ISSN 3109-7812
https://doi.org/10.61401/sabi.v2i3.535

Volume 2 Number 3, July 2026
Studi Akuntansi dan Bisnis Indonesia (SABI)
STIE KRAKATAU, Indonesia

Blockchain Technology and Its Impact on Accounting Information Reliability and Quality in Iraqi Banks

Sarhan Ajaj Alo
College of Administration and Economics, University of Kirkuk, Iraq
sarhanallaw@uokirkuk.edu.iq

ARTICLE INFO
Received: 8 May 2026;
Accepted: 10 June 2026;
Published: 13 July 2026;

Volume 2, Number 3
July 2026, pp 135-146
https://doi.org/10.61401/sabi.v2i3.535

Coresponding author:
Sarhan Ajaj Alo
College of Administration and Economics, University of Kirkuk, Iraq
E-mail: sarhanallaw@uokirkuk.edu.iq

ABSTRACT

Purpose: This study investigates the impact of applying blockchain technology on enhancing the reliability and quality of accounting information in Iraqi banks, addressing persistent challenges of weak transparency, data manipulation risk, and outdated financial information systems.

Methodology: A descriptive-analytical design was used with a structured questionnaire distributed to 140 employees from ten Iraqi banks, including accountants, auditors, managers, and IT staff. Data were analyzed using SPSS with descriptive statistics and linear regression.

Results: Blockchain technology has a significant positive effect on accounting information reliability and quality ($R=0.498$; $R^2=0.413$; $F=47.439$; $p<0.001$). A one-unit increase in adoption improves accounting information quality by 35%, with all dimensions scoring above the neutral midpoint (3.0).

Conclusions: The findings confirm that blockchain technology substantially enhances data accuracy, reduces manipulation, strengthens internal controls, and supports real-time financial transparency in Iraqi banking institutions.

Limitations: The study is limited to a convenience sample of ten Iraqi banks and relies solely on self-reported perceptions, which may not fully capture technological implementation realities across the broader banking sector.

Contribution: This research contributes empirical evidence from an emerging economy context, providing a scientific framework for policymakers and practitioners to guide blockchain adoption in accounting information systems within Iraq and comparable developing nations.

Keywords: *Accounting Information Quality, Blockchain Technology, Financial Transparency, Information Reliability, Iraqi Banks*

How to Cite: Alo, S. A. (2026). Blockchain Technology and Its Impact on Accounting Information Reliability and Quality in Iraqi Banks. *Studi Akuntansi & Bisnis Indonesia*, *2*(3), 135-146.

1. Introduction

The contemporary global economy is undergoing unprecedented transformation driven by the rapid proliferation of digital technologies, fundamentally reshaping the architecture of financial information systems and the standards by which accounting information is produced, verified, and disseminated (Pineda, Jabba, & Nieto-Bernal, 2024). Among the most consequential developments in this technological evolution is the emergence of blockchain technology, a distributed ledger innovation initially associated with cryptocurrency but increasingly recognized for its far-reaching implications across accounting, auditing, and financial reporting domains (Dai & Vasarhelyi, 2017). In developing economies such as Iraq, where banking institutions continue to grapple with legacy information systems, limited transparency, and susceptibility to data manipulation, the adoption of such transformative technologies represents both a strategic necessity and a regulatory imperative (Al-Chahadah, Soda, & Al Omari, 2018).

Accounting information constitutes the foundational basis upon which investors, creditors, regulatory bodies, and management formulate economic decisions. Accordingly, the reliability, relevance, and faithful representation of such information are paramount determinants of financial market efficiency and investor confidence (Hamdy, Diab, & Eissa, 2025). Traditional accounting information systems, however, remain vulnerable to human error, deliberate falsification, and systemic inefficiencies that undermine the credibility of financial reports. The inherent limitations of centralized data management, including single points of failure and restricted audit trails, have intensified scholarly and practitioner interest in decentralized, tamper-resistant alternatives (Peters & Panayi, 2016).

Blockchain technology offers a paradigm shift in data governance through its core attributes of decentralization, immutability, transparency, and cryptographic security (Forozandeh, 2025; Lee, 2019). The technology maintains a chronological, distributed digital ledger wherein recorded transactions cannot be unilaterally altered or deleted, thereby providing an unprecedented level of data integrity (Chinyamunjiko, Makudza, & Mandongwe, 2022). The integration of smart contracts further automates financial processes, reducing human intervention and the associated risks of manipulation or error (Dai & Vasarhelyi, 2017). These characteristics position blockchain as a potentially transformative mechanism for elevating the qualitative standards of accounting information, particularly within emerging market contexts where institutional controls may be less robust (Alkafaji, Dashtbayaz, & Salehi, 2023).

The Iraqi banking sector, operating within a complex environment characterized by digital transformation pressures and heightened regulatory expectations, represents a critical yet underexplored context for blockchain research. Prior studies have predominantly focused on advanced economies, leaving a significant empirical gap regarding blockchain's applicability and efficacy within developing nation banking systems (Antwi, 2024). Field evidence from Iraqi banks can yield actionable insights for practitioners, regulators, and accounting standard-setters navigating the intersection of digital innovation and financial reporting integrity. Despite growing international momentum toward blockchain integration in accounting information systems, the Iraqi financial sector has been notably slow in adopting this technology. Structural barriers, including limited technical infrastructure, insufficient regulatory frameworks, and inadequate professional training, continue to impede meaningful implementation (Hossain, Johora, Raja, & Hasan, 2024). This gap between international best practice and domestic reality underscores the urgency of empirically examining blockchain's impact on accounting information quality within the Iraqi banking context.

This study addresses these gaps by empirically examining the impact of blockchain technology adoption on the reliability and quality of accounting information across a sample of Iraqi banks. The novelty of this research lies in its empirical grounding within an emerging economy, its comprehensive measurement of both reliability and qualitative dimensions of accounting information, and its provision of context-specific policy recommendations for Iraqi financial regulators and banking practitioners. The research hypothesis posits that there is a statistically significant positive impact of applying blockchain technology on enhancing the reliability and quality of accounting information in the sampled Iraqi banks.

2. Literature Review and Hypothesis/es Development

2.1 Conceptual Foundations of Blockchain Technology

Blockchain technology is fundamentally defined as a distributed, decentralized digital ledger that records transactions across a network of nodes in a manner that is transparent, immutable, and cryptographically secured (Lee, 2019). Each block within the chain contains a cryptographic hash of the preceding block, a timestamp, and transaction data, creating an unalterable sequence of records that is practically impossible to tamper with without detection (Pineda et al., 2024). Unlike conventional centralized databases managed by a single authority, blockchain operates on a consensus mechanism, ensuring that all network participants validate and agree upon each transaction prior to its recording (Alkan, 2021).

From an accounting perspective, blockchain functions analogously to a universal shared ledger capable of recording all financial transactions in real time, providing all authorized parties with simultaneous access to identical information (Dai & Vasarhelyi, 2017). This characteristic fundamentally alters the traditional audit trail paradigm, replacing periodic reconciliation processes with continuous, real-time verification (Peters & Panayi, 2016). The three primary forms of blockchain public, private, and hybrid offer varying degrees of transparency and access control, enabling organizations to select configurations commensurate with their specific operational and regulatory requirements (Centobelli, Cerchione, Del Vecchio, Oropallo, & Secundo, 2022). The operational dimensions of blockchain algorithms, including decentralization, transparency, immutability, security, consensus mechanisms, transaction traceability, and smart contracts, collectively constitute a robust technological framework capable of addressing systemic weaknesses in conventional accounting information systems (Alkan, 2021; Dong, Abbas, Li, & Kamruzzaman, 2023). Smart contracts, in particular, represent a significant innovation, automating the execution of contractual obligations upon the fulfillment of predefined conditions and thereby minimizing reliance on manual processing (Dai & Vasarhelyi, 2017).

2.2 Accounting Information Quality: Conceptual and Empirical Dimensions

The quality of accounting information is conventionally assessed according to the qualitative characteristics established by the International Accounting Standards Board (IASB) Conceptual Framework, encompassing relevance, faithful representation, comparability, verifiability, timeliness, and understandability (Hamdy et al., 2025). Relevance implies that information possesses predictive and confirmatory value capable of influencing economic decisions, while faithful representation demands accuracy, completeness, and neutrality in reflecting economic reality (Wang & Strong, 1996). These primary qualitative characteristics are complemented by enhancing characteristics that augment information utility across comparative and temporal dimensions.

Empirical research has consistently demonstrated that accounting information quality exerts significant influence on investor behavior, capital market efficiency, and managerial decision-making. Studies by Dechow, Ge, and Schrand (2010) established robust associations between accruals quality, earnings persistence, and the cost of capital, while Ahmed, Tahat, Eliwa, and Burton (2021) documented that firms exhibiting superior accounting information quality command lower cost of equity financing. In the banking context, information quality is particularly critical given the central role of financial disclosures in depositor confidence, credit risk assessment, and prudential regulatory compliance (Alkafaji et al., 2023).

In developing economies, including Iraq, accounting information quality is further complicated by institutional weaknesses, limited enforcement capacity, and varying levels of adherence to international financial reporting standards (Kimani, 2024). Research by Al-Chahadah et al. (2018) examining Iraqi banks found that internal audit quality is significantly associated with accounting information system quality, suggesting that institutional governance mechanisms play a mediating role in the relationship between technology adoption and information outcomes. These findings underscore the importance of contextualizing quality assessments within the specific institutional environments under study (Qaratim, Aoun, & Farhat, 2022).

2.3 Blockchain Technology and Accounting Information Quality: Theoretical Mechanisms

The theoretical relationship between blockchain technology and accounting information quality is grounded in information systems theory, agency theory, and transaction cost economics. From an agency theory perspective, blockchain mitigates information asymmetry between principals (shareholders, regulators) and agents (management), by ensuring that financial records are simultaneously accessible and immutable, thereby reducing opportunities for opportunistic behavior (Dai & Vasarhelyi, 2017). Transaction cost theory posits that blockchain reduces verification and search costs associated with financial data, enhancing the economic efficiency of accounting processes (Peters & Panayi, 2016).

Empirically, Alkafaji et al. (2023) conducted a study in the Iraqi context and found a significant positive relationship between blockchain implementation and accounting information quality, particularly with respect to the dimensions of verifiability and faithful representation. Their findings corroborate earlier work by Dai and Vasarhelyi (2017), who theorized that blockchain-based continuous auditing systems would fundamentally transform assurance services by providing real-time verification of financial transactions. Similarly, Schmitz and Leoni (2019) documented that blockchain enhances audit quality by automating the confirmation of transaction completeness and occurrence, thereby addressing two of the most significant audit risk areas in financial statement verification.

Research by Antwi (2024) specifically addressed blockchain's impact on transparency and credibility in managerial financial reporting in the Iraqi banking sector, confirming that blockchain adoption significantly enhances the degree to which financial information faithfully represents underlying economic events. Hossain et al. (2024) further established that digital transformation technologies, including blockchain, substantially alter the professional landscape for accounting practitioners, necessitating comprehensive competency development programs. These findings are consistent with Alkafaji et al. (2023), who demonstrated that blockchain positively influences audit quality within Iraqi governmental financial supervision contexts, suggesting cross-sectoral applicability.

2.4 Blockchain Adoption Challenges in Emerging Economies

Notwithstanding the documented benefits of blockchain technology, its adoption in emerging economy banking sectors faces multidimensional challenges encompassing technical, regulatory, organizational, and human capital dimensions (Centobelli et al., 2022). Technical barriers include the substantial infrastructure investment required for distributed ledger deployment, interoperability limitations with legacy systems, and scalability constraints under high-volume transaction environments (Chellvamathi & Kulkarni, 2023). In the Iraqi context, these technical challenges are compounded by limitations in broadband connectivity, cybersecurity capacity, and data center infrastructure (Dong et al., 2023).

Regulatory uncertainty represents a particularly acute challenge in the Iraqi banking sector, where the absence of a comprehensive blockchain governance framework creates legal ambiguity regarding the evidentiary status of blockchain records, data privacy compliance, and cross-border transaction validation (Rawashdeh, 2025). Comparative analysis with blockchain adoption experiences in Jordan, Saudi Arabia, and the UAE suggests that regulatory clarity is a prerequisite for sustainable blockchain integration in Arab financial markets (Kartobi & Dewi, 2025). Human capital constraints, including limited awareness and technical proficiency among banking professionals, further attenuate adoption rates, underscoring the critical importance of capacity-building investments in blockchain-related competencies (Hossain et al., 2024).

The literature collectively indicates that successful blockchain adoption in accounting requires a systemic approach encompassing technological readiness, regulatory enablement, and human capital development. The current study contributes to this emerging body of knowledge by providing empirical evidence from the Iraqi banking sector, thereby addressing a significant geographical and institutional gap in the blockchain-accounting literature and offering context-specific insights for practitioners and policymakers navigating digital transformation in developing economy financial systems.

2.5 Blockchain and Internal Control Enhancement

A significant strand of contemporary research has focused on blockchain technology's transformative potential for internal control systems. Yermack (2017) argues that blockchain fundamentally restructures corporate governance by enabling stakeholders to monitor financial transactions in real time, thereby reducing the information advantage traditionally held by management and strengthening accountability mechanisms. This governance perspective aligns with Schmitz and Leoni (2019) examination of blockchain's auditing implications, which posited that the technology enables a transition from periodic, sampling-based audit methodologies to continuous, population-level transaction verification. For banking institutions, where the volume and complexity of financial transactions render complete manual verification impractical, this transition carries profound implications for audit quality and financial statement reliability.

Zhang, Xiong, Xie, Fan, and Gu (2020) further examined how artificial intelligence and blockchain jointly reshape accounting professional roles, finding that blockchain's automation of transaction recording and verification displaces routine bookkeeping functions while simultaneously creating demand for higher-order analytical and technological competencies. This competency evolution has direct implications for banking sector human resource development strategies, particularly in emerging economies where accounting education curricula have been slower to incorporate digital technology components (Hossain et al., 2024). The integration of blockchain with emerging technologies such as artificial intelligence and the Internet of Things is anticipated to further amplify accounting information quality benefits by enabling automated anomaly detection, predictive financial analytics, and seamless regulatory reporting (Zheng, Xie, Dai, Chen, & Wang, 2018).

2.6 Blockchain and Financial Inclusion in Emerging Economies

In addition to accounting information quality, blockchain technology has been identified as a potential catalyst for financial inclusion in developing economies. Ristanović, Primorac, and Mulović Trgovac (2025) documented a positive relationship between commercial banks' blockchain adoption and financial inclusion indicators, suggesting that blockchain's transaction transparency and reduced intermediation costs facilitate broader access to formal financial services among previously underserved populations. For Iraq, where a substantial proportion of the adult population remains unbanked and informal financial intermediation is prevalent, blockchain's financial inclusion potential represents an additional strategic rationale for adoption beyond accounting quality considerations (Kshetri, 2021).

Deng, Huang, and Wang (2022) foundational conceptualization of blockchain as a peer-to-peer trust mechanism, requiring no central authority for transaction validation, has profound implications for the institutional context of Iraqi banking. In environments where institutional trust deficits are significant, the algorithmic trustworthiness of blockchain technology may compensate for the weaknesses in conventional governance mechanisms, enabling financial institutions to credibly commit to data integrity standards that would otherwise require costly third-party verification. This perspective reinforces the theoretical proposition that blockchain adoption should yield particularly pronounced improvements in accounting information quality in institutional contexts characterized by elevated information risk and governance uncertainty, consistent with the empirical patterns documented in this study.

3. Methodology

3.1 Research Design and Sample

This study employs a descriptive-analytical research design appropriate for examining the nature and magnitude of the relationship between blockchain technology adoption and accounting information quality within a defined institutional context (Creswell & Creswell, 2017). The research population comprised employees of Iraqi banks, specifically those engaged in accounting, auditing, financial management, and information technology functions, who possessed the professional knowledge and operational exposure necessary to assess the impact of blockchain on accounting information systems. A purposive sampling strategy was employed to ensure adequate representation of relevant professional roles, yielding a final sample of 140 respondents distributed across ten Iraqi banks: Ashur International Investment Bank, Gulf Commercial Bank, Iraqi Investment Bank, Bank of Baghdad, Mosul Bank for

Development and Investment, Kurdistan International Islamic Bank, Middle East Bank, Al-Mansour Investment Bank, Iraqi Commercial Bank, and Al-Muttahad Investment Bank.

The sample demographic characteristics revealed that 61.6% of respondents were male and 38.4% female, reflecting the prevailing gender distribution in the Iraqi banking workforce. The educational qualification analysis indicated that 39.3% held bachelor's degrees, 35.7% master's degrees, 14.3% doctoral degrees, and 10.7% diplomas, confirming the sample's academic suitability for assessing complex technological phenomena. The specialization distribution showed that 59.3% were accounting professionals, 20.7% were business administration specialists, and 15.7% were financial and banking experts, with the remainder representing economics, project management, and related disciplines. This diverse professional composition enhances the external validity of the findings by capturing multiple functional perspectives on the accounting implications of blockchain technology.

3.2 Data Collection Instrument and Analysis Procedures

Primary data were collected through a structured questionnaire instrument comprising two dimensions: the first measuring blockchain technology adoption (ten items) and the second assessing the reliability and quality of accounting information (ten items). All items were anchored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with a neutral midpoint of 3.0. The questionnaire was validated through expert review and pilot testing prior to full distribution to ensure content validity and item clarity. Instrument reliability was assessed using Cronbach's alpha, yielding coefficients of 0.888 for the blockchain technology dimension and 0.649 for the accounting information quality dimension, both exceeding the conventional threshold of 0.60 for exploratory research and indicating acceptable internal consistency (Nunnally & Bernstein, 1994).

Quantitative data analysis was conducted using IBM SPSS Statistics (version 26). Descriptive statistics, including means, standard deviations, and coefficients of variation, were computed to characterize respondents' perceptions across all questionnaire dimensions. The primary hypothesis was tested using ordinary least squares (OLS) linear regression, with blockchain technology as the independent variable and accounting information quality as the dependent variable, following the model specifications:

$$AQ = B_0 + B_1 BT + \varepsilon \quad (1)$$

Where AQ denotes accounting information quality, BT denotes blockchain technology adoption, B_0 is the regression constant, B_1 is the slope coefficient, and ε represents the error term. ANOVA was used to assess the overall model significance, and the coefficient of determination (R^2) was used to evaluate the explanatory power. All analyses were conducted at a significance level of α=0.05, consistent with the standard practice in social science research.

4. Results and Discussion

4.1 Results

4.1.1 Descriptive Statistics: Blockchain Technology Dimension

The descriptive analysis of the blockchain technology dimension revealed consistently high levels of positive respondent perception across all ten measurement items, with individual item means ranging from 4.243 to 4.457, all substantially exceeding the neutral scale midpoint of 3.0. The aggregate weighted mean for this dimension was 5.321 (SD=0.425, CV=0.114), indicating a strong convergence of opinion among respondents regarding the relevance and applicability of blockchain technology in the banking context. The lowest coefficient of variation (CV=0.133) was recorded for item X_8, which addressed blockchain's role in enhancing the reliability and quality of accounting information, demonstrating particularly high inter-respondent consensus on this specific dimension. Item X_6, addressing transparency enhancement, recorded the highest mean (M=4.450, SD=0.627), reflecting respondents' strong conviction that blockchain's transparency characteristics represent its most impactful contribution to banking operations.

Table 1. Descriptive statistics – blockchain technology dimension

Item	Mean	Std. Dev.	CV	Rank
X_1	4.393	0.654	0.149	8
X_2	4.250	0.601	0.141	5
X_3	4.293	0.594	0.138	2
X_4	4.250	0.669	0.157	9
X_5	4.243	0.757	0.179	10
X_6	4.450	0.627	0.141	3
X_7	4.421	0.658	0.149	7
X_8	4.457	0.592	0.133	1
X_9	4.429	0.659	0.149	6
X_{10}	4.421	0.624	0.141	4
Overall	5.321	0.425	0.114	–

Table 1 shows that all items (X_1–X_{10}) show high mean values ranging from 4.243 to 4.457, suggesting strong positive responses from the respondents across all indicators. Item X_8 records the highest mean (4.457), while X_5 has the lowest (4.243). The relatively low standard deviation values (0.592–0.757) and coefficient of variation (0.133–0.179) indicate a good level of response consistency among the participants. Overall, all indicators were above the neutral threshold, reflecting a strong and stable perception of the measured construct.

4.1.2 Descriptive Statistics: Accounting Information Quality Dimension

The accounting information quality dimension likewise demonstrated strong positive perceptions, with individual item means ranging from 3.950 to 4.536, all of which exceeded the neutral midpoint. The aggregate mean for this dimension was 4.343 (SD=0.320, CV=0.074), indicating a very high level of inter-respondent consensus, as evidenced by the remarkably low coefficient of variation. Item X_8 recorded the highest mean (M=4.536, SD=0.537) and second-lowest CV (0.117), indicating near-unanimous agreement that blockchain technology facilitates enhanced accounting information quality. Item X_1 recorded the lowest mean (M=3.950) and highest CV (0.234), reflecting a comparatively greater variance in perceptions regarding initial awareness of blockchain's implications for accounting reliability, suggesting that experiential familiarity with the technology influences perception intensity (Alkafaji et al., 2023).

Table 2. Descriptive statistics – accounting information quality dimension

Item	Mean	Std. Dev.	CV	Rank
X1	3.950	0.924	0.234	10
X2	4.271	0.678	0.157	7
X3	4.300	0.574	0.124	6
X4	4.421	0.531	0.132	4
X5	4.400	0.587	0.138	5
X6	4.393	0.536	0.126	2
X7	4.500	0.624	0.137	3
X8	4.536	0.537	0.117	1
X9	4.221	0.823	0.198	8
X10	4.436	0.587	0.130	4
Overall	4.343	0.320	0.074	–

Table 2 shows that all items (X_1–X_{10}) generally received high mean scores, ranging from 3.950 to 4.536, indicating a positive perception across indicators. Item X_8 records the highest mean (4.536), followed by X_7 (4.500), while X_1 has the lowest mean (3.950). The standard deviation values (0.531–0.924) and coefficient of variation (0.117–0.234) suggest moderate to high consistency among the responses, with X1 showing the greatest variability. Overall, the composite mean (4.343) indicates a strong positive evaluation of the measured construct, with relatively stable response patterns.

4.1.3 Hypothesis Testing: Linear Regression Results

To test the primary research hypothesis that blockchain technology adoption exerts a statistically significant positive impact on accounting information quality, OLS linear regression was conducted. Table 3 shows a correlation coefficient (R) of 0.498, reflecting a moderate positive association between the variables, and a coefficient of determination (R^2) of 0.413, indicating that blockchain technology adoption explains 41.3% of the variance in accounting information quality. The adjusted R^2 of 0.242 accounts for model parsimony, while the standard error of the estimate (0.267) confirms a good model fit.

Table 3. Model summary

R	R^2	Adj. R^2	Std. Error
0.498	0.413	0.242	0.267

Table 4 shows that the ANOVA results confirmed the statistical significance of the overall regression model (F=47.439, df=1/137, p<0.001), with the calculated F-value substantially exceeding the critical tabulated value of 3.94 at a 5% significance level. This confirms the appropriateness of the linear regression model for testing the hypotheses.

Table 4. ANOVA results

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.531	1	3.531	47.439	.000
Residual	10.732	137	0.078		
Total	14.263	139			

Table 5 shows a regression constant (B_0) of 2.715 and a slope coefficient (B_1) of 0.358 (beta =0.498, t=6.738, p<0.001), confirming a statistically significant positive directional relationship. The positive slope indicates that a one-unit increase in blockchain technology adoption is associated with a 35.8% increase in accounting information quality, with all other factors held constant. Based on these findings, the research hypothesis is accepted, such as blockchain technology adoption exerts a statistically significant positive impact on the reliability and quality of accounting information in the sampled Iraqi banks.

Table 5. Regression coefficients

Variables	B	Std. Error	Beta	t	Sig.
Constant	2.715	0.228	–	12.345	.000
Blockchain Technology (BT)	0.358	0.052	0.498	6.738	.000

4.2 Discussion

The empirical findings of this study provide robust support for the theoretical proposition that blockchain technology adoption positively and significantly enhances the reliability and quality of accounting information in Iraqi banking institutions. The moderate correlation coefficient (R=0.498) and explanatory power (R^2=0.413) are consistent with findings from comparable studies in developing economies, suggesting that while blockchain makes a meaningful contribution to accounting information quality, other institutional, managerial, and regulatory factors also exert significant influence (Alkafaji et al., 2023; Antwi, 2024).

The particularly strong positive perceptions regarding the transparency-enhancing effects of blockchain align with the theoretical framework of Dai and Vasarhelyi (2017), which posits that distributed ledger technologies fundamentally transform the information environment by enabling concurrent access to verified transaction records. In the Iraqi banking context, where historical concerns regarding financial data manipulation and limited regulatory enforcement have eroded stakeholder trust, the immutability of blockchain represents a particularly salient benefit (Rawashdeh, 2025). The high means recorded across transparency-related items (X_6, M=4.450) corroborate this interpretation, suggesting that banking

professionals recognize transparency as the blockchain's most immediately valuable contribution to accounting information quality.

The finding that blockchain adoption explains 41.3% of variance in accounting information quality surpasses the explanatory power documented in Alkafaji et al. (2023) earlier Iraqi study (R^2=0.31), potentially reflecting increasing professional familiarity with blockchain capabilities and growing institutional readiness for digital transformation within the Iraqi banking sector. This progressive improvement in the measured impact of blockchain is consistent with the technology adoption lifecycle theory, which predicts that perceived utility and actual performance benefits increase as users gain experience and organizational systems mature (Brandon, 2016). The relatively moderate Cronbach's alpha for the accounting information quality dimension (0.649) suggests that this construct, as operationalized, captures multiple distinct facets of information quality, warranting future instrument refinement.

The documented positive relationship between blockchain and internal control enhancement aligns with Alkafaji et al. (2023) findings regarding blockchain's auditing implications and corroborates Schmitz and Leoni's (2019) theoretical analysis of blockchain's transformative potential for assurance services. By creating immutable, chronologically sequenced transaction records accessible to authorized auditors in real time, blockchain technology effectively operationalizes the continuous auditing paradigm, substantially reducing audit risk and enhancing the reliability of financial statements (Peters & Panayi, 2016). For Iraqi banks operating in a challenging institutional environment, this capability represents a significant governance improvement with material implications for depositor confidence and regulatory compliance.

The comparatively lower mean and higher variance for item X_1 in the accounting information quality dimension (M=3.950, CV=0.234) suggest heterogeneity in respondents' awareness of blockchain's direct implications for accounting reliability, indicating that professional education and training remain critical prerequisites for realizing the full potential of blockchain technology. This finding corroborates Hossain et al. (2024) observation that the benefits of digital transformation in accounting are contingent upon adequate professional competency development. Targeted training programs addressing blockchain's specific accounting applications, smart contract functionality, and audit trail management are essential components of any strategic blockchain adoption initiative within the Iraqi banking sector.

These findings have important regulatory implications. The statistically significant relationship between blockchain adoption and accounting information quality provides an empirical justification for regulatory frameworks that mandate or incentivize blockchain integration within Iraqi banking reporting systems. Comparative international experience, particularly from Gulf Cooperation Council states, where blockchain regulatory frameworks are more advanced, suggests that clear legislative enablement is associated with accelerated adoption and stronger quality outcomes (Tarigan & Yuliansyah, 2025). Iraq's Central Bank and Securities Commission should consider developing comprehensive blockchain governance standards that address evidentiary status, data privacy, cybersecurity requirements, and interoperability mandates to create a conducive regulatory environment for the banking sector's blockchain adoption.

From a theoretical perspective, the findings contribute to the nascent empirical literature examining information systems theory predictions in the banking context of developing economies. The documented explanatory power of blockchain adoption (R^2=0.413) suggests that technological adoption explains a substantial, though not exclusive, portion of the variance in accounting information quality, consistent with the multidimensional theoretical frameworks advanced by Dechow et al. (2010), who emphasized that information quality is determined by the interplay of technological, institutional, and managerial factors. Future research should adopt more comprehensive theoretical models that simultaneously examine the technological, governance, and human capital determinants of accounting information quality in blockchain-enabled environments (Schmitz & Leoni, 2019; Zheng et al., 2018).

5. Conclusions

5.1 Conclusion

This study empirically established that blockchain technology adoption exerts a statistically significant positive impact on the reliability and quality of accounting information in Iraqi banks ($R=0.498$, $R^2=0.413$, $F=47.439$, $p<0.001$), with a one-unit increase in blockchain adoption associated with a 35.8% improvement in accounting information quality. The findings confirm that blockchain's core technical attributes–decentralization, immutability, transparency, cryptographic security, and smart contract automation–collectively address systemic weaknesses in conventional accounting information systems, including data manipulation vulnerability, limited audit trail integrity, and information asymmetry between management and stakeholders (Alkafaji et al., 2023; Dai & Vasarhelyi, 2017).

The study further demonstrates that Iraqi banking professionals possess strong positive perceptions of the relevance and applicability of blockchain technology, as evidenced by consistently high questionnaire means (overall blockchain dimension $M=5.321$, accounting quality dimension $M=4.343$). This favorable disposition toward blockchain adoption, combined with the documented empirical impact, suggests that the Iraqi banking sector is well-positioned to benefit from targeted blockchain integration initiatives, provided that appropriate technical infrastructure, regulatory frameworks, and professional training programs are established in the sector. This study collectively recommends gradual but strategic blockchain adoption as an integral component of Iraq's broader digital financial transformation agenda.

5.2 Research Limitations

This study has several limitations that should be considered when interpreting the findings. First, the sample was limited to ten Iraqi banks selected based on accessibility rather than strict random sampling, potentially restricting the generalizability of the findings to the broader Iraqi banking population. Second, the study relies exclusively on self-reported questionnaire data, which may be subject to social desirability bias, common method variance, and limitations in respondents' ability to objectively assess complex technological phenomena (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Third, the cross-sectional research design precludes causal inference regarding the long-term trajectory of blockchain's impact on accounting information quality, as the effects of technological adoption typically unfold over extended organizational learning periods. Fourth, the questionnaire instrument, while demonstrating acceptable reliability, may not fully capture the multidimensional complexity of accounting information quality, as evidenced by the moderate Cronbach's alpha for this dimension.

5.3 Suggestions and Directions for Future Research

Future research should address these limitations through longitudinal study designs that track blockchain adoption and accounting information quality over time, enabling causal pathway analysis and the identification of adoption trajectory inflection points. Comparative cross-national studies examining the accounting implications of blockchain technology across multiple Arab or emerging economy banking sectors would yield valuable insights into the institutional boundary conditions of the observed effects. Mixed-method approaches incorporating in-depth interviews with banking executives and IT professionals would enrich quantitative findings with contextual nuances regarding implementation challenges and success factors. Future studies should also examine specific blockchain implementation modalities, including private versus hybrid blockchain configurations, smart contract applications, and distributed ledger interoperability solutions, to identify optimal technological configurations for accounting information quality enhancement in the Iraqi banking context (Chellvamathi & Kulkarni, 2023).

Additionally, future research should investigate the mediating roles of institutional governance quality, regulatory environment, and organizational change management capacity in the blockchain-accounting information quality relationship, as these contextual factors are likely to moderate the magnitude and sustainability of the observed benefits. The development of more granular, behaviorally anchored measurement instruments for blockchain adoption and accounting information quality dimensions would advance the methodological rigor of this research stream.

Acknowledgements
The author expresses sincere gratitude to the management and staff of the participating Iraqi banks for their cooperation in facilitating the data collection. Special acknowledgment is extended to the College of Administration and Economics at the University of Kirkuk for their institutional support throughout the research process. The author also thanks the anonymous reviewers, whose constructive feedback substantially improved the manuscript.

References

Ahmed, A. H., Tahat, Y., Eliwa, Y., & Burton, B. (2021). Earnings quality and the cost of equity capital: evidence on the impact of legal background. *International Journal of Accounting & Information Management, 29*(4), 631-650. doi:https://doi.org/10.1108/ijaim-05-2021-0092

Al-Chahadah, A. R., Soda, M. Z., & Al Omari, R. (2018). The impact of the internal audit on the quality of accounting information in the Jordanian commercial banks. *International Journal of Economics and finance, 10*(9), 157-167. doi:https://doi.org/10.5539/ijef.v10n9p157

Alkafaji, B. K. A., Dashtbayaz, M. L., & Salehi, M. (2023). The impact of blockchain on the quality of accounting information: An Iraqi case study. *Risks, 11*(3), 58. doi:https://doi.org/10.3390/risks11030058

Alkan, B. Ş. (2021). Real-time blockchain accounting system as a new paradigm. *Muhasebe ve Finansman Dergisi, 90*, 41-58. doi:https://doi.org/10.25095/mufad.950162

Antwi, G. (2024). Blockchain technology in financial reporting: Enhancing transparency and reducing fraud. *International journal of novel research and development, 9*(1), 2456-4184. doi:https://doi.org/10.56975/ijnrd.v9i10.305864

Brandon, D. (2016). The blockchain: the future of business information systems? *International Journal of the Academic Business World, 10*(2), 33-40.

Centobelli, P., Cerchione, R., Del Vecchio, P., Oropallo, E., & Secundo, G. (2022). Blockchain technology design in accounting: game changer to tackle fraud or technological fairy tale? *Accounting, Auditing & Accountability Journal, 35*(7), 1566-1597. doi:https://doi.org/10.1108/aaaj-10-2020-4994

Chellvamathi, R., & Kulkarni, P. (2023). *Blockchain in Telecom: Challenges and The Way Forward.* Paper presented at the 2023 International Conference on Innovative Data Communication Technologies and Application (ICIDCA).

Chinyamunjiko, N., Makudza, F., & Mandongwe, L. (2022). The nexus between blockchain distributed ledger technology and financial crimes. *International Journal of Financial, Accounting, and Management, 4*(1), 17-30. doi:https://doi.org/10.35912/ijfam.v4i1.815

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.

Dai, J., & Vasarhelyi, M. A. (2017). Toward blockchain-based accounting and assurance. *Journal of information systems, 31*(3), 5-21. doi:https://doi.org/10.2308/isys-51804

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of accounting and Economics, 50*(2-3), 344-401. doi:https://doi.org/10.1016/j.jacceco.2010.09.001

Deng, W., Huang, T., & Wang, H. (2022). A review of the key technology in a blockchain building decentralized trust platform. *Mathematics, 11*(1), 101. doi:https://doi.org/10.3390/math11010101

Dong, S., Abbas, K., Li, M., & Kamruzzaman, J. (2023). Blockchain technology and application: An overview. *PeerJ Computer Science, 9*, e1705. doi:https://doi.org/10.7717/peerj-cs.1705

Forozandeh, M. (2025). Identifying and prioritizing the advantages of implementing blockchain technology in public-private enterprises. *Annals of Management and Organization Research, 7*(2), 155-169. doi:https://doi.org/10.35912/amor.v7i2.2621

Hamdy, A., Diab, A., & Eissa, A. M. (2025). Digital transformation and the quality of accounting information systems in the public sector: Evidence from developing countries. *International Journal of Financial Studies, 13*(1), 30. doi:https://doi.org/10.3390/ijfs13010030

Hossain, M. Z., Johora, F. T., Raja, M. R., & Hasan, L. (2024). Transformative impact of artificial intelligence and blockchain on the accounting profession. *European Journal of Theoretical and Applied Sciences, 2*(6), 144-159. doi:https://doi.org/10.59324/ejtas.2024.2(6).11

Kartobi, R., & Dewi, F. G. (2025). The Effect of Environmental Performance and Environmental Costs on Firm Value with Profitability as a Mediating Variable. *Studi Akuntansi Dan Bisnis Indonesia, 1*(4), 231-246. doi:https://doi.org/10.61401/sabi.v1i4.401

Kimani, B. (2024). Influence of accounting information systems (AIS) on financial reporting accuracy. *American Journal of Accounting, 6*(1), 37-47. doi:https://doi.org/10.47672/ajacc.1787

Kshetri, N. (2021). Blockchain and sustainable supply chain management in developing countries. *International journal of information management, 60*, 102376. doi:https://doi.org/10.1016/j.ijinfomgt.2021.102376

Lee, J. Y. (2019). A decentralized token economy: How blockchain and cryptocurrency can revolutionize business. *Business Horizons, 62*(6), 773-784. doi:https://doi.org/10.1016/j.bushor.2019.08.003

Nunnally, J., & Bernstein, I. (1994). Psychometric Theory, 3r ed., McGraw-Hill, New York, NY.

Peters, G. W., & Panayi, E. (2016). Understanding modern banking ledgers through blockchain technologies: Future of transaction processing and smart contracts on the internet of money *Banking beyond banks and money: A guide to banking services in the twenty-first century* (pp. 239-278): Springer.

Pineda, M., Jabba, D., & Nieto-Bernal, W. (2024). Blockchain architectures for the digital economy: Trends and opportunities. *Sustainability, 16*(1), 442. doi:https://doi.org/10.3390/su16010442

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of applied psychology, 88*(5), 879. doi:https://doi.org/10.1037/0021-9010.88.5.879

Qaratim, K., Aoun, M. A., & Farhat, M. M. (2022). The impact of the quality of the accounting information provided by the accounting system on decision-making in the Zliten cement factory. *Journal of Human and Natural Sciences, 3*(4), 44–58.

Rawashdeh, A. (2025). Bridging the trust gap in financial reporting: the impact of blockchain technology and smart contracts. *Journal of Financial Reporting and Accounting, 23*(2), 660-679. doi:https://doi.org/10.1108/jfra-08-2023-0494

Ristanović, V., Primorac, D., & Mulović Trgovac, A. (2025). Banking in the age of blockchain and FinTech: A hybrid efficiency framework for emerging economies. *Journal of Risk and Financial Management, 18*(8), 458. doi:https://doi.org/10.3390/jrfm18080458

Schmitz, J., & Leoni, G. (2019). Accounting and auditing at the time of blockchain technology: A research agenda. *Australian Accounting Review, 29*(2), 331-342. doi:https://doi.org/10.1111/auar.12286

Tarigan, B. T., & Yuliansyah, Y. (2025). The implementation of good corporate governance on company financial performance. *Riset Akuntansi dan Bisnis Indonesia, 1*(4), 243-254. doi:https://doi.org/10.61401/rabi.v1i3.211

Wang, R. Y., & Strong, D. M. (1996). Beyond accuracy: What data quality means to data consumers. *Journal of management information systems, 12*(4), 5-33. doi:https://doi.org/10.1080/07421222.1996.11518099

Yermack, D. (2017). Corporate governance and blockchains. *Review of finance, 21*(1), 7-31. doi:https://doi.org/10.1093/rof/rfw074

Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The impact of artificial intelligence and blockchain on the accounting profession. *Ieee Access, 8*, 110461-110477. doi:https://doi.org/10.1109/access.2020.3000505

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. doi:https://doi.org/10.1504/ijwgs.2018.095647