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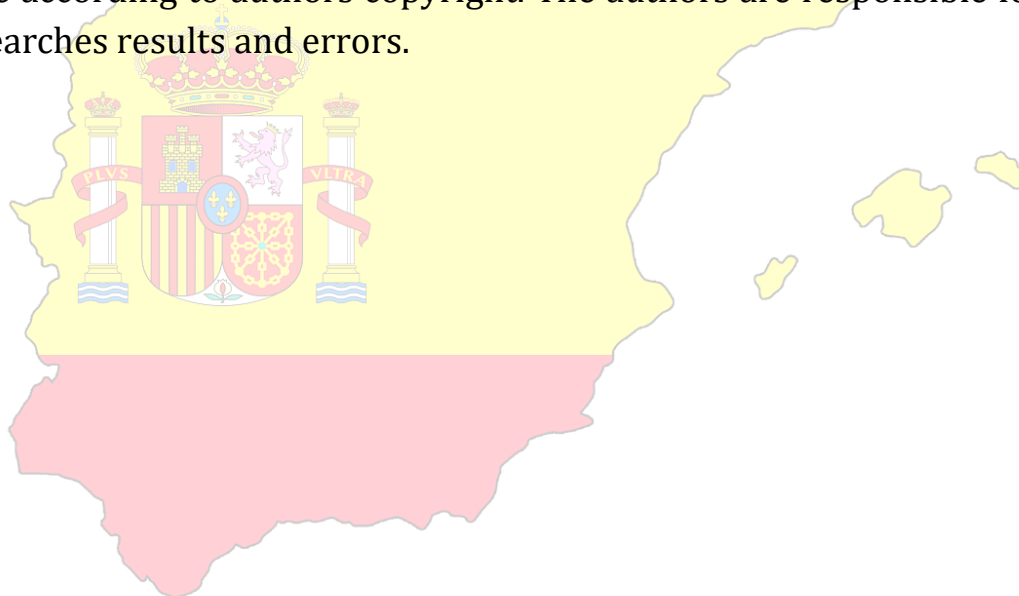


INTERNATIONAL CONFERENCE ON SUPPORT OF MODERN SCIENCE AND INNOVATION: a collection scientific works of the International scientific conference – Madrid, Spain, 2026, Issue 5.

Languages of publication: Uzbek, English, Russian, German, Italian, Spanish,

The collection consists of scientific research of scientists, graduate students and students who took part in the International Scientific online conference «**INTERNATIONAL CONFERENCE ON SUPPORT OF MODERN SCIENCE AND INNOVATION**». Which took place in Spain, 2026.

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THE IMPACT OF BLOCKCHAIN TECHNOLOGY ON ACCOUNTING TRANSPARENCY AND AUDIT EFFICIENCY

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Abstract. Blockchain technology is poised to revolutionize accounting and auditing by introducing immutable, transparent, and decentralized record-keeping. This paper examines the impact of blockchain on accounting transparency and audit efficiency through a systematic literature review. Key features such as immutability, real-time data access, and smart contracts significantly enhance data reliability, reduce fraud risks, and streamline audit processes, with reported reductions in audit time by 30-70%. However, challenges including integration issues, regulatory uncertainty, scalability, and skill gaps remain. The analysis highlights blockchain's transformative potential while acknowledging barriers to widespread adoption.

Keywords: Blockchain technology, accounting transparency, audit efficiency, immutability, smart contracts, real-time auditing, financial reporting, triple-entry accounting.

Traditional accounting and auditing systems face persistent challenges such as data manipulation risks, reconciliation delays, high costs, limited transparency, and reliance on sample-based testing. Blockchain technology — a distributed ledger system that provides secure, immutable, and transparent records — offers a promising solution. Each transaction is recorded in chronological blocks, cryptographically secured, and verified by multiple network participants, making alterations virtually impossible.

Blockchain enables triple-entry accounting, real-time financial reporting, and automated verification through smart contracts. For auditors, it shifts the focus from retrospective, labor-intensive procedures to continuous, real-time assurance. This paper investigates the role of blockchain in enhancing accounting transparency and audit efficiency using the IMRaD structure.

This study employs a systematic literature review (SLR) methodology. Relevant sources were identified using keywords such as “blockchain accounting transparency,” “blockchain audit efficiency,” “blockchain in auditing,” and “blockchain financial reporting” across academic databases, professional reports (e.g., Deloitte), and peer-reviewed journals. Priority was given to publications from 2019–2025, including empirical studies, meta-analyses, and industry reports from Big Four firms. Theoretical frameworks such as the Technology-Organization-Environment (TOE) model, Diffusion of Innovations Theory, and Transaction Cost Economics guided the synthesis. Qualitative and quantitative findings were integrated. Limitations include the early-stage nature of widespread adoption and variability in empirical evidence.

Impact on Accounting Transparency Blockchain significantly improves transparency through its immutable and decentralized nature. Once recorded,

transactions cannot be altered, providing a tamper-proof audit trail visible to authorized parties. This reduces information asymmetry, minimizes fraud risks (by 80-90% in some cases), and enables real-time visibility into financial activities. Stakeholders can verify records independently, increasing trust in financial statements.

Impact on Audit Efficiency

- Reduces audit time by 30-50% (up to 70% in advanced implementations).
- Cuts reconciliation efforts by 70-90%.
- Enables 100% transaction testing instead of sampling.
- Smart contracts automate compliance checks and internal controls, reducing human error.
- Facilitates continuous auditing and real-time monitoring.

Empirical studies show strong positive correlations: immutability is the strongest predictor of audit quality ($\beta \approx 0.45$), while transparency most strongly influences efficiency ($\beta \approx 0.40$), with high explanatory power ($R^2 = 0.74-0.78$).

Blockchain transforms auditing from a periodic, backward-looking process to a proactive, continuous one. Auditors gain direct access to verified data via read-only nodes, reducing reliance on client-provided information and third-party confirmations. This leads to higher audit quality, lower costs, and better fraud detection.

Key challenges include:

- Difficulty integrating with legacy systems.
- Lack of universal standards and regulatory clarity.
- High initial implementation costs and skill shortages.
- Scalability and privacy concerns in public blockchains.

Permissioned (private) blockchains often address many enterprise needs. Big Four firms are already piloting solutions (e.g., Deloitte COINIA for crypto asset auditing). Future integration with AI is expected to further amplify benefits.

Blockchain technology substantially enhances accounting transparency and audit efficiency by providing immutable records, real-time access, and automation. It has the potential to reduce fraud, lower costs, and improve the reliability of financial reporting. While significant barriers to full adoption exist, ongoing technological maturity and regulatory developments will likely accelerate its integration. Organizations and professionals should invest in training and pilot projects to capitalize on these opportunities.

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