

Development and Implementation of Blockchain technology in Banking: A Case Study of Professionals in Banking Industry

Dr. Devesh Aggarwal

Assistant Professor, Department of Commerce, Indira Gandhi University, Meerpur, Rewari

ABSTRACT

The key objective of the study is to identify the opinion of banking professionals on the introduction of blockchain technology in the Banking sector. The primary data collection was conducted, and the write-up is derived from the analysis of the collected data and the researcher's subjective perspective. The study collected primary data from a sample of 147 respondents who are professionals working in the banking sector in Udaipur. The theme of research is very apt as there is no such related literature available on exactly the title, which makes it all the more unique, interesting and exclusive. The results revealed that the professionals are optimistic about the inception of blockchain technology in banking for several reasons, which they accepted through the Likert statement. However, the respondents of the young and middle age group are in favour of the technology, whereas others do not favour this change.

KEYWORDS: Blockchain Technology, Banking sector, Banking professionals.

INTRODUCTION

Banks have a long-standing presence spanning several decades, functioning as intermediaries in a diverse range of economic and financial activities, including but not limited to lending, trade facilitation, transaction settlement, and payment processing. Nevertheless, the extended duration of the industry's existence has resulted in a state of stagnation, impeding its ability to embrace and adjust to changes promptly. In recent years, the utilisation of blockchain technology, sometimes referred to as distributed ledger technology (DLT), has gained significant recognition as a feasible resolution to several challenges faced by the banking industry. The described system is a decentralised and distributed ledger that facilitates secure and transparent transactions between two parties, eliminating the requirement for a trusted intermediary. The ledger comprises a series of interconnected blocks, wherein each block encompasses a compilation of transactions. Once a block is added to the chain, it becomes immutable, so ensuring its resistance to tampering. Cryptography is employed within the blockchain system to guarantee that solely permitted entities possess the ability to access and authenticate transactions.

The utilisation of this technology possesses the capacity to revolutionise the operational dynamics of banks through the enhancement of security measures, augmentation of efficiency levels, and perhaps reducing associated costs. This essay will examine the benefits of blockchain technology in the banking sector, along with its potential uses.

The financial industry has sought to explore the potential of blockchain technology by replicating pre-existing asset transactions on the blockchain. Although this aspect allows for certain adaptability in terms of the efficiency consequences of a blockchain solution, it fails to consider the broader ecosystem ramifications of implementing such a solution. Blockchain is an open-source software that has been specifically developed to enable the seamless and instantaneous transfer of digital assets across various participants in the market, with a particular focus on infrastructure. By utilising a chosen blockchain API, it is possible to showcase a notable reduction in expenses and time delays associated with transferring assets. The primary focus of most bank solutions revolves around this particular aspect. Nevertheless, when it comes to implementing the proof of concept on a larger scale in a real-world context, financial institutions tend to utilise the existing application layer, including all of the present regulatory and security measures.

Nevertheless, Distributed Ledger Technologies (DLT) are inherently structured as an inclusive network intended to facilitate unrestricted peer-to-peer communication, devoid of any form of censorship. A peer can refer to either an organisation or an individual. In order to provide network connectivity, the financial institution must evaluate the entire ecosystem and value chain thoroughly. Many financial institutions formulate their strategies and decision-making processes based on the potential benefits and advantages for the bank. It is imperative to take into account all players within the ecosystem.

The present paper attempts to touch the two distant but complementary ends that are currently working together: Banks and Blockchain technology.

REVIEW OF LITERATURE

(Kumari *et al.*, 2022) in their research work titled "The impact of fintech and blockchain technologies on banking and financial services", stated that technological advancements, internet access, and cell phones have had a big impact on the banking and financial services industry. The amalgamation of blockchain and fintech technology is transforming digital banking services. This study looks into how FinTech and blockchain affect digitalisation trends, particularly on community involvement and modernisation procedures in banking and financial services.

(Chowdhury *et al.*, 2021) in their research work titled "Blockchain application in the banking system" stated that Based on interviews with three bankers in European banks, the paper looks at the possible effects of blockchain technology on banks. It implies that blockchain presents banks with both risks and opportunities, bringing with it new possibilities. However, blockchain might be viewed as an opportunity rather than a problem because of its lack of legislation and technological constraints. It might enhance customer service and banking procedures.

(Garg *et al.*, 2021) in their research work titled "Measuring the perceived benefits of implementing blockchain technology in the banking sector", stated that This study focuses on security, standards, and values while analysing the alleged business benefits of implementing blockchain technology in the banking industry. 291 bank CEOs, marketing specialists, and blockchain consultants provided information for the study. The suggested instrument was evaluated for validity and reliability using confirmatory factor analysis (CFA). The findings demonstrate strong unidimensionality, validity, and reliability for the five components of the instrument. The tool might give decision-makers a basic understanding of how to quantify the advantages of applying blockchain technology before incorporating it into their current processes.

(Khadka, 2020) in their research work titled "The impact of blockchain technology in banking: How

can blockchain revolutionise the banking industry?" stated that Blockchain technology has the ability to completely transform a number of banking industries, including capital markets, trade finance, financial reporting, and cross-border payments. It makes identifying and serving customers easier. But there are still issues like regulations and technical barriers. Notwithstanding these challenges, adopting blockchain technology is anticipated to upend the banking and financial sector by facilitating smart contracts and quicker trade execution.

RESEARCH QUESTION:

The key research question that guided the study was:

Question: Are the respondents satisfied with this introduction of new technology into Banking?

OBJECTIVES:

The key objective of the study is to identify respondents' perception on the inception of Blockchain technology in the Banking sector.

RESEARCH METHODOLOGY

The number of respondents taken as a sample is 147 Banking professionals who are managers or hold key role positions in the industry. The following was the pattern of the Likert scale adopted for the study:

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

One hypothesis was framed to be tested statistically, for which an independent t-test was applied to come to noteworthy conclusions.

The following table mentions a set of 10 Likert statements comprising various dimensions of implementation of Blockchains in the Banking sector; the professionals from the banking sector were the respondents chosen as a sample, were asked to give their opinion in the form of a Likert summary ranging between strongly agree to disagree on the five-point scale strongly. The technique of sampling used is Judgmental sampling. Data was collected from Udaipur city. Post-collection of the data for a better understanding of the subject, one-sample Wilcoxon test is used.

LIKERT STATEMENTS:

Following were the Likert Statement framed

1. Blockchain technology supports huge databases with ease.
2. It helps to get and save information on KYC.
3. It has an increased workload and is burdensome.
4. It is complicated to manage the upgraded technology.
5. It is suitable for youngsters to adjust to such modern means; middle age and near-to-retirement people are sufferers.
6. I do not favour this.
7. It is very expensive; we are investing very high to get relatively minor benefits.
8. It is a restrictive approach as only technically savvy employees are comfortable using it.

9. Mistakes are completely forbidden in blockchain, which makes it all the more unusual and complicated.
10. This technology is a waste of time and money.

ANALYSIS OF DATA

H₀₁: There is no significant difference in the opinion of respondents on the implementation of blockchain technology in Banks.

Primary data obtained with the use of the Likert statement were averaged in order to determine the significant difference in perception.

A one-sample Wilcoxon test was then run using test value 2.5, and the resulting findings are shown.

Table 1.2 Descriptive Statistics

	n	Mean	Median	Standard deviation
	147	3.49	3.78	1.14

Table 1.3 Summary of Ranks

		n	Mean Rank	Sum of Ranks
- Test Value	Negative Ranks	33	36.41	1201.5
	Positive Ranks	114	84.88	9676.5
	Ties	0		
	Total	147		

- Negative Ranks: < Test Value (2.5)
- Positive Ranks: > Test Value (2.5)
- Ties: = Test Value

Table 1.4 One-Sample Wilcoxon Signed Rank Test

Total N	147
Test Statistic	9647.500
Standard Error	516.553
Standardised Test Statistic	8.147
Asymptotic Sig.(2-sided test)	.000

INTERPRETATION:

Based on the statistical analysis conducted, the obtained p-value of less than .001 is below the predetermined significance level of 0.05. Consequently, the researcher is unable to accept the standard null hypothesis for the one-sample Wilcoxon test, which suggests that the sample has been

drawn from a population with a median that is less than or equal to 2.5.

CONCLUSION:

Based on the analysis conducted, the researcher has accepted the null hypothesis and has consequently concluded that there is no statistically significant difference in the opinions of the respondents regarding the implementation of blockchain technology in banks. The data collected from the respondents indicates a general tendency towards agreement with the Likert statement that was presented.

FINDINGS

Blockchain is a revolution in the Banking sector. It has simplified various tasks in the industry, which makes it acceptable to many, but the other side of the coin is that all are not favouring it; age factor is a significant limitation since the technology is modern and requires comfort with AI, not all respondents support its inception. But overall, blockchain technology is a boon to the banking sector as it has simplified, improved and developed the banking sector more.

REFERENCES

1. Agarwal, A., Parihar, M., & Shah, T. (2021). Feasibility of Adoption of Blockchain Technology in Banking and Financial Sector of India. In *Innovations in Computational Intelligence and Computer Vision: Proceedings of ICICV 2020* (pp. 479-487). Springer Singapore.
2. Chowdhury, M. U., Suchana, K., Alam, S. M. E., & Khan, M. M. (2021). Blockchain application in banking system. *Journal of Software Engineering Applications*, 14(7), 298-311.
3. Garg, P., Gupta, B., Chauhan, A. K., Sivarajah, U., Gupta, S., & Modgil, S. (2021). Measuring the perceived benefits of implementing blockchain technology in the banking sector. *Technological forecasting social change* 163, 120407.
4. Gupta, A., & Gupta, S. (2018). Blockchain technology: Application in Indian banking sector. *Delhi Business Review*, 19(2), 75-84.
5. Hassani, H., Huang, X., & Silva, E. (2018). Banking with blockchain-ed big data. *Journal of Management Analytics*, 5(4), 256-275.
6. Khadka, R. (2020). The impact of blockchain technology in banking: How can blockchain revolutionize the banking industry? <https://www.theseus.fi/handle/10024/346030>.
7. Kumari, A., & Devi, N. C. (2022). The impact of fintech and blockchain technologies on banking and financial services. *Technology Innovation Management Review*, 12(1/2).
8. Martino, P. (2019). Blockchain technology: Challenges and opportunities for banks. *International Journal of Financial Innovation in Banking*, 2(4), 314-333.
9. Nirolia, M. (2023). A Study on the Application of Blockchain Technology in the Banking and Financial Sector in India. In *Revolutionizing Financial Services and Markets Through FinTech and Blockchain* (pp. 251-268): IGI Global.