

-RESEARCH ARTICLE-

INFLUENCE OF BLOCKCHAIN TECHNOLOGY ADOPTION ON FINANCIAL TRANSPARENCY: THE MEDIATING ROLE OF FINANCIAL MANAGERIAL EFFICIENCY AND MODERATING ROLE OF TECHNOLOGY MANAGEMENT CAPABILITY

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—Abstract—

The research aimed to test the influence of block chain technology adoption on the banking sector financial transparency through improving financial managerial efficiency. Moderating influence of technology management capability also used to strengthen the impact of blockchain technology on financial transparency. For this purpose, data collected from banking sector employees using convenient sampling technique which was analyzed using Smart PLS. Hypothesis results shown that blockchain technology adoption has a significant positive impact on financial transparency. Further results highlighted that blockchain technology adoption also significantly and positively effect to the financial managerial efficiency. Similarly, financial managerial efficiency has a significant positive impact on financial transparency. On the other hand, moderating effects indicated that technology management capability positively and significantly moderated between blockchain technology adoption and financial managerial efficiency. Mediation analysis also shown that financial managerial efficiency partially mediates between blockchain technology adoption and financial transparency. The study results contributed

Citation (APA): Ghaleb, M. M. S., Sattarov, A. (2026). Influence of Blockchain Technology Adoption on Financial Transparency: The Mediating Role of Financial Managerial Efficiency and Moderating Role of Technology Management Capability. *International Journal of Economics and Finance Studies*, 18(02), 01-27. doi: 10.34109/ijefs.2026180201

theoretically through extending literature on the blockchain technology after inclusion of financial managerial efficiency as a mediating mechanism and technology management capability as a moderating factor in enhancing financial transparency within the banking sector. Further, on practical perspectives, findings contributed through providing guidance to the banking stakeholders for improving financial transparency, managerial efficiency, and digital transformation through effective adoption of blockchain technology and strong technology management capabilities.

Keywords: Blockchain technology, financial transparency, managerial efficiency, banking sector.

INTRODUCTION

Banking sector is undergoing a profound transformation driven through rapid advancement in the latest technologies (blockchain technology) which is increasingly recognized as a disruptive innovation in financial system (Al Mamun et al., 2025). Blockchain technology is a decentralized digital ledger which records transactions in secure, and transparent manner across multiple networks (Alkhudary, 2020). This the reason, in contrast to traditional centralized financial system, blockchain system enables peer to peer validation of transactions without intermediaries which reduces the operational inefficiencies and increase trust on the financial ecosystems (Kant, 2021). It also helps to share the information among the stakeholders without any requirement of centralized intermediaries, which helps to increase the trust, security, and accountability in financial systems (Adegbite, 2024). Its importance has to be also increased because it increases the security in transaction, minimizes fraud, improves traceability, and ensures immutability of records (Bhardwaj & Kaushik, 2018). Due to these characteristics, blockchain technology becomes more relevant for modern banking institutions seeking improved accountability and governance (Socatiu et al., 2024). In these studies, it has been highlighted that blockchain technology becomes an integral factor for the banking sector which is showing the importance to improve financial transparency (Kukman & Gričar, 2025).

Financial transparency has becomes an integral requirement for the banking institutions due to the more regulatory pressure, and rising stakeholders expectations (Al Mamun et al., 2025). Financial transparency refers to the extent to which organizations provide accurate, timely, and reliable financial information that is accessible and understandable to stakeholders (King & McKennie, 2023). It is also important for minimizing the information asymmetry, and enhancing the confidence of investors which positively increase the market value of banking sector (Adewale et al., 2022). Equally, transparency is also particularly important because financial institutions act as intermediaries in the economy, where trust and credibility are essential for stability (Olatinsu & Eke, 2025). To improve the financial transparency

of banks, blockchain technology is a significant predictors which increases the financial transparency through ensuring real-time recording of transactions, creating tamper-proof audit trails, and enabling continuous verification of financial data (Almadadha, 2024). On the other hand, blockchain technology also increases the block chain based system which increases accountability through making financial records permanently traceable and publicly verifiable within authorized networks (Salehi & Molavi, 2025). This the reason, study focused on test influence of blockchain technology adoption on financial transparency

Along with of the transparency, financial managerial efficiency is also important critical factor which influence of financial transparency of the banking sector. Financial managerial efficiency is being refers to financial managers ability for planning effectively, control, and utilizing financial resources effectively for achieving organizational objective in a cost effective manners (Barr et al., 1993). Other author also emphasized that financial manger efficiency is also important for improving financial transparency which ensures the optimal resources utilization (Nyakieni et al., 2022). To improve the financial managerial efficiency, blockchain technology is being considered to be effective tool which improves the efficiency of managers because it automates the financial transactions which increases the accuracy and speed of financial operations (Nyakieni et al., 2022). Furthermore, blockchain technology also improves financial coordination and reduces administrative burdens, which is enabling managers to focus on strategic financial decision-making rather than routine verification tasks (Arshadi & Dombrowski, 2026) which increase financial transparency. This the reason, study focused on testing the influence of blockchain technology adoption on financial transparency through improving financial managerial efficiency.

The blockchain technology effectiveness for improving the financial outcomes is not being uniformed in all organizations because it success is being fully depends on management of internal organizational capabilities (Olatinsu & Eke, 2025). To improve this, one of the most important factor is technology management capability which is being referred to firm's ability in acquiring and utilizing technology based resources effectively to achieve strategic objectives (Aziz & Wediyanto, 2024). Technology management capability is being more important because the companies with the strong technology management could successfully increase culture of block chain technology with better technological capabilities can effectively integrate blockchain systems into financial operations (Venter & Grobbelaar, 2022). This the reason, research argued that technology management capability which consisted of IT infrastructure readiness, employee technological skills, innovation management capacity, and organizational adaptability toward digital transformation (Ünsal & Cetindamar, 2015) which significantly improve the financial transparency. Other author's also highlighted that relationship between blockchain technology and financial managerial efficiency is being improved through effective management of

the technology (Ma et al., 2022). Because, organizations with strong technology expertise could efficiently manage the blockchain based financial process which increase the best monitoring process that significantly improves the financial transparency (Ghobakhloo et al., 2022). These prior studies highlighting that technology management capability is an integral factor to improve the financial transparency, and accordingly it is being used a moderating variable in the current study.

Along with the growing body of literature on the blockchain technology adoption and financial transparency, still various important gaps remained unexplored. Firstly, most of the prior studies have majorly focused on the technical features of blockchain like as decentralization, security, and cryptographic validation, rather than examining its organizational and financial implications in banking systems (Aziz & Wediyanto, 2024; Ma et al., 2022; Olatinsu & Eke, 2025; Vaigandla et al., 2023; Venter & Grobbelaar, 2022). Secondly, prior studies have limited attention on investigating the relationship between blockchain technology and financial managerial efficiency with a minimum effect of mediating effect of financial managerial efficiency (Al-Okaily, 2025; Ma et al., 2022; Olatinsu & Eke, 2025). Thirdly, mediating effect of financial managerial efficiency also remained unexplored between blockchain technology and financial transparency (Bai et al., 2024; Daisy, 2026; Zhang et al., 2026; Zhao & Wang, 2024). Fourth, although technology management capability is widely acknowledged in innovation literature, its moderating effect on blockchain-related financial outcomes has received limited empirical attention in banking contexts (Cui, 2025; Grego et al., 2025; Liu et al., 2022). Lastly, not previous researchers have focused on the comprehensive framework where both of moderated-mediation framework has been tested that simultaneously examines blockchain technology adoption, financial managerial efficiency (mediator), financial transparency (outcome), and technology management capability (moderator), particularly within the banking sector of developing economies. Therefore, to address these gaps, research aimed to test the influence of block chain technology adoption on the banking sector financial transparency through improving financial managerial efficiency. Moderating influence of technology management capability also used to strengthen the impact of blockchain technology on financial transparency

After addressing the above gaps, this research framework is contributing an integrated conceptual framework that explains not only whether blockchain technology improves financial transparency and managerial efficiency, but also how and under what conditions these effects occur. The research contributed through extending the understanding of blockchain technology beyond its technical dimensions through integrating organizational and financial perspectives, particularly through the inclusion of financial managerial efficiency as a mediating mechanism. Moreover, the inclusion of technology management capability as a moderating variable enriches innovation and technology adoption theories by demonstrating how organizational

capabilities strengthen the effectiveness of blockchain technology in achieving financial outcomes. The development of a comprehensive moderated-mediation framework also contributes to the literature by simultaneously examining the interrelationships among blockchain technology adoption, financial managerial efficiency, technology management capability, and financial transparency within the banking sector of developing economies. From the practical perspectives, the study results also provide a valuable insight for the banking stakeholders through highlighting the importance of investing in blockchain technology and strengthening managerial and technological capabilities to improve transparency and operational efficiency. The study further assists banking institutions in developing strategic policies for digital transformation, enhancing accountability, reducing financial irregularities, and improving stakeholder trust in financial reporting systems. Rest of the chapter was being divided into further four chapter's literature review where both of theoretical and empirical studies were discussed. Research methodology which covers the data collection and research design perspectives. Data analysis and results which covers the main analysis and interpretation of findings. Lastly, discussion and future directions of study.

LITERATURE REVIEW

Block Chain Technology Adoption and Financial Transparency

Blockchain technology is an distributed ledger system which helps to record transaction securely, transparently, and permanently across multiple networks (Komalavalli et al., 2020). It also helps to share the information among the stakeholders without any requirement of centralized intermediaries, which helps to increase the trust, security, and accountability in financial systems (Adegbite, 2024). Its importance has to be also increased because it increases the security in transaction, minimizes fraud, improves traceability, and ensures immutability of records (Bhardwaj & Kaushik, 2018). Furthermore, blockchain technology improves operational transparency by creating tamper-resistant audit trails and reducing opportunities for financial manipulation (Kukman & Gričar, 2025). In other research also highlighted that blockchain technology played a key role in enhancing the financial transparency because it increases the real time access towards the financial records and ensures transaction verification through consensus mechanisms (Adewale et al., 2022). Because the blockchain in the organization minimizes the possibility of data alteration and financial fraud through maintaining immutable records of transactions (Mahtani, 2022). Moreover, blockchain-based accounting systems improve auditing efficiency and reduce the likelihood of hidden financial activities (ALSaqa et al., 2019). The integration of blockchain technology into financial systems also enhances traceability and accountability, which are key dimensions of transparency (Zhang et al., 2020). Eyo-Udo et al. (2025) empirical study also found that blockchain technology significantly increases accounting transparency and

transaction visibility. Similarly, [Souissi et al. \(2024\)](#) reported that blockchain adoption reduces information manipulation and improves the quality of financial disclosure practices. In other study also found that block chain technology based recording also increases the audit reliability and [Dai and Vasarhelyi \(2017\)](#). [Judijanto et al. \(2025\)](#) study also shown that blockchain technology improves the transactions transparency and trust on the financial markets. [Parhi \(2025\)](#) further also emphasized that blockchain creates transparent and verifiable financial ecosystems that support accountability and governance which increases the company's competitive advantage. In this regard, following hypothesis is below,

H1: *Block Chain technology adoption significantly improves the financial transparency.*

Block Chain Technology Adoption and Financial Managerial Efficiency

Financial managerial efficiency is shown the ability of the financial managers in effective planning, and utilization of organizational financial resources in achieving the firm's operational objectives ([Bai et al., 2024](#)). Because the efficient financial management is being important because it helps to improves the organizational productivity, strengthens budgeting systems which significantly increases the firms profitability ([Hasan et al., 2020](#)). Financial managerial efficiency also supports effective risk management, financial planning, and decision-making processes within organizations ([Putri et al., 2025](#)). To improve the financial managerial efficiency, blockchain technology adoption has been become an integral factor in improving the financial management because it increases the automation in the transactions, minimizes paper works, and increases the accuracy in the financial operations ([Alsharari, 2021](#)). Blockchain systems enable organizations to process financial transactions efficiently without relying heavily on intermediaries, thereby lowering transaction costs and improving operational performance ([Sun et al., 2022](#)). Additionally, blockchain technology improves data security and minimizes errors in financial recording systems, which contributes positively to managerial efficiency ([Bai et al., 2024](#)). The automation capability of blockchain systems also improves coordination among departments and enhances financial monitoring activities ([Rashid et al., 2025](#)).

Further empirical study also highlighted that blockchain technology significantly improves the financial managerial efficiency through providing the real-time financial information and facilitating faster financial decision-making ([Putri et al., 2025](#)). Firms who are adopting the blockchain system also improve the accounting functions through enhancing transactions tracking, and strengthening internal control system ([Alsharari, 2021](#)). In addition, blockchain technology also helps to reduce the administrative burdens which helps to focuses on the strategic financial activities ([Asadi, 2025](#)). The integration of blockchain technology into financial management

systems therefore contributes significantly to organizational efficiency and performance improvement. Daisy (2026) empirical study found that blockchain technology increases the managerial efficiency through improving the organizations automation and simplification of financial transactions. Bag et al. (2023) found that blockchain adoption significantly improves financial coordination and organizational efficiency. Similarly, Abdelwahed et al. (2025) emphasized that blockchain systems strengthen managerial effectiveness through improved financial monitoring and cost reduction. Dai and Vasarhelyi (2017) also argued that blockchain technology enhances accounting efficiency and financial control mechanisms. In addition, Rakhmansyah et al. (2025) study also found that blockchain adoption improves managerial productivity through reducing transaction complexity and increasing operational reliability. Prior studies highlighting that blockchain technology increases the managerial efficiency and accordingly hypothesis is,

H2: *Block Chain technology adoption significantly improves the financial managerial efficiency.*

Financial Managerial Efficiency and Financial Transparency

As it is highlighted that financial managerial efficiency is being referred to the effectiveness of financial managers in planning of financial resources and in financial transactions monitoring to increase the company's competitive advantage (Lowenstein, 1996). Because the efficient management of resources is important because it helps to ensure the proper allocation of financial resources which increase the accountability, improves reporting quality, and supports organizational sustainability (Lacombe et al., 2025). Organizations with efficient financial management systems are more capable of maintaining accurate financial records and complying with reporting standards (Efendi, 2025). Literature supported that efficient financial management system increase the transparency through reducing reporting errors, strengthening internal controls, and ensuring timely disclosure of financial information (Lindfors, 2003). Moreover, efficient managerial practices also improves the stakeholders trust because companies with the efficient technology improve the transparent financial system through reducing uncertainty and information asymmetry (Cifuentes-Faura et al., 2023). Organizations with high financial managerial efficiency are therefore more likely to achieve reliable and transparent financial communication systems. Other empirical study also found that effective financial management systems improve corporate transparency and reduce information asymmetry (Nikitina & Sidey, 2026). Nikitina and Sidey (2026) empirical study also found that efficiency managerial practices increase the company's disclosure quality and transparency. In the same vein, Casalino and Bednar (2015) study also argued that managerial efficiency significantly increase the organizations accounting transactions transparency. Alzoubi (2025) also emphasized that high-quality financial management improves disclosure credibility and accountability. Lastly, Badhon et al. (2025) and

Chowdhury et al. (2023) study also highlighted that efficient management systems reduce agency problems and strengthen organizational transparency which increase the company's competitive advantage in their stakeholders. Prior studies highlight that managerial efficiency increases financial transparency, and accordingly hypothesis is,

H3: *Financial managerial efficiency significantly improves the financial transparency.*

Moderating Effect of Technology Management Capability

The relationship between blockchain technology and financial managerial efficiency is being improved through effective management of the technology. The technology management capability refers to an organization's ability to acquire, integrate, and manage technological resources to increase organizational performance (Liu et al., 2022). It consisted of infrastructure readiness, employee technical expertise which increase the organizational adaptability in the emerging technologies (Sun et al., 2022). Technology management capability is being more important because the companies with the strong technology management could successfully increase culture of block chain technology with better technological capabilities can effectively integrate blockchain systems into financial operations (Lima et al., 2025). Organizations with strong technology expertise could efficiently manage the block chain based financial process which increase the best monitoring process that significantly improves the financial transparency (Ogunrinde et al., 2025). In contrast, organizations with weak technology management capability may face implementation difficulties, employee resistance, and infrastructure limitations that reduce the effectiveness of blockchain adoption (Ogunrinde et al., 2025). This is the reason, the technology management capability is being important because block chain technology is being required a technical infrastructure which effectively improved the financial transparency (Alokdeh et al., 2026). Another study also highlighted that firms with the advanced technology management increases the operational efficiency through block chain technology which increases the effective financial transparency (Machado et al., 2020). Additionally, technology management capability enhances organizational flexibility and innovation adoption which increases the financial transparency (Acikgoz et al., 2024). Further empirical study also highlighted that technology capability positively and significantly strengthens the influence of digital technologies on the organizational performance (Acikgoz et al., 2024). Pattanayak et al. (2023) study also further argued that companies with the stronger technology capabilities significantly increase the efficiency benefits from technological innovations, which increases the financial transparency. Similarly, Zhang et al. (2026) highlighted that technology management capability enhances blockchain implementation success and organizational effectiveness, which increases the transparency of organizations. Centobelli et al. (2022) also reported that technological readiness improves the operational outcomes of blockchain adoption to improve financial transparency.

Furthermore, [Mokodenseho et al. \(2023\)](#) study also emphasized that technological competency strengthens the efficiency outcomes of blockchain systems to improve the better records of financial statements. Therefore, the following hypothesis is proposed:

H4: *Block Chain technology adoption significantly improves the financial managerial efficiency through moderating effect of technology management capability.*

Mediating Effect of Financial Managerial Efficiency

In the prior studies, relationship between blockchain technology and financial transparency is tested on direct effects while limited attention has been observed with moderating effect. The mediation analysis is being referred to the process where an exogenous variables effects to the endogenous variables through the intervening variable known as a mediator ([Baron & Kenny, 1986](#)). In this study, financial managerial efficiency acts as a mediating variable between blockchain technology adoption and financial transparency. The mediating effect is being integral because it could explained the underlying mechanism where blockchain technology could improve financial transparency mechanism ([Ali, 2021](#)). Empirical studies also found that blockchain technology adoption significantly improves the financial managerial efficiency through the automating financial transactions, enhancing data accuracy, reducing operational costs, and strengthening financial monitoring systems ([Saeed, 2025](#)). Improved managerial efficiency subsequently enhances financial transparency because efficient managers ensure accurate reporting, timely disclosures, and effective financial control practices ([Nguyena & Vub, 2025](#)). Therefore, blockchain technology indirectly improves transparency through enhanced managerial effectiveness and financial governance systems ([Oriekhoe et al., 2024](#)). Other empirical study of [Zadeh \(2023\)](#) also found that digital technologies improve organizational transparency through enhanced operational and managerial efficiency. In the same vein, [Daisy \(2026\)](#) study also found that blockchain adoption strengthens the transparency through improving managerial efficiency. [Cho and Lee \(2019\)](#), and [Zadeh et al. \(2021\)](#) study also emphasized that efficient financial management mediates the relationship between technological innovation and financial reporting quality. In the same vein, [Ko et al. \(2018\)](#) study also highlighted that blockchain-based accounting systems enhance transparency through improved financial management practices. Moreover, [Eyo-Udo et al. \(2025\)](#) study also found that blockchain-driven operational efficiency contributes positively to organizational transparency and accountability which also increases the company's organizational performance. In this regard, the following hypothesis is,

H5: *Blockchain technology adoption significantly improves the financial transparency through mediating effect of financial managerial efficiency*

Research Methodology

The research aimed to test the influence of block chain technology adoption on the banking sector financial transparency through improving financial managerial efficiency. Moderating influence of technology management capability also used to strengthen the impact of blockchain technology on financial transparency. To test this objective, researchers employed the quantitative research approach. A quantitative research approach provides objective, reliable, and statistically measurable results that can be generalized to a larger population (Mehrad & Zangeneh, 2019). The data was collected from employees of banking sector using self-administered survey instrument. Therefore, cross sectional research design is most appropriate for the current study where data collected on one time. The cross sectional research design was used because it enables researchers to collect data from a large population at a single point in time, making it a cost-effective and efficient approach for examining relationships among variables (Hunziker & Blankenagel, 2024).

The research instrument was taken from prior studies where it was already tested. Firstly, blockchain technology adoption was comprised from 10 items of (Alrfai et al., 2026). Furthermore, financial transparency was also comprised from 10 items (Alrfai et al., 2026). Technology management capability was measured by 10 items of (Jafarpanah et al., 2025). Lastly, managerial efficiency was comprises with 11 items which were adopted from the study of (Patel et al., 2022). Five-point Likert scale was distributed among 500 employees of banking using convenient sampling. Among those, 412 questionnaires were returned that is enough to conduct the social science study. Research variables are depicted in Figure 1 below,

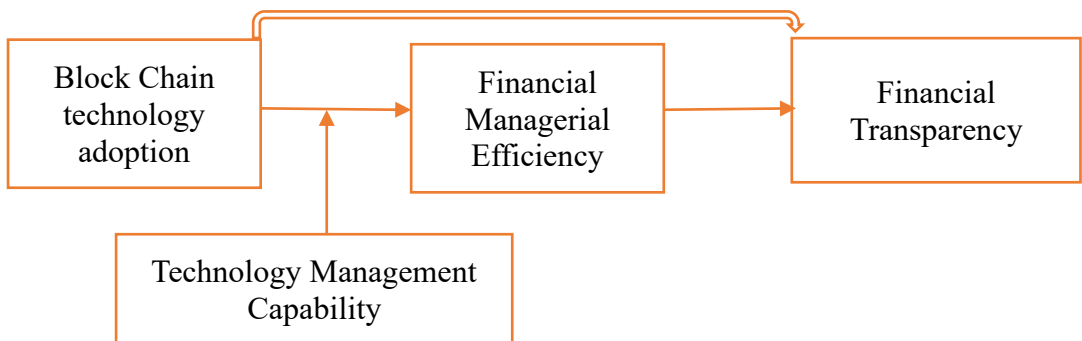


Figure 1: Research Instrument

Demographic Profile of Respondents

Data in the current study was being collected from working employees of banking sector which are being to be considered a more effective respondents in examining the adoption of advanced financial technologies such as blockchain technology and its influence on financial operations and transparency. There was total of 412

respondents were being selected using convenient sampling technique for the final analysis which are being satisfied the minimum sample size for the Structural Equation Modeling (SEM) (Ahmad & Halim, 2017). Demographic results shown that most the respondents were being male employees which is representing 60.2% of the sample, while female respondents accounted for 39.8%. This shown that male respondents have more participation as compared to female in the banking sector. Regarding age distribution, most respondents belonged to the age group of 31–40 years (40.8%), indicating that the study mainly captured responses from mature and professionally experienced banking employees who possess adequate understanding of technological and financial systems. In terms of education, most respondents possessed a master's degree (54.4%), showing that banking employees involved in the study were highly educated and capable of understanding blockchain technology adoption and financial management practices (Treiblmaier, 2018). With respect to experience, most of the respondents have 5 to 10 years working experience (42.7%), which is indicating that respondents possessed sufficient professional exposure to evaluate banking operations and technological systems effectively (Lima et al., 2025). Above results are in Table 1.

Table 1: Demographic Characteristics of Respondents

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	248	60.2
	Female	164	39.8
Age	21–30 Years	126	30.6
	31–40 Years	168	40.8
	41–50 Years	82	19.9
	Above 50 Years	36	8.7
Education	Bachelor Degree	118	28.6
	Master Degree	224	54.4
	MPhil/PhD	70	17.0
Experience	Less than 5 Years	102	24.8
	5–10 Years	176	42.7
	11–15 Years	89	21.6
	Above 15 Years	45	10.9

Convergent Validity

To test the validity and reliability, measurement model is integral for the research construct before testing the study hypothesis in two validity criteria's. Convergent validity which shown that whether the measurement items are properly represented the respected construct using factor loadings, Cronbach Alpha, Composite Reliability, and Average Variance Extracted values (Fornell & Larcker, 1981). The convergent validity results indicate that all constructs achieved acceptable reliability and validity levels according to the recommendations of (Hair Jr et al., 2017). For the factor loadings all values should be greater than from 0.70, indicating strong item reliability

(Hair et al., 2017). The Cronbach Alpha values greater than 0.70 which is demonstrating high internal consistency reliability among the measurement items (Holmbeck & Devine, 2009). In the same vein, composite reliability should also be greater than 0.70, confirming strong construct reliability (Bagozzi & Yi, 1988). Furthermore, AVE values above 0.5, exceeding the minimum acceptable value Fornell and Larcker (1981).

Table 2: Convergent Validity Results

Construct	Cronbach Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
BCTA	0.901	0.927	0.718
FME	0.887	0.917	0.690
FT	0.914	0.935	0.744
TMC	0.895	0.922	0.704

Note: BCTA-block chain technology adoption, FME-financial managerial efficiency, FT-financial transparency, TMC-technology management capability.

These findings confirm that the constructs possess adequate convergent validity and that the measurement items effectively represent their respective latent variables and results are predicted in Table 2.

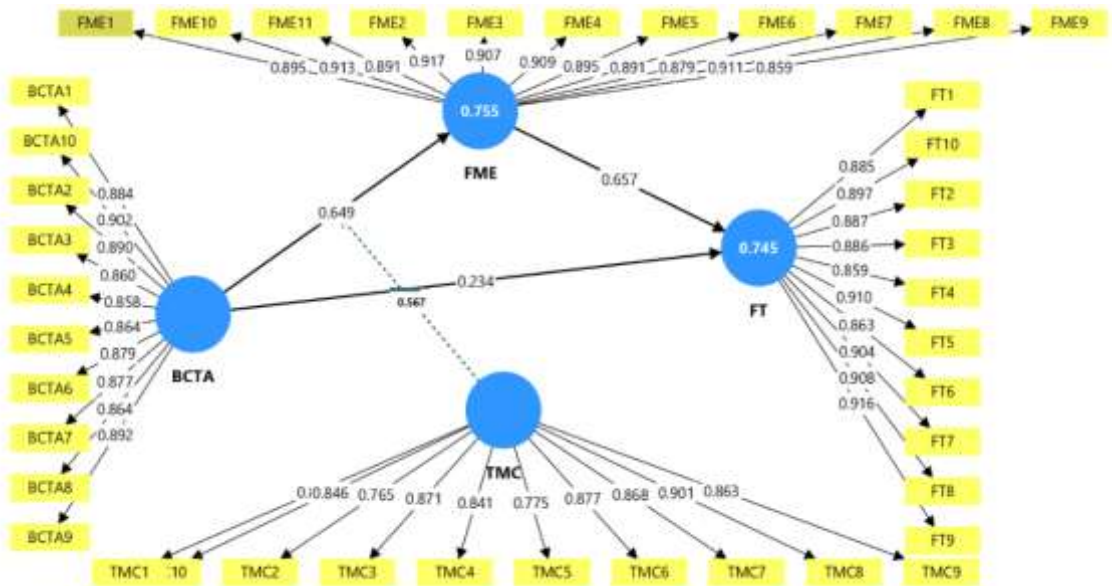


Figure 2: Measurement model

Discriminant Validity Assessment

After the convergent validity, discriminant validity represent the extant which indicated that construct is totally different from other construct in the model (Fornell & Larcker, 1981). From the various constructs, fornell and larcker is being one of the

most important approach for the assessment of discriminant validity in the PLS-SEM (Hair Jr et al., 2017) where AVE square root in diagonal values should be greater than from below values. The square root of the AVE values, presented in diagonal bold values, are greater than the correlation values among constructs, satisfying the discriminant validity criterion proposed by Fornell and Larcker (1981). These results indicate that the measurement model possesses satisfactory discriminant validity and that no significant multicollinearity issue exists among the latent variables (Henseler et al., 2015). Discriminant validity results are presented in Table 3.

Table 3: Fornell–Larcker Criterion

Constructs	BCTA	FME	FT	TMC
BCTA	0.847			
FME	0.641	0.831		
FT	0.688	0.719	0.862	
TMC	0.603	0.671	0.625	0.839

Structural Model Assessment

When the criteria for the assessment of construct is being fulfilled, then the next step is to test study hypothesis using structural model, which is being evaluated the significance and strength of hypothesized relationships among research variables through beta values, t-values, and p-values (Hair Jr et al., 2017). Hypothesis results shown that Blockchain Technology Adoption has a significant positive impact on financial transparency ($\beta = 0.372$, $t = 5.982$, $p < 0.001$).

Table 4: Hypothesis Testing Results

Relationship	Beta (β)	t-value	p-value	Decision
BCTA \rightarrow FT	0.372	5.982	0.000	Supported
BCTA \rightarrow FME	0.481	7.364	0.000	Supported
FME \rightarrow FT	0.429	6.715	0.000	Supported
Moderating Effect				
BCTA \times TMC \rightarrow FME	0.221	3.894	0.000	Supported
Mediating Effect				
BCTA \rightarrow FME \rightarrow FT	0.206	4.128	0.000	Supported

Note: BCTA-block chain technology adoption, FME-financial managerial efficiency, FT-financial transparency, TMC-technology management capability.

Therefore, H1 is supported. Further results highlighted that blockchain technology adoption also significantly and positively effect to the financial managerial efficiency ($\beta = 0.481$, $t = 7.364$, $p < 0.001$). Thus, H2 is supported. Similarly, financial managerial efficiency has a significant positive impact on Financial Transparency ($\beta = 0.429$, $t = 6.715$, $p < 0.001$), supporting H3. On the other hand, moderating effects indicated that technology management capability positively and significantly moderated between blockchain technology adoption and financial managerial

efficiency ($\beta = 0.221$, $t = 3.894$, $p < 0.001$). Therefore, H4 is supported. At last, mediation analysis shown that financial managerial efficiency partially mediates between blockchain technology adoption and financial transparency ($\beta = 0.206$, $t = 4.128$, $p < 0.001$), supporting H5. Direct and indirect effects results are presented in Table 4.

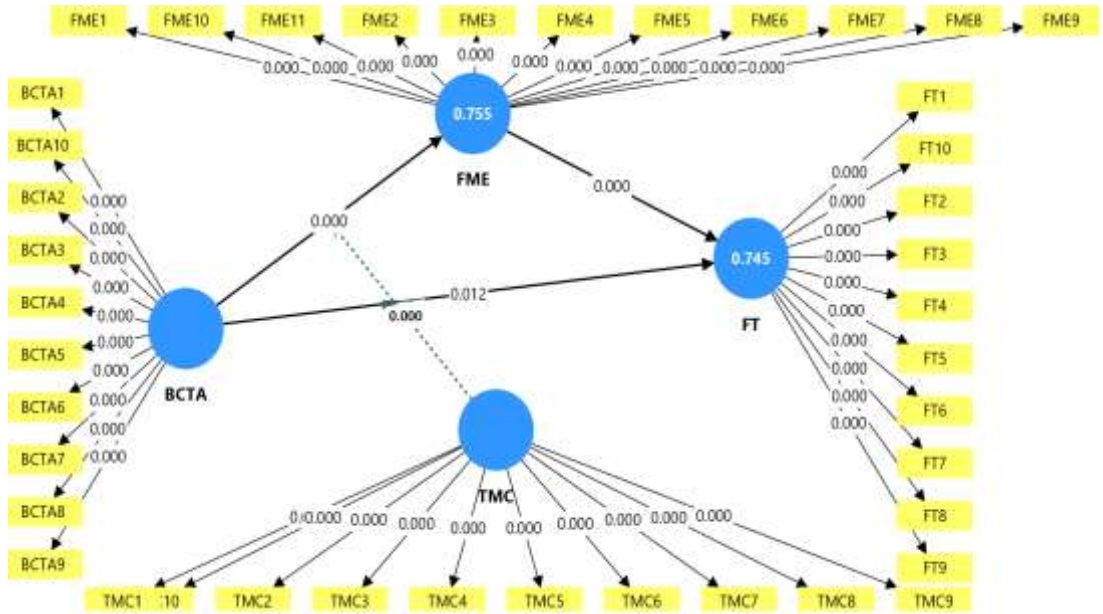


Figure 3: Structural Model

DISCUSSION

The research aimed to test the influence of block chain technology adoption on the banking sector financial transparency through improving financial managerial efficiency. Moderating influence of technology management capability also used to strengthen the impact of blockchain technology on financial transparency. The study results provided strong evidence that block chain technology adoption is being played a significant role in increasing the financial transparency within the banking sector. This significant result confirmed that technology adoption has a positive and significant impact on financial transparency. This result indicated that banks are adopting a blockchain system experience improved transparency in financial reporting due to real-time transaction recording, immutable data storage, and enhanced traceability of financial activities. This result is highly relevant for the banking sector because transparency is a fundamental requirement for building stakeholder trust, ensuring regulatory compliance, and reducing information asymmetry. When banks operate on blockchain-based systems, the risk of data manipulation and financial misreporting is significantly reduced, thereby strengthening accountability and governance mechanisms. The study findings are supported with the study of (Eyo-

Udo et al., 2025), where they emphasized that block chain technology significantly improves the financial transparency through limiting information distortion. In other study Samoggia et al. (2025) also found that blockchain enhances accounting transparency through secure and verifiable transaction systems. Thus, based on these findings, it could be argued that blockchain adoption is a critical technological driver of transparency in modern banking systems, and banks should prioritize its integration into core financial operations to strengthen trust and regulatory confidence.

Further results highlighted that block chain technology adoption also significantly increases the manager's financial efficiency where this result suggested that blockchain-enabled banking systems enhance the efficiency of financial operations by automating processes, reducing manual intervention, and eliminating unnecessary intermediaries. Literature supported that managerial efficiency improvement is significantly important for the banks because it is being leads to improve the banks decision making and in utilization of organization resources more effectively. In highly competitive financial environments, efficiency determines the ability of banks to remain sustainable and responsive to market demands. Blockchain contributes to this efficiency by streamlining transaction processing and improving accuracy in financial records. Study results in line with the study of Daisy (2026) where they explained that blockchain enhances operational efficiency through automation and reduced transaction complexity, while Ferone and Verrilli (2025) highlight its role in improving organizational efficiency and coordination. Accordingly, it being recommended that blockchain technology does not only improves the financial transparency, but it is also a powerful mechanism for improving internal financial management efficiency in banking institutions.

Further results highlighted that financial managerial efficiency also increases positively and significantly financial transparency of banking sector. This finding highlighted that banking operations transparency is not only dependent on technology but is also strongly influenced by the effectiveness of financial management practices. This is since a trained financial manager always ensures transactions accuracy, proper reporting, and effective internal control system which improves the banking sectors financial statements transparency. This finding is supported by Duong et al. (2025), who argue that effective financial management reduces information asymmetry, and they also emphasize that managerial efficiency enhances disclosure quality. Ferone and Verrilli (2025) further confirm that strong financial governance improves transparency and investor confidence. Thus, based on these finding, it is being highlighted that financial managerial is showing the better internal mechanism which is improving the banking sectors transparency.

Further, Moderating effect results shown that technology management capability positively and significantly moderated between blockchain technology adoption and financial managerial efficiency. These results shown that blockchain technology for

enhancing managerial efficiency is being depends on the technology level readiness in the banking organizations. It is has identified that financial institutions with the effective technology management capabilities are being able to integrate a effective blockchain system, which enhances the overall benefits of blockchain adoption. In contrast, banks with weak technological capability may struggle to fully utilize blockchain systems, limiting its impact on efficiency. Study findings are being further justified with the study of (Eyo-Udo et al., 2025) where they emphasized that dynamic capabilities significantly determines that how effectively organizations benefit from technological innovations. Zayed and Yaseen (2025) study also highlighted that technological capability strengthens digital transformation outcomes. In other study technology management capability was also used a moderating variable and found significant moderating effect. In this regards, it can be concluded that blockchain adoption alone is not sufficient; its success in improving managerial efficiency depends significantly on organizational technological capability (Zayed & Yaseen, 2025).

Lastly, study results indicated financial managerial efficiency partially mediated between the relationship of blockchain technology adoption and financial transparency of banking sector. These findings indicating that blockchain technology does not directly improves the banking sector financial transparency alone but does so indirectly by first enhancing managerial efficiency, which then leads to improved transparency outcomes. This result is providing a clear explanation of effective organizational mechanism through which blockchain technology is being created a effective value in the banking institutions. When blockchain improves efficiency in financial operations, it enables managers to produce more accurate, timely, and reliable financial reports, which ultimately enhances transparency. This mediation effect is particularly important because it highlights that technology adoption must be complemented by effective managerial systems to achieve full benefits. Study results are being supported with prior studies Rashid et al. (2025) who found that digital technologies improve transparency through operational efficiency. In other study of Bipasha (2023) was also supported the view that blockchain improves transparency through improved managerial processes. Thus, based on these findings, it is being justified that financial managerial efficiency is being acts as critical channel through which blockchain technology enhances financial transparency in the banking sector.

IMPLICATIONS AND FUTURE DIRECTIONS

The study has various implications from both of theoretical and practical perspectives. Firstly, the study extended prior model through understanding of blockchain technology by confirming that it significantly enhances both financial transparency and financial managerial efficiency in the banking sector. In contrast to prior studies where most of the literature was mainly concentrated on direct effect of blockchain technology on the performance while this study added a significant findings impact of

blockchain technology on financial transparency from both of direct and indirect effects. This effect strengthens the theoretical argument that blockchain is not merely a technological innovation but a transformational system that reshapes financial governance structures within organizations. Second, this study contributes to the literature by validating the mediating role of financial managerial efficiency between blockchain technology adoption and financial transparency. This finding supports and extends information systems and resource-based view theories by demonstrating that technological adoption alone does not directly ensure transparency; instead, internal organizational capabilities such as managerial efficiency act as critical transmission mechanisms. Therefore, this study theoretically reinforces the notion that organizational outcomes depend on both technological adoption and effective internal resource utilization. Lastly, this study also contributed a theoretical insight through confirming the moderating effect of technology management capability in increasing the effect of blockchain technology on financial managerial efficiency. This significant increasing effect shown the significance of dynamic capability theory which suggested that companies along with the strong technology capabilities are being better able to absorb, integrate, and exploit new technologies. The significant moderating effect found in this study extends this theory by empirically demonstrating that blockchain effectiveness is conditional upon organizational readiness and technological competence.

Practical Implications

Various practical implications also existed in the current study for the management of banking sector. Firstly, the study positive significant impact of blockchain technology adoption on the financial transparency and financial managerial efficiency is being contributed that banks should prioritize investment in blockchain-based financial systems. By adopting blockchain solutions, banks can improve real-time transaction tracking, reduce fraud risks, enhance auditability, and strengthen financial reporting systems. This will ultimately improve stakeholder trust and regulatory compliance. Secondly, financial managerial efficiency mediating effect also contributed that financial institutions should not be only focused on the technological implementation, but they must also focus on strengthening internal financial management systems. Managers should ensure that blockchain technologies are effectively integrated into accounting, auditing, and reporting processes. Training programs should be developed to enhance employees' ability to use blockchain systems efficiently, thereby ensuring that technological investments translate into improved financial performance and transparency. Lastly, technology management capability moderating role also highlighted the significance of organization readiness for increase the benefits of blockchain benefits. Banks with strong technological infrastructure and skilled human resources are more likely to achieve higher efficiency gains from blockchain adoption. Therefore, financial institutions should invest in IT infrastructure, digital transformation strategies, and continuous employee development programs.

Strengthening technology management capability will allow banks to fully leverage blockchain systems and improve operational performance. Furthermore, policymakers and regulatory authorities should support the adoption of blockchain technology in the banking sector by developing clear regulatory frameworks and standards for blockchain-based financial reporting. This could help to ensure the consistency, and security in various financial institutions that will also help to the regulators in encouraging capacity building initiatives to improve technological readiness among banks, especially in developing economies.

The study with the significant findings has various limitations. Firstly, study focused on banking sector which could not be generalized on other financial institutions, and to remove these limitations and increasing research generalizability further research needs to be addressed on other financial institutions. Secondly, study focused on blockchain technology while ignored artificial intelligence which limited the predictive power of the model, hence, to remove these limitations, there is a need to conduct research after adding artificial intelligence in existing model which could increase the predictive power of the model. Thirdly, study focused on cross sectional research design while ignored the longitudinal research design where data collected in different time frames, and in this regard future research could be explored on longitudinal research design. Lastly, study focused on quantitative research approach where data collected in numbers, while ignored the qualitative research approach. Therefore, further research needs to be conducted on mixed methods to improve the research methodology.

CONCLUSION

The research aimed to test the influence of block chain technology adoption on the banking sector financial transparency through improving financial managerial efficiency. Moderating influence of technology management capability also used to strengthen the impact of blockchain technology on financial transparency. For this purpose, data collected from banking sector employees using convenient sampling technique which was analyzed using Smart PLS. Hypothesis results shown that blockchain technology adoption has a significant positive impact on financial transparency. Further results highlighted that blockchain technology adoption also significantly and positively effect to the financial managerial efficiency. Similarly, financial managerial efficiency has a significant positive impact on Financial Transparency. On the other hand, moderating effects indicated that technology management capability positively and significantly moderated between blockchain technology adoption and financial managerial efficiency. At last, mediation analysis shown that financial managerial efficiency partially mediates between blockchain technology adoption and financial transparency. The study results contributed theoretically through extending literature on the blockchain technology after inclusion of financial managerial efficiency as a mediating mechanism and technology

management capability as a moderating factor in enhancing financial transparency within the banking sector. Further, on practical perspectives, findings contributed through providing guidance to the banking stakeholders for improving financial transparency, managerial efficiency, and digital transformation through effective adoption of blockchain technology and strong technology management capabilities. Research also suggested some of the future directions to explore new research area

FUNDING

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant Number KFU262608].

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