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## An Examination of the Utilization of Blockchain Innovation in Banking Sector

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### Abstract

*This research paper investigates how blockchain is a useful technology for banking sector to provide the easiest services for the customers and the applications associated with it. Blockchain technology in banking domain is implemented as an open distributed ledger that will records the transactions happened between two parties. It consists of chain of data blocks each of them has a set of transaction that are related to each other. This technology is applied in such use cases where there is a need to process transactions without the involvement of a third party called “central authority”. Blockchain in banks can provide quicker payments, lower charge than banks, number of financial transactions with added security and increased performance. Blockchain Technology is associated with cryptocurrency bitcoin that work with digital coins to do financial transaction. Later, the blockchain is implemented for different type of transactions such as smart contracts, real estate, buying and selling assets, accounting and auditing etc. to handle the different financial transaction in a more efficient way. Now a days, a large number of banks are focusing on this technology to make the transaction easier and to increase the economy to understand the possibilities of blockchain .In this research paper we provide an overview of the blockchain technology concept and how it works with the banking sectors and what are the uses case for it.*

**Keywords:** Banking, Blockchain, Transaction, Blockchain in banking, Records, Third parties

## Introduction

The blockchain which has recently gained attention as an emerging technology changing the future has emerged as a modern financial market model (Peters, Panayi and Science, 2015). According to the statistics, they expected to grow on the spending on blockchain solutions around the world from 1.5 billion in 2018 to 15.9 billion by 2023 (Rega, 2018). In 2018, the financial sector accounts for over 60% of the worldwide market value of blockchain, but the technology has spread from healthcare to agriculture to almost every industry. About the world in 2016, the Economic Forum (WEF) anticipated that the blockchain would revolutionize the financial services, a forum for customers and producers to communicate each other (Yoo, 2017). In addition, blockchain technology was included in the UN future study on the “future of 10 new technology that will affect different industries”. For that, blockchain technology is considered as the most useful technology in this sector.

This paper discussed the use of blockchain technology in banking sector and what are the different use case in this sector and how we can implement it and make it useful for banks. Here, we provide a summary of the blockchain technology concept and its potential to change the banking environment by enabling global remittance of capital, smart contracts, ledgers for electronic banking and digital properties (Poland, 2018). Whereas, many research papers that was included in literature study, all agreed that they need to use this technology 100% in all banks. As banking transactions are considered as one of the most important things that should be available in it some features like: security, ease to use “user friendly” and saving time and effort (Jutilla, 2017) can be provided through blockchain technology.

Indeed, this technology is like other technologies that contain many limitations that may affect its work. For example, first limitation is associated with governance. Even though the decentralized existence of the blockchain is its key benefit, the financial sector can have some limitations. There is no central decision-maker in the network that make the members participating in a blockchain financial transaction to have some motives which are misaligned. In 2016 DAO Hack “Decentralized Autonomous Organization” was established. The aim of this organization was to develop an automatic decision-making mechanism based on certain guidelines, to remove the need

for governance. Second, is the scalability issue. Since the blockchain is a distributed system, its combined computing power relies directly on the computational power of the computers involved. Blockchain can handle an average of around 4.6 transaction per second, compared to Visa's 1.700 transaction per second that considered as big challenge. Finally, regulations and policies. The financial institutions face a lack of clarification on regulations (Kot, 2019).

## Methodology

Google scholar was used to search about papers that are related to the topic. The keywords such as "*Blockchain in banking sector*", "*blockchain application in bank sector*", "*Blockchain and how we use blockchain with banks*" etc. was used to conduct the search. The keyword "*Blockchain*" resulted in the listing of around 313,000 research papers, but majority were about the general information about Blockchain. Then, we narrowed the search using the keywords: "*blockchain application in bank*", "*how we use blockchain with banks*" and "*blockchain in banking sector*". 30,000 to 36,000 research papers were listed under these categories. At the end, 15 useful and relevant research papers closely related to the research topic were selected.

## Literature review

According to a survey conducted among 1053 people (Deloitte's, 2018), the financial industry is the most sector that will benefit from blockchain technology. In another study conducted in 2018, interviews were done for 800 executives and banking experts regarding the importance of blockchain technology for bank sectors, where 71% of the banks surveyed praised the importance of this technology (Karsch,2018).

According to the study that was done by the Block Box team in 2020, they said: "The blockchain would reduce banks annual costs by nearly \$27 billion over the next ten years". By 2022, the use of blockchain for trading and regulatory enforcement along with cross-border payments would save financial institutions over \$20 billion annually" (theBlockBox,2020). The two common advantages of using blockchain in banking sector that was repeatedly found in the literature study, was (a) it reduces cost and (b) it offers high security.

As per Mitic (2020), “the percentage of investments in this technology will increase as has solutions to most of the problems that bank faced”. This was we see in the statistics that were made by Mitic (2020), that the investment in blockchain technology are increased by 280% in the first ¾ of 2018, compared with 2017.

On the other hand, many researchers have concerns about this technology, as it could affect many things, including the energy consumed. According to the statistics made by (Jutla, 2017)said: “The more people use blockchain-based applications, the more resources they consume.” As they have many concerns about the development of this technology and its adopting in the most sensitive sectors.

Therefore, using this technology has its pros and cons, but we do not deny that the results that showed the effectiveness of this technology in the banking sector may solve 80% of the problems that this sector suffers from.

### **Benefits of Blockchain technology in banking sector**

Now a days, banks have been forced to search for new technology that reduce costs and increase profits due to the changes in the economy, so they chose blockchain technology. Whereas, many positive developments are expected when this technology is adopted, such as new models for revenue, substantial reduction in risks across the sector, performance gains and cost saving of millions (Deloitte, 2017). In the beginning blockchain work by bitcoin only, when there are several participants in (peer-to-peer) network and a digital coin transfer occurs between each other. Every participant in the network has a copy of distributed ledger and all this transaction are immutable (A *et al.*, 2019). When use this technology, it may disrupt some financial industry we know it and use it until today, as there are many things that will be eliminated or developed such as, fraud reduction (since blockchain basically is a distributed ledger where each block in the chain have a several transaction with timestamp, that can eliminate some of the lasts crime against our financial institutions being perpetuated online today), KYC Know Your Customer(Blockchain would allow other entities to access the independent verification of one client by one entity, so that the KYC process would not have to start again. The drop in operating costs will be important for

enforcement agencies), smart contracts (can do the contracts digitally), payment (they will add more security for this kind of transactions) and reduce the risk in trading platforms.

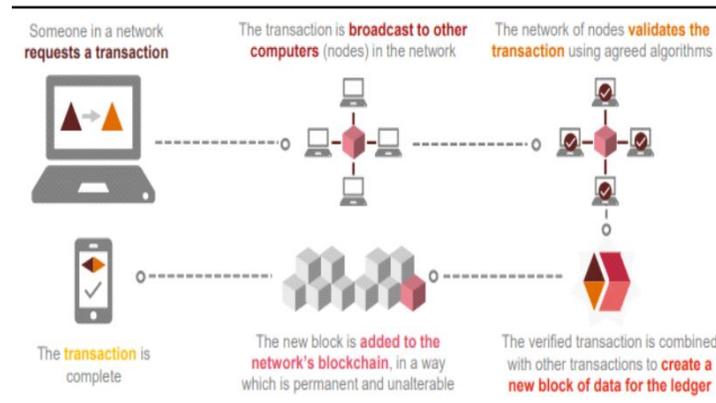


Figure 1. Transaction process (A *et al.*, 2019).

The main benefit of using this technology is to makes the financial transactions open and verifiable with ease. This is achieved due the fact that transactions is immutable, since no one can manipulate or delete the transaction that happened via blockchain technology (Guo and Liang, 2016). This technology will solve many of the problems that banks are facing at the present time like the high cost, they can also reduce the expense of contracts being maintained and preformed as well. Banks can also reduce transaction costs between transactions from banks to banks. Slow transaction, offering quicker transactions is another benefit of blockchain in banking. Banks can now bypass intermediaries which can allow them to make sure customers complete transactions at a faster rate. This will contribute to the willingness of clients and banks to complete and process further transactions. Poor security, shared ledger can assist banks to protect transaction data better, whereas they will finish the transactions in fast time and reduce someone's chance of either gathering transaction data or diverting payments (Dashkevich, Counsell and Destefanis, 2020).

## Blockchain applications in banking sector

### 1. Platforms for Trade Finance

It is considered as one of the blockchain application used in banks to build smart contracts between participants. To increase productivity and transparency and to open new revenue opportunities, many banks use blockchain trade finance platforms. When blockchain technology is implemented in this case, the following are the advantages: -

- Providing sellers with payment assurance by automating payment processes: LC (letters of credit) is considered as one of the payment methods that provide an efficient way to reduce business risks; their worth can be severely restricted by bank facilitation of the exchange flow and settlement process. It mostly results in high costs, contractual delays and complexities in systems. The LC can be modelled as self-executing contracts to mitigate the possibility of overdue or refused payments. Blockchain will automate the verification of compliance with contract terms and ensure compliance with contract terms and ensure faster payment to suppliers by avoiding the occurrence of conflicts due to ambiguities in the payment contracts. Automating the blockchain payment system also speeds up payments through early detection of inconsistencies. (Varghese and Goyal, 2017).
- Risk reduction and increased bank funding revenues by the digitization of payments instruments: since payment instruments are basically credit instruments created by a commercial transaction, they can be regarded as payment instruments. Issued directly as native assets on a blockchain network. Direct issuance of blockchain payment instruments avoids fraudulent invoicing activities and enhances financing options for SMEs by increasing the liquidity of receivables and enabling process efficiencies throughout the receivables control (Varghese and Goyal, 2017).

### Blockchain - Process

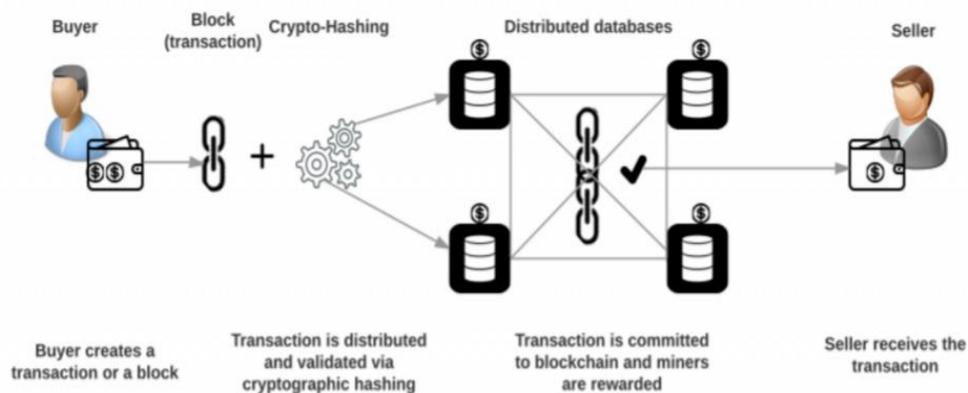


Figure 2. Trade Financial (tradefinanceglobal, 2020).

2. Verification of digital identity

Using blockchain enabled IDs, blockchain enables banks and others financial institutions to recognize citizens. When information is protected by customer identification using blockchain, banks can increase public trust while protecting against fraud and dramatically speed up the verification process. When blockchain technology is implemented in this case, the following are the advantages: -

- Ease of collecting duplicate ID evidence after the original is lost.
- SSL (Self Sovereign Identity), it will be more secure.
- Easily verification of identities using blockchain.

3. Credit report monitoring

As shown by recent data breaches, blockchain-based credit reporting is more reliable than conventional server-based reporting. When determining credit scores, blockchain can also allow businesses to consider non-traditional factors. When blockchain technology is implemented in this case, the following are the advantages: -

- Credit reporting will be more secure.
- Reduce data breaches.

4. Settlements and clearing

Blockchains accurate recording capabilities can one day render current clearing and settlement procedures redundant, resulting in faster transactions and lower financial institutions costs. When blockchain technology is implemented in this case, the following are the advantages: -

- Increase transparency and audibility.
- Streamline current confirmation processes.

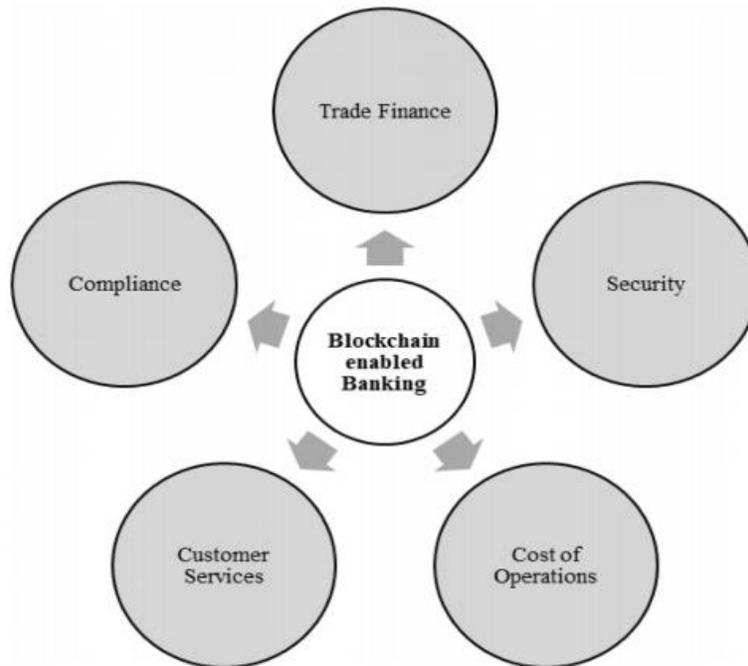


Figure 3. Another blockchain application in banks (Garg *et al.*, 2020)

## Conclusion

Toward the end, blockchain is an innovative new idea in the financial sector that is as of now having an effect. This paper takes a gander at crafted by this innovation in banking areas, the applications utilized by blockchain in this area, the advantage of using this technology and the drawbacks of it. Obviously, there are some negative impact that may influence what was referenced in this investigation on the financial area when utilizing this innovation. In future, this unique technology will provide many opportunities for the banking industry in terms of security and ease of use, it will also provide many jobs in this sector. The main opportunities that is provided by this technology in this sector are trade financial opportunities. The consistent ascent in security tokens related to blockchain would help banks to diminish worldwide exchanging costs drastically.

Distributed ledger technology will boost clearing and settlement and blockchain technology will faster the complex settlement and clearing and KYC processes. It can help streamline a blockchain network. process of authentication through a shared KYC infrastructure.

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