Chapter 14
Innovative Applications and Implementation Challenges of Blockchain Technology in the Financial Sector

Chitra Devi Nagarajan
Vellore Institute of Technology, Chennai, India

Mohd Afjal
Vellore Institute of Technology, Vellore, India

ABSTRACT

Blockchain use in various industries improves the standard of services provided to end users and benefits society as a whole. The chapter discusses the innovative use of blockchain technology in the financial sector, including know your customer, cross-border payments, clearing and settlements in the insurance sector, trade finance platforms, and digital identity verification. On the other hand, while blockchain technology has the potential to be a very competitive and "imaginative" technology, it is important to address concerns with its implementation, such as the cost of adoption, energy consumption, cybersecurity, interoperability, scalability, latency, and so on. The findings of this study will give the required information to the government, decision-makers, and consumers to help them understand the applications and difficulties of implementing blockchain technology in the financial sector.

INTRODUCTION

A new era of business models is dawning with the advent of digital technology, and the financial sector has been exploring better ways of increasing transaction speed and efficiency to improve customer service. Easy access to digital technology through Financial Technology companies (Fintechs) has transformed the entire banking and financial industry (Riasanow et al., 2018). As digital technology has increasingly been used over the past few decades, financial institutions and banks have embraced the adaptation of

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technology to meet the fast-changing expectations of their customers. There are, however, challenges that need to be overcome for technology to be effectively implemented (Swan, 2017). Banks and financial institutions have many concerns regarding the adaptation of new technology, including high transaction costs, intermediary roles, cyber fraud, regulatory compliance, the use of big data, artificial intelligence, and customer retention (Eyal, 2017).

The profitability of banks and financial institutions is determined by the implementation of digital technology that enables them to provide better services and meet customer demands. A bank or fintech company that is not able to comply with these standards is unlikely to sustain its profitability over the long term (Mishra & Kaushik, 2021; Sundarraj, 2019). The sustainable financial sector is an engine for the development of an economy because it encourages balanced, and inclusion and facilitates the growth of the commercial sector. Adopting and integrating new digital technologies such as the Internet of Things (IoT), 5G networks, artificial intelligence (AI), big data, and cloud computing at the right time is crucial to enhancing customer service and operations and, in turn, ensuring sustainable profitability of banks and fintech companies.

As one of the world's most recent technologies, blockchain has enabled several applications in financial technology, allowing finance to become more global. Blockchain is a tamper-proof digital ledger that is implemented in a distributed manner (i.e., without a central repository) and usually without any central authority (i.e., no bank, government, or company) (Yaga et al., 2019). A distributed ledger technology called blockchain enables all participants to connect, review and approve a transaction before it is included in the value chain (Walters & Novak, 2021). Due to various computer technologies, distributed data storage, point-to-point transmission, consensus mechanisms, and encryption algorithms, the application of blockchain in the financial sector has attracted a lot of attention, especially in the fintech and banking services industries (Guo & Liang, 2016a). As a component of Industry 4.0, blockchain technology has the potential to change how businesses operate in a variety of sectors. Blockchain technology is now widely employed in the banking and financial sectors. Several international institutions, including the United Nations and the International Monetary Fund, have taken note of the development of blockchains and explored their application in various fields. As well as developed nations, such as the United States, the UK, and Japan, these technologies have received considerable attention and exploration. The advantages offered by blockchain technology in the financial sector, many companies, such as Dwolla, PayPal and Square Payments, have adopted it as a means of facilitating decentralised, risk-free digital financial transactions. The technology of blockchain has the potential to revolutionize the way that money is transferred. Globally, blockchain is modernizing digital banking services. The timely evolution and adoption of the advanced technology of blockchain will add to the required economic growth (Dutra et al., 2018). Blockchain technology adoption in financial sectors comes in three flavours: distributed, decentralized, and centralized. A reliable central server that makes decisions about data storage, data integrity, and user needs is referred to as a centralized system. In this system, all financial transactions are overseen by an intermediary, and client confidence is enhanced in because of the centralised measures to safeguard user-profiles and user-generated content. In the absence of trusted intermediaries, blockchain is also considered a peer-to-peer decentralized communication system while also boosting security, trust, and data integrity.

The distributed system is helpful in the financial sector because it substantially reduces the risk of loss of asset-related information (Rechtman, 2017). Record management for every individual user ends in a decentralized scheme, making it secure and safer (Mori, 2016). The blockchain application is a distributed ledger system of transactions that is tamper-proof due to cryptographic methods (Pilkington, 2016). To