



Chapter 14

Blockchain–Based Identity Management: Securing Customer Data in Financial Services


Rachit Agarwal

 <https://orcid.org/0000-0003-0164-5292>
Chandigarh University, Mohali, India


Tanya Kumar

 <https://orcid.org/0000-0001-7608-9820>
Chandigarh Group of Colleges, Landran, Mohali, India


Satveer Kaur

 <https://orcid.org/0000-0001-7064-1514>
Maharaja Agrasen University, Baddi, India

Ruchira Prasad

 <https://orcid.org/0009-0009-4330-7081>
Dr. Bhimrao Ambedkar University, Agra, India

Neeraj Kumar

 <https://orcid.org/0009-0005-1248-8300>
Government PG College Mant, Mathura, India

ABSTRACT

This chapter aims to explore the potential of blockchain-based identity management systems in enhancing the security and privacy of customer data within financial services. It examines how blockchain technology can address existing vulnerabilities in traditional identity management frameworks and improve overall data protection. The research adopts case studies of financial institutions that have implemented blockchain-based identity management solutions to provide practical insights and real-world applications. The findings indicate that blockchain-based identity management systems offer significant advantages over traditional methods, including enhanced data security, reduced risk of identity theft, and improved user control over personal information. The decentralized and immutable nature of blockchain ensures that customer data is protected from unauthorized access and tampering. Case studies reveal successful implementations where blockchain has streamlined identity verification processes, reduced compliance costs, and improved customer trust.

DOI: 10.4018/979-8-3693-7447-4.ch014

INTRODUCTION

The financial services industry has experienced significant advantages from the integration of technology, including the optimisation of procedures, reduced expenses, increased client satisfaction, and improved accessibility to pertinent information. Furthermore, the utilisation of technology enables the assessment of risk, facilitates the identification of lucrative investments, and enhances the understanding of client behaviours (Dananjayan et al., 2023). The usage of big data in finance is susceptible to creating information asymmetry, which facilitates its seamless integration with blockchain technology. Firstly, the sophisticated database system and big data mining and analysis technologies are utilised to effectively leverage client information, taking into account factors such as the customer's risk profile, value, transaction behaviour characteristics, and preferences. Utilise social network technology and big data technology to achieve the online gathering of client information and prompt processing of transaction data (Han & Ma, 2021). Blockchain-based transaction infrastructure can help banks minimise the resources allocated to anti-money laundering (AML) compliance. Blockchain transparency enhances the ability to identify counterparties, ascertain the sources of funds, and provide warnings in transaction monitoring. These measures decrease the amount of time and effort required for Anti-Money Laundering (AML) compliance, resulting in lower costs (Vinther Daugaard et al., 2024). The utilisation of technology to mechanise financial services is increasingly crucial for economic organisations and sectors due to the ongoing shift in consumer behaviour and the emphasis on customisation in the digital era. Technologies such as the Internet of Things, blockchain, and artificial intelligence will have a significant impact on the future of FinTech (Rjoub et al., 2023). The banking sector in today's world is heavily reliant on technology and data-driven operations. Banks that possess the ability to use technology and effectively incorporate them into their operations will gain a competitive edge and be recognised as successful institutions within the financial industry. Utilising Technology Foresight, we can anticipate the projected advancements in Banking Services technology over the next decade (Elrashidy et al., 2021). Blockchain has the capability to play a crucial role in the financial industry by enabling financial institutions to safeguard their everyday financial transactions using a more secure, immediate, and cost-effective approach (Hefny et al., 2023). The Indian financial sector has been progressively adopting innovative technologies to enhance the quality of services and transactions. However, it is crucial to implement measures to ensure the liquidity and safety of the funds injected into the markets. To address this issue, we propose the implementation of a novel public ledger system known as blockchain technology. This technique is designed to be tamper-proof, meaning that it prevents any alterations to the recorded data (Lalitha & Soujanya, 2019).

Financial technology (FinTech) has revolutionised traditional banking and financial services by providing clients with more easy, accessible, and tailored services. On the contrary, FinTech has enhanced the efficiency, cost-effectiveness, and security of financial services, allowing individuals to easily manage their funds using their smartphones with only a few clicks (Girish & Bhowmik, 2023). The blockchain technology has been prioritising the development of many applications owing to its significant advantages, such as resistance to manipulation, enhanced security, transparency, superior services, decentralisation, immediate settlement, and increased performance (Trivedi, 2023). Open banking enables banks and financial institutions to conveniently retrieve clients' financial data, leading to a revolutionary transformation. Additionally, it offers users exceptional cloud access to a diverse array of financial services provided by numerous sources. Storing sensitive services and data on cloud servers has both advantages and disadvantages. It facilitates and reinforces precise access to such services/data from any location and at any time, hence enabling the open financial system. However, data privacy and confidentiality pose a significant difficulty. Therefore, it is imperative to establish effective access control measures for the services and data of open banking in order to safeguard cloud-hosted financial sensitive data from unauthorised individuals (Riad & Elhoseny, 2022). The swift progress of developing technologies has led to substantial changes in many industries, such as banking and finance (Vittala et al., 2024). The corporate landscape has undergone a significant transformation, becoming more inclusive, customer-centric, agile, and cost-effective. The emergence of financial technology (fintech) has led to the digitalisation of economies, with the implementation of Artificial Intelligence

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