequisites, including confidence in the data, that must be satisfied before a square may be joined to the chain. To build the block, a cryptographic riddle must first be solved. Proof of work occurs when the computer which solves the puzzle distributes the answer atmost of the other machines on the network. The chunks will be put in to the chain supply when the system has verified this proof of work. The combination of these difficult math challenges and confirmation from several personal computers, we can trust every square within the chain. The system establishes trust for us, present situation have the possibility to work together lawfully with information that is real time[2].

The terminology is divided into two categories:

1. Public domain Block chain – Anyone interested in joining a public domain blockchain system, also known as a permission less blockchain network, may do so without obtaining anyone's consent[9]. The key distinction between a an open and secure blockchain network. In the permission-less network, everyone can participate, carry out share an open domain public ledger and uphold the consent protocol.

2. Private domain Block chain - Membership in a private blockchain community requires an invitation. Both the network starter and the community starter's rules and requirements must use to establish the invitation. The community of permissioned blockchains restricts participant access while allowing the most productive type of member for the source.

2.2 Cryptocurrency is not blockchain.

The technology behind cryptocurrency is called blockchain. The ledger that records the network's activity makes the blockchain the age. This technology makes it possible to transact and makes it possible to move prices and records.

The utilized coins in these networks to send fees and make payment for these exchanges are known as cryptocurrencies. They can be considered a tool for blockchain technology, occasionally acting as a helper or a software feature. In other situations, they could be use to digitize an asset's cost.

Blockchains are used to generate ideas, and cryptocurrency is a component ecological system[10]. It and payments on a blockchain typically go hand in hand. need cryptocurrency. We might not, however, have a mechanism to store and transmit such transactions without the blockchain.

3 Methodology

Today's banks must contend with problems like increased operational expenses, growing susceptibility to fraud assaults on centralized infrastructure, and difficulties maintaining transparency. All of this is mainly due to this fact that the common of banking transactions from establishing consumer accounts and international payments might require extensive use of manual procedures and documentation pricey intermediaries, and takes time and it must be validated by different participants at various points in time, which delays the procedure and makes it nearly impossible to connect fraud-proof real-time solution [15].

Banks are frequently looking for additional efficient ways to carry out transactions quickly for improved client administration while also ensuring task cost productivity and client and controller transparency. Blockchain could be able to help banks with this as it eliminates intermediaries, maintains an accurate record of transactions, and facilitates continual exchange execution.

This may shorten the length of time it takes to whole a financial transaction, saving money on labour expenses and improving client satisfaction[16]. There are many obstacles and problems we need to go beyond before we can fully appreciate or recognise completely of the excellent golden opportunities blockchain eras provide us used for the funding and commercial offers sector.

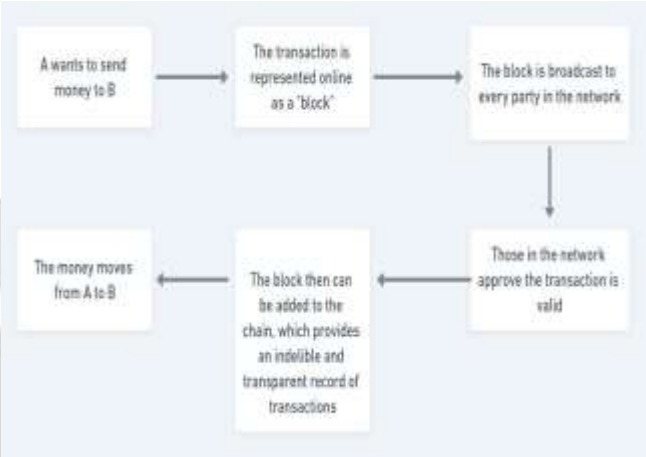

Fig -1 Blockchain's Operation

4 PROPOSED SYSTEM

This is a technology that is growing in a great way it will take enormous effects on many other sectors and businesses in addition to financial services. On the previous global financial system, trillions of dollars are exchanged daily while serving billions of individuals and organizations. Nevertheless heavily dependant and reliant on paper, even when wrapped up in There are a number of issues with this age, despite its virtual look. Motive increased costs and delays while also making it considerably simpler for fraud and criminality to disable it. The benefits of blockchain outweigh the financial employer's opposition to trade, thus it is still desirable. Unlike traditional frameworks, blockchain is agile enough to become a leader in operation in a competitive market environment. The biggest benefit of a block chain is that every event has a statement that is kept in public ledger and is accessible to anyone. It is a record that is heavily shared amongst certain users, creating a common catalog that is duplicated to those consumers & who can only access it when they have the appropriate access rights.

Fig -2 Usage of Blockchain

4.1 Platform operation as proposed

Each bank that signed up to utilize technology obligated to update the record of the information by a customer in an encrypted manner that guarantees the privacy of the consumers. The ledger of customer data information will be

available to each bank that registers for this platform. The Distributedledgertransaction will provide customers with a fully transparent model and around-the-clock accessibility so they may send overseas amount. The transaction's processing period will speed up the recovery when every phase in the network confirms the details and saves in the database of the blockchain. This distributed ledger details will also address the problem of double expenditure that occurs in the centralised system. This stage also offers on-chain clearance at a very low transaction cost.

This platform offers several advantages over the centralised approach for users who want to transmit money to other users. In the ledger, here interaction between the banks enrolled on block chain platform. The user's sole option for transfer currency is to registered banks on this platform that will store all other users' information on this distributed record.

The individual transferring money through this platform will have access to visibility for the exchange to be done with the lowest possible costs. After the transaction has been verified by extra than 74% of nodes, the users receiving end they get the monies. They do not, however, need to go to banks in order to move money abroad because the platform is readily available and simply accessible. Every transaction must go through a consensus process that is handled by network nodes.

Platform will be have a benefit over the centralised system in that the transactions will be irreversible, which will lower the rate of conversion fraud.

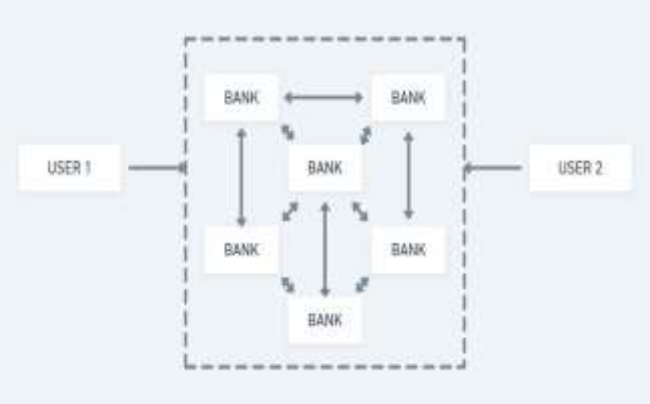

Fig. 3. Transactions carried out on the suggested platform

5 CONCLUSION & FUTURE SCOPE

Because the internet permitted the flow of data though the blockchain has the possible to entail the movement of value, banks need to appreciate the principles of this system and how it addresses present business concerns. Although it is commonly asserted that blockchain's potential is on par that early business interest. Banks must spot possibilities, assess their viability and effect, and do proof-of-concept tests. Emulation-related issues, however, will be addressed through in-depth dialogue with the right regulatory bodies and assimilation of their thought processes.

We will continue to look into ways to offer off-chain settlement to banks that are not listed on the platform; one option is to gain access to its database with permission, which would allow for additional transactions will be made and maintain an equal ledger for both.

6 REFERENCES

[1] Tejal Saha, Shalilak Jani, “Applications of Blockchain Technology in banking and finance”, Parul CUniversity, Vadodara, India, February 2018 DOI: 10.13140/RG.2.2.35237.96489

[2] DUSKO KNEZEVIC, “Impact of blockchain technology platform in changing the financial sector and other industrutries., University Union Belgrade, Serbia, Montenegrin Journal Of Economics, Vol. 14, No. 1(2018), p.p(109-120).

[3] Lin William Cong Zhiguo He Working Paper 24399 http://www.nber.org/papers/w24399 NATIONAL BUREAU OF ECONOMIC RESEARCH 1050 Massachusetts Avenue Cambridge,MA 02138 March 2018, Revised April 2018

[4] Soonduck Yoo**,** (2017) "Blockchain based financial case analysis and its implications"**,** Asia Pacific Journal of Innovation and Entrepreneurship, Vol. 11 Issue: 3, pp.312-321 https://doi.org/10.1108/APJIE-12-2017-036

[5] C. Miguel and L. Barbara, "Practical byzantine fault tolerance," in Proceedings of the Third Symposium on Operating Systems Design and Implementation, vol. 99, New Orleans, USA, 1999, pp. 173–186. Underwood, S. (2016),Blockchain beyond Bitcoin,Commun. ACM, Vol. 59, No. 11, pp. 15–17. https://doi.org/10.1145/2994581

[6] Digital currencies",IEEE Commun.Surv.Tutorials,Vol.18,No.3,pp.2084–2123. https://doi.org/10.1109/COMST.2016.2535718. Greenspan, G. (2015), "MultiChain Private Blockchain", White PaperFounder and CEO, Coin Sci-ences Ltd, https://www.multichain.com

[7] M. Vukoli´c, "The quest for scalable blockchain fabric: Proof-of- work vs. bft replication," in International Workshop on Open Problems in Network Security, Zurich, Switzerland, 2015, pp. 112– 125.

[8] D. Kraft, "Difficulty control for blockchain-based consensus systems," Peer-to-Peer Networking and Applications, vol. 9, no. 2,pp. 397–413,2016.

[9] Eyal, A. E. Gencer, E. G. Sirer, and R. Van Renesse, "Bitcoinng: A scalable blockchain protocol," in Proceedings of 13th USENIX Symposium on Networked Systems Design and Implementation (NSDI 16), Santa Clara, CA, USA, 2016, pp. 45–59.

[10] J. Bonneau, A. Narayanan, A. Miller, J. Clark, J. A. Kroll, and E. W.Felten, "Mixcoin: Anonymity for bitcoin with accountable mixes," in Proceedings of International Conference on Financial Cryptography and Data Security, Berlin, Heidelberg, 2014, pp. 486– 504.

[11] T. Ruffing, P. Moreno-Sanchez, and A. Kate, "Coinshuffle: Practical decentralized coin mixing for bitcoin," in Proceedings of EuropeanSymposium on Research in Computer Security, Cham, 2014, pp. 345–364. Miers, C. Garman, M. Green, and A. D. Rubin, "Zerocoin:Anonymous