# The Role of Blockchain in Transforming the Financial Sector


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**Abstract** This essay offers a thorough analysis of the literature on blockchain technology's application in the finance industry. The study looks at how blockchain affects several financial services like lending, trade finance, and payments and remittances. The article outlines the main advantages of blockchain technology, including transparency, security, immutability, and decentralization, and explores how they may revolutionize the financial sector. The assessment also examines the various applications of blockchain in the financial sector globally. The study concludes that although blockchain technology has the potential to disrupt the financial industry, its successful deployment necessitates stakeholder cooperation, regulatory clarity, and a thorough comprehension of its advantages and disadvantages. Policymakers, financial institutions, and other stakeholders who want to use blockchain technology to enhance financial services and advance financial inclusion should take note of the study's conclusions.

**Keywords** Blockchain · Fintech · Public ledger

## 1 Literature Review

### *1.1 Introduction*

In the recent years, the blockchain technology has perceived attention expressly in the financial industry due to its high potential in transforming the conventional financial systems. Blockchain is a decentralized, unchangeable technology that financial institutions can utilize for various purposes. The decentralized and incontrovertible

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nature of blockchain intrigues the financial institutions to explore numerous applications and use cases. This literature review will discuss the conducted research in the blockchain applications in the financial industry.

## *1.2 Blockchain in Fintech*

As the public distributed ledgers for bitcoin, blockchain technology is a type of financial technology (FinTech). For a while, the bitcoin overshadowed the blockchain technology. But, in recent years, it has begun to gain attention on its own and is evolving into a key FinTech technology (Du et al. 2019). Blockchain is known to be the most promising and advanced technology in the FinTech area (Du et al. 2019). Studied conducted my experts and researchers have recognized that the impacts of blockchain goes way beyond the financial industry and Bitcoin where it can drive changes in many different businesses (Ølnes et al. 2017; Razzaque et al., 2020; Mohamed et al., 2021). Through blockchain consortiums, the financial institutions are starting to support blockchain technology development at the same time (Yoo 2017).

## *1.3 Blockchain Role in Financial Sector*

Blockchain innovation has sparked a heated debate among researchers because of its potentially disruptive impact on business models. An article by Halilbegovic et al. (2019) investigated how the blockchain will affect payments, which are a key component in the financial sector as well as the origin of this technology. The research findings concludes that blockchain enables the provision of new services while making some of the ones now available outdated. As a result, this influences the financial structure of businesses in the payments sector, and it creates enormous opportunities for new business models while rendering certain incumbents obsolete. The study also highlighted that the new participants who are more prepared to utilize the possibilities of blockchain will eventually provide a powerful drive for its progress.

Kim and Kim (2022) proposed a model of a single payment that utilize fundamental cryptocurrency characteristics like the public key, private key as well as a digital signature to eradicate the transaction middlemen like public key certificates. The suggested model is capable of processing e-commerce payments without the public or private keys registration. The implementation of digital signature pledges the integrity of the e-payments as well as it eliminates the cost for intermediate services like payment gateways. The study provides valuable insights on applying blockchain technology to the electronic commerce payments systems.

In another article by Liao et al. (2022), the authors discuss the blockchain-based framework for identity management as well as the access control in the open banking ecosystem. The proposed framework utilized the blockchain to offer security as

well as distributed access control, which gives the permission only to the parties who has authorizations to the data. The article concludes that using blockchain will provide competitive edge to the financial institutions especially in the open banking ecosystem such as better security, fraud prevention as well as more conviction. Additionally, the implementation of blockchain technology can guarantee that user information is not under a single party control, reducing the risk of security breaches as well as information tampering. Furthermore, the authors contend that the suggested architecture can boost the identity management as well as the access control effectiveness, resulting in quicker and more precise transactions.

Blockchain technology has gained interest recently due to its ability to speed up process automation and streamlining, eliminate manual back office labor, save time, increase transparency, and boost security (Walker et al. 2016). Many papers have empathized on the benefits of blockchain on the financial sector, As the technology develops and matures, these advantages can be recognized, predicted, and analysed. Blockchain also gives customers the chance to preserve safe payment histories across several institutions in various areas, which lowers the danger of fraud (Zohar 2015). Consumers, the current banking system, and society are anticipated to gain a lot from blockchain technology. It can have a positive effect on market prices and expenses in addition to the security implications and enhanced openness of transactions for all participants, including institutions and customers (Srivastava 2023; Rajumesh 2023).

## *1.4 Blockchain Applications*

### Digital Notes

A financial note is considered as a specialized type of security. The drawee is given a security in return for the drawer's pledge to pay a certain amount of money. Cheques, bills of exchange, as well as promissory notes are just a few examples of the numerous types of instruments that is used in the financial industry. Overall, financial notes are used for a wide range of functions, such as payment, exchange, credit, settlement, financing, in addition to circulation. Payments made using financial notes may be made more easily, which expands the range of payment choices available in the social economy. The exchange feature of financial notes can help traders reduce the hazards of paying in cash in transregional trades, especially in international trades (Wu and Duan 2019). By utilizing technology and overcoming the limitations, blockchain technology enables the development of electron notes. Digital notes on a blockchain are distinct from conventional electronic notes. It is a completely new type of digital note that combines the advantages of blockchain technology with all the features and benefits of electron notes (Fanning 2016). There are currently a few successful cases with blockchain-based digital notes. A blockchain-based digital note system, for instance, may be implemented in 2016, according to the People's Bank of China (PBOC). This approach could finish the whole transaction, just like when using paper notes. China Zheshang Bank (CZB) completed the first transaction employing

blockchain digital notes in 2017. Multiple banks in China includes China's Industrial and Commercial Bank of China (ICBC), Bank of China (BOC), Shanghai Pudong Development Bank (SPDB), and Bank of Hangzhou (HCCB) finalized the issuing, accepting, discounting, as well as the transfer discounting of digital notes in that order after Shanghai Commercial Paper Exchange announced that the trading platform for online digital notes in 2018 (Wu and Duan 2019).

**Cross Border Payments**

The money transfer across a minimum of two nations can be completed by cross-border payments. In order to complete cross-border payments when a local consumer buys a product made by a foreign manufacturer, the needs of consumers to rely on a defrayal instrument as well as payment systems. Foreign money is the most often used payment method, while cross-border interbank payments are the most frequently used payment system. For instance, domestic consumers can easily purchase imports from other countries using bank payment methods like VISA, MASTER, JCB, and others. The most common types of cross-border payments are credit card payments, third-party payments, remittance firm transfers, and bank telegraphic transfers. Initially, the Association for International Interbank Financial Telecommunications' payment network serves as the foundation for bank telegraphic transfers (SWIFT). A receiving bank overseas receives a remittance message from a sending bank domestically and subsequently pays the payee the requested amount. For this type of payment, one must wait a long time and pay large costs. Second, a remittance organization, which certifies the payment transaction by authorized agents abroad, may also complete the cross-border transaction. The entire transaction took very little time to complete. Thirdly, the bank's payment and clearing system serves as the foundation for credit card payments. Although while credit cards are frequently used for in-person and online purchases, outfitting stores with the necessary hardware and software can be very expensive. Fourthly, a recent payment mechanism is the third-party payment. Customers can complete a payment by using a third-party payment tool, such as Alipay or WeChat Pay, if the government enables third-party payment institutions to offer their payment services to traders at home and abroad (Wu and Duan 2019). The operational efficiency of the conventional methods of cross-border payments is lower and involves numerous middlemen and trading partners. In these circumstances, blockchain technology can be employed in the cross-border payment industry to get around the drawbacks of current cross-border payment methods and lower transaction risks (Josephine and Muninarayanappa 2023).

In the real world, Ripple is a highly well-known cross-border payment network that accepts both virtual currencies and all forms of legal money. When compared to conventional methods of cross-border payments, Ripple's transaction costs are almost free, and transactions only take a few seconds to complete. Also, a trader can accomplish a free deal using any one money, whether it be a virtual currency or a form of legal tender.

### Blockchain in Cryptocurrency

Satoshi Nakamoto first envisaged a decentralized electronic cash transaction system in 2008 to tackle the problem of duplicate payments and improve the security of information verification (Underwood 2016). As a result, the blockchain system has been employed more often in the financial industry. There are many advantages of blockchain technology such as the decentralization, openness, autonomy, tamper-resistant data, as well as anonymity. It could assist commercial banks manage their money more affordably and successfully (Yli-Huumo et al. 2016).

As Bitcoin develops in popularity, blockchain technology has typically become one of the most important core technologies in the Bitcoin transactions. Despite growing public interest, Bitcoin continues to be a hotly debated subject in both academia and the real world due to its use as a form of cash. It is commonly known that some markets accept Bitcoin for trading products and services, but not all markets do (Eyal and Sirer 2018).

### Blockchain in Micropayments

Blockchain technology's invention sped up the creation of cutting-edge use cases that took advantage of the environment's lack of trust and decentralization made possible by cryptocurrencies. The divisible character of a cryptocurrency, which enables micropayments via the blockchain and makes it possible to make transactions in fractions, is one of many advantages of the blockchain technology. Micropayments are a crucial strategy for enabling financial access and assisting in the reduction of world poverty. Khan et al. (2019) discusses the economic effects of blockchain-based micropayment systems. The study emphasizes on the importance of the business inclusion as well as the socioeconomic enhancement. The article also discusses how micropayments contribute to the economics of cybercrime, highlighting the urgent need for legislation to stop the rising threat presented by the system of electronic payments.

### Smart Contracts

Most clients are reluctant to disclose and save their personal financial information due to data leakage and potential security weaknesses in security systems (Yue et al. 2016). Because of this, there is a clear need for a distributed approach to data sharing and storage where users can feel more secure about the privacy and security of their data and where all relevant parties can have a comprehensive understanding of all transactions. Therefore, it's imperative to utilize blockchain technology's potential in the financial and banking sectors given the problems with the current financial and banking system (Mettler 2016).

There is no longer only one dependable third party handling customer information. Instead, decentralized apps like smart contracts process it. On behalf of

the entire financial ecosystem, the latter contracts manage consumer data. Furthermore, the only way a customer's information may be accessed for KYC (or other) purposes is with that customer's authorization, which offers a solid foundation for fine-grained privacy control (Polyviou et al. 2019). Smart contracts are additionally is applied to financial trading, legal contracts and real estate transactions where the terms and content of the transactions are registered, and the procedures are automatically applied when the conditions are met. In comparison to current kinds of transactions based on physical exchanges, smart contracts are projected to streamline physical and visual transactions and lower transaction costs. Global corporations like Microsoft and IBM are attempting to link and market their businesses, and they are also interested in a platform-based blockchain (Yoo 2017).

## 2 Conclusion

There are many papers that support blockchain and the capability it offers in terms of improving existing infrastructures or creating new services or products that addresses customers pains such as cost, privacy and control over their funds. We studied many applications that are available today in the market that eased the life of financial cooperation's and stakeholders such cross border payments where the cost and time required for money transfer is significantly reduced. In addition, Blockchain offers great benefits in terms of security such as the integrity of transactions and the privacy for customers. Blockchain is still a hot topic that is being studied where new studies and applications are being brought forward frequently.

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