sdmimd
Shri Dharmasthala Manjunatheshwara Institute for Management Development, Mysuru, India
9th International Conference on
Economic Growth and Sustainable Development- Emerging Trends– November 21-22, 2024

Enhancing Data Transaction Security and Transparency with Blockchain Technology

Dhanya K M
Assistant Professor in Commerce
Christ College (Autonomous)
Irinjalakuda, Thrissur
adithi050@gmail.com
drdhanya050@gmail.com

Abstract

In the present context, it is imperative for organizations, particularly those in the financial sector, to improve their understanding of clients and their financial transactions. The Know Your Customer (KYC) procedure authenticates a client's identification and pertinent information. Each financial institution has its own Know Your Customer (KYC) procedure, which may occasionally involve the involvement of third parties. This can lead to higher costs, time, and duplication in maintenance. The study sought to delineate the structure of blockchain technology and its implementation in the Know Your Customer (KYC) procedure in the United Arab Emirates (UAE). The study revealed a substantial influence of blockchain technology on the security and transparency of KYC and KYB processes. The participants acknowledge the advantages and disadvantages of blockchain technology in the context of KYC/KYB. However, it appears that the potential benefits of blockchain surpass the related risks. Nevertheless, successfully using digital technologies necessitates substantial expenditures, clear legal frameworks, and effective measures to address digital exclusion. We also advise banks in the United Arab Emirates to comply with the regulatory framework and policy concerns related to blockchain technology implementation. This factor has a significant influence on the extent of blockchain technology adoption.

***Keywords**:* Blockchain Technology, KYC, Security and Transparency

Introduction

Digital technologies are becoming the driving force behind world development. Artificial intelligence, smart contracts, big data technology, blockchain, the Internet of Things, digital technology platforms, etc. are just a few of the entirely new categories that have emerged as a result of the rapid development of digital technologies and are being used in a variety of fields (Kirillova, E.A., et al. 2020). The World Economic Forum, held from 25 to 29 January 2021, stated that classical banking structures, such as universal banks, underwent the most rapid transformation. This happened due to the need to introduce new digital technologies and update software and information systems.

At the international level, digital technologies are being applied in the financial and banking sphere. For example, Sup Tech is the use of digital technology by banks for the automation of administrative procedures. Supervision technology allows to transfer of the interaction of the bank and the client into a digital format, increases the reliability of information, and optimizes the effective decision-making system. Big data technologies, artificial intelligence, cloud storage, robotic automation, blockchain,

ISBN code 978-93-83302-74-1

etc. are used within the framework of Sup Tech. Advances in digital technology have had a significant impact on the banking industry over the past few years. One such disruptive innovation that is changing the banking sector globally is Blockchain Technology (BCT) (Labadi Hadjer., et al 2022).

The integration of blockchain into the banking system by financial service providers will transform the industry as most of the core processes will become transparent, secure, and efficient (Bilgin. M. H et al. 2021), blockchain technology is identified as a disruptive innovation of the internet era. This technology promises to bring revolutionary transformations in the way we transact over the internet, with prospective applications in various domains. It represents an emerging technology that is among the most promising and potential technologies in the future. Blockchain technology came into the picture with the embedded functionality of distributed ledger technology as it provides better security, transparency, and privacy over an insecure communication channel. Blockchain is an incorruptible, immutable, decentralized replicated digital public ledger with the facility of recording not just only financial transactions but also almost everything of value (Vukolic. M, 2015). In October 2008 an unknown person or entity was introduced using the name Satoshi Nakamoto, who presented it as a part of the proposal for Bitcoin. The Institution of Development and Research in Banking Technology (IDRBT) (established by the Reserve Bank of India) released a whitepaper in January 2017 giving positive views on using blockchain in the banking and financial sector (Vijay Kitte & Aruna, 2018). Online banking, as modern banking norms are being adopted more slowly in the Middle East than in Europe or North America, has trailed behind. But as financial-free zones proliferate in the area, fintech businesses function freely while adhering to international standards, encouraging quicker innovation. Nonetheless, conditions in each of the Middle Eastern nations vary. This research paper profoundly discusses digital banking in Middle Eastern countries, mainly focusing on the UAE. The UAE has seen a steady increase in digital banking users over the past few years, driven by the government's commitment to digital transformation.

Thus, the purpose of the research is to evaluate the understanding and perceptions surrounding the potential of blockchain technology to improve the security and transparency of KYC data transactions and also gather insight into the perceived strengths and advantages of using blockchain adoption for KYC/KYB. The research employs the use of existing literature and studies to form the theoretical foundation of the study followed by using descriptive and analytical approaches to research the phenomenon considered within the data gathered from individuals/ professionals working in UAE with a basic knowledge of blockchain technology and its potential applications which has been elaborated in the following sections of the report.

Review of Literature

Today, it is vital for any organization, especially financial organizations to understand customers and their financial dealings better. KYC is a process to verify the identity and related details of corresponding bank customers. The current KYC mechanism has a severe concern in financial institutions as it requires separate ledgers for separate financial organizations. The Bank has its KYC process, which sometimes may include third-party, which may cause increased costs, maintenance

ISBN code 978-93-83302-74-1

costs, and customer verification costs. The current KYC process is very time-consuming and it decreases the user experience (Yadav. A. K et al. 2020). With the development of the exchange of virtual cash, numerous unethical cases have been accounted for ceaselessly, so every authority has chosen to bring such a framework under which all the potential boundaries of a client can be shielded from irresponsible utilization of his/her benefits. Some sort of policies that are measured under existing KYC are customer acceptance policy, customer identification policy, and monitoring of transactions with risk management. These all can be optimized using blockchain technology (David. L & Farooq. B, 2020).

The origin of blockchain technology dates back to the invention of Bitcoin as a response to the financial crisis in 2008 (Nakamoto. S 2008). In blockchain technology nodes are located at different locations with their resources of operations and can manage their functioning by using a message-passing system over a network. Blockchain technology works over unsafe networks, so it uses cryptographic algorithms to maintain the integrity and authenticity of the data (Haber, S., & Stornetta, W. S. (1991). Blockchain works on the motto "visible and verifiable to all within the network, but immutable by nature". Only some sets of nodes are authorized to verify the record before the final commitment of a block in the blockchain. Their nodes are called miners. The collection of blocks, and a block means a collection of transactions. A block is created in 10 minutes, and the priority of its size is IMB, but it can be extended to 10 MB (Yadav. A. K & Bajpai. R. K, 2020).

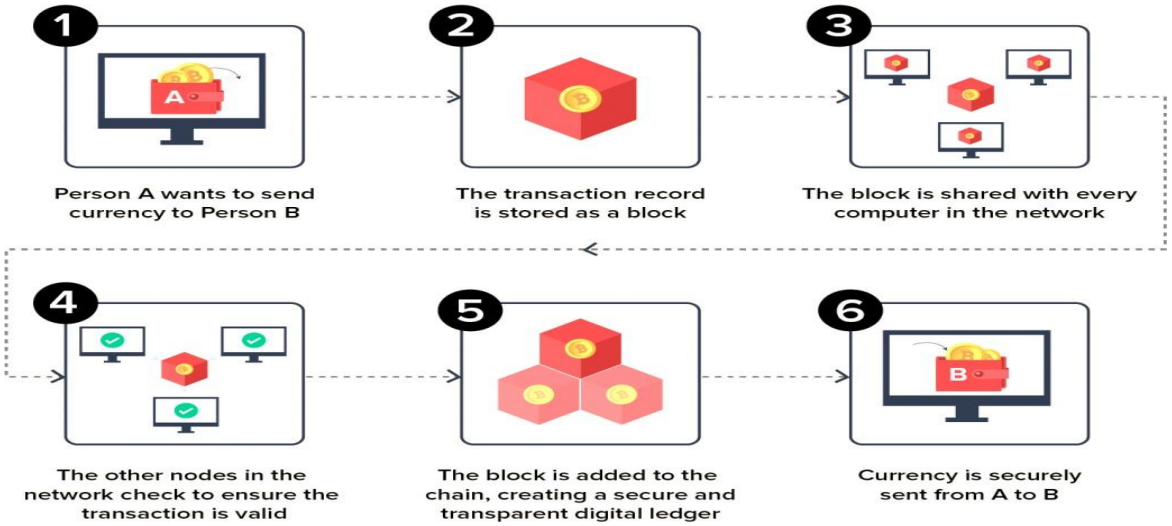
Blockchain Technology in the Banking Sector

The advancement of blockchain technology in recent years has forced traditional banking organizations to change how they operate. Creative value exchange and payment companies have created new markets (Peters et al., 2015). The financial sector is now driving the need for blockchain applications, particularly to address accounting system issues by enabling quicker transaction recording, identification, and tracking. Financial applications such as securities, swap derivatives, trade financing, and syndicated lending are all feasible. Banking has always been an extremely information-intensive industry, so banks have relied heavily on new technologies to process information and differentiate their goods and services. Banks need to constantly innovate and improve their services if they want to retain their clientele (Tan & Teo, 2000). Compared to traditional banks or the Internet, distributed ledger transactions simplify transaction clearing for users of blockchain technology. To clear transactions, they use a distributed ledger and point-to-point transmission rather than many middlemen. Users' data is more secure since banks and blockchains are using asymmetric encryption. Moreover, distributed data storage on the blockchain is impervious to manipulation, but centralized data storage can be easily manipulated (Guo & Liang, 2016).

Additionally, financial institutions are consistently investigating novel approaches to expedite transaction processing for improved customer support, all the while maintaining operational cost-effectiveness and guaranteeing openness to both customers and regulatory bodies. Blockchain, which keeps an immutable record of transactions, lets banks do away with middlemen and enables real-time transaction execution, may offer a solution in this regard. This might lower the expenses associated with manual labour and improve customer happiness and service (Shah & Shailak, 2018). Moreover, it can streamline company procedures and produce secure, reliable records of contracts and transactions (Treleaven, P., Brown, R. G., & Yang, D. (2017). Under the blockchain system, the algorithms themselves operate as an online middleman,

reducing transaction fees and infrastructure expenses while enhancing payment security. Blockchain technology provides a decentralised network with an infrastructure that is more transparent, safe, and dependable. Banks compete by making significant technological investments to boost the effectiveness of the financial innovation system. They introduce a wide range of financial services, including phone, Internet, mobile, Bitcoin wallet, blockchain, automated teller machines (ATMs), cash dispensers, electronic fund transfers at the point of sale (EFTPOS), etc. (Harris, W.L. and Wonglimpiyarat, J. (2019). Banking systems can be classified as dispersed, decentralised, or central. A centralised system consists of a dependable central server that makes judgements on user needs, validation, data integrity, and storage. Peer-to-peer communication systems that eliminate the need for middlemen while simultaneously boosting security, trust, and data integrity are known as decentralised systems.

The blockchain application refers to a decentralised system of recording transactions that are protected against tampering through the use of cryptographic techniques (Pilkington. M. 2016). The consensus method facilitates a secure agreement among users, leading to the inclusion of a new transaction in the ledger (Puthal. D. et al., 2018). A blockchain can include novel digital assets across several nodes. In the event of a node crash, the remaining nodes are still capable of accessing and delivering prints. Due to its public nature, the blockchain necessitates the encryption of any sensitive personal data kept on it, limiting access to just two parties. Data on the blockchain is encrypted using a public key and decrypted using a private key. The immutability and non-replicability of the blockchain are attributed to its consensus mechanism. According to Ginsberg, H. N., et al. (2021), the inclusion of a block in the chain is contingent upon the consensus that the transactions contained within the block are deemed genuine. The adoption of blockchain technology in the investment business remains limited. The adoption of blockchain-integrated infrastructure in corporate organisations is expected to occur rapidly across many industries (CIP, 2018).



ISBN code 978-93-83302-74-1

Photograph: 1.1 Blockchain-based financial transaction

Source: Bonnie (2021)

Lipton, A., & Treccani, A. (2018). asserts that the use of distributed ledger technology has the potential to enhance the efficiency and cost-effectiveness of traditional banking. However, achieving this goal necessitates surmounting many technological and political challenges. The utilisation of a closed (private) distributed ledger, which circumvents the involvement of a central bank in facilitating interbank payments, is experiencing significant expansion. A closed (public) distributed ledger service is emerging in the international remittance industry, where institutions and clients are involved, within the domain of global financial transactions. The entire implementation of smart contracts will yield significant benefits for various sectors, including trade finance, insurance payments, asset management, compliance, and capital market activity. This is attributed to the substantial number of participants engaged. We anticipate the blockchain, a closed-type distribution ledger, to serve as a future financial innovation engine.

The research study pertaining to blockchains in the financial sector revealed that through the reduction of operational expenses, banks can effectively decrease their marginal cost of funds, hence influencing lending rates. Blockchain technology has the potential to decrease the interest rates imposed by financial institutions. This phenomenon is expected to stimulate individuals to acquire supplementary bank loans and advances, thereby leading to a subsequent rise in investments and GDP. This technology is currently being employed in various domains, including Know Your Customer (KYC) processes, cross-border transfers, document authentication and storage, trade finance, and non-performing assets (NPAs). The complete implementation of the blockchain will revolutionize the operational dynamics of banks in the future. Based on industry projections, it is anticipated that the global market for blockchain technology will surpass $39.7 billion by the year 2025. The financial industry, which has demonstrated rapid adoption of blockchain technology, accounts for more than 60% of the market value (Liu, Y., et al 2021). The use of blockchain technology has been widely adopted by the global financial sector. Numerous prominent financial institutions have already initiated blockchain projects. The implementation of blockchain technology by banks has the potential to enhance the security and mobility of data held on a blockchain. Blockchain technology has the potential to eradicate intermediaries, such as banks, in financial transactions.

KYC/KYB Process and Blockchain Technology

KYC is an abbreviated form of Know Your Customer. It is a systematic process that business enterprises carry out to verify the identity of their respective potential customers. Know Your Customer, or KYC is a widely accepted need in the global economy, particularly for sectors of the economy that involve significant investments and high levels of risk. The industry's regulatory organizations implement this procedure to safeguard all parties involved. Thus, any investor or investment organization would be better off implementing KYC, particularly when a sizable sum of money is involved. Doing KYC for current clients or investors is necessary in addition to the Know Your Customer procedure for new clients. It is essential to keep up-to-date and correct records for both the company and its clientele. KYC standards help companies protect themselves from illegal financial activities and identify consumers who may be involved in criminal activity. These days, organizations of all sizes need to be aware of the customer procedures in place to make sure that their prospective clients, advisers, agents, or distributors are legitimate and real. Mansoor, N. et al. (2023) looked into a thorough investigation

of the use of blockchain technology for the Know Your Customer (KYC) procedure in the banking industry. The study evaluates a variety of recently developed blockchain-integrated KYC systems and closely examines the application of blockchain in KYC. Additionally, the author attempts to present a set of performance indicators meant to assess this blockchain solution's efficacy concerning KYC procedures in the banking sector.

Moreover, the use of a blockchain-based methodology for Know Your Customer (KYC) verification in financial institutions aims to address the existing constraints associated with manual KYC procedures. The proposed approach offers significant advantages, including time reduction and less redundancy by avoiding repetitive task execution by many banks. Additionally, this solution offers a novel mechanism for banks to report instances of fraudulent activities inside the network, thereby contributing to eradicating corruption within the system (Patil. P & Sangeetha. M, 2022). Based on all previous studies the researcher tries to prove whether blockchain technology-based KYC, provides security and transparency among UAE banking customers.

Research Objectives

The primary objective of this dissertation is to investigate the impact of incorporating blockchain technology on improving transparency and security in KYC/KYB data transactions within the banking and financial sector across different parts of the world. Specifically, the study aims to:

Evaluate the current challenges and limitations of traditional KYC/KYB processes in the banking and financial sector.

Assess the potential benefits and risks associated with adopting blockchain technology for KYC/KYB purposes.

Provide recommendations for financial institutions, policymakers, and regulators to maximize the effectiveness and sustainability of blockchain-based KYC/KYB initiatives.

Research Methodology

The research design adopted within the underlying study has been explained as follows:

The research work is descriptive and analytical. It is a descriptive study because it is a fact-finding investigation and focuses on the particular facts and dimensions of the problem. On the other hand, in analytical research, the researcher has to use facts or information already available and analyses to make a critical evaluation of the material. Statistical methods are used for examining the quantitative information, and relationships between variables are established.

Sampling Design

A sampling design helps infer the sample frame for the underlying research study, characterized by population, size, and sampling technique. The attributes associated with this study have been elaborated on below:

ISBN code 978-93-83302-74-1

Sample Size and Sampling Technique

A multi-stage sampling technique determines the sample size of customers in the UAE. The study's demographic comprises bank clients who possess knowledge about blockchain technology and industry procedures, which is limitless. The research methodology has drastically lowered the sample size for the study, given the substantial size of the UAE population.

We selected a total of 100 participants to provide data on the research topic to conduct multivariate analysis and accommodate a large sample size. We regarded this sample size as effective and large, as it would yield results from a quantitative study. Since the data collection has been employed within the research study by using one set of questionnaires.

Data Analysis

The collected data are processed and analyzed by using common statistical and mathematical tools. For this, descriptive statistical tools like Mean, Median, Variance, Standard Deviation, Skewness, and Kurtosis are used. Multivariate analysis like ANOVA, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and structured Equation Models (SEM) are used. Multivariate analysis is the statistical technique that simultaneously analyzes multiple measurements on individuals or objects under investigation.

Scope of the study

The earliest approach to transferring money utilising digital banking platforms—like the Internet and mobile devices—is known as "digital banking." People widely regard blockchain technology as the most consequential innovation since the advent of the internet in contemporary times. The field of blockchain technology has experienced significant advancements, emerging as a transformative influence in various sectors and fundamentally altering the methods of data storage, management, and security. The United Arab Emirates (UAE), renowned for its forward-thinking approach towards technical progress, has adopted blockchain technology as a driving force for fostering innovation, promoting economic development, and enhancing governance. The concept of Know Your Customer (KYC) is widely recognised and utilised throughout the banking and financial industries. The manual Know Your Customer (KYC) method has become obsolete in the current digital banking era, necessitating the automation of the KYC verification process. The emergence of blockchain technology has garnered significant public interest due to its potential to facilitate trustless economic transactions through its unique approach. Blockchain technology enables anonymous and secure transactions involving virtual currencies, including but not limited to Bitcoin and Litecoin. It efficiently stores the transaction information and associated metadata in a centralised database.

ISBN code 978-93-83302-74-1

Data Analyses, Findings, and Discussions

In response to the problems posed in Chapter One, this chapter presents the results of the data analysis. The data was first collected and then processed. To evaluate the study, the researcher categorized the data analysis based on the study objectives outlined in the first chapter. This follows the presentation of the theoretical framework used in the previous chapter.

Demographic Profile of the Respondents

The table shows the demographic profile of the respondents categorized by area of expertise (banking or finance), educational qualification (graduation, PG, professional, or Ph.D. and above), and experience (up to 2 years, 2-4 years, 4-5 years, or above 5 years).

Table 1.1: Demographic Profile of the Respondents

		Area of Expertise	
		Banking	***Finance***
		Number	***Number***
Educational Qualification	Graduation	12	10
	PG	20	15
	Professional	16	19
	Ph.D. and above	4	4
Experience	Up to 2 Years	7	15
	2-4 Years	22	21
	4-5 Years	16	4
	Above 5 Years	7	8

In terms of Area of Expertise, there are more people with professional degrees (40) than any other qualification, followed by those with PG (25) qualifications. There are far fewer people with Graduation (12) and Ph.D. and Above (23) qualifications. In terms of experience, most of the respondents have had 2-4 years (35) or 4-5 years (35) of experience. There are far fewer respondents with up to 2 years (22) and above 5 years (8) of experience. Overall, the table suggests that the respondents are a relatively experienced group with a mix of educational qualifications.

Objective 1: To evaluate the current challenges and limitations of traditional KYC/KYB processes in the banking and financial sector

The study identified five variables to assess the challenges and limitations of traditional Know Your Customer/Know Your Business (KYC/KYB) processes in the banking and financial sector. All these variables are measured on a five-point Likert scale, where 1 indicates strongly disagree and 5 indicates strongly agree.

ISBN code 978-93-83302-74-1

Challenges and Limitations - One Sample T Test

The table presents the results of a one-sample t-test analyzing the perceived challenges and limitations of traditional Know Your Customer/Know Your Business (KYC/KYB) processes in the banking and financial sector. The test investigates whether the average score (mean) for each statement about traditional KYC/KYB processes is significantly different from a hypothetical value of 3. This value might represent a neutral level of agreement or disagreement with the statement.

Table 1.2: Challenges and Limitations of traditional KYC/KYB processes in the banking and financial sector- One Sample T Test

	SD	D	N	A	SA	Mean	T Value	P Value
Traditional KYC/KYB processes are time-consuming and paper-intensive, leading to delays in onboarding new customers	0	0	8	72	20	4.12	21.623	.000
The reliance on manual document verification in KYC/KYB makes the process prone to errors and inconsistencies	0	2	11	65	22	4.07	16.727	.000
Traditional KYC/KYB struggles to keep pace with the evolving tactics used by fraudsters, making it vulnerable to money laundering and other criminal activities	0	0	9	69	22	4.13	20.768	.000
The lack of standardization in KYC/KYB requirements across different institutions creates inefficiencies and burdens compliance teams	0	0	5	70	25	4.20	23.416	.000
Traditional KYC/KYB processes can be exclusionary, particularly for individuals without access to traditional forms of identification or who reside in unbanked regions.	0	0	10	65	25	4.15	19.994	.000
Test Value= 3								

From the results, it is observed that all statements have a mean score above 4. This suggests that all participants generally agree with the statements, meaning they perceive traditional KYC/KYC processes as having the limitations described. All p-values are less than 0.001. In statistics, a p-value below 0.05 is typically considered statistically significant. This implies that the observed difference between the mean scores (above 4) and the hypothetical value of 3 is highly unlikely to be due to chance. In simpler terms, the results strongly support the conclusion that participants significantly agree with the statements. The T-value for each statement is also positive and high (ranging from 16.727 to 23.416). This further reinforces the significance of the difference between the observed mean scores and the hypothetical value.

ISBN code 978-93-83302-74-1

For all the statements in the table, the null hypothesis (H0) that the mean score is equal to 3 (neither agree nor disagree) is rejected with a p-value of 0.000, which is less than the significance level of 0.05. This means that the study rejects the null hypothesis and concludes that the mean score is statistically different from 3. In other words, there is strong evidence to suggest that participants agree that traditional KYC/KYB processes have the challenges and limitations mentioned in the statements. Overall, the results provide strong evidence that individuals involved in the study, presumably within the banking and financial sector, perceive traditional KYC/KYB processes to be significantly time-consuming, error-prone, vulnerable to fraud, inefficient, and exclusionary.

Structural Equation Modeling

To investigate which perceived challenge or limitation of traditional KYC/KYB processes had the most significant impact, the study formulated the following structural equation model.

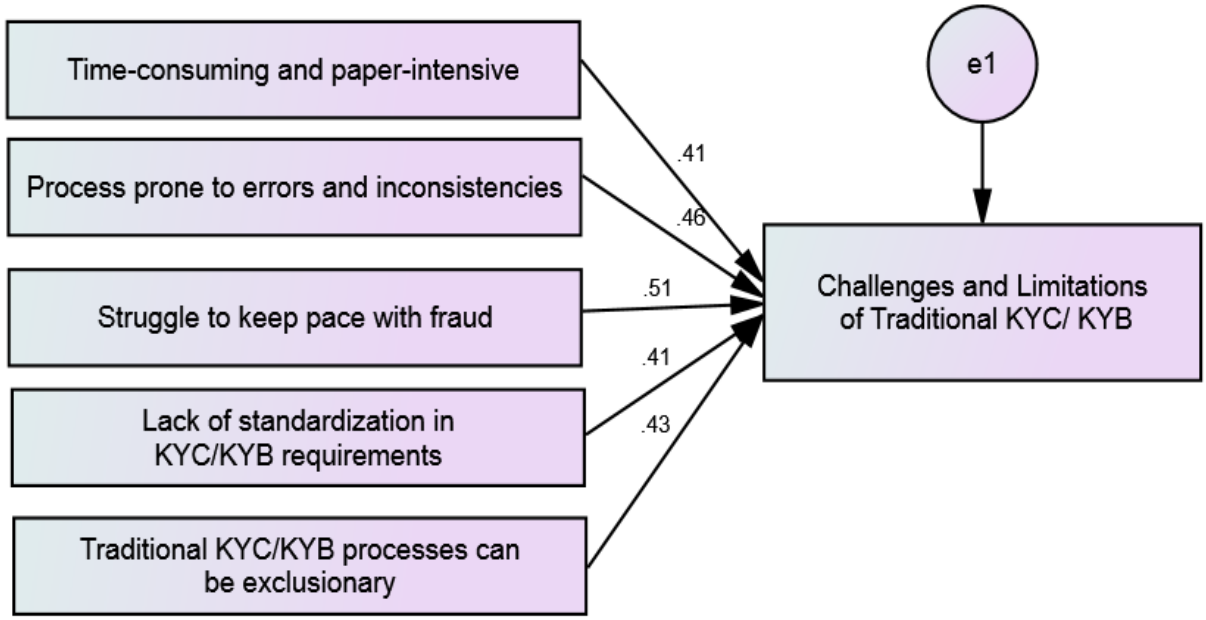


Fig 1.1: Challenges and Limitations of traditional KYC/KYB processes in the banking and financial sector- SEM

Table 1.4: Model Fit Indices- Challenges and Limitations of traditional KYC/KYB processes in the banking and financial sector

Variable	CFI	GFI	TLI	NFI	RMSEA
Measurement model	.96	.95	.93	.95	.02
Standard	>0.9	>0.9	>0.9	>0.9	<0.05

The model fit indices in Table 3 suggest that the structural equation model used above has an acceptable to good fit to the observed data. This implies that the model adequately captures the relationships between the perceived challenges and limitations of KYC/KYB processes and potentially identifies the most impactful one.

ISBN code 978-93-83302-74-1

Table 1.5: Challenges and Limitations of traditional KYC/KYB processes in the banking and financial sector

Challenges/ Limitations	Beta Coefficient	P Value	Rank
Time-consuming and paper-intensive	.41	<0.001	**IV**
Process prone to errors and inconsistencies	.46	<0.001	**II**
Struggle to keep pace with fraud	.51	<0.001	**I**
Lack of standardization in KYC/ KYB requirements	.41	<0.001	**IV**
Traditional KYC/ KYB processes can be exclusionary	.43	<0.001	**III**

From the analyses, it is observed that the inability to keep pace with evolving fraud tactics is perceived as the most significant challenge affecting the overall perception of traditional KYC/KYB processes. Concerns about errors, inconsistencies, and exclusionary practices also contribute significantly to the negative perception. While time-consuming processes and lack of standardization are also perceived as challenges, their impact is slightly less pronounced.

Objective 2: To assess the potential benefits and risks associated with the adoption of blockchain technology for KYC/ KYB purposes - Correlation

To assess whether there is any significant correlation between benefits and risks associated with the adoption of blockchain technology for KYC/ KYB purposes, the study used the structural equation modeling technique. For this, the study fixed the following null hypothesis.

The respondents' perceptions of the benefits and risks of blockchain technology for KYC/KYB are likely independent of each other

Table 1.6: Benefits and Risks associated with the adoption of blockchain technology for KYC/ KYB purposes- Correlation

		Benefits	Risk
Benefits	Pearson Correlation	1	.048
	Sig. (2-tailed)		.635
	N	100	100
Risk	Pearson Correlation	.048	1
	Sig. (2-tailed)	.635	
	N	100	100

The correlation coefficient value indicates the strength and direction of the relationship between two variables. It ranges from -1 (perfect negative correlation) to +1 (perfect positive correlation), with 0 indicating no correlation. In this case, .048 is very close to zero. The significance level (sig. of .635) is well above the standard alpha level of 0.05 used in statistics. This means that the correlation coefficient

of .048 is unlikely to be due to chance. However, even though it's statistically significant, the weak magnitude makes it practically meaningless.

Overall, it is identified that there is practically no relationship between the perceived benefits and risks of block chain adoption for KYC/KYB. This suggests that respondents who perceive high benefits for block chain may not necessarily perceive lower risks, and vice versa. People's assessment of the benefits seems to be independent of their assessment of the risks.

Benefits and Risks associated with the adoption of block chain technology for KYC/ KYB purposes- Structural Equation Model

The figure shown below analyzes the impact of various benefits and risks associated with adopting block chain technology for KYC/KYB processes. It uses two key metrics

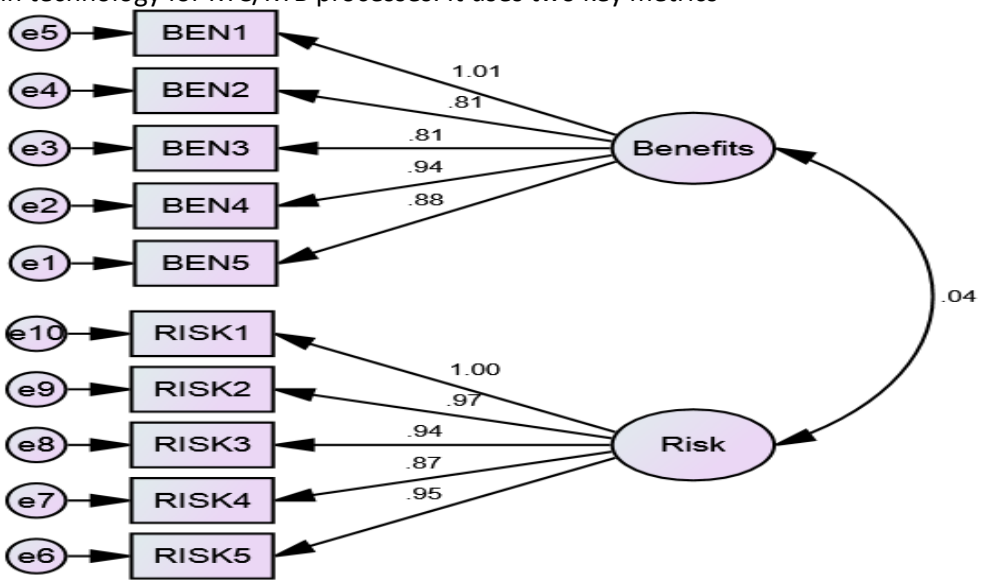


Fig 1.2: Benefits and Risks associated with the adoption of block chain technology for KYC/ KYB purposes- Correlation

Objective 3: To study the impact the incorporation of blockchain technology has on improving transparency and security in KYC/ KYB data transactions within the banking and financial sector

To study the impact of incorporating blockchain technology on improving transparency and security in KYC/ KYB data transactions within the banking and financial sector. For this, the study fixed the following hypothesis.

There is no significant impact of the adoption of blockchain technologies on improving security.

- There is no significant impact of the adoption of blockchain technologies on improving transparency.

ISBN code 978-93-83302-74-1

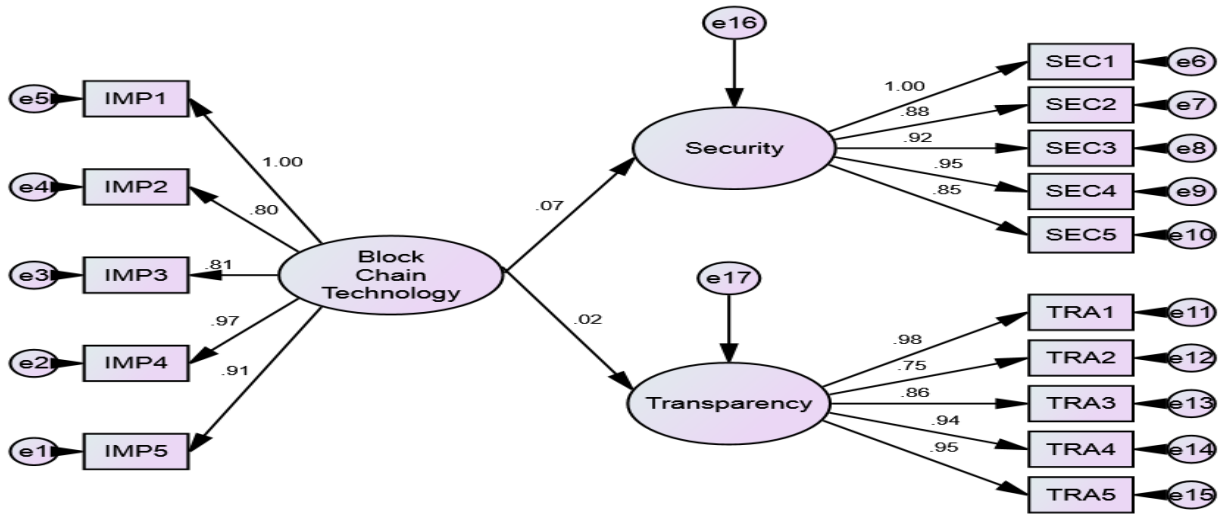


Fig 1.3: impact does the incorporation of blockchain technology have on improving transparency and security in KYC/ KYB data transactions within the banking and financial sector

Table 1.7: Testing of Hypothesis- Impact does the incorporation of blockchain technology have on improving transparency and security in KYC/ KYB data transactions within the banking and financial sector

Hypothesis	**Beta Value**	**P Value**	**Result**
The adoption of blockchain technologies has no significant impact on improving security.	**.07**	**<0.05**	**Reject**
The adoption of blockchain technologies has no significant impact on improving transparency.	**.02**	**<0.05**	**Reject**

In the case of hypothesis 1, the p-value being less than 0.05 suggests the study can reject the null hypothesis. This means there's evidence of a significant impact of blockchain technology on security in KYC/KYB. In the case of hypothesis 2, the p-value less than 0.05 suggests the study can reject the null hypothesis. This means there's evidence of a significant impact of blockchain technology on transparency in KYC/KYB.

Findings from the study

The findings suggest that respondents overwhelmingly perceive traditional KYC/KYB processes to be:

Time-consuming and paper-intensive, leading to delays.

Prone to errors and inconsistencies due to manual verification.

- Vulnerable to fraud due to limitations in keeping pace with evolving tactics.

Inefficient due to a lack of standardization across institutions.

ISBN code 978-93-83302-74-1

Exclusionary for certain individuals who lack traditional identification or live in unbanked regions.

All statements regarding benefits (increased efficiency, enhanced security, improved collaboration, single source of truth, financial inclusion) have a mean score above 4 (on a 5-point scale likely ranging from Strongly Disagree (SA) to Strongly Agree (A)) and a p-value of less than 0.000. This suggests strong agreement among respondents about the potential benefits of blockchain for KYC/KYB.

All statements regarding risks (infrastructure investment, regulatory uncertainty, scalability limitations, potential for misuse, digital exclusion) have a mean score above 3 and a p-value of less than 0.000. This indicates that respondents acknowledge potential challenges associated with blockchain adoption.

The findings suggest a positive perception of the potential benefits of blockchain technology for improving KYC/KYB processes. However, there's also a clear recognition of the potential risks and challenges that need to be addressed.

From the analyses, it is identified that there is practically no relationship between the perceived benefits and risks of blockchain adoption for KYC/KYB. This suggests that respondents who perceive high benefits for blockchain may not necessarily perceive lower risks, and vice versa. People's assessment of the benefits seems to be independent of their assessment of the risks

The study suggests that while respondents acknowledge both benefits and risks associated with blockchain for KYC/KYB, the potential benefits seem to outweigh the risks. However, significant investments, regulatory clarity, and solutions for digital exclusion are crucial for successful adoption

The study suggests the significant impact of blockchain technology on security in KYC/KYB.

The study suggests the significant impact of blockchain technology on transparency in KYC/KYB.

Suggestions from the study

Automation and digitization: Implementing digital solutions to streamline document collection, verification, and data storage can improve efficiency and reduce reliance on paper.

Standardization: Collaborative efforts to establish standardized KYC/KYB requirements across institutions can improve efficiency and reduce redundancy.

Risk-based approach: Tailoring KYC/KYB procedures based on individual risk profiles can help strike a balance between security and expediency.

Identity verification services: Utilizing third-party services for identity verification can enhance accuracy and reduce manual errors.

New identification methods: Exploring alternative identification methods like digital IDs or biometrics can promote financial inclusion for the unbanked or under-banked.

Focus on fraud prevention: Implementing advanced analytics and fraud detection tools can help identify and mitigate emerging threats.

Invest in data quality: Streamlining data collection and verification procedures can reduce errors and inconsistencies. This might involve automation and integration with reliable data sources.

Promote financial inclusion: Exploring alternative identification methods and risk-based approaches can help expand access to financial services for a wider population.

ISBN code 978-93-83302-74-1

Standardization efforts: Collaboration among financial institutions and regulators can lead to a more standardized KYC/KYB framework, improving efficiency and reducing redundancy.

Cost-benefit analysis: Financial institutions should conduct a cost-benefit analysis to evaluate the potential return on investment for blockchain implementation in KYC/KYB.

Collaboration and standardization: Collaborative efforts among industry players and regulators can help establish clear guidelines and standards for blockchain use in KYC/KYB, mitigating regulatory uncertainty.

Scalability solutions: Exploring scalable blockchain solutions or hybrid approaches that combine blockchain with traditional methods can address potential bottlenecks.

Security measures: Implementing robust security measures to protect data stored on the blockchain is crucial to minimize the risk of misuse.

Digital inclusion initiatives: Develop training programs or alternative access methods to ensure that individuals with limited technological literacy are not excluded from the benefits of blockchain-based KYC/KYB.

Discussion and Recommendations

The current study contributes to the existing understanding of blockchain technology in several ways. It is the first time that a study has been conducted to examine the importance of blockchain technology perceptions of customers in one of the important service sectors-Banking Sector. This is very important in banking or financial sector literature, because, KYC verification is very crucial in banking services. So far, no clarity has been made regarding whether blockchain technology has any role in influencing customers' perceptions related to blockchain technology in KYC/KYB.

Additionally, the present study has developed a thorough conceptual framework for measuring blockchain technology, thereby confirming its ability to enhance transparency and security in the context of banking KYC/KYB. This understanding provides a complete structure for other academics in this field to comprehend the elements that make up customers' impressions of blockchain in the banking business. Furthermore, the present study aims to contribute to the existing body of knowledge on blockchain technology in the banking sector by focusing on the conceptualization and operational aspects of the blockchain-based KYC/KYB area.

Moreover, the present study contributes to the existing body of knowledge in the field of service marketing by providing insights into the psychological processes employed by customers when evaluating their view of blockchain technology. The research findings indicate that consumers tend to prioritise key elements, including transparency and security, when engaging with blockchain-based KYC/KYB systems. These two mechanisms are significant in influencing customers' perceptions or evaluations of blockchain technology within the context of their firm-related perceptions. Hence, this work serves as a guide for other researchers in this field, encouraging them to incorporate these two mechanisms into their investigations in order to develop more resilient models.

This paper provides a significant theoretical contribution to the existing literature on the utilisation of blockchain technology as a marketing tool within the context of digital banking services by demonstrating its dynamic impact. The researcher additionally offers essential guidance to demonstrate that consumers in the banking sector place significant importance on technological advancements. This comprehension underscores the significance of effectively overseeing diverse services associated with blockchain technology, considering Know Your Customer (KYC) protocols, and

leveraging them as a marketing instrument to advertise banking services in the United Arab Emirates (UAE). The study's significant theoretical contribution is its examination of the specific situation in the United Arab Emirates (UAE). According to the current study, UAE banks should prioritize the development of innovative strategies, enhance their high-quality services, and standardize their operations using blockchain technology.

Conclusions

This chapter presents the conclusions derived from the research hypothesis examination, followed by an analysis of the findings and an explanation of the reasons behind the alignment or divergence of these findings from prior studies. Furthermore, this chapter presents implications that are relevant for both scholars and practitioners in the scholarly community. Additionally, it addresses the research constraints. The chapter concludes by providing recommendations for future research endeavours.

References

Abeyratne, S. A., & Monfared, R. P. (2016). Blockchain Ready Manufacturing Supply Chain Using Distributed Ledger. International Journal of Research in Engineering Technology in Society, 5, 10 p.

Alsharari, N. (2021). Integrating Blockchain Technology with the Internet of Things to Efficiency. *International Journal of Technology, Innovation and Management (IJTIM)*, *1*(2), 01–13. https://doi.org/10.54489/ijtim.v1i2.25

Andoni. M., et al. (2020). Blockchain technology in the energy sectors: A systematic review of Challenges and Opportunities. Renewable and Sustainable Energy Reviews. 143-174

Auerbach, C. F. and Silverstein, L. B. (2003), "*Qualitative data: An introduction to coding and analysis*", New York: New York University Press

Bhaskaran, K., dos-Santos-Silva, I., Leon, D. A., Douglas, I. J., & Smeeth, L. (2018). Association of BMI with overall and cause-specific mortality: a population-based cohort study of 3· 6 million adults in the UK. *The Lancet Diabetes & endocrinology*, *6*(12), 944-953.

Bilgin. M. H, Danis. H. and Demir. E. (2021). Eurasian Business and Economics Perspective (EBES) Volume 17, ISBN: 978-3-030-65146-6

Bollen, K. A. (1989), "*Structural equations with latent variables*", New York: Wiley

Bodkhe, U., Tanwar, S., Parekh, K., Khanpara, P., Tyagi, S., Kumar, N., & Alazab, M. (2020). Blockchain for Industry 4.0: A comprehensive review. *IEEE Access*, *8*, 79764-79800.

Buitenhek. M. (2016). Understanding and applying Blockchain technology in banking: Evolution or revolution. Journal of Digital Banking. Vol.1, 2, 111-119

David. L & Farooq. B. (2020). A multi-layered blockchain framework for smart mobility data markets. Transportation Research Part-: emerging technologies: 588-615

Dasgupta, S. (2020). Association between social vulnerability and a county's risk for becoming a COVID-19 hotspot—United States, June 1–July 25, 2020. *MMWR. Morbidity and Mortality Weekly Report*, *69*.

Catalini, C., & Gans, J. S. (2018). *Initial coin offerings and the value of crypto tokens* (No. w24418). National Bureau of Economic Research.

Cearley, D., Burke, B., Searle, S., & Walker, M. J. (2016). Top 10 strategic technology trends for 2018. *The Top*, *10*, 1-246.

Crosby, M., Pattanayak, P., Verma, S., & Kalyanaraman, V. (2016). Blockchain technology: Beyond bitcoin. *Applied innovation*, *2*(6-10), 71.

Chen, G., Xu, B., Lu, M. and Chen, N.S. (2018). Exploring blockchain technology and its potential applications for education. Smart Learning Environments, 5(1): 1-10.

Chattu, V.K., Nanda, A., Chattu, S.K., Kadri, S.M. and Knight, A.W. (2019). The emerging role of blockchain technology applications in routine disease surveillance systems to strengthen global health security. Big Data and Cognitive Computing, 3(2): 25-35.

Christ, K.L. and Helliar, C.V. (2021). Blockchain technology and modern slavery: Reducing deceptive recruitment in migrant worker populations. Journal of Business Research, 131(1): 112-120.

Collomb, A., & Sok, K. (2016). Blockchain/distributed ledger technology (DLT): What impact on the financial sector? *Digi world Economic Journal*, (103).

Esmaeilian, B., Sarkis, J., Lewis, K., & Behdad, S. (2020). Blockchain for the future of sustainable supply chain management in Industry 4.0. *Resources, conservation and recycling*, *163*, 105064.

Gabison, G. (2016). Policy considerations for the blockchain technology public and private applications. SMU Sci. & Tech. L. Rev., 19(1): 327-334.

Gamage, H.T.M., Weerasinghe, H.D. and Dias, N.G.J. (2020). A survey on blockchain technology concepts, applications, and issues. SN Computer Science, 1(2): 1-15.

Gereffi, G., Wadhwa, V., Rissing, B. and Ong, R. (2008). Getting the numbers right: International engineering education in the United States, China, and India. Journal of Engineering Education, 97(1): 13-25.

Xu, X., Lu, Q., Liu, Y., Zhu, L., Yao, H., & Vasilakos, A. V. (2019). Designing blockchain-based applications a case study for imported product traceability. *Future Generation Computer Systems*, *92*, 399-406.

Yadav, A.K., & Bajpai, R.K. (2020). KYC optimization using blockchain smart contract technology. *International Journal of Innovative Research in Applied Science and Engineering (IJIRASE),* 4, 669-674

Yadav. A.K & Karan. S. (2020). Comparative analysis of Consensus Algorithms of Blockchain Technology. *In Ambient Communication and Computer Systems* pp: 205-218

Yermack. D. (2017). Corporate Governance and Blockchain. *Review Finance*. https://doi.org/10.1093/rof/rfwo74

Yenisey, M. M., Ozok, A. A., & Salvendy, G. (2005). Perceived security determinants in e-commerce among Turkish university students. *Behaviour & Information Technology*, *24*(4), 259-274.

Yli-Huumo J, Ko D, Choi S, Park S, Smolander K (2016) Where Is Current Research on Blockchain Technology? —A Systematic Review. PLOS ONE 11(10): e0163477. https://doi.org/10.1371/journal.pone.0163477

Zheng, Z., Xie, S., Dai, H. N., Chen, X., & Wang, H. (2018). Blockchain challenges and opportunities: A survey. *International journal of web and grid services*, *14*(4), 352-375.

ISBN code 978-93-83302-74-1