Journal of Harbin Engineering University Vol 44 No. 7
ISSN: 1006-7043 July 2023

Challenges in Implementing Blockchain Technology in Banking Sector

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Abstract

This research paper investigates the applications of blockchain technology for the banking industry as well as the problems that are facing the adoption of the technology. Interviews with industry experts who possess both expertise and experience relating to this subject were carried out. In order to acquire a more in-depth comprehension of the applications of blockchain technology in the banking industry, the findings from the interviews were afterwards compared with the study literature. The absence of regulations pertaining to this technology and problems with its scalability have been identified as two of the most significant obstacles. The purpose of this descriptive study is to investigate the potential effects that blockchain technology could have on the banking industry, along with its constraints and difficulties. This study offers a clear and concise overview of blockchain technology, as well as its underlying workings and how it might be used to the financial sector. In addition, the study investigates the issues that contemporary banks are dealing with, as well as the potential roles that blockchain technology could play in resolving those issues, as well as how banks are exploring and utilizing blockchain technology in their operations.

Keywords: Blockchain, Technology, Banking Sector, Financial Sector, Challenges

Introduction

Many corporations, new ventures, and news outlets are keeping a close eye on one particular emerging technology: blockchain. It is well recognized as the underlying technology behind Bitcoin, the digital money. Blockchain technology has the potential to significantly alter many different industries, improving democracy, security, transparency, and efficiency in the process. Despite widespread excitement for the opportunities this technology presents both financial and non-financial entities.

Although this technology is just getting started, individuals in the financial sector have been quick to see its potential. A World Economic Forum1 analysis found that in 2017, financial institutions and government organizations throughout the world will test multiple Blockchain prototypes. More than 90 central banks from around the world have participated in discussions about Blockchain technology, over 2,500 patents have been filed on Blockchain-related technologies in the past three years, and it is expected that 80% of banks will launch Blockchain and distributed ledger technology (DLT) projects by 2017. Businesses

outside of the financial services industry are keeping a close eye on the potential use cases of blockchain technology because of the positive disruption it could bring to their current business models in areas such as telecommunications, healthcare and life sciences, travel and hospitality, and the energy sector.

The banking industry's primary function from its inception has been to operate as a go-between for customers. Their reliable actions have been essential to the smooth transfer of cash. Technology has a long history of permeating the economic system. In order to keep up with the ever-increasing speed of technological development, banks have constantly revised their internal procedures. Modern banks are connected to a variety of technological networks like SWIFT to improve the efficiency of information transfer. Thus, technological advancements have made the banking industry wholly dependent on them. Therefore, blockchain technology may become a significant force in the financial sector.

Review Literature

In their article from (Al Shorman et al.,2020) explore the challenges of governance. Reaching consensus on issues that need to be solved between all of the active persons in the network is challenging. The decision-making process is complicated because of the need to involve huge communities of participants in order to overcome this obstacle. Furthermore, the immutability of the Blockchain system and its global dispersion add to the difficulty of governance.

Users' personal details may be gathered through blockchain transactions, according to a recent study (Lin and Liao, 2017). This privacy leakage may point to a security risk regarding this information, despite the many proposed solutions to strengthen anonymity in the blockchain (Chang et al., 2020). The theft of significant sums of money from systems using blockchain as its underlying technology, as reported by Lin and Liao (2017), suggests a flaw in the security of these systems. Lin and Liao's (2017) claim is based on this insecurity. Criminals can more easily engage in illegal activities including money laundering, fraud as well as tax evasion on a public blockchain, as stated by Zhang et al. (2020). The researchers in this study conclude that this increases the prospect of criminal behavior.

There are compatibility concerns between existing enterprise internal systems and blockchain systems, as found by the studies of "Ali et al. (2020), Al Shorman et al. (2020), & Dashkevich et al., (2020)". These challenges raise worries about security and make it harder to integrate with other computer systems that use different operating systems, development methodologies, and programming languages. Fatima, A. (2021), examined Indian service industry drivers for Blockchain adoption. The drivers of blockchain technology's adoption will inform policy and decision-making. Interpretive structural modelling (ISM) will suggest hierarchical models. This report is a step in building a theory of Blockchain technology adoption in India.

According to research by Al Shorman et al. in 2020, a consensus mechanism is required when using Blockchain to complete a transaction. Time and computing power are consumed because the transaction must be repeated on all nodes of the Blockchain network in order to satisfy the security concern. The rapid increase in the number of transactions, the complexity of blockchain systems, the fact that they are decentralized and encrypted, and the capacity limitations of the blocks are all to blame, as stated by Chang et al. (2020). Zhang et al. (2020) estimate that creating a new block to the blockchain takes about ten minutes. According to Ali et al., (2020), regulators still need to deal with the jurisdictional and legal difficulties that are linked with the blockchain in order to obtain a thorough understanding of this technology and to build the infrastructure of the financial industry.

Research Methodology

The purpose of this exploratory study is to investigate the potential effects that blockchain technology could have on the banking industry, along with its constraints and difficulties. This study offers a clear and concise overview of blockchain technology, as well as its underlying workings and how it might be used to the financial sector. In

addition, the study investigates the issues that contemporary banks are dealing with, as well as the potential roles that blockchain technology could play in resolving those issues, as well as how banks are exploring and utilizing blockchain technology in their operations. This will be done by learning more about how blockchain technology is being used in banks. The data has been collected from secondary sources only. Websites, published articles, government portal etc were the main sources of collecting review literature & other related data.

Problem Statement

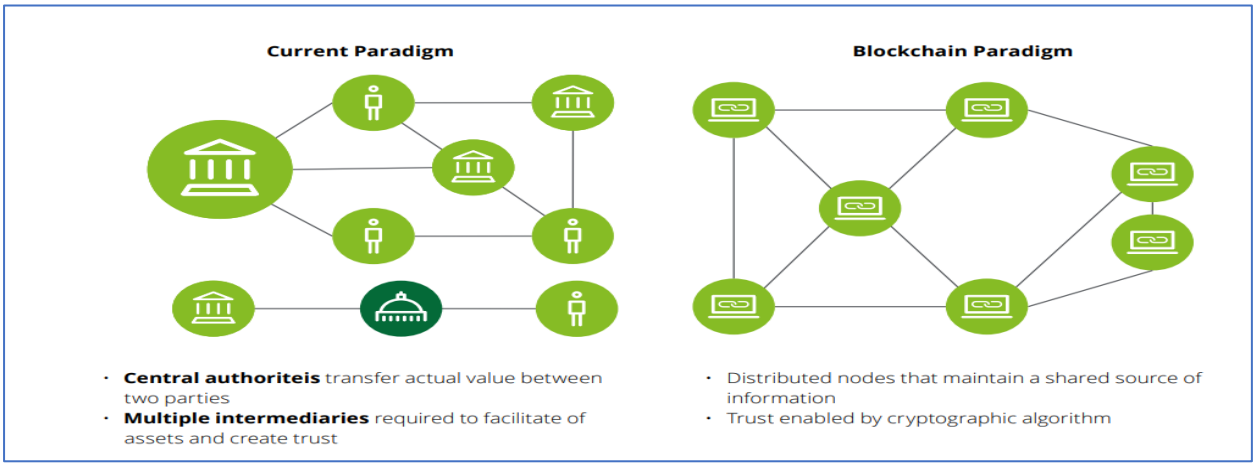
More than a trillion dollars are expected to be transferred daily using this system (Roy, 2020), and the traditional system used by banks in the financial industry is considered the backbone of global trade finance (Chang et al., 2020). Gupta (2020) argues that the financial sector has benefited from the widespread adoption of several technological innovations over the years, including credit card systems, the internet, and mobile applications. As these new technologies have improved the efficiency, convenience, and speed of transactions, as well as decreased the distance between the parties involved, they have been of tremendous aid to banks in carrying out their operations (Gupta, 2020; Roy, 2020). These modern technological advancements have also proven to be extremely helpful.(Ali et al.'s, 2020) research found that using automated smart contracts cuts the need for middlemen even further. The blockchain system is more resistant to fraud and cyberattacks (Gupta, 2020; Jaoude and Saade, 2019) since it uses a consensus approach to validate each transaction. This is due to the fact that the users of the network themselves created the consensus model. However, there are several challenges associated with using blockchain technology. Werbach (2018) claims that malicious actors can exploit weaknesses in the Blockchain system. Endpoints where blockchain-based platforms can be accessed present an additional security risk (Garg et al., 2021). This is because flaws in distributed ledger technology (DLT) are inherent to the system. The blockchain relies on asymmetric encryption. In order to decrypt a transaction that has been conducted on the blockchain, both the private key and the public key are required to be used. If a hacker obtains the private key, they can get access to the network, as stated by Garg et al. 2020 and Li et al. 2020. Additional weak points may emerge during the process of deploying blockchain technology.

Objective of the study

- To explain challenges facing banks to implement blockchain technology
- To explore the effects of blockchain technology in banking industry

Let us understand the concept of blockchain- How it Works?

A blockchain is a digital, immutable, and distributed ledger that records transactions in a chronological order and in as close to real time as possible. The respective consensus of the network participants, also known as nodes, is required before any further transactions can be added to the ledger. This establishes a constant mechanism of control with regard to manipulation, errors, and the quality of the data.



[1]Fig 1: Blockchain base distributed ledger vs. Traditional database

Types of Blockchain

Public Blockchain : These blockchains are totally receptive to the concept of decentralization and everything that goes along with it. Because they do not impose any limitations, participation in the network is open to anybody who possesses a computer and access to the internet.

- Since the name of this blockchain is public, anyone may access it; this indicates that no one has exclusive ownership over it.
- This public blockchain allows participation from anybody who has access to the internet and a computer with sufficient processing power.
- Every single computer that is part of the network has a copy of every other node and block that is part of the network.
- Within this distributed public ledger, we also have the ability to do verification of transactions or records.

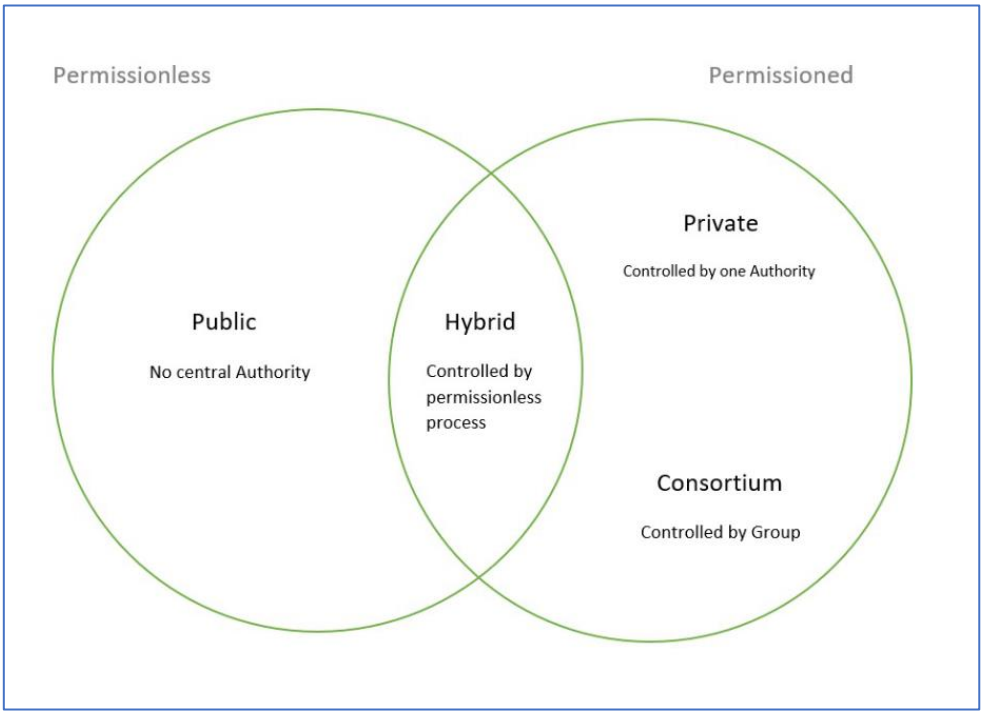
Proof of work and proof of stake are two methods that can be used to secure a public blockchain. These methods have the potential to supplant conventional financial systems. The smart contract feature of this blockchain is the most advanced aspect of this technology, as it is what made it possible for this blockchain to allow decentralization. The cryptocurrencies Bitcoin and Ethereum are two examples of public blockchains.

Private Blockchain : These blockchains do not follow the same principles of decentralization as the public blockchain does; instead, only selected nodes are allowed to take part in the process. This makes the public blockchain more secure than the others.

- These kinds of blockchains are not as transparent as public ones.
- Only certain users with proper authorization can access them.
- The operation of these blockchains takes place within a private network.
- Only a select few individuals are permitted to take part in a network that is housed within a firm or organization.

This blockchain can be a tremendous asset to secure information without exposing it to the public view if correct security and maintenance procedures are followed. As a result, businesses employ them for purposes including internal auditing and voting, as well as asset management. The Hyperledger and Corda blockchains are both examples of private blockchains.

[1] "https://www2.deloitte.com/content/dam/Deloitte/in/Documents/strategy/in-strategy-innovation-blockchain-technology-india-opportunities-challenges-noexp.pdf"



[2] Figure 2: Types of Blockchain

Hybrid Blockchain : It is a combination of the private and public blockchains' contents, with some parts of the private blockchain owned by an organization while other parts of the public blockchain are made visible to the public.

- It incorporates both public and private blockchains into a single system.
- There are permission-based systems as well as permissionless ones in use.
- Through the use of smart contracts, users can access information.
- Even if a principal entity owns a hybrid blockchain, it is unable to make any changes to the transaction.

It offers a more comprehensive answer to problems faced by the government, businesses in the real estate and finance sectors, as well as the health care industry. It offers a solution for situations in which data must be made publicly accessible while still maintaining its confidentiality. Ripple's network and the XRP token both function as examples of hybrid blockchains.

Consortium Blockchain : It is an innovative solution that addresses the issues that have been raised by the organization. This particular blockchain is responsible for transaction validation as well as the initiation or reception of transactions.

- Also known as federated blockchain or federated blockchain.
- This is a creative approach to meeting the requirements set forth by the company.
- Some of it is open to the public, while other parts are off limits.
- The blockchain is managed by more than one entity in this variant of the protocol.

It offers a significant amount of untapped potential in commercial settings, banking systems, and other types of payment processors. Because these firms frequently engage with their respective industries, food monitoring is a federated solution that is well suited for their use. Tendermint and Multichain are two examples of blockchains that are used by consortiums.

Need For Blockchain Technology in Banks

The banking sector might make use of blockchain technology in a variety of ways, which has a number of potential advantages. **The following is a list of some of the most important reasons why banks might profit from implementing blockchain technology:**

[2] https://www.geeksforgeeks.org/types-of-blockchain/

Security and Data Integrity : Blockchain is based on a decentralized and immutable ledger, which is where transactions are safely recorded and linked together using cryptographic techniques. This provides a high level of data integrity as well as security. Because of this, once data is recorded, it cannot be changed or otherwise tampered with, which increases both the overall security and the integrity of the data. Blockchain technology can assist financial institutions in combating fraudulent activity, data breaches, and unauthorized access, all of which involve sensitive financial data.

Efficiency and Transparency : Blockchain technology offers real-time settlement and verification of transactions, which eliminates the need for third parties and streamlines the process. Efficiency and transparency are two key benefits of blockchain technology. The procedures traditionally used in banking can be time-consuming and involve several parties, which can result in delays and the possibility of errors. Banks are able to enhance both the efficiency and the transparency of their operations by utilizing blockchain technology.

Cost Reduction : Adopting blockchain technology may assist financial institutions in reducing the costs associated with their operations. Because it removes the need for intermediaries and automates operations, blockchain decreases the requirement for manual involvement, which can be laborious and costly depending on the situation. Because every participant uses the same distributed ledger, it can also reduce the amount of time spent reconciling transactions.

Cross-Border Payments : Payments across borders blockchain has the potential to completely transform payments across borders by delivering solutions that are both more efficient and less expensive. Traditional methods of conducting business across international borders entail a number of different banks, currencies, and intermediaries, which can result in delays as well as increased transaction fees. Transactions can be settled directly between parties using blockchain technology, eliminating the need for intermediaries while simultaneously cutting transaction fees and processing times

Smart Contracts : Contracts that execute themselves Smart contracts are contracts that have conditions that have been predefined and are encoded into code. When certain circumstances are met, they will immediately initiate the specified actions. The use of smart contracts enables banks to automate a variety of activities, including loan approvals, compliance checks, and trade settlements, which ultimately results in operations that are both more efficient and accurate.

Financial Inclusion : Inclusion of underserved communities in the financial system blockchain technology can help financial institutions contact underserved communities that may not have access to regular banking services. Banks are able to extend their financial services to rural areas by utilizing the decentralized nature of blockchain technology. This opens the door for prospects for economic expansion and financial inclusion.

Regulatory Compliance: Because of the immutable and auditable characteristics of blockchain technology, financial institutions may be able to more effectively meet the standards for regulatory compliance. Due to the fact that all transactions are recorded on the blockchain, it is now much simpler for auditors and regulators to monitor and verify activity, which in turn reduces the danger of not complying with regulations.

Tokenization of Assets: Blockchain technology makes it possible to tokenize many different types of assets, including real estate, equities, and commodities. This capability can be leveraged by banks to create new investment products and expedite asset management operations, making it easier for clients to invest in a varied variety of assets. These benefits can be passed on to customers.

The immutability and decentralization of the ledger that blockchain technology provides could bring about a paradigm shift in the way that records are maintained. The blockchain technology is applicable to the financial sector as well as practically every other industry. It has the ability to completely revolutionize the backend of the financial system while simultaneously cutting a significant amount of operational costs. Blockchain technology would be essential in resolving the issues that currently plague banks. Efficiency, reduced costs, increased transparency, and doing away with the need for a third party are the primary benefits offered by blockchains. To begin, using blockchain technology makes a transaction more efficient since it removes the need for a middleman to make decisions. Automating tasks like record

keeping and management allows for tasks to be finished more quickly than they could be done manually. The second benefit is that it reduces the costs of both transactions and operations.

Both the payment and the settlement can be carried out without the participation of a third party or the incurring of expensive broker fees. The trust that is placed in other parties is established through the use of cryptography in blockchain. The final step is the distribution of blockchains, which provides both parties with information about the transaction in real time and ultimately results in transparency. (Gupta & Gupta 2018.)

The use of blockchain technology in the financial industry is not without its share of difficulties, despite the fact that the technology offers a number of advantages. There are a number of concerns that need to be addressed, including scalability, interoperability, and the integration of legacy systems. In spite of this, it is anticipated that blockchain, with all of the current improvements and innovations in the technology, will play a big part in the future of the banking industry.

The Effects of Blockchain in the banking Sector

Blockchain technology has significant effects on the financial sector, revolutionizing various aspects of traditional finance.

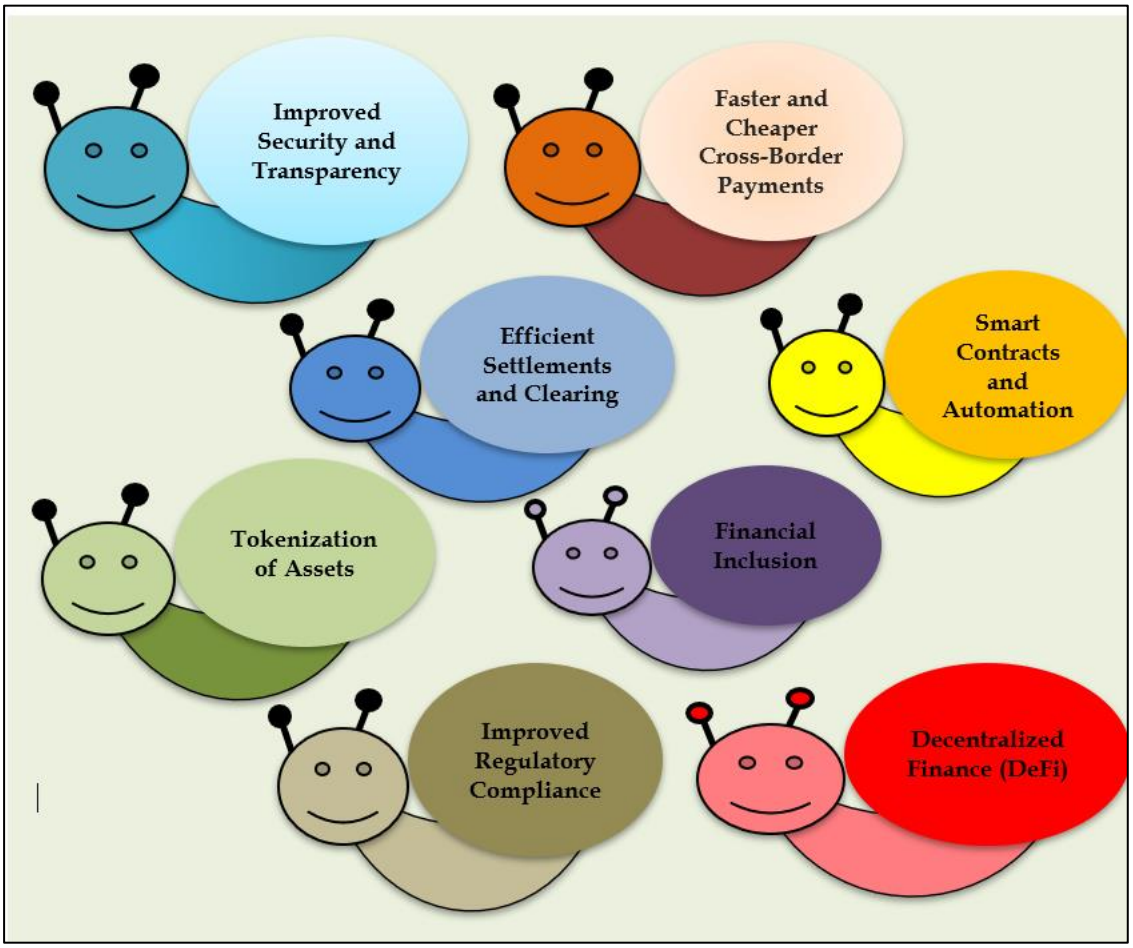


Figure 3: Blockchain Effects on Banking Sector

Here are some key effects of blockchain on the banking sector:

- The decentralized and unchangeable nature of blockchain provides an increased level of security by preventing unwanted access and the manipulation of data.
- There is an increased level of confidence among users and authorities as a result of the transparent nature of blockchain transactions, which can be audited in real time.
- Traditional payments made across countries are frequently sluggish and expensive since there are

several middlemen involved and complex settlement procedures.

- Blockchain technology makes it possible for users to conduct transactions directly with one another, which cuts down on processing times and expenses.
- Settlement solutions that are built on blockchain technology have the potential to assist the real-time, automated, and efficient clearing and settlement of financial transactions. This has the added benefit of reducing operational costs and minimizing counterparty risk.
- Automating a number of financial procedures, such as loan approvals, insurance claims, and trade settlements, is made possible through the use of "smart contracts," which enable agreements to self-execute and contain predetermined rules.
- The use of digital tokens to represent physical assets, such as real estate, stocks, and commodities, enables fractional ownership and makes it easier to transfer ownership. Blockchain technology makes this possible.
- Access to banking services can be provided to unbanked and underbanked communities by means of decentralized applications and digital wallets, which enables blockchain technology to expand the provision of financial services to those populations.
- Because of the immutable and auditable nature of blockchain technology, it may be possible for financial institutions to more easily comply with regulatory standards. This will be accomplished by increasing visibility into transactions and data in real time.
- The development of blockchain technology has made possible the proliferation of Direct Financial Interaction (DeFi) platforms, which provide various financial services, such as lending, borrowing, and trading, without the use of conventional intermediaries.

In spite of their importance to the economy as a whole, banks have historically struggled with a variety of issues. The 2008 financial crisis demonstrated that the economy is extremely vulnerable to the actions of its participants. As a result, we must weigh the benefits and drawbacks of blockchain technology. How can blockchain technology be utilized to improve financial models without triggering a financial crisis is the question at hand. In 2018, (Casey et al.)

Isaksen (2018) and Guo and Liang (2016) both point to the potential for blockchain technology to help banks streamline and reduce the cost of making direct international payments. To begin, financial institutions must develop their own blockchain networks that facilitate instantaneous monetary transfers between institutions. The block permanently records all transactions, making them immutable. All participants will have access to the ledger, eliminating the need for a third party.

Current issues with international monetary transactions can be alleviated with the aid of blockchain technology. There will be no need for a third party to handle the foreign exchange. Self-initiated bookkeeping and payment tracking can lessen operating expenditures. It will take less time to complete the transactions. The process of making a payment will be clear and simple for the client. Citation: (Petrov 2019,)

A Letter of Credit, like an international transfer of funds, is difficult and time-consuming to write (Gupta & Gupta, 2018). Manual inspection and extensive paperwork are still required, adding significantly to the time and money involved. Through the use of smart contracts, blockchain technology may boost productivity while decreasing overhead. (Petrov & Gupta 2019, Guo & Liang 2016, Collomb & Sok 2016, Gupta & Gupta 2018)

The capital market trading mechanism stands to benefit greatly from the introduction of blockchain technology. Settlement of accounts in the capital market is a tedious process that might take a long time. Capital markets include a wide variety of participants, including banks (primarily investment), brokers, investors, credit agencies, and others. At the moment, these individuals are responsible for maintaining and updating their own ledger. This is a costly and time-consuming procedure. (Gupta and Gupta, 2018). Disparate clearing and settlement procedures are currently a major issue in the capital market. There is a lot of counterparty risk because there are so many people engaged. When one party defaults, it can affect the

entire market. The process is typically time-consuming and ineffective. Citation: (Petrov 2019,)

Challenges in Implementing Blockchain Technology in Banking Sector

The adoption and integration of blockchain technology in the banking industry presents a number of problems, all of which will need to be overcome before the project can be considered a success.

The following challenges are:

- ✓ Scalability
- ✓ Interoperability
- ✓ Regulatory Compliance
- ✓ Data Privacy and Security
- ✓ Energy Consumption
- ✓ Costs and Investments
- ✓ Governance and Consensus Mechanisms
- ✓ Education and Awareness

Scalability: Scalability is one of the most significant obstacles that blockchain technology must overcome. Traditional public blockchains, such as Bitcoin and Ethereum, could potentially encounter performance concerns as the number of transactions increases, which would result in longer processing times and increased transaction fees. According to Croman and Kroman (2016), this constraint is a cause for concern for banks that need to manage a high volume of transactions effectively.

Interoperability: There is a lack of standardization and compatibility between the many blockchain platforms and networks, which presents a difficulty for financial institutions that wish to incorporate blockchain technologies into their already established infrastructure. According to "Consortia, Standards, and Interoperability," published by the World Economic Forum, it is necessary for banks to ensure that different blockchains can communicate and interact with one another in a seamless manner. This will allow for the facilitation of cross-border transactions and partnerships with other financial institutions.

Regulatory Compliance: The decentralized and pseudonymous nature of blockchain technology might make it difficult for banks to comply with some regulations, particularly those pertaining to anti-money laundering (AML) and know-your-customer (KYC). According to Li, S. and Li, J. (2018), financial institutions have an obligation to discover methods that allow them to satisfy regulatory requirements while also retaining the ability to reap the benefits offered by blockchain technology.

Data Privacy and Security: Even though blockchain technology is regarded for having strong security characteristics, there is still a concern over the privacy of data and the protection of sensitive information. Because of the open and distributed nature of blockchain technology, all participants are able to view every transaction that takes place on the network. This raises concerns about the visibility of sensitive financial data (Zheng, Z., 2017).

Energy Consumption: It is possible for certain blockchain networks to consume a significant amount of energy. One example of this is Bitcoin, which uses a consensus process called proof-of-work (PoW). According to the Bitcoin Energy Consumption Index and Digiconomist, the enormous amount of energy that is required for mining and validating transactions raises issues over the environment and sustainable development.

Costs and Investments: In order to successfully implement blockchain technology, considerable up-front expenditures in infrastructure, expertise, and research are required. According to Accenture (2018), it might be difficult for financial institutions to determine the return on investment (ROI) and to justify the associated expenditures.

Governance and Consensus Mechanisms: It can be difficult to design appropriate governance models and consensus processes for a blockchain network that are in line with the requirements of all of the stakeholders in the network. According to Yli-Huumo, J., et al. (2016), one of the most important factors to take into account is how to ensure consensus while also preserving decentralization.

Education and Awareness: Because blockchain technology is still in its infancy, both bank staff and clients have a limited awareness of and comprehension of the technology's capabilities and applications. According to Kshetri et al. (2017), educating stakeholders on blockchain is vital for the technology's smooth implementation and acceptability.

In order to overcome these obstacles, it will be necessary for participants in the sector, regulatory agencies, and those who develop technology to work together. As the blockchain technology continues to grow, it is probable that answers to these difficulties will emerge. This will make it more possible for banks to adopt blockchain technology into their operations.

Findings of the study

- As the number of transactions on traditional public blockchains increases, the processing speeds for these blockchains may become more slow.
- There is a lack of standardization and compatibility between the various blockchain platforms, which makes it difficult to integrate blockchain technology seamlessly into existing banking systems and to collaborate with other financial institutions.
- Blockchain's decentralized and pseudonymous nature might make it difficult to comply with regulatory obligations, particularly those pertaining to anti-money laundering and know your customer policies.
- Despite the fact that blockchain technology has solid security measures, maintaining data privacy and safeguarding sensitive financial information remains a problem owing to the decentralized and public nature of blockchain.
- Certain blockchain networks, such as those based on PoW consensus mechanisms, require a substantial amount of energy, which raises worries about their impact on the environment.
- The use of blockchain technology calls for significant upfront investments, and it can be difficult for financial institutions to both justify these costs and calculate return on investment.
- It is difficult to successfully design effective governance models and consensus procedures while also preserving decentralization.
- The novelty of the blockchain technology causes both bank workers and clients to be unfamiliar with it and unable to fully comprehend its implications.
- The decentralized and unchangeable nature of blockchain bolsters the security of financial transactions and encourages transparency in those transactions.
- Direct peer-to-peer transactions are made possible by blockchain technology, which cuts down on the amount of time needed to execute international payments and the associated fees.
- Clearing and settlement procedures can be automated and streamlined with the use of blockchain-based settlement solutions, which in turn helps to reduce counterparty risk and operating expenses.
- The automated execution of specified agreements is made possible by smart contracts, which helps to streamline a variety of financial operations.
- Blockchain technology makes it possible to represent assets in the form of digital tokens, which paves the way for faster transferability and fractional ownership of assets.
- The provision of financial services via blockchain to unbanked and underbanked individuals helps to advance the goal of financial inclusion.
- The transparent and auditable feature of blockchain technology assists financial institutions in more effectively addressing regulatory compliance standards.
- Decentralized financial platforms, which provide a variety of financial services without the use of conventional middlemen, have emerged as a result of blockchain technology.

Recommendations:

- It is important for financial institutions to investigate potential solutions to the problems of scalability and interoperability, such as the utilization of layer-2 solutions or private blockchain networks for certain use cases.
- Banks, together with other financial institutions and technology companies, should work together to set industry standards and increase the interoperability of various blockchain platforms.
- In order to ensure that blockchain-based solutions comply with regulatory standards, particularly

those pertaining to data protection and AML/KYC, banks should design these frameworks in close collaboration with regulators.

- Additional security precautions, such as encryption and multi-factor authentication, should be implemented by financial institutions in order to safeguard sensitive data and improve the safety of blockchain networks.
- Alternative consensus techniques, such as proof-of-stake (PoS), which utilize substantially less energy than proof-of-work (PoW), could be investigated by financial institutions.
- To determine whether or not implementing blockchain technology is feasible and whether or not it will provide a return on investment, banks should initiate proof-of-concept and pilot projects.
- Banks should make investments in training programs to educate both their workers and their customers on blockchain technology and the benefits and hazards associated with using blockchain-based services.
- Banks can gain access to specialized knowledge and cutting-edge solutions by forming strategic partnerships with blockchain-focused fintech companies and technology startups.

By resolving these difficulties and putting the necessary recommendations into action, financial institutions will be able to harness the potential of blockchain technology to alter multiple facets of the banking industry and provide enhanced services to their clients.

Conclusion

According to the findings, blockchain technology is set to cause a major disruption in the financial services industry. Banks' inefficiencies may be alleviated thanks to this new technology, which promises to eliminate intermediaries while simultaneously increasing productivity and decreasing overhead expenses. The five areas most likely to profit from blockchain technology include cross-border payments, trade finance, "knowing your customer" activities, the capital market, and regulatory compliance and supervision. Blockchain allows financial organizations to perform international financial transactions faster and cheaper than with current technologies like Swift. By cutting out the middleman, the transaction becomes more direct and transparent for the customer. Smart contracts can be used to efficiently and affordably draft agreements, which might then be used to finance commerce. In addition, it can help in monitoring the trade's delivery and reducing the associated risk. Banks on a blockchain network may use a similar smart contract to store, verify, and disseminate client identification data. This would help financial institutions save time and money, while also assisting government authorities in their efforts to combat money laundering and other forms of terrorism financing. Capital market trades can be settled instantly, in a way that is both extremely efficient and entirely transparent. Financial organizations may also find that blockchain technology might help them automate financial reporting and compliance procedures. Blocks are trusted by authorities because the information contained within them cannot be altered. Blockchain technology offers many advantages, but it also has certain limitations. Blockchain's underlying idea is complicated and time-consuming to put into practice. Although blockchain technology has been studied by major institutions since 2015, few are prepared to really use it just yet. Financial organizations should find solutions to problems with legislation, technology, trust, energy usage, and cost before embracing blockchain technology. The major goal of this research was to identify potential roadblocks to the widespread adoption of blockchain technology in the financial sector. The research indicates that the impact will have far-reaching consequences for international transactions, trade financing, customer profiling, the capital market, and government oversight. In conclusion, distributed ledger technology has the potential to utterly transform the financial services sector.

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