



BLOCKCHAIN TECHNOLOGY IN BANKING SECTOR

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ABSTRACT

Aim: This paper aims at researching the use of blockchain technology in the banking industry and its potential to make the triumphs of this technology in raising operational efficiency, cut costs, and enhance security and the issues that limit the extensive implementation of this technology are going to be addressed.

Methodology: As a study, this paper intends to use secondary measures in the form of articles, research papers and reliable online resources to examine the effects of blockchain in banking. Qualitative analysis has been done to evaluate the practical use of blockchain and its struggles with various banking functions.

Findings: Blockchain has a number of advantages such as negotiating transactions at a lower cost, speed of payment, and increased transparency. It can enable efficient payments transfer, enhancement of settlement and clearance systems, and streamline the KYC. But, problems such as regulatory issues, and security concerns are creating barriers to its full adoption within the sector.

Recommendations: These could be overcome by banks working together with fintech firms, funding blockchain education, promoting transparent rules and regulations, and piloting blockchain technologies. Interoperability with already existing systems will harmonize integration as well into the banking infrastructure.

Keywords: Blockchain, Banking, Digitalization, Advantages, Problems



1. INTRODUCTION

Financial intermediaries around the world have been establishing multiple programs aimed at embracing a digitally-driven business model, such as mobile banking programs. However, the attempts to incorporate blockchain technology in the banking industry have been so ignored. Indifference of financial institutions has been in sharp contrast to enthusiasm of blockchain developments in other sectors. The technological industry is expected to go on with its impressive growth as it is projected to surge inmassively, already reaching 4.9 billion (good) in 2021 with an outrageous rise of 67.4 billion by 2026, which suggests a bright future. Nevertheless, looking at the situation through the prism of a financial organisation, the reluctance begins to be more understandable. There are almost no examples in which the use of blockchain technology was adopted widely in the banking field and in the field of finances. Moreover, there have been persistent regulatory hurdles that have been creating a barrier to the implementation of the blockchain technology. Despite the challenges being faced by financial organisations, some have started adopting the technology albeit on a small scale. This article explores how blockchain technology is gaining growing prominence in the banking industry, how it is being applied in the real world.

2. LITERATURE REVIEW

2.1. Blockchain Technology and its Evolution in Banking

The blockchain technology has gained popularity due to its capacity to reshape various sectors like the banking section. Historically applied by Bitcoin, blockchain has proceeded to create a possibility of becoming more transparent, secure, and efficient in economic exchanges (Tapscott and Tapscott, 2016). Decentralization allows peer to peer transactions and is particularly beneficial to international payments, making it less expensive and time-limited (Gupta and Sharma, 2022). It has impressed the banking sector that has come with heightened interest in the integration of Bitcoin to enhance the payment systems and financial supplies (Nakamura and Patel, 2023).

2.2. Applications of blockchain in Banking Operations.



Blockchain can be used in the banking industry in numerous applications. Studies have shown that it is capable of improving payment delivery by reducing transaction fees and the amount of time spent to complete payment (Li and Wang, 2021). An illustration of this is that one can use blockchains to carry out payments bypassing parties involved in mid-tier transfers, states/services that will drive the price and duration of certain typical bank transactions down (Chen and Bellavitis, 2024). In addition, its application in a settlement system and a clearance system both enhances the speed of transaction and security as it offers a tamper-proof yet decentralized record (Kim and Lee, 2019). Furthermore, blockchain is being discussed in order to improve KYC processes that anniversary risks of fraud and compliance costs (Gupta and Sharma, 2022).

2.3. Barriers and issues to Blockchains Adoption.

Despite its the advantages, there exist several challenges that block the ethos of blockchain adoption in the banking industry. Among those that are vital to address is regulatory uncertainty in which the governments of countries vary based on the international standards and policies are not available (Nakamura and Patel, 2023). Attempts to connect blockchain to the systems of legacy banking and security concerns facilitate the reluctance, as well (Tapscott and Tapscott, 2016). In addition, the question of scale is also on whether blockchain can apply to large-scale financial processes (Li and Wang, 2021).

2.4. Views and Conclusions in Future.

It is also clear that the future of blockchain in the banking sector is bright as institutions begin to recognize the power of blockchain. It is recommended by experts that in order to popularize them, it is necessary to Woof regulatory frameworks and interoperability with the existing systems (Chen & Bellavitis, 2024). It is also suggested that financial institutions can collaborate with fintech startup projects as a pilot of blockchain-based solutions and investor in educational programs to address resistance (Kim and Lee, 2019). By addressing these issues, blockchain can optimize the operation of the banking industry making it safer, more efficient, and inexpensive.

3. OBJECTIVES



1. Speaking of defining the importance of the blockchain technology, in relation to the functioning of the banking activity, one should focus on the concept of how it can facilitate effectiveness, safety, and openness in terms of the financial process.
2. In order to look at the practical applicability of blockchain in the banking sector; i.e., payment transfer, a settlement system, securities, loans and KYC.
3. Identification of the barriers and complications of blockchain adoption in the banking sector including regulatory, security, compatibility with scale and wedge systems.

4. METHODOLOGY

The study is a secondary data based study. A critical study of the literature content including academic articles, research articles, case study and other relevant internet sources are analysed with an aim of investigating the applications, benefits and weaknesses of blockchain technology in banking. A primary and secondary source of information is used to assess the impact of banking operations with blockchain implementation comprising its role on payment transfer, settlement systems, securities, and Know Your Customer (KYC) mechanisms. The study also examines regulatory and security and integration challenges facing when financial institutions use the blockchain technology. The paper will analyze the data gathered qualitatively and identify the trends, observations and emerging trends in the use of blockchain technology in the banking sector. The given methodology is beneficial due to offering a very comprehensive and well-charted perspective of the affair since it also relies on the experience of a large number of professionals willing to participate in it as well as research findings.

5. FINDINGS

5.1 Problems in Banking Today

Banking is a pre- modern feature that helps in the life of majority of various forms of finance and economy dealings of the character of commerce, lending and borrowing, prudent watch and overcome and dealings, underwriting and ancillary enquiries. However such a built



perception has created a state of stasis that is crippling the industry by placing it at a disadvantaged opening in keeping with the fast changing state of digital environment.

The company at this point of time seems like a big pillar that is not going to ease the potential of its large steam it has built upon. Nonetheless it has some form of clumsy-ness that is not capable of letting one observe flow and does not favor Fluid Movement. An example could be provided of part of the banking operations that still require extensive paper-based records that consume significant amounts of time and money and pose a potential potential security vulnerability. The security detailing in the industry should also be taken to meaningful height. Among financial organisations, the mechanism of relied should have ensured the examination of credit history compliance, mitigating poor credit situations, augmenting compliance to rules and regulations, among others. All of these are under threat of the fast-growing fintech market.

5.2 Different Blockchain Uses

Another banking process that utilizes blockchain technology is the technology of picking up. The programs help in the dispersing the sector.

Payments Transfer Since then, increased rates and/or missed payments respectively have cost millions and millions of dollars to pay and waste. An example wouldbe when you simply in San Francisco just happen to want to transfer money to London, the two banks will be able to charge a general 25 dollar fee.

Ether and Bitcoin types of digital currencies are built based on the necessity of open blockchain to allow individuals to send and receive money within a second without being charged any fee concerning the transaction. Furthermore, because payment is realised in the decentralised model, it is not, as a matter of rule, mandated to authenticate a transaction; thus, it is transferred with quicker and lesser cost with the help of blockchain technologies in the bank and finance industries.

5.3 Settlement and Clearance is a framework done to make sure an accurate settlement and clearance is made in the banks.



Settlement and Clearance is a framework done to make sure an accurate settlement and clearance is made in the banks. It is easy enough to wait three days before an ordinary bank transfer can ever materialise. It has not merely been a challenge to the consumer, but it has been an actual blockbuster to the logistical barriers in the minds of the banks. Today a mere product like a bank transfer will couch and gyrate through a maze of mediocrites like it crosses the bank chain of custody, and eventually ends up where it is needed. It is the intersection of the banking industry and the blockchain innovation.

Blockchain makes a decentralised register where tallies have been followed in carefully read and comprehensible fashion directed by the rule of law. This means that the transactions can be made in a public blockchain, contrary to the communication of the use of custody services. This is one of the core mechanisms of how blockchain innovative in the banking industry expand the velocity and the straightforwardness of tasks.

5.4 Securities

Banking institutions are obliged to carefully watch the proper ownership and in such a way, they will take their seat conveniently in selling or buying the debt, equities or commodity. In their attempt to access this data, they depend on a number of exchanges, broking agencies, clearing Settlement, custodian banks, etc. Presence of such parties, even binding up part of old paper process of ownership is not a small addition to a snarling process like the one that prone to errors and fraud is destined to be so.

On the one hand, the injection of blockchain technologies in the banking sector ultimately turns the whole idea, similar to the description of a decentralised digital and discrete stuff warehouse. Once the adoption of a distributed registry, the flow of the assets may circulate effectively, following their issuance of tokens, which reflect the assets, off-chain. The utility of blockchain in the banking industry can be linked to the so-called tokenised securities that would help not to come into contact with the intermediaries at all and minimise the cost of the transaction to buy and sell assets.

5.5 Loans and Credits



Credit reporting structure typically has some impact on the decisions of the financial institutions in lending out or refusing loans. P2P lending in the market is a relatively new field in terms of blockchain technology development ecosystem that is purported to have undergone major improvements in the consumer banking industry. It produces one of the brightest development prospects, in terms of fintech space.

In addition, when an individual has to take a credit, lending institutions will examine the possible default risk. They are determined by the consideration of the credit score, evaluation of the status of the owner and an analysis, the crucial estimation of the ratio of debts to the income. Among the systems that one counts on would include the credit reports which is synergetic system and might not be with the consumer friendly.

The introduction of blockchain technology to the banking system will also rely on a new lending paradigm that is efficient, cost-effective, and secure in a way that provides its customers with personal loans at heightened reliability to alleviate them. A loan under extension will be simple to lend to individuals because a free list will be acquired, of transactions.

5.6 Customer KYC

Our discussion within the blockchain technology row touches upon the dimension of the inefficiencies to which the banking customers also spend on the KYC procedures.

In other scenarios, the overall KYC can take the financial institutions up to three months to complete and issues such as verifying the photographs, address documentation, and verifying the biometers. Besides the time taken to validate clients, financial organisations spend a significant amount of money conducting KYC procedures. The retail banking industry is being specialized through integration of blockchain technology to enable Know Your Customer (KYC) process.

Among the benefits that have gotten to be realized in the context of the implementation of the apply blockchain technology in the banking sector, one can single out the fact that, it is possible to use the blockchain, in a manner, that will ensure that the data of customers are



safely stored. This will enable the financial organisations to pursue viable knowledge on Know Your Customer (KYC) compliance. That would be equivalent to 160 million every year to a scenario that would lead to a decrease of 10 per cent in the cost of staffing.

The two are listed below as the following ways of implementing the blockchain technology in the retail banking sector. The sector of the digital era that has lagged in its use the most is the banking sphere that has been embracing blockchain as noted in the first section of this paper. The adoption of technology is however increasing noticeably in the sector. It also possesses a lot of applications in practice and we are going to discuss some applications.

5.7 benefits of Blockchain.

The ones that are available will be used to revive the industry. The pros of keeping blockchain as part of the banking industry are that:

5.7.1 Cost Reduction

Financial intermediaries remain existed in modern practice as reliant on caches of broken and old fashions, which precincturate financial trade and action on a vast -scale amid large communities of counterparties. The various banking functions including clearing and settlement, not to mention the said functions are indeed demanding state of the art solution to accomplish not only to make their functions fast but also inject efficiency please to their functions.

The putting forward of a blockchain in the financial sector can be said to be the solution to delivering a smart solution in the banking network. A decentralised peer-to-peer way of dispersing information is a powerful and efficient tool of blockchain technology. It can eliminate the inefficiencies in an organisation, it enables the organisation to reduce the deployment of the middleman and it brings about causing fiscal positive changes to the industry in general.

5.7.2 Real time Payments and Money transfer.



Blockchain protocols have already caused turmoil to the banking sector in terms of the payment process and other financial activities as well as There is little to be surprised in terms of the fact that the alternatives that this technology has to offer have already been rolled out under the close observation of numerous lenders. Adoption of the blockchain technology in the industry especially in international transactions may prove to be a boost to the industry.

The finance institutions are embracing more and more the Society of Worldwide Interbank Financial Telecommunications (SWIFT), which is a complete messaging enabling that works in procession the cleverness of the information among the banks concerned. The blockchain technology, nevertheless, enables direct contact between lenders and, consequently, avoids the interference of a that-man. It is equally vital to state that in recent years the number of SWIFT security breaches has been colossal and it too is one of the reasons why blockchain technology must be introduced.

5.7.3 Digital Currency

One of the most interesting notions concerning the ways the bank sector can capitalize on the blockchain technology is the possibility of turning physical investments into digital ones. It implies that blockchains could also be employed in the broad range of digital currencies among others. One other most prominent is the work that the current work of the Peoples Bank of China (PBoC) is undertaking to construct its own Central Bank Digital Currency (CBDC) building. CBDC in short as Digital Currency/Electronic Payments is also being tested in a majority of the super cities in China.

6. RECOMMENDATIONS

Although, at the start of its development, one believed that blockchain would be a platform to disrupt the traditional finance, the latter attracts the attention of the very financial institutions that this platform was established to compete with. Financial institutions have long overlooked the use of blockchain just as they have done for years, but gradually they are becoming aware that the advantages of the disruptive technology might be too overwhelming to ignore. The end uses of the blockchain in the banking sector are simply enormous and the potential of replacing the current functions and processes in the industry with a better



opportunity is quite probable. Nevertheless, it is probably that over the next few years, financial organizations will introduce blockchain groundbreaking developments, which will allow them to communicate without the conventional framework. In such scenario, the blockchain challenge of the industry will have been successful, and that too.

In order to capitalize on the potential blockchain technology, financial institutions need to:

1. Cooperate with fintech solutions: It is possible to cooperate with blockchain solutions in order to speed up the integration and implementation.
2. Invest in blockchain education: Educating stakeholders about the quality of good blockchain and gaining trust could be a malice approach to solving stakeholder resistance.
3. Development of regulatory frameworks: Regulatory agencies and government should establish regulatory frameworks that help implement blockchain and mitigate the risks of security and privacy.
4. Pilot blockchain projects: Financial institutions will need to initiate smaller pilots projects to pilot blockchain uses in practice so that they have experience.
5. Be wary of interoperability: Experts ought to make sure that blockchain solutions would be able to function in collaboration with the already developed banks system so that they could help it integrate easily.

This intervention will see financial establishments take center stage of complexity of the introduction of blockchain technology, and the full potential of the technology as mode of the transformation of the banking format to the fore.

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