

Blockchain Role in Enhancing Financial Risk Management-A Correlation Analysis in Banking Companies

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Abstract

There is a strong connection between the total risk and the financial risk that an organization faces. When there is a financial risk involved, it may be very disruptive to both individual enterprises and the economy as a whole. In this study, blockchain technology and big data are used as important technologies to get a better understanding of financial risk assessments and associated regulatory research. According to the findings of this research, the best way to analyze financial risk is to combine theory with model. An analysis of the elements that are responsible for the risk is performed to arrive at the risk value. Experiments imply that the financial risk associated with combining blockchain technology and big data has been lowered by between 10 and 15 percent as a consequence of these efforts. In the quest for efficient financial risk management, this form of risk reduction may often prove to be extremely beneficial in achieving one's goals. In the not-too-distant future, a large number of financial transactions will be processed using a technology called block chain.

Keywords: Blockchain, Financial risk management, transactions.

Introduction

Users of Blockchain are given the ability to make decentralized improvements to the network. There is no need for a third party, such as a bank, to monitor the activities that take place on blockchain networks. Blockchains may be used to store information, and the technology behind distributed ledgers makes it possible for that information to be more readily transferred (Mishra & Kaushik, 2023). It is possible to utilize it to have one-on-one conversations with other people who are using the network. All of the transactions that take place on the blockchain network are safe and anonymous. The solid security features offered by blockchain technology make it desirable to a wide variety of various sorts of enterprises. The process of data reconciliation is time-consuming and resource-intensive since in the modern business world, each organization is responsible for its

accounting obligations (Ning, 2021). The use of blockchain technology might provide a solution to this problem by enabling the simultaneous recording of several sorts of information in real-time inside a distributed ledger, such as transactional data, contractual terms, and other data. This suggests that evaluations of adherence to legal requirements will be carried out in an automated manner. It is anticipated that the actions of the organization will have a much higher effect. The experience of the consumer might perhaps be enhanced, which would increase the safety of identification and data transactions. The concept of a distributed ledger, which records every transaction and maintains the chronology and correctness of the data stored therein over a secure and unbreakable worldwide network, is the cornerstone around which blockchain was built.

This technology may assist in maintaining harmony in the middle of the current digital revolution by mediating conflicts that arise between technology, user data, and privacy concerns. The need to protect one's privacy should be emphasized more in relation to data management. When accounting records between counterparties are correct and up to date, the auditing process is facilitated by increased openness and effectiveness. It is possible that the time and effort spent by auditors on reviewing a large volume of mundane transactions will be redirected toward the resolution of more complex and contentious issues. As a consequence, the need for accountants and auditors has not been eliminated as a consequence of the automation of processes (Liu, 2021). Both blockchain and artificial intelligence are incredibly unique technologies that have an astonishingly wide range of potential applications. On the other hand, artificial intelligence is a highly centralized service that is dependent on safe data that cannot be accessed or duplicated in any way. Their collaboration brings about a number of advantages, most notably in the form of monetary assistance. With the help of smart contracts, which are made possible by blockchain technology, all parties involved in a transaction can form legally enforceable agreement financial in nature and it will be executed when all conditions are met. This eliminates the necessity for keeping the record in order-to-cash, record-to-report, and procure-to-pay processes (Boakye, 2022). Blockchain technology enables continuous statements between those groups who were engaged in the transmission of the information. In the same way, traditional

contracts do, contracts that are smart ensure that the terms are followed in actual time and deprived of any room for interpretation on a blockchain (Ashima, 2021). This removes the need for a third party and increases the level of accountability for all parties involved in a way that traditional contracts cannot. By having a decentralized network of computers perform the intermediate responsibilities through the use of the internet, the distributed ledger system removes the necessity of having to rely on the services of a trusted third party. A public distributed ledger keeps a record of all transactions and sends them out over the network to every node. This system is more secure than the current centralized ledger system because each node in the network has a true copy of the ledger. It can also validate asset ownership and make transactions transparent (Mosteanu 2020).

Cloud-based software with analytics that are customized for specific uses such as receivables of payment, payables of payment, administration of the contract, preparation of reports, and other financial accounting operations, has revolutionized these processes. Receivables of Cash and electronic payment transfers are the types of payments that are considered to have the highest level of reliability. However, a single wire transfer cannot be used to transmit both the money and the time at the same time (Duchenne, 2018). These issues are resolved by payment systems that are based on blockchain technology, which also helps to boost customer trust. The ability of financial institutions to execute instantaneous transfers of money to one another has been made feasible by technological advancements,

which have led to a reduction in transaction costs and an acceleration in settlement times. The use of this technology makes it easier to monitor financial transactions and gives the possibility of automating previously manual processes. Banks and other types of financial organizations can utilize smart contracts to keep an eye on clients' transactions involving money and other items.

Review of Literature

Within the expansive field of technology used in blockchain for rendering services related to finance and its architecture, there are a select few tools and techniques that particularly stand out. It has been discovered over time that the tools and procedures used in the applications of blockchain for providing services are very identical (Mishra & Kaushik, 2023). These strategies and tools can swiftly adapt to rapidly shifting financial situations since Blockchain principles underpin their operation. The following open-source software tools—Parity, Geth, Solc, MTYHX, Truffle, Infura, Metamask, and others—are featured here. With the help of these innovative and cutting-edge solutions, blockchain technology will continue to enhance financial services and linked industries (Zheng, 2022).

Since the beginning of this decade, the financial and insurance sectors have been pondering the potential benefits brought about by blockchain technology. One way to think of a use of blockchain is as a digital ledger that is not centralized and keeps a record of all completed transactions that are monetary. This journal is printed, and copies of it are kept, at several different libraries and archives. The time and date of each transaction are written down and stored in a distinct block

that is created by each ledger copy. All transactions about money may be accurately documented in this manner (Paul, 2022). Because there are several copies of the ledger, blockchain is nearly indestructible and very secure. This makes it extremely difficult, if not impossible, for hackers to modify or fabricate any part of the record. Businesses are now able to more readily and confidently place their faith in one another because of blockchain technology. As a direct consequence of this, deterministic smart contracts may be written and used in immutable systems to simplify business procedures, increase productivity, and build confidence. It protects sensitive information at every step of the software development life cycle, making it the most advanced solution available for selective data sharing inside corporate networks (Gupta, 2019).

When compared to the issue of physical securities, the process of digital securities may be said to be both quicker and more efficient. Issuers of digital financial solutions can customize these solutions so that they meet the requirements of individual investors. Examples of this include fractional ownership of real objects, tokenized micro-economies, and asset transfers that are secure, scalable, and quick (Chen 2019). These elements provide several advantages, including enhanced stakeholder incentive alignment, increased efficiency in corporate operations, and governance structures that are both more visible and responsible. There is growing demand for specialized markets, venture capital, private equity, and real estate funds to modernize their methods of liability risk management, build more nimble decision-making frameworks, and

cope with the complexities of ever-evolving rules. Blockchain technology, which functions as a distributed ledger, can completely transform stakeholder and asset management. The fact that digital money was the first sort of data to be stored on blockchains gives financial applications the potential to usher in a period of profound change across the sector.

An insurance company may make use of smart contracts to speed up the process of filing claims. An instantaneous evaluation of a client's claim will be performed by the programs that are pre-installed in the Blockchain. Payment to the customer will be provided according to the conditions of the smart contract if the contract is found to be legally binding (Bulut 2022). To avoid scam and laundering, the majority of banks and other companies that offer financial services now require their customers to go through some form of identity verification procedure. When a block is generated for each operation and which will be added to the chain, this results in the creation of a digital ledger. Because blockchain ledgers provide several advantages over more traditional digital ledgers, there is a growing possibility that they may be used in the financial industry. Now, with the use of blockchain technology, we can establish our very own decentralized digital ledgers. As a result, there is no need to rely on a centralized organisation to process or preserve information on transactions. When adopting Blockchain, there is a potential reduction in the risk of transaction data being hacked since there is no centralized repository for holding transaction data that uses its distinct security mechanism (Dewey 2018).

Applications based on the blockchain might potentially make banking more accessible and less expensive. The fact that blockchain technology offers a high level of security is only one of the numerous benefits that contribute to the technology's growing popularity in the financial sector. Encryption is applied for reasons of safety to the distributed ledger that records blockchain transactions. Because of this, the information was unavailable to anybody who was not aware of the hidden code (Vijai 2019). The banking industry currently provides a wide variety of possibilities within the realm of fintech. As a result, it may be challenging for those who supply financial services to hone in on the solution that will prove to be the most successful. The answers to some of the furthestmost thoughtful issues now confronting the monetary services segment may be realised via the use of blockchain technology. The administration of financial services is still performed in the traditional, centralized, and convoluted manner around the globe. Transparency has been reduced as a result of the majority of financial data being maintained in centralized systems and having to pass through several intermediaries. In addition, the protection of the data can only be compromised through intermediaries and database security (Kherbouche, 2022).

However, even the most secure systems are susceptible to being hacked and having their data stolen. Lack of transparency generally results in complicated security issues since discrepancies are not brought to anyone's attention until it is discovered that a data breach or other system problem has occurred. When compared to the issue of

physical securities, the process of digital securities may be said to be both quicker and more efficient. Issuers of digital financial solutions can customise these solutions so that they meet the requirements of individual investors. Examples of this include fractional ownership of real objects, tokenized micro-economies, and asset transfers that are secure, scalable, and quick. These elements provide several advantages, including enhanced stakeholder incentive alignment, increased efficiency in corporate operations, and governance structures that are both more visible and responsible (Han 2022). There is growing demand for specialized markets, venture capital, private equity, and real estate funds to modernize their methods of liability risk management, build decision-making frameworks that are more nimble, and cope with the complexities of ever-evolving rules. Blockchain technology, which functions as a distributed ledger, can completely transform stakeholder and asset management. The fact that digital money was the first sort of data to be stored on blockchains gives financial applications the potential to usher in a period of profound change across the sector.

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Methodology

Traditional trade finance methods have, for a very long time, been a source of annoyance for businesses. This is due to the lengthy procedures involved, which may sometimes cause delays in operations and make it difficult to manage liquidity. The use of blockchain technology may simplify the processes involved in international business transactions and company operations. It makes it easier to conduct secure corporate transactions across international borders. Use cases that need an immutable record, such as monitoring things in real-time as they are exchanged between multiple parties across the supply chain, are a good fit for blockchain because of its properties.

Research Assumptions

H1: There is no major association between the application of blockchain technology and enhanced safer clearing and settlements

H2: There is no major association between the application of

blockchain technology and real-time tracking of financial transactions for better management

H3: There is no major association towards the application of blockchain technology and the creating of cost-effective tools for efficient credit reporting

Data Analysis

The major part of the research analysis covers the percentage rate analysis, correlation analysis and chi-square test analysis.

Percentage rate analysis

Table 1:Blockchain supports in Fraud prevention

Fraud prevention	Frequency	in %
Strongly Disagree	12	8.3
Disagree	14	9.7
Neutral	9	6.3
Agree	53	36.8
Strongly Agree	56	38.9
Total	144	100

Source: Compiled by Authors

Table 1 shows that 38.9% of the respondents strongly agreed with the statement that blockchain technology supports in preventing fraud in financial transactions and thereby reducing financial risk and approximately 36.8 %of the respondents agreed to it. Hence, it can be stated that blockchain supports in fraud prevention. Furthermore, 6.3% of the respondents were unbiased and remaining were conflicting to the statement

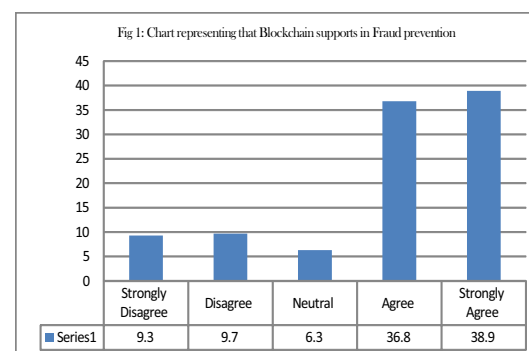


Table 2: Efficacy in Handling Transactions

Efficacy in handling transactions	Frequency	in %
Strongly Disagree	15	10.4
Disagree	13	9
Neutral	11	7.6
Agree	50	34.7
Strongly Agree	55	38.2
Total	144	100

Source: Compiled by Authors

Table 2 states that 38.2% of the respondents have strongly agreed to the statement that blockchain enable in creating efficacy in financial transactions, also 34.7% of the respondents have agreed to the statement. However, 7.6% were unbiased and remaining were conflicting to the statement

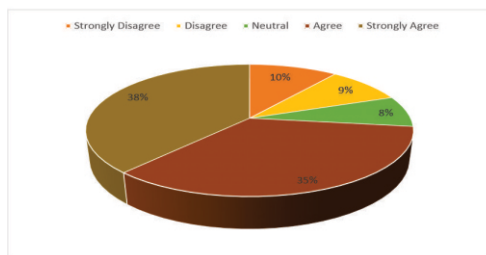


Fig 2: Chart representing the Efficacy in handling transactions

Correlation analysis

The second part of the analysis is involved in presenting the critical nature of relationship between the independent variables correlation analysis is one of the useful statistical tools to measure the overall association between the variables, in the study the researchers has considered three key independent variables viz., risk management, areas of enhancing financial performance and managing the cash and its relationship towards the dependent variable enhancing financial decision making.

Table 3: Correlation analysis

Coefficients	Safer clearing and settlements	Real-time tracking	Cost effective	Application of Blockchain tech
Safer clearing and settlements	1	0.888	0.823	0.858
Real-time tracking	0.888	1	0.858	0.868
Cost effective	0.823	0.858	1	0.823
Application of Blockchain tech	0.858	0.868	0.823	1

Source: Compiled by Authors

For the complete analysis it is noted that the coefficient of correlation analysis lies between +0.823 to +0.888 which shows that there is a higher positive correlation between the variables. On the other hand, the overall comparison between the independent variables and dependent variable shows that highest correlation lies between real-time tracking of financial transactions and application of blockchain technology with the value of +0.868, also variables safer clearing and settlement and application of blockchain technology is +0.858 and the remaining variable cost effective and application of blockchain technology is +0.823.

Chi square test analysis

The last and the major step in the data analysis is to test the hypothesis using the chi square analysis

Hypothesis 1

Null: There is no major association among the application of blockchain technology and enhanced safer clearing and settlements.

Table 4: Chi square analysis between application of blockchain technology and real time tracking of financial transactions for better management

Chi-Square Test	Value	df	P Val.
Chi-Square Data	296.812a	16	0.00
L Ratio	210.318	16	0.00
Linear-by-Linear	105.308	1	0.00

Based on the analysis it is depicted that the p value is 0.00 which is less than the significance value hence alternate hypothesis is considered hence there is a major association towards the application of blockchain technology and creating cost effective tools for efficient credit reporting.

Hypothesis 2

Null: There is no major association among the application of blockchain technology and real time tracking of financial transactions for better management

Table 5: Chi square analysis between application of blockchain technology and real time tracking of financial transactions for better management

Chi-Square Test	Value	df	P Val.
Chi-Square Data	291.110a	16	0.00
L Ratio	198.319	16	0.00
Linear-by-Linear	107.721	1	0.00

Source: Compiled by Authors

Based on the above analysis it is depicted that the p value is 0.00 which is less than the significance value hence alternate hypothesis is considered hence there is a major association among application of blockchain technology and real time tracking of financial transactions for better management

Hypothesis 3

Null: There is no major association towards the application of blockchain technology and creating cost effective tools for efficient credit reporting

Table 6: Chi square analysis between application of blockchain technology and creating cost effective tools for efficient credit reporting

Chi-Square Test	Value	df	P Val.
Chi-Square Data	298.677a	16	0.00
L Ratio	186.064	16	0.00
Linear-by-Linear	96.969	1	0.00

Source: Compiled by Authors

Based on the above analysis it is depicted that the p value is 0.00 which is less significant than the value, hence alternate hypothesis is considered hence there is application of blockchain technology and creating cost effective tools for efficient credit reporting

Therefore, the statement of hypothesis is stated as

Table 7: Final Results of Hypothesis

Hypothesis	Decision
Alternate H1: There is a major association among the application of blockchain technology and enhanced safer clearing and settlements	Accept
Alternate H2: There is a major association among the application of blockchain technology and real time tracking of financial transactions for better management	Accept
Alternate H3: There is a major association towards the application of blockchain technology and creating cost effective tools for efficient credit reporting	Accept

Source: Compiled by Authors

Conclusion

Blockchain technology is being comprised by businesses all over the world as more and more of their production facilities are networked together. The factory of the future will be made up of a massive supply chain that will include a variety of different goods, businesses, and services. This primary objective is to provide a record for digital currency such as cryptocurrencies that is incorruptible and cannot be changed in any way. Information is protected by applications based on

blockchain technology, which also enables companies to target particular audiences and ensures that artists are paid appropriately. The number of individuals who choose to conduct their financial dealings via the use of this technology is consistently growing. Payment processing is essential in today's society since the vast majority of monetary transactions now take place between bank accounts. In exchange for safer transactions and the potential to create their digital currencies, banks have embraced innovative technology and have been at the vanguard of the digital revolution. Financial organizations now can monitor all transactions in real-time thanks to the technology of blockchain. Transactions involving financial institutions will be able to be settled utilizing a public blockchain as a result of this technological innovation. It will be necessary for banking executives to fulfill several conditions before the concept can be widely accepted by the banking industry. The capacity of blockchain technology to enable the sharing of data and the provision of temporary access to assets will fundamentally transform how we navigate our environments.

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