INVESTIGATING THE ISSUES ARISING FROM THE INTEGRATION OF BLOCKCHAIN TECHNOLOGIES AND ARTIFICIAL INTELLIGENCE INTO ACCOUNTING AND AUDITING PRACTICES

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Abstract. *The integration of emerging technologies into accounting and auditing represents a major global challenge, reflecting the ability of financial and organizational systems to adapt to digitization processes. In this context, blockchain technology is considered a key driver of digital transformation, contributing to the redefinition of accounting practices and the enhancement of the reliability of financial information. This study analyzes recent literature on the use of blockchain technology in accounting and auditing, highlighting the main research directions, methodologies used, and implications for professional practices. The research explores how this technology influences accounting and auditing processes, as well as the relationship between digitization, automation, and increased transparency of financial information. The results indicate that blockchain facilitates the development of real-time accounting and continuous auditing, contributing to increased data security and process automation. At the same time, integration with artificial intelligence improves analytical capabilities and risk identification processes. However, the implementation of this technology highlights the existence of persistent challenges related to the regulatory framework, implementation costs, and the level of digital skills. The analysis highlights that blockchain acts as a structural driver of accounting transformation, but its effectiveness depends on the alignment between technological development, the institutional framework, and the adaptation of professional practices.*

Keywords: *blockchain technology, accounting, auditing, artificial intelligence, digital transformation, data security*

JEL: M41, M42

Introduction

Digital transformation represents one of the most significant challenges facing the accounting field in the context of the modern economy, characterized by the intensive use of emerging technologies. In this regard, blockchain technology, alongside artificial intelligence, is considered a major disruptive factor, capable of redefining how financial information is collected, processed, and reported [1, 2].The emergence of these technologies marks the transition from traditional accounting

systems, based on manual processes and ex-post verifications, to integrated digital systems characterized by automation and real-time access to information.

Blockchain stands out for a number of key features, such as decentralization, transparency, and data immutability, which help increase trust in financial information and reduce the risk of fraud [3, 4]. By using distributed ledgers, transactions can be recorded and verified in real time, thereby facilitating the development of a continuous accounting system and automated auditing. Furthermore, the integration of blockchain with artificial intelligence enables the analysis of large volumes of data and the rapid identification of anomalies, contributing to improved decision-making [1].

The literature highlights a significant increase in interest in the use of blockchain technology in accounting and auditing, particularly in recent years, against the backdrop of the accelerated digitization of the economic environment [5]. Recent studies highlight both the benefits of implementing this technology—such as increased transparency, efficiency, and data security—and the associated challenges, such as the lack of a regulatory framework, high costs, and difficulties in integrating with existing systems [6, 7, 8]. Furthermore, the adoption of blockchain entails significant changes in the role of accounting professionals, requiring the development of digital skills and adaptation to new technological requirements.

In this context, the aim of this research is to analyze recent contributions in the literature regarding the use of blockchain technology in accounting and auditing, highlighting the main research directions, the methodologies used, and the impact on professional practices.

The specific objectives of this paper are: O1: To identify the main research directions regarding the use of blockchain in accounting and auditing; O2: To analyze the methodologies used in recent studies and the results obtained; O3: To assess the impact of blockchain technology on accounting and auditing practices.

The State of Research on the Integration of Blockchain and AI Technologies in Accounting and Auditing

To achieve the proposed objectives, the research is based on an analysis of recent specialized literature on the use of blockchain technology in accounting and auditing. The studies included in the analysis reflect a variety of perspectives on the integration of this technology, covering both theoretical approaches and empirical investigations [1].

The selection of studies took into account their relevance to the research topic and their contribution to understanding the impact of blockchain on accounting and auditing practices. In this regard, studies highlighting the benefits and limitations of the technology [3] were considered, as well as research analyzing the determinants of its adoption in the organizational environment [6]. Additionally, papers capturing the evolution of research in the field and the main directions of development [5] were included.

The results of the analysis are summarized in Table 1, which highlights the main contributions of recent studies in terms of the phenomenon under study, the research objective, the methodology used, as well as their results and impact on the field of accounting. The analysis also reveals the diversity of methodological approaches and the complexity of the phenomenon under study [7].

Table 1. Summary of recent studies on the use of blockchain technology in accounting and auditing

AUTHOR(S) (YEAR)	SUBJECT STUDIED	PURPOSE	METHODOLOGY	RESULTS	IMPACT
HAN ET AL. [1]	Integration of blockchain technology and artificial intelligence in accounting and auditing	Analysis of how blockchain improves transparency, trust, and decision-making in accounting and auditing	Review of the literature	Blockchain enables real-time accounting, continuous auditing, and improves data quality and reliability	Reduces information asymmetry and supports the development of automated auditing and digital ecosystems

PUTRITAMA ET AL. [3]	The Impact of Blockchain Technology on Accounting, Auditing, and Financial Reporting	Analysis of the transformative role of blockchain in accounting and identification of research directions	Review of the literature	Blockchain increases data transparency, security, and efficiency, but poses integration and regulatory challenges	Supports accounting innovation and highlights the need for standardization and future research
AKTER ET AL. [6]	Adoption of blockchain technology in accounting	Identifying factors influencing blockchain adoption and associated challenges	Empirical study based on interviews	Adoption is influenced by organizational factors, high costs, lack of knowledge, and integration difficulties	Provides empirical evidence on adoption barriers and supports organizational decisions
PARRA-DOMÍNGUEZ ET AL. [2]	The disruptive impact of blockchain technology on accounting practices	Analysis of how blockchain is transforming accounting and identification of trends and gaps in research	Systematic literature review and bibliometric analysis	Blockchain improves transparency, security, and automation and integrates with AI, while also highlighting implementation challenges	Provides future research directions and supports the development of the theoretical and practical framework of digital accounting
ZHANG ET AL. [9]	The impact of blockchain technology on the audit process	Assessment of the benefits and risks of blockchain in auditing	Systematic literature review and case study analysis	Blockchain improves audit efficiency and enables continuous auditing, but presents technical risks and regulatory limitations	Highlights the need to develop the legislative framework and professional competencies
HASSANEIN ET AL. [5]	The evolution of research on blockchain technology in accounting and auditing	Mapping the specialized literature and identifying trends and research directions	Bibliometric analysis	The research highlights the rapid growth of interest in blockchain in accounting and auditing, identifying the main research directions and collaboration networks concentrated among authors and institutions	It contributes to shaping future research directions and highlights the need to develop the theoretical framework and of empirical studies on the integration of blockchain and AI
GKEKAS ET AL. [10]	Adoption of blockchain technology in accounting and auditing services	Analysis of factors influencing the intention to adopt blockchain	Empirical study and structural equation modeling	Adoption is influenced by moral values, social norms, attitude, and perceived behavioral control	Provides insights for developing strategies to implement blockchain in organizations
SHAHWAN ET AL. [11]	Auditors' perceptions of the use of blockchain technology in	Identification of blockchain's advantages and challenges from the	Empirical study and statistical analysis	Blockchain is perceived as increasing transparency, but there are	Highlights the influence of organizational culture on the adoption of

	accounting and auditing	auditors' perspective		differing opinions regarding other benefits	blockchain in auditing
LIMA E SILVA. [4]	The use of blockchain technology in accounting and auditing	Analysis of How Blockchain Enhances Transparency, Efficiency, and the Audit Process	Review of the literature	Blockchain enables continuous auditing, automates processes, and reduces fraud, but presents integration and regulatory challenges	Supports the strategic implementation of blockchain and the improvement of financial reporting quality
HAMADEH ET AL. [12]	Auditors' intention to adopt blockchain technology	Analysis of factors influencing blockchain adoption using the TAM model3	Empirical SEM modeling study	Auditors are more willing to adopt blockchain if they consider it useful for their work and easy to use	Highlights the need for professional training and infrastructure development for blockchain adoption
JENA [7]	Factors influencing the adoption of blockchain technology in accounting and auditing	Prioritization and classification of determinants of blockchain adoption	Qualitative approach based on MCDM methods	Adoption is primarily influenced by management support and government backing	Provides support for strategic decisions regarding blockchain implementation in organizations
ARICIU ET AL. [8]	The use of blockchain technology in accounting and auditing practices	Analysis of empirical research and identification of gaps and future directions	Systematic literature review	Blockchain transforms professional roles and highlights the need to develop technical skills	Provides research directions and supports the adaptation of organizational strategies to digitalization

Source: Authors' compilation based on the specialized literature

An analysis of the studies presented in Table 1 highlights a significant increase in research on the use of blockchain technology in accounting and auditing, reflecting the academic community's growing interest in the impact of these emerging technologies on professional practices. The specialized literature consistently emphasizes the transformative role of blockchain, highlighting its contribution to increasing the transparency and security of financial information [1]. At the same time, the use of distributed ledgers enables the recording and verification of transactions in real time, a feature that leads to improved data traceability [3].

A primary direction identified in the analyzed literature is represented by conceptual studies and literature reviews, which highlight the benefits of implementing blockchain in accounting and auditing. This research reveals that the technology facilitates the development of real-time accounting and continuous auditing, contributing to increased efficiency in accounting processes [2]. At the same time, the automation of repetitive tasks leads to a reduction in errors and the optimization of operational workflows [4]. The integration of blockchain with artificial intelligence is frequently cited as a key factor in the development of advanced financial analysis and control systems [1].

A second area of research consists of empirical studies, which offer an applied perspective on the adoption of blockchain technology. Their results indicate that the implementation of this technology is influenced by a combination of technological, organizational, and behavioral factors. Thus, high costs and the complexity of integration represent significant barriers to adoption [6]. At the same

time, perceived utility and ease of use directly influence the intention to adopt blockchain [12]. Furthermore, social and ethical factors, such as moral values and organizational norms, play an important role in the decision-making process [10], while management support and the institutional framework contribute to facilitating implementation [7].

At the same time, the literature highlights the existence of structural challenges that limit the widespread adoption of blockchain technology. These include a lack of digital skills among accounting professionals and difficulties in integrating with existing IT systems [6]. Furthermore, the absence of a clear regulatory framework adapted to new technologies represents a major obstacle to expanding the use of blockchain in practice [9].

Another relevant category of studies consists of bibliometric analyses, which provide an overview of the evolution of research in this field. These works highlight a rapid increase in interest in blockchain technology and identify the main research directions, emphasizing the need to develop more robust theoretical and methodological frameworks [5].

Conclusions

The analysis conducted highlights that blockchain technology is a key driver in the digital transformation of accounting and auditing, contributing to the redefinition of how financial information is collected, processed, and reported. Through its fundamental characteristics, this technology enables increased transparency, security, and reliability of data, while facilitating the development of modern accounting systems based on real-time recording and continuous auditing.

The research findings also highlight that integrating blockchain with other emerging technologies, such as artificial intelligence, enhances the capacity for analysis and risk identification, contributing to increased efficiency in decision-making processes. In this context, the role of the accounting professional is undergoing significant changes, requiring a shift toward activities involving a higher degree of analysis and interpretation of information.

However, the implementation of blockchain technology remains limited by a number of challenges, such as the lack of an adequate regulatory framework, high implementation costs, and insufficient development of digital skills. These issues highlight the need for an integrated approach that includes both technological adaptations and organizational and educational changes.

Thus, blockchain technology offers significant opportunities for modernizing accounting and auditing, but fully realizing this potential depends on the ability of organizations and professionals to adapt to the demands of a constantly evolving digital environment. Thus, the future of the accounting field is closely linked to the integration of emerging technologies and the development of skills suited to new economic realities.

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