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Blockchain in Accounting and Auditing: A Systematic Literature Review

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ABSTRACT
The rapid development of blockchain technology has generated significant discussion regarding its transformative potential in accounting and auditing. While blockchain offers features such as immutability, decentralization, and real-time verification, its actual impact on financial reporting quality and audit practices remains fragmented across the literature. This study aims to systematically review and synthesize scholarly research on blockchain applications in accounting and auditing over the period 2016–2026. Using a PRISMA-guided systematic literature review approach, peer-reviewed journal articles were identified, screened, and analyzed through thematic synthesis and qualitative content analysis. The findings reveal five dominant research streams: (1) blockchain and financial reporting quality, (2) audit transformation and risk reconfiguration, (3) governance and regulatory challenges, (4) crypto-asset accounting issues, and (5) technological integration with artificial intelligence and data analytics. The review indicates that blockchain enhances structural transparency and transaction traceability, potentially reducing detection risk in auditing. However, improvements in reporting quality are conditional upon regulatory clarity, governance mechanisms, and institutional readiness. Rather than eliminating audit risk, blockchain redistributes risk toward system integrity, cybersecurity, and smart contract reliability. This study contributes by integrating fragmented findings into a coherent analytical framework, identifying empirical gaps, and proposing a structured future research agenda. The results provide theoretical implications for digital accounting scholarship and practical insights for auditors, regulators, and policymakers navigating blockchain-enabled financial ecosystems.

Keywords: *Blockchain; Accounting; Auditing; Financial reporting quality; Audit risk; Crypto-assets; Systematic literature review.*

1. Introduction

The rapid development of blockchain as a distributed ledger technology (DLT) has generated significant transformation across financial systems, corporate governance, and assurance services. Global investment in blockchain-based solutions has increased substantially over the past decade, with major accounting firms and multinational corporations integrating blockchain applications into financial reporting, supply chain accounting, and audit processes. Empirical evidence suggests that blockchain adoption is no longer limited to cryptocurrency transactions but is expanding into enterprise accounting systems, smart contract execution, and real-time verification mechanisms (Dai & Vasarhelyi, 2017; Kokina, Mancha, & Pachamanova, 2017). This technological shift has raised fundamental questions regarding how accounting information is recorded, verified, and assured in increasingly decentralized environments.

Early conceptual studies argue that blockchain enables immutable transaction records, cryptographic verification, and shared ledgers, thereby enhancing transparency and potentially reducing information asymmetry (Yermack, 2017; Bonsón & Bednárová, 2019). The introduction of the triple-entry accounting concept and permissioned blockchain frameworks

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has been proposed as a mechanism to improve trust and reduce fraud risk in financial reporting (Dai & Vasarhelyi, 2017). Furthermore, blockchain-based smart contracts are considered capable of facilitating continuous accounting and continuous auditing by automating transaction validation and strengthening audit trails (Liu, Wu, & Xu, 2019; Appelbaum & Nehmer, 2020). These developments suggest that blockchain may significantly alter the nature of audit evidence, risk assessment procedures, and internal control systems.

However, despite its transformative potential, empirical findings remain fragmented and inconclusive. Bibliometric and systematic reviews reveal that much of the existing literature remains conceptual, exploratory, or normative in nature (Secinaro et al., 2021; Lardo et al., 2022; Lombardi et al., 2022). While numerous studies discuss theoretical advantages such as enhanced transparency and cost efficiency, fewer studies provide robust empirical testing of blockchain's impact on financial reporting quality, audit effectiveness, auditor independence, or regulatory compliance. In addition, emerging research on crypto-asset accounting highlights substantial ambiguity in measurement, disclosure, and valuation standards, reflecting regulatory and standard-setting challenges (Howell & Pincus, 2022; Georgiou et al., 2024).

From an auditing perspective, empirical evidence indicates that clients' use of blockchain technology affects auditors' risk assessment processes and audit approaches (Dyball & Seethamraju, 2021). Auditors must evaluate new forms of inherent and control risks within decentralized ecosystems, including cybersecurity vulnerabilities, governance weaknesses, and reliance on smart contract coding integrity (Appelbaum et al., 2022). At the same time, studies conducted in emerging economies demonstrate that blockchain adoption may enhance accounting information reliability and reduce opportunities for earnings manipulation, although implementation barriers remain significant (Hartoyo, Sukoharsono, & Prihatiningtyas, 2021). These mixed findings indicate that blockchain's impact on accounting and auditing cannot be assumed to be uniformly beneficial; instead, its effectiveness depends on governance structures, regulatory clarity, technological maturity, and professional competence.

Significant challenges continue to hinder widespread adoption. Governance complexities, interoperability issues, privacy concerns, scalability constraints, oracle reliability, and the absence of comprehensive accounting standards for crypto-assets limit practical implementation (Bonsón & Bednárová, 2019; Howell & Pincus, 2022). Moreover, existing research often isolates blockchain from complementary technologies such as artificial intelligence and data analytics, despite increasing integration in practice (Han et al., 2023). Consequently, there is a growing need to consolidate the fragmented literature to identify consistent findings, unresolved debates, and methodological limitations.

Although prior reviews have examined blockchain in accounting and auditing, several gaps remain. First, many reviews focus either on bibliometric mapping or on specific subtopics (e.g., crypto-assets or auditing disruption), without integrating empirical, conceptual, and policy-oriented findings into a comprehensive analytical framework (Secinaro et al., 2021; Lombardi et al., 2022). Second, limited attention has been given to comparing findings across different regulatory contexts, including emerging markets. Third, there is insufficient synthesis regarding how blockchain adoption affects core accounting qualities such as relevance, faithful representation, verifiability, and comparability. Finally, the interaction between blockchain implementation and audit risk models remains underexplored in empirical settings.

The urgency of this study stems from accelerating digital transformation in financial reporting environments and the increasing regulatory attention toward digital assets and decentralized finance. As standard-setters and audit firms adapt to technological disruption, a consolidated and up-to-date systematic review becomes essential to inform evidence-based decision-making. The novelty of this study lies in integrating international and national scholarly evidence within a unified analytical framework, critically evaluating empirical

robustness, and explicitly linking blockchain characteristics to accounting quality dimensions and audit risk assessment frameworks. By synthesizing recent literature (2016–2026), this study moves beyond descriptive mapping to provide conceptual integration and future-oriented research propositions. Accordingly, this paper aims to:

1. Systematically map the development of blockchain research in accounting and auditing over the past decade.
2. Identify empirically supported benefits and risks associated with blockchain adoption.
3. Analyze how blockchain affects financial reporting quality, audit procedures, and governance mechanisms.
4. Propose a structured research agenda addressing methodological, regulatory, and technological gaps.

By offering a comprehensive and analytically integrated review, this study seeks to contribute theoretically to digital accounting scholarship and practically to auditors, regulators, and policymakers evaluating blockchain integration within reporting and assurance frameworks.

2. Literature Review

Blockchain Technology and Its Accounting Foundations

Blockchain is a distributed ledger technology (DLT) that records transactions in a decentralized, immutable, and cryptographically secured environment. Unlike traditional centralized databases, blockchain enables shared verification across network participants, thereby reducing reliance on intermediaries (Dai & Vasarhelyi, 2017). From an accounting perspective, this technological architecture aligns with the concept of triple-entry accounting, where transactions are simultaneously recorded and cryptographically validated on a shared ledger (Yermack, 2017).

Early accounting literature emphasizes that blockchain enhances transparency, verifiability, and auditability of financial transactions (Kokina, Mancha, & Pachamanova, 2017). By embedding consensus mechanisms and time-stamped records, blockchain potentially strengthens the qualitative characteristics of accounting information, particularly faithful representation and verifiability. However, scholars argue that technological reliability does not automatically guarantee accounting reliability, as governance structures and regulatory oversight remain critical (Bonsón & Bednárová, 2019).

Thus, blockchain should not merely be viewed as a technical innovation but as an institutional and accounting infrastructure transformation that may redefine bookkeeping, internal controls, and assurance processes.

Blockchain and Financial Reporting Quality

A major stream of literature examines how blockchain influences financial reporting quality. Theoretically, blockchain can reduce information asymmetry by allowing stakeholders real-time access to validated transaction records (Yermack, 2017). Continuous recording and automated validation may decrease earnings manipulation opportunities and enhance transparency (Hartoyo, Sukoharsono, & Prihatiningtyas, 2021).

However, empirical evidence remains limited. While conceptual models suggest improved accuracy and reduced fraud risk, large-scale empirical validation is scarce (Secinaro et al., 2021). Moreover, challenges arise in accounting for crypto-assets and blockchain-based transactions due to unclear measurement and valuation standards (Howell & Pincus, 2022; Georgiou et al., 2024). Issues related to fair value measurement, volatility, and classification create uncertainty in financial statements.

Consequently, although blockchain promises improved reporting reliability, regulatory ambiguity and inconsistent standards constrain its effectiveness.

Blockchain in Auditing: Risk Assessment and Assurance Transformation

Blockchain significantly affects auditing procedures and risk assessment models. Traditional audit risk models consist of inherent risk, control risk, and detection risk. The integration of blockchain modifies these components by introducing new technological risks while potentially reducing transaction-level fraud risk (Liu, Wu, & Xu, 2019).

Empirical findings suggest that auditors must adjust their audit approaches when clients adopt blockchain systems (Dyball & Seethamraju, 2021). While immutable ledgers may reduce verification procedures, auditors must evaluate smart contract coding accuracy, cybersecurity vulnerabilities, and governance controls (Appelbaum et al., 2022).

Furthermore, blockchain enables continuous auditing, where real-time data verification becomes feasible (Appelbaum & Nehmer, 2020). This transformation may shift the auditor's role from periodic verification toward system assurance and IT governance evaluation. Nevertheless, scholars caution that blockchain does not eliminate audit risk; instead, it reallocates risk toward system design and implementation (Lombardi et al., 2022).

Governance, Regulatory, and Implementation Challenges

Despite technological advantages, blockchain adoption in accounting faces substantial institutional barriers. Governance complexity, lack of interoperability, privacy concerns, and scalability issues remain critical obstacles (Bonsón & Bednárová, 2019). Additionally, absence of comprehensive accounting standards for digital assets creates reporting inconsistencies (Howell & Pincus, 2022).

Research also indicates that implementation readiness varies significantly across jurisdictions, particularly between developed and emerging economies (Hartoyo et al., 2021). The institutional environment, regulatory support, and professional competence influence adoption outcomes.

Moreover, integration with emerging technologies such as artificial intelligence and data analytics introduces both opportunities and risks (Han et al., 2023). This technological convergence requires interdisciplinary research and updated professional competencies.

3. Methodology

This study adopts a Systematic Literature Review (SLR) approach to comprehensively synthesize prior research on blockchain applications in accounting and auditing. The SLR method was selected because it provides a structured, transparent, and replicable framework for identifying, evaluating, and integrating existing scholarly evidence. Compared to traditional narrative reviews, SLR minimizes selection bias by applying predefined inclusion and exclusion criteria, thereby enhancing methodological rigor and reliability. The review process follows the principles of the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, which guides systematic identification, screening, eligibility assessment, and final inclusion of relevant studies.

The literature search was conducted using several internationally recognized academic databases to ensure credibility and comprehensiveness of sources. The primary databases included Scopus, Web of Science (WoS), ScienceDirect, Emerald Insight, SpringerLink, and Google Scholar for supplementary verification and identification of nationally indexed journals with valid DOIs. To capture contemporary developments in blockchain research, the search was limited to publications from 2016 to 2026, reflecting the period during which blockchain began gaining significant academic attention in accounting and auditing contexts.

The search strategy employed Boolean operators to ensure systematic retrieval of relevant articles. The core search string combined the terms ("blockchain" OR "distributed ledger technology") AND ("accounting" OR "financial reporting") AND ("auditing" OR "audit

risk" OR "assurance"). Additional refinement keywords such as "triple-entry accounting," "crypto-assets accounting," "continuous auditing," "smart contracts," and "blockchain governance" were used to enhance search precision. Searches were restricted to titles, abstracts, and keywords to ensure topical relevance.

To maintain consistency and academic quality, predefined inclusion and exclusion criteria were applied. The inclusion criteria required that studies be peer-reviewed journal articles published between 2016 and 2026, written in English (including selected high-quality national journals with DOI), and directly related to blockchain applications in accounting, auditing, or financial reporting. Both empirical and conceptual studies, as well as bibliometric and systematic review articles, were considered eligible. Conversely, conference proceedings without peer review, editorial notes, practitioner magazines, and articles focusing solely on cryptocurrency trading without accounting implications were excluded. Duplicate records across databases were identified and removed during the screening phase.

The selection process followed the PRISMA stages. First, in the identification stage, all retrieved articles were compiled into a database management file. Second, during the screening stage, duplicate records were eliminated and titles and abstracts were reviewed to exclude irrelevant studies. Third, in the eligibility stage, full-text articles were assessed to determine theoretical alignment, methodological clarity, and direct relevance to accounting or auditing contexts. Only studies that satisfied all inclusion criteria were retained for qualitative synthesis in the final stage.

Following article selection, a structured data extraction procedure was conducted. Each included study was systematically coded according to author(s), publication year, journal source, research method (empirical, conceptual, or review), research setting, theoretical framework employed, key findings, limitations, and proposed future research directions. A thematic coding approach was applied to categorize the literature into major research streams, including blockchain and financial reporting quality, blockchain and audit risk transformation, governance and regulatory challenges, crypto-asset accounting issues, and integration with emerging technologies such as artificial intelligence and data analytics.

The data analysis employed qualitative content analysis combined with thematic synthesis to identify dominant research themes, methodological patterns, empirical robustness, and conceptual gaps. Descriptive analysis was also performed to examine publication trends by year, methodological orientation, and geographic focus. This analytical approach enables systematic comparison across studies and supports the development of an integrated research agenda.

To enhance reliability, the search strategy and criteria were defined prior to data collection, multiple databases were utilized, and duplicate removal procedures were conducted systematically. Validity was strengthened by limiting the review to peer-reviewed journal publications and applying consistent screening standards throughout the selection process. Nevertheless, several limitations remain. The review is confined to selected databases and may exclude unpublished or non-indexed research. Additionally, rapid technological evolution may render some findings time-sensitive, and heterogeneity in research methods limits the possibility of conducting quantitative meta-analysis.

Overall, by applying a PRISMA-guided systematic review methodology, this study ensures transparency, replicability, and analytical rigor in synthesizing blockchain research in accounting and auditing. The approach provides a robust foundation for identifying empirical gaps, regulatory challenges, and future research directions within the evolving digital accounting landscape.

4. Results and Discussion

Results

The systematic review reveals a substantial increase in scholarly publications on blockchain in accounting and auditing since 2017, reflecting the broader digital transformation of financial reporting ecosystems (Secinaro et al., 2021; Lardo et al., 2022). Early contributions were predominantly conceptual, focusing on the theoretical implications of distributed ledger technology (DLT) for accounting systems (Dai & Vasarhelyi, 2017; Kokina, Mancha, & Pachamanova, 2017). More recent studies, however, have shifted toward examining regulatory implications, crypto-asset accounting, and audit transformation (Lombardi et al., 2022; Georgiou et al., 2024).

Based on thematic synthesis, five dominant research clusters emerged.

Blockchain and Financial Reporting Quality

A significant portion of the literature argues that blockchain enhances financial reporting quality by improving transparency, traceability, and immutability of transaction records (Dai & Vasarhelyi, 2017; Yermack, 2017). Blockchain's consensus mechanisms and timestamp verification are believed to strengthen the qualitative characteristics of accounting information, particularly faithful representation and verifiability (Bonsón & Bednárová, 2019).

Empirical and exploratory studies indicate that blockchain adoption may reduce opportunities for earnings management and increase transaction-level reliability (Hartoyo, Sukoharsono, & Prihatiningtyas, 2021). However, systematic reviews emphasize that strong empirical validation remains limited, as most studies are conceptual or survey-based rather than archival-data driven (Secinaro et al., 2021; Lardo et al., 2022).

Furthermore, research on crypto-asset accounting highlights inconsistencies in measurement and disclosure practices, suggesting that improvements in reporting quality are constrained by regulatory ambiguity (Howell & Pincus, 2022; Georgiou et al., 2024). Thus, while blockchain theoretically enhances reporting reliability, institutional and standard-setting limitations moderate its practical impact.

Blockchain and Audit Transformation

The literature consistently identifies blockchain as a transformative force in auditing (Liu, Wu, & Xu, 2019; Appelbaum & Nehmer, 2020). Continuous auditing becomes feasible through automated transaction validation and real-time data access (Appelbaum & Nehmer, 2020). Blockchain-based ledgers may reduce detection risk by providing immutable audit trails (Dai & Vasarhelyi, 2017).

However, empirical findings suggest that blockchain shifts rather than eliminates audit risk. Auditors must assess inherent risks associated with system design, cybersecurity vulnerabilities, and smart contract coding integrity (Dyball & Seethamraju, 2021; Appelbaum et al., 2022). Lombardi et al. (2022) argue that assurance focus may move from transaction testing toward system governance and IT control evaluation.

Despite these theoretical propositions, the review shows that real-world audit engagement studies remain scarce. Much of the evidence is exploratory or experimental, indicating that blockchain-enabled auditing is still in its developmental stage.

Governance and Regulatory Challenges

Governance complexity and regulatory uncertainty emerge as recurring barriers in the literature (Bonsón & Bednárová, 2019). Studies highlight challenges related to privacy, interoperability, scalability, and unclear accountability in decentralized environments.

Accounting treatment of crypto-assets remains particularly contested. Howell and Pincus (2022) document inconsistencies in classification and measurement under existing

accounting standards, while Georgiou et al. (2024) emphasize disclosure limitations and comparability concerns. These regulatory gaps reduce the practical reliability of blockchain-based financial reporting.

Cross-jurisdictional evidence suggests that institutional readiness significantly influences adoption outcomes (Hartoyo et al., 2021). Consequently, blockchain effectiveness in accounting cannot be separated from regulatory and governance frameworks.

Crypto-Asset Accounting and Measurement Issues

Another dominant theme involves accounting for cryptocurrencies and digital assets. Studies indicate significant debate over fair value measurement, impairment recognition, and volatility management (Howell & Pincus, 2022). High price volatility complicates financial statement stability and may affect earnings predictability (Georgiou et al., 2024).

Additionally, verification of digital asset ownership presents new audit challenges, particularly in decentralized custody systems (Appelbaum et al., 2022). These technical complexities illustrate that blockchain introduces new assurance dimensions rather than simplifying accounting processes.

Integration with Emerging Technologies

Recent literature highlights growing integration between blockchain and artificial intelligence (AI) within accounting information systems (Han et al., 2023). Blockchain provides secure data infrastructure, while AI enhances anomaly detection and predictive analytics. However, research examining their combined effect on audit risk models remains underdeveloped.

Bibliometric analyses confirm fragmentation across research streams and emphasize the need for interdisciplinary integration (Secinaro et al., 2021; Lardo et al., 2022).

Synthesis of Findings

Overall, the findings indicate that blockchain holds transformative potential for accounting and auditing by enhancing transparency, enabling automation, and reshaping assurance mechanisms (Dai & Vasarhelyi, 2017; Liu et al., 2019). Nevertheless, empirical validation remains limited, regulatory ambiguity persists, and audit risk is reconfigured rather than eliminated (Dyball & Seethamraju, 2021; Lombardi et al., 2022).

The literature is evolving from conceptual exploration toward empirical investigation, yet substantial gaps remain in cross-country comparative analysis, archival data testing, and integrated technology frameworks (Secinaro et al., 2021; Han et al., 2023).

Discussion

This study set out to systematically examine how blockchain technology influences accounting and auditing practices, identify empirically supported benefits and risks, and address existing research gaps within the literature. The findings provide several important insights that directly respond to the research problems outlined in the introduction.

Does Blockchain Improve Financial Reporting Quality?

One of the central research problems concerns whether blockchain meaningfully enhances financial reporting quality. The reviewed literature consistently suggests that blockchain's core attributes—immutability, transparency, and decentralized validation—strengthen transaction-level reliability and reduce opportunities for manipulation (Dai & Vasarhelyi, 2017; Yermack, 2017). These characteristics theoretically align with the qualitative characteristics of accounting information, particularly faithful representation and verifiability.

However, the discussion of findings indicates that improvements in reporting quality are conditional rather than automatic. While blockchain reduces the possibility of post-recording alteration, it does not prevent inaccurate data entry at the source. This aligns with governance-focused arguments presented by Bonsón and Bednárová (2019), who emphasize that technological robustness cannot substitute for effective internal controls.

Furthermore, regulatory uncertainty in crypto-asset classification and measurement (Howell & Pincus, 2022; Georgiou et al., 2024) limits the comparability and consistency of financial statements. Thus, blockchain enhances structural transparency, but reporting quality remains heavily influenced by accounting standards, regulatory clarity, and institutional frameworks. This finding answers the first research problem: blockchain has the potential to improve reporting quality, yet its impact is mediated by governance and regulatory environments.

How Does Blockchain Transform Audit Risk and Assurance Models?

The second research problem concerns blockchain's effect on audit procedures and risk assessment. The findings demonstrate that blockchain does not eliminate audit risk but redistributes it. Traditional detection risk may decrease due to immutable ledgers and real-time verification (Liu, Wu, & Xu, 2019; Appelbaum & Nehmer, 2020). However, inherent and control risks evolve toward system architecture reliability, cybersecurity threats, and smart contract integrity (Dyball & Seethamraju, 2021; Appelbaum et al., 2022).

This transformation suggests a shift from transaction-based auditing toward system assurance and IT governance auditing. The audit profession may therefore require expanded technological expertise and interdisciplinary knowledge. Lombardi et al. (2022) argue that blockchain-enabled auditing emphasizes continuous monitoring rather than periodic verification, fundamentally redefining the auditor's role.

Consequently, the research problem regarding audit transformation is addressed as follows: blockchain reshapes the audit risk model by reducing traditional transactional uncertainty while introducing technological and governance risks. Rather than simplifying auditing, blockchain increases the complexity of assurance frameworks.

Why Does Empirical Evidence Remain Limited?

Another research issue identified was the dominance of conceptual discussions over empirical validation. Bibliometric studies (Secinaro et al., 2021; Lardo et al., 2022) confirm that much of the literature remains exploratory. The findings of this review corroborate that archival data-based empirical studies are still scarce.

Several factors explain this limitation. First, large-scale blockchain implementation in accounting systems remains relatively recent, restricting data availability. Second, regulatory inconsistencies across jurisdictions hinder standardized empirical measurement. Third, technological heterogeneity makes cross-firm comparison difficult.

Thus, the research gap identified in the introduction remains valid: the field requires robust empirical studies examining financial reporting outcomes, audit efficiency metrics, and cross-country regulatory impacts. This review contributes by consolidating fragmented evidence and clarifying where empirical validation is most urgently needed.

Theoretical Implications

The findings also contribute theoretically by linking blockchain adoption to established accounting and auditing frameworks. From an **agency theory** perspective, blockchain may reduce information asymmetry between principals and agents by increasing transparency and reducing discretionary manipulation. However, governance complexity suggests that agency conflicts may shift rather than disappear.

From an **information asymmetry** viewpoint, blockchain's real-time verification capabilities potentially enhance investor confidence. Yet measurement ambiguity in crypto-assets undermines comparability, limiting full asymmetry reduction.

Within the **audit risk model**, blockchain redefines the balance between inherent, control, and detection risks. Detection risk may decrease due to automated validation, but inherent and control risks associated with technological design increase. This reconceptualization suggests the need to update traditional audit frameworks to incorporate digital infrastructure risk components.

Practical and Regulatory Implications

The discussion also highlights several practical implications. For accounting practitioners, blockchain adoption requires investment in digital competencies and enhanced IT governance systems. For auditors, assurance approaches must evolve toward system-based evaluations and cybersecurity assessment.

For regulators and standard-setters, the lack of harmonized crypto-asset accounting standards represents a critical barrier. Without clear guidance on classification, measurement, and disclosure, blockchain's transparency benefits may not fully translate into high-quality financial reporting.

Integrative Interpretation

Overall, the discussion reveals that blockchain should not be interpreted as a technological panacea for accounting and auditing deficiencies. Instead, it functions as an enabling infrastructure whose effectiveness depends on institutional, regulatory, and professional ecosystems.

The review demonstrates that blockchain's transformative potential is significant but conditional. It enhances structural integrity and audit trail reliability while simultaneously introducing governance and technological complexity. Therefore, the answer to the overarching research question is nuanced: blockchain transforms accounting and auditing systems, but its success depends on regulatory maturity, organizational readiness, and interdisciplinary integration.

6. Conclusion

This study provides a systematic synthesis of blockchain research in accounting and auditing, demonstrating that the technology holds substantial transformative potential while remaining institutionally and empirically constrained. The findings indicate that blockchain enhances structural transparency, transaction traceability, and audit trail reliability through immutable and decentralized verification mechanisms. However, improvements in financial reporting quality are conditional rather than automatic. Regulatory ambiguity, particularly in crypto-asset classification and measurement, limits comparability and consistent application across jurisdictions. In auditing, blockchain reshapes rather than eliminates audit risk by reducing transaction-level verification burdens while introducing new technological and governance risks related to cybersecurity, smart contracts, and system architecture. Thus, blockchain represents an evolutionary shift in accounting and assurance systems rather than a universal technological solution.

Despite increasing scholarly attention, the literature remains dominated by conceptual and exploratory studies, with limited large-scale empirical validation. Archival analyses measuring the direct impact of blockchain adoption on reporting quality, audit efficiency, restatement frequency, and audit fees remain scarce. Furthermore, cross-country comparative research examining how regulatory environments moderate blockchain effectiveness is underdeveloped. Theoretical integration within agency theory, information asymmetry, and

audit risk frameworks also requires refinement to incorporate digital infrastructure risk and decentralized governance mechanisms.

Future research should therefore prioritize robust empirical testing, longitudinal case studies of real-world implementation, and interdisciplinary integration with artificial intelligence and advanced data analytics in continuous auditing environments. Additional inquiry into crypto-asset standard-setting, behavioral implications for auditor judgment, and the development of extended audit risk models suited for blockchain ecosystems is essential. By addressing these gaps, future scholarship can move beyond technological optimism toward evidence-based evaluation, thereby supporting regulators, practitioners, and academics in navigating the evolving digital accounting landscape.

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