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Digital Currencies in Accounting: Evolution and Future Prospects

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Abstract. This present paper articulates an in-depth examination of the evolution and consequential ramifications of digital currencies in the contemporary financial paradigm. It critically explores the historical development of monetary systems, the emergence of digital currencies, their comparative analysis with traditional monetary instruments, and the impacts of blockchain technology in this transition. Employing a systematic literature review methodology, the paper scrutinizes the potential influences of Central Bank Digital Currencies (CBDCs) on enhancing financial inclusivity, security, and operational efficacy. Furthermore, it addresses the multifaceted challenges and prospects digital currencies introduce to the accounting landscape, emphasizing the necessity for a nuanced comprehension of their mechanisms and the broader economic implications thereof.

Keywords: Finance; Blockchain technology; Cryptocurrency; Digital currency

1 Introduction

In recent years, the nature and function of money in our society have undergone significant transformations, driven by technological advances and changes in consumption and economic transaction patterns. In the past, money has been extracted from the earth (gold, silver), found (shells), or associated with a social group (cattle). These days, money is distributed as coins, paper money, or computer records, the majority of which are debt [1]. The goal of this article is to Evaluate the Effects of Blockchain Technology and Digital Currencies: Examine how blockchain technology and digital currencies are impacting financial and monetary processes, paying particular attention to transaction security, privacy, financial inclusion, and operational efficiency.

Money has changed over the ages to satisfy society's demands for both technology and economics. The conventional uses of money as a store of value, a unit of account, and a medium of exchange continue to be crucial considerations when assessing new currency types. The monopoly of currencies issued by central banks is under threat, though, as new dynamics brought about by the emergence of digital currencies and blockchain technology alter the notion of trust and security in financial transactions. A central bank response would be necessary if trade and currency warfare worsened.

There is a need to handle the significant changes that are occurring in payment systems. A major military conflict would necessitate immediate financial action. There is a chance that the global monetary system may experience stress with uncertain outcomes [2].

In order to ascertain the effects of digital currencies and blockchain technology on the current financial system, this study conducts a thorough examination of the literature. We will discuss how these innovations have the potential to enhance financial inclusion, lower transaction costs, and boost operational efficiency in addition to being a technological achievement. We will also talk about the difficulties in acceptance, security, and regulation that come with integrating digital currencies into the mainstream of finance. Blockchain is simply a distributed database or decentralized ledger that records transactions across several computers in a way that prevents the registered transactions from being changed after the fact. Digital currencies are supported by this technology, which also makes it possible to handle data transparently and securely without the need for a central authority. To guarantee the integrity and security of transactions, it makes use of cryptography. Due to its essential characteristics, which include decentralization, immutability, transparency, and auditability, blockchain technology can be used in industries other than cryptocurrency, such as supply chain management, healthcare, and financial services [3].

Through this analysis, we aim to contribute to the understanding of the role of digital currencies and blockchain technology in the transformation of monetary and financial systems, highlighting both the opportunities and challenges that these innovations present. The investigation is based on a broad review of academic literature and a meticulous analysis of recent studies, ranging from the traditional concept of money to the most recent innovations in the field of digital currencies and blockchain.

2 Conceptual Background

2.1 Money

Money is important in today's economy because it is used in nearly all transactions that support economic activity [4]. However, what is accepted as payment and how it is paid have evolved over time. Precious metals gradually fell out of use as money, first by goldsmiths' receipts for gold, then by banknotes redeemable in precious metals, and now by banknotes whose value is determined not by gold but by the monetary policy of the issuing central bank [4]. New schemes, such as cryptocurrencies and digital currencies, have recently emerged, combining new decentralized payment systems and currencies. In some ways, digital currencies are similar to earlier forms of money and payment systems. They are not created by central banks and allow payments to be made directly between the payer and the payee with no intermediaries [4].

In this way, according to [5], there are 3 traditional big functions of money: medium of exchange, store of value and unit of account:

- Serving as a medium of exchange is a minor requirement that any good, digital or physical, can fulfill once acquired with the intention of selling it later in exchange for another good.
- A store of value is a value reservoir that is used to transfer 'purchasing power' (the ability to acquire goods and services) from one point in time to another.
- Unit of account implies that it must be capable of serving as a unit of account for determining the worth of any specific item for sale.

Reference [6] indicate that cigarettes fulfilled all three of these functions within prisoner of war camps during the Second World War. Additionally, satisfying these economic criteria does not automatically imply that an asset will be classified as money for legal or regulatory purposes.

Money functions can be thought of as existing in a hierarchy, as seen in Figure 1. Several things that people see as repositories of value (such as houses) are not used as media of exchange. On the other hand, an asset can only function as a medium of exchange if at least two people (as transaction parties) are willing to treat it as a store of value, at least temporarily. Finally, to be called a unit of account, an asset must be able to be used as a medium of exchange in a variety of transactions involving multiple persons, and thus constitute a type of coordination across society [4].

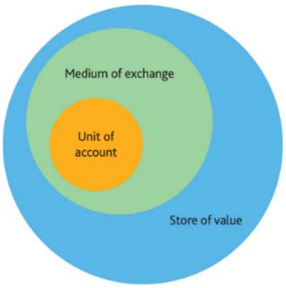


Fig. 1. The 3 functions of money (adapted from [4]).

2.2 Digital currency

According to reference [7], some members of the population are confused by the value of digital currencies, which exist exclusively in computer memory. However, the concept of virtual money is not new, as electronic payment systems have progressively evolved alongside developments in computer memory and communications technology, eventually supplanting physical currency and paper checks in sophisticated nations. For decades, several forms of electronic money have been in circulation.

When an independent digital currency circulates in an economy, it competes with the central bank's official currency. Official currency vs. private money competition is nothing new, and alternative money has included commodities such as gold and silver, as well as other things that have served as stores of value and mediums of exchange in

numerous societies. However, in most countries, the local currency faces the most competition from foreign government currencies, particularly the US dollar. For a central bank, the challenges raised by digital money are essentially the same as those raised by the presence of a competing foreign currency [7].

Countries' attitudes toward digital currencies have ranged from ambivalent or hostile to laissez-faire and encouraging [7].

The degree to which an asset fulfills the various functions of money varies from person to person and over time. In theory, anyone with an internet-connected computer or device could use digital currencies as money. However, digital currencies only serve as money to a limited extent and for a small number of people. They are likely to serve all three purposes for only a few thousand people worldwide right now, and even then, only in tandem with user's traditional currencies [4].

However, several central banks are considering adopting CBDC (Central Bank Digital Currencies). The operational efficiency and cost-cutting potential offered by CBDC is emphasized, positioning it as a modern iteration of Adam Smith's fiduciary money. Projections indicate a significant reduction in the costs associated with issuing and managing physical currency, as well as a potential reduction in commercial banks' monopoly rents.

Another driver is the impact of digitalization on the use of physical cash, particularly in countries such as Sweden and Norway. CBDC emerges as a safe alternative that is less vulnerable to theft and loss. Furthermore, the potential to improve financial inclusion, particularly in developing and emerging economies, is a compelling reason for CBDC adoption. In this case, CBDC could provide disadvantaged groups without bank accounts with access to the financial system and facilitate efficient fiscal transfers during national emergencies such as pandemics [8].

CBDC is marketed as a secure and trustworthy digital currency that is free of the risks of fraud, hacking, money laundering, and terrorism financing. CBDC is examined functionally through its roles as and efficient medium of exchange, a safe store of value, and a stable unit of account [8].

3 Material and methods

3.1 Research design

A systematic review methodology was used in this investigation, which involved developing a review strategy and looking for the most pertinent literature. According to reference [9], a systematic literature review is frequently applied in the social sciences and the study of organizations because it is methodical, comprehensive, transparent, and replicable. We collected our data in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [10]. PRISMA is a widely used tool for the systematic review of literature, it includes three main steps referred to as identification, screening and included. We used multiple checklists as we proceeded through these three stages.

The selection of the articles for our review was based on the relevance of the article to the digital currency, accounting record and blockchain disciplinary field. Several articles had been dropped during the process of carefully reviewing their complete texts after the inclusion criteria for the following reasons:

a) The allusion to cryptocurrencies: while some research has addressed the idea of cryptocurrencies, which may prove useful for the inquiry, it has not established any connection to the subject matter of this study.

b) Specific focus: certain research focused on blockchain technology applications unrelated to digital currencies, accounting or auditing. For instance, a study on artificial intelligence might be pertinent to the ideas previously mentioned, but since that research does not focus on the topics of our study, it must also be rejected because it might not provide information that is useful to our inquiry.

c) Analysis sphere: certain research was limited to specific circumstances, such as nations or businesses. The goal of our study is to explore and analyze the evolving landscape of financial transactions, specifically focusing on the rise of digital currencies. Including the historical evolution of money, the emergence of digital currencies, and the role of blockchain technology in shaping the financial landscape. The article aims to shed light on the challenges, opportunities, and implications of digital currencies, with a particular emphasis on Central Bank Digital Currencies (CBDC).

3.2 Eligibility Criteria

The selection of the articles for our review was based on the relevance of the article to the digital currency, accounting record and blockchain disciplinary field. Several articles had been dropped during the process of carefully reviewing their complete texts after the inclusion criteria for the following reasons:

a)The allusion to cryptocurrencies: while some research has addressed the idea of cryptocurrencies, which may prove useful for the inquiry, it has not established any connection to the subject matter of this study.

b) Specific focus: certain research focused on blockchain technology applications unrelated to digital currencies, accounting or auditing. For instance, a study on artificial intelligence might be pertinent to the ideas previously mentioned, but since that research does not focus on the topics of our study, it must also be rejected because it might not provide information that is useful to our inquiry.

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3.3 Search Strategy

Terms like digital currency, blockchain, cryptocurrencies, accounting, auditing, and accounting record were all included in the string. The database Scopus was used to acquire the documents needed for our analysis. Table 1 lists the research protocol that was followed for this investigation.

Table 1. Summary of research protocol.

Items	Description
Selected databases	Scopus
Search terms	Digital currency, blockchain, cryptocurrencies, accounting, auditing, and accounting record
Search fields	Title, abstract and keywords
Inclusion criteria	Digital currency, accounting record and blockchain

3.4 Data Extraction

Consistent data were extracted from the chosen documents (Table A, Appendix A). The data we obtained from each study included the following: the author(s), publication year, purpose, review methods, and main findings of the article. This document helps to provide a comprehensive understanding of the subject by synthesizing knowledge accumulated since 2017.

According to reference [11], NVIVO is a computer-assisted qualitative data analysis software (CAQDAS) program, was used to conduct grounded theory analysis in order to offer a more in-depth and comprehensive analysis of the dominant academic discourse.

Through the use of a popular qualitative research method, content analysis, we carefully examined a number of reviews, integrating them into NVIVO 12 for methodical organization and analysis. The process of analyzing qualitative data is complex and requires closely examining large amounts of text to find patterns and distinctions. Following the initial idea selection process, pertinent words and phrases were carefully coded using NVIVO 12, a program that was essential to the integration, coding, and analysis of a substantial amount of data. According to reference [12], NVIVO software has been used for data analysis because of its more reliable nature in qualitative data analysis. Section 4 of this study presents the results of the content analysis, which was supported by ADO-TCM and allowed for the systematic structure and visualization of co-occurrence networks of terms from chosen articles. This method broadened the scope of our investigation.

3.5 Quality Assessment

In the context of producing impactful scientific articles, readability is a critical metric that assesses how easily the written text can be understood. This assessment employs metrics such as the Gunning Fog Index, the Flesch-Kincaid Reading Ease Index, and the SMOG Grade, which take sentence length and word complexity into account (Appendix B). Readability assessment plays a crucial role in facilitating content writers and proofreaders to receive guidance about how easy or difficult a piece of text is [13]. This accessibility is especially important in scientific articles, where effective communication of complex ideas is critical. The choice of words and the structure of sentences have a direct impact on understanding of the reader.

Table 2. Readability characteristics of the 36 reports included.

Characteristics	Mean	Median	Standard Deviation
Nº of Sentences	258,86	179	222,53
Words per Sentence	11,16	8,82	5,79
Characters per Word	5,68	5,68	0,23
% Difficult Words	26,16	25,95	2,96
Flesch Reading Ease	34,24	35,7	9,88
Gunning Fog Index	14,93	13,99	2,59
Flesch Kincaid Grade	11,25	10,23	2,60
Smog Grade	12,15	11,53	3,09

3.6 Organizing Framework

According to reference [14], in a systematic review, an organizing framework is a structure that is used to guide the integration of peculiarities from various streams of literature. The structure of a systematic review is critical, and organizing frameworks are one way to provide this structure in ways that improve rigor, relevance, and impact [15].

Several organizing frameworks have been championed by previous scholars. For example, theory, construct, characteristics, and method (TCCM) framework, developed by reference [16], the TCM framework to account for peculiarities to theory, context, and method [14]. Other organizing frameworks include the reference [17] interrogative framework, which considers six function words: what, when, who, why, how, and where, and ADO framework from reference [18], which considers the assembly of relationships among constructs in the form of antecedents, decisions, and outcomes.

In this paper, two organizing frameworks are chosen to develop a comprehensive review of the existing literature the ADO framework and the TCM framework. These frameworks tenets are:

a) According to reference [18], the ADO framework was developed, where "A" stands for antecedents, "D" stands for decisions, and "O" stands for

outcomes. In essence, antecedents define the reasons for engaging or not engaging in behavior, decisions define the types of behavioral performance or non-performance, and outcomes define the evaluations that emerge after behavioral performance or non-performance.

b) According to reference [14], the TCM framework was established, where "T" stands for theories, "C" stands for contexts, and "M" stands for methods. Theories encapsulate the perspectives that scholars rely on to guide their investigation, whereas contexts depict the circumstances that an investigation entails, and methods shed light on the nature of empirical evidence that the investigation develops through.

The combination of the ADO and TCM frameworks is required for two important reasons. First, the ADO framework is an excellent framework for organizing past research findings (i.e., constructs and their ensuing relationships) in a structured assembly [18]. However, because it does not explain the theories, contexts, or methods that could guide future research, the ADO framework may be insufficient to direct future research on its own. According to [17], the TCM framework is an excellent framework for organizing the foundations of previous research, providing future scholars with tools to replicate or make new discoveries in the field. However, because it does not deal with topical content as much as the ADO framework, the TCM framework may be insufficient to drive future research on its own.

To achieve this, the integration of the ADO and TCM frameworks, allows us to leverage the strengths of each framework while overcoming its shortcomings. More specifically, the ADO framework responds to the questions "what do we know" (existing) and "where should we be heading" (new), whereas the TCM framework responds to the preceding questions "how do we know".

3.7 Systematic Review Results

This study obtained 147 documents from the core database Scopus. Following screening procedures, 111 documents were eliminated because they lacked information pertinent to this study. After that, our thorough review was concentrated on the remaining 36 documents. The exclusion criteria were examined by two of the study's authors, and then confirmed by a third, guaranteeing a thorough and exacting evaluation that adhered to the systematic literature review methodology.

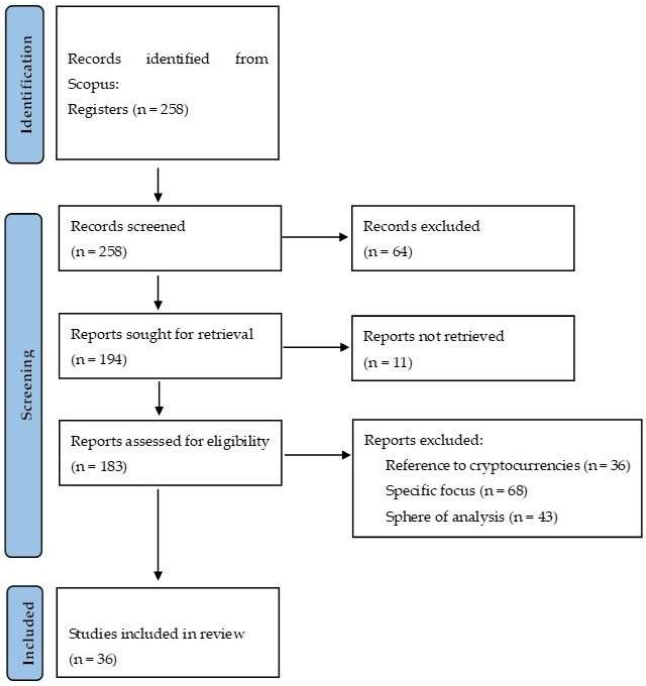


Fig. 2. PRISMA flowchart..

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3.8 Bibliometric Analysis

Similar to reference [19], which collected information about the most prestigious journals, authors, papers, universities, and nations in the bibliometrics analysis, the current study also collected detailed information about blockchain technology applications unrelated to digital currencies, accounting, or auditing through a comprehensive literature review.

Among the 36 articles that were chosen, 10 are from 2023, 10 from 2022, 6 from 2021, 3 from 2020, 4 from 2019, 2 from 2018 and 1 from 2017. All the contributions are journal articles, according to the Scopus database, the Accounting, Auditing and Accountability Journal has the most articles published by year, with 8 articles; 6 of these were published in 2022, 1 in 2023, and the remaining in 2021. The journal that has received the second-most contributions, International Journal of Digital Accounting Research, stands out with 6. Journal of Corporate Accounting and Finance ranks third with 5 contributions. 1 to 3 articles were published in the remaining journals as demonstrated in Figure 3.

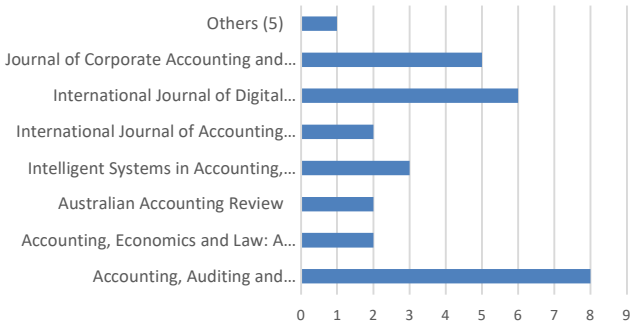


Fig.3. Number of Articles per Journal (by year).

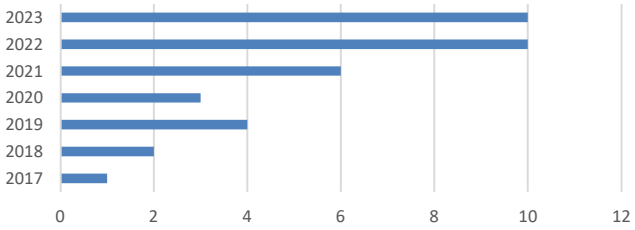


Fig. 4. Number of Articles per year.

Figure 4 shows an obviously increasing trend of publications since 2017 up to 2023. This is to suggest that the increased publications were most pronounced from 2021, hence suggesting that the topic at hand is of growing interest.



Fig 5. Distribution of Articles by Journal Quartile.

Figure 5 shows the number of papers published in Q1 and Q2 journals in the "Distribution of Articles by Journal Quartile." This distribution indicates that there is a strong focus on publishing in high-impact (Q1) journals in the field of study, indicating that authors are either aiming for or succeeding in publishing in higher-status venues. The comparatively high number of publications in Q1 journals may reflect the caliber and applicability of the research being done, as well as the goals and achievements of the writers in terms of spearheading discussions within their respective fields. A healthy diversity in publication venues is also shown by the existence of articles in Q2 journals, demonstrating that important research findings are being shared across a variety of respectable journals.

The most used keyword in the articles was blockchain, which had 28 references. Twelve references have been made to auditing, twelve to accounting, and ten to technology throughout the articles. Artificial intelligence (AI), ledger, and finance were the remaining keywords that were mentioned five times, while digital, cryptocurrency, and information appeared seven times. Figure 6 illustrates the frequency with which specific keywords were utilized in articles and provides insight into their influence on the research.

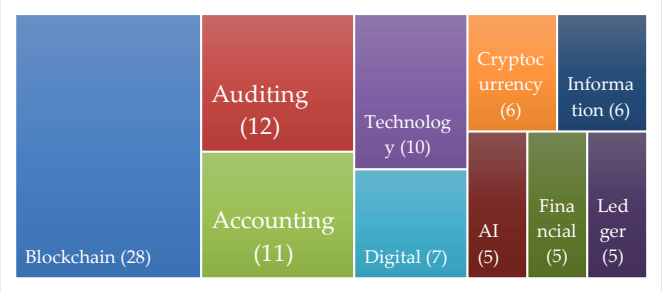


Fig.6. Most used Keywords.

4 What do we know? (ADO framework)

4.1 Antecedents

The following table outlines the antecedents in the context of blockchain technology within the ADO framework. It traces the historical progression of accounting systems, highlighting the transformative impact of blockchain from its origins in double-entry bookkeeping to its current potential for enhancing security, transparency, and efficiency. The narrative begins with the genesis of blockchain in cryptocurrencies and extends to its possible applications in business information systems, corporate governance, and auditing. Attention is drawn to Australia's pioneering role in blockchain technology, emphasizing its contribution to setting international standards and its successful blockchain ventures in the financial and public sectors. The document also touches upon the existing body of research on decentralized autonomous organizations (DAOs), underlining the collective vision for blockchain governance.

Regulatory dynamics are also a focal point, with discussions around the influence and negotiations among regulators, auditors, and developers in shaping blockchain's integration into mainstream operations. Moreover, the disruption of traditional business models through blockchain's integration in accounting is noted, alongside the perspectives of major industry players and the challenges associated with its adoption. Finally, the image hints at the broader implications of digital transformation and Industry 4.0, suggesting a revolution spurred by the synergy of AI and blockchain across various sectors, underscoring the critical role of technological innovation in this evolution.

Table 3. Antecedents.

ANTECEDENTS	DESCRIPTION
Evolution of Accounting Systems	Development of systems such as double-entry and the evolution of blockchain technology.
Limitations of Current Systems	The need for greater security, transparency, and efficiency.
Initial Blockchain Application in Cryptocurrencies	The evolution of blockchain technology from its initial use in cryptocurrencies to a potential tool for improving business information systems, corporate governance, and audit processes.
Global Leadership and Standards	Australia's global leadership in blockchain technology, its role in creating international standards, and notable blockchain implementations in the financial and public sectors.
Previous Research on DAOs and Stakeholder Vision	References to previous research on decentralized autonomous organizations (DAOs) and the broader vision of stakeholders in blockchain governance.
Role of Regulators, Auditors, Developers	The negotiating influence of regulators, auditors, developers, and beyond traditional users in blockchain operations.
Industry Perspectives and Big Auditors	Disruption in traditional business models, general characteristics and applications of blockchain in accounting, focus on fintech, financial disintermediation, challenges in blockchain adoption in accounting, industry perspectives, and views from major auditors.
Digital Transformation and Industry 4.0	The digital transformation and the revolution in the industry, including "Industry 4.0," as determinants for the discussion on the impact of Internet technologies on accounting.
Blockchain Technology in Various Sectors	Application of AI and blockchain technology in different industries, and the importance of technological innovation.

4.2 Decisions

The Table 4 analyzes the 'Decisions' aspect of the ADO framework, focusing on the pivotal choices made in the context of blockchain technology's role in business and finance. Key decision points include the commitment to data immutability, which guarantees the integrity and reliability of information on the blockchain. The move towards enhancing operational efficiency speaks to the process improvements driven by this technology.

Decisions around transparency and security are crucial, as blockchain offers a new standard for the visibility and safety of transactions. Blockchain's potential to mitigate fraud is recognized, with significant implications for audit and accounting processes. Moreover, the technology's promise to bolster data integrity and authenticity, especially with the advent of Smart Ledger protocols, is a decisive step towards greater credibility in financial operations. Blockchain's influence extends to the efficiency of audit processes, ensuring the reliability of data and openness of transactions. Decisions in this area are deeply intertwined with the regulatory, organizational, and ethical considerations, necessitating a thoughtful approach to the adoption of blockchain, considering its impact on company culture, responsibility, ethics, and management.

Table 4. Decisions.

DECISIONS	Description
Data Immutability	The unchangeability of data stored on the blockchain, ensuring integrity and reliability.
Operational Efficiency	Improvements in process efficiency due to blockchain technology.
Transparency and Security	Enhancements in the transparency of transactions and the security of information stored and transferred.
Fraud Reduction	The potential impact of blockchain on reducing fraud and improving audit and accounting processes.
Data Integrity and Authenticity	The integrity of accounting data and the authenticity of its origin, with Smart Ledger protocols aiming to enhance credibility.
Impact on Audit Process Efficiency	The effect of blockchain on the efficiency of audit processes, reliability of data, and transparency of transactions.
Regulatory, Organizational, and Ethical Implications	The implications of adopting blockchain in terms of regulation, organization, culture, responsibility, ethics, and management.
Current and Future Blockchain Applications	Uses of blockchain in accounting, including similarities, differences, and gaps in academic and industry literature.
Central Bank Digital Currencies (CBDCs)	Considerations on the design, distribution, and impacts of CBDCs on banking systems, competition, financial stability, and monetary policy.
Decision Trees, SVM, Neural Networks	Various methodologies including decision trees, support vector machines, neural networks, and their applications in analyzing blockchain data.
Firm Performance and Market Value	The impact of blockchain on firm performance, market value, and quality of accounting information.
Cost Savings and Compliance	Economic benefits such as cost savings and enhanced compliance with regulations due to blockchain adoption.
Decentralized Finance (DeFi) Challenges	Topics related to decentralized finance, operational challenges, jurisdictional risks, and regulatory considerations.

Explorations into current and future applications of blockchain in accounting reveal decisions that bridge academic and industry perspectives, identifying commonalities, differences, and literature gaps. The emergence of Central Bank Digital Currencies (CBDCs) has provoked strategic decisions about the design and distribution of digital money and its implications for banking systems, competition, and monetary policy. Analytical methods such as decision trees, support vector machines, and neural networks represent decisions in methodological approaches to analyzing blockchain data. These

choices reflect on the broader impact of blockchain on firm performance, market value, and the quality of accounting information, linking the adoption of blockchain technology to tangible economic benefits like cost savings and compliance with regulations. Lastly, the challenging decisions associated with decentralized finance (DeFi) acknowledge the operational, ethical, and jurisdictional complexities introduced by this disruptive financial innovation, underscoring the careful navigation required in this rapidly evolving landscape.

4.3 Outcomes

The Table 5 summarizes the 'Outcomes' component of the ADO framework, specifically in the context of blockchain's application in audit and accounting.

Table 5. Outcomes.

Outcome Categories	Description
Efficiency and Transparency	Improvement in audit and accounting processes, reducing costs and errors.
Accountability and Trust	New frameworks for accountability in blockchain, enhancing individual and corporate trust.
Regulatory and Compliance	Development of regulatory frameworks for crypto assets and addressing compliance issues.
Operational Improvements	Automation of accounting and auditing processes, resulting in efficiency gains and cost savings.
Professional Skills	Importance of understanding blockchain technology for accountants and auditors.
Innovation in Auditing	Opportunities for auditors to improve data quality and develop new assurance services.
Transformation in Roles	Shift from traditional data recording to authentication and verification, changing accountants' roles.

The outcomes are predominantly positive, reflecting advancements in efficiency and transparency with improved audit and accounting processes that lead to reductions in both cost and error. In the domain of accountability and trust, blockchain introduces new paradigms that bolster both individual and corporate trust through enhanced accountability frameworks. This is closely tied to the regulatory and compliance sector, where the development of regulatory frameworks for crypto assets and compliance issues is a significant outcome. Operational improvements are evident through the automation of accounting and auditing processes, which bring about further efficiency gains and cost savings. Such advancements underscore the increasing importance of professional skills, particularly the need for accountants and auditors to understand and engage with blockchain technology. Innovation in auditing is another critical outcome, offering auditors the chance to enhance data quality and create new assurance services. This goes hand in

hand with the transformation in roles where there's a marked shift from traditional data recording to a focus on authentication and verification, significantly altering the roles and responsibilities of accountants.

5 How do we know it? (TCM framework)

5.1 Theories

Table 6 presents a structured overview of theoretical frameworks within economics, finance, technological innovation, statistical decision-making, and governance. In the area of economic and macroeconomic theories, it spans from broad economic behaviors and policies to the specifics of monetary systems, addressing both global economic interactions and the particularities of financial stability. In the finance sector, the focus shifts to payment systems, banking competition, and the emerging digital currencies, indicating a keen interest in how money changes hands and evolves in the modern era. The column dedicated to technological innovation reflects on the impact of financial technology advancements, especially those related to distributed ledger technologies, which are revolutionizing accountability and transparency in transactions. The decision and statistics theories section details the mathematical models that predict outcomes and the frameworks for making choices under uncertainty. Lastly, the governance and accountability section underscore the importance of responsibility in financial and economic actions, a theme that binds all these theories together as they apply to real-world scenarios. Each theory contributes to a comprehensive understanding of the multifaceted nature of financial systems and their governance.

Table 6. Theories.

Economic and Macroeconomic Theories	**Finance and Payment Systems Theories**	**Financial and Technological Innovation**	**Decision and Statistics theories**	**Governance and Accountability**
Macroeconomics Theory	Payment Systems Theory	Financial Innovation Theory	Generalized Extreme Value	Accountability
International Economic Theory	Bank Competition Theory	Smart Ledger	Logistic Regression Models	
Monetary Theory	Digital Money and Cryptocurrencies Theory	Distributed Ledger Technology	Arrow's Impossibility	
Financial Stability Theory		Regulatory space theory		
Monetary Policy Theory				
Fractional Reserve Banking Theory				

5.2 Context

The Table 7 depict the 'Context' component within the TCM framework, focusing on the geographical and organizational scope relevant to blockchain technology research. Geographically, the research encompasses a global perspective, with specific attention to the United States in North America, a collection of countries across Europe including France, the Netherlands, and Germany, and significant Asian economies such as China and Japan. Oceania is represented by Australia, while Nigeria is highlighted within the African context. Organizational contexts include major audit firms, notably the Big Four, and a range of blockchain companies that integrate this technology within their offerings. Financial institutions such as banks and insurance companies, along with central banks like the ECB and the People's Bank of China, form another critical context for blockchain application. Experts in blockchain technology, early adopters of innovative technologies, and companies in banking, health, and pharmaceutical sectors utilizing or exploring blockchain technology round out the populations of interest. Collectively, these contexts provide a diverse and comprehensive backdrop for examining the adoption, impact, and evolution of blockchain technology across different regions and sectors.

Table 7. Context.

Continent/Region	***Specific Countries/Regions***
North America	*United States*
Europe	*France, Netherlands, Russia, United Kingdom, Lithuania, Sweden, Denmark, Germany*
Asia	*China, United Arab Emirates, India, Japan*
Oceania	*Australia*
Africa	*Nigeria*

Population	**Description**
Audit Firms	BIG4
Blockchain Companies	Companies incorporating blockchain technology in their products or services
Financial Institutions	Banks, insurance companies, investment funds, etc.
Blockchain Experts	Individuals or companies specializing in blockchain development or consultancy
Early Adopters	First users of innovative technologies, including blockchain
Central Banks	ECB, Sveriges Riksbank, Danmarks Nationalbank, People's Bank of China, Central Bank of Nigeria
Companies in Banking, Health, and Pharmaceutical Sectors	Companies in these sectors utilizing or exploring blockchain technology

5.3 Methods

The table delineates the 'Methods' aspect of the TCM framework as applied to research in blockchain within accounting and auditing. The qualitative approach includes field studies with interviews to gather in-depth insights, thematic analysis using NVivo for identifying patterns in qualitative data, and manual reviews of articles for a detailed understanding. Quantitative methods comprise logistic regression models within the Generalized Extreme Value framework for predicting risks, bibliometric analysis using Scopus database to track research trends and impacts, and citation analysis to evaluate the influence of various studies. Mixed methods integrate both qualitative and quantitative data, employing Structured Literature Reviews (SLR) for comprehensive research overviews and Topic Modeling using Latent Dirichlet Allocation (LDA) for discovering abstract topics within documents. Lastly, the conceptual/theoretical approach involves discussing the broad concepts, benefits, challenges, and considerations related to the implementation of blockchain in the fields of accounting and auditing, contributing to the theoretical discourse.

Table 8. Methods.

RESEARCH APPROACH	Methodologies Employed
Qualitative	Field study with interviews Thematic analysis using NVivo. Manual review of articles
Quantitative	Logistic regression models (Generalized Extreme Value framework) Bibliometric analysis using Scopus. Citation analysis Analysis of publication patterns, keywords, and thematic clusters
Mixed Methods	Structured Literature Review (SLR) Topic modeling using Latent Dirichlet Allocation (LDA)
Conceptual/ Theoretical	Discussion of concepts, benefits, challenges, and considerations related to blockchain in accounting and auditing

6 Where should we be heading

Based on the previous, Table 9 presents the gaps identified and the pertinent research questions as avenues for future research.

Table 9. Literature gap analysis: Blockchain Technology.

GAP AREA	Type of Gap	Pertinent Research Questions (RQs)
Theoretical Frameworks	Knowledge	RQ1: How do existing theoretical frameworks account for blockchain's impact across different sectors? Are there gaps in these frameworks?
Regional and Sectoral Applications	Empirical	RQ2: What are the under-researched regions or sectors where blockchain could have significant impacts?
Methodological Diversity	Knowledge	RQ3: Which research methods are currently underutilized in blockchain studies?
Blockchain Adoption Antecedents	Empirical	RQ4: What are the key factors influencing the adoption of blockchain in unexplored sectors or regions?
Decision-making in Blockchain Implementation	Knowledge	RQ5: How are decisions regarding blockchain technology made in emerging markets or industries?
Outcomes of Blockchain Adoption	Empirical	RQ6: What are the long-term impacts of blockchain on organizational efficiency and transparency in less studied contexts?

7 Conclusions

The uprise of digital currencies represents a significant change in the finance sector, promising a future where transactions are quicker, more secure, and less dependent on traditional banking intermediaries. This research analyses the comprehensive impact of blockchain technology and digital currencies, highlighting their potential to transform financial transactions, improve financial inclusion, and challenge the dominance of traditional fiat currencies.

Our findings show that digital currencies offer unparalleled opportunities for financial efficiency and inclusion. Transactions can be processed in real time without intermediaries, reducing costs and improving access to financial services for the unbanked and underbanked. Blockchain technology's inherent transparency and security increase trust in financial transactions, which is essential for the financial stability of global economies, especially in emerging markets. However, the adoption of digital currencies faces challenges such as regulatory uncertainty, security issues, and their high volatility. A balanced regulatory framework is needed to protect consumers and financial stability while encouraging innovation and competition in the digital currency space.

In order to fully understand the variables impacting the acceptability and adoption of digital currencies and blockchain technology, the ADO/TCM framework was used in this study. This model provides a theoretical framework for analyzing how users desire to adopt new financial technologies is influenced by their perceptions of the technology’s usefulness and simplicity of use. Furthermore, it aids in the identification of adoption

barriers and the creation of workable solutions for them, supporting the successful adoption and wider acceptance of digital currencies in the international financial system.

The development of legal frameworks and advances in blockchain technology are closely related to the future of digital currencies. Blockchain technology has the ability to completely change how financial transactions are carried out, documented, and validated as it develops. Blockchain's intrinsic qualities—transparency, immutability, and decentralization—present previously unheard-of chances to improve the effectiveness, safety, and reliability of financial systems around the globe. Furthermore, regulatory agencies are crucial in determining how the finance industry will develop in the future as they adjust to the rise of digital currencies. In order to protect consumers, stop illegal activity, preserve financial stability, and promote innovation and competition in the digital currency market, a well-balanced regulatory framework is necessary. Clear and unambiguous regulations give investors and companies the confidence they need to engage in the digital currency market, which propels the industry's expansion and widespread acceptance. Digital currencies have the potential to become an increasingly important component of the global financial system as blockchain technology develops and regulatory frameworks get stronger. Through reduced costs, quicker transactions, and more accessibility to financial products and services, this integration may result in the creation of more creative and effective financial services. Additionally, the use of digital currencies can promote financial inclusion by giving the underbanked and unbanked people access to banking services, especially in areas with weak banking infrastructure. People who were previously shut out of the official financial system can now engage in the economy, obtain credit, and amass money by utilizing digital currencies and blockchain technology. Overall, digital currencies have a great deal of potential to change the financial environment, spur innovation, and advance global financial inclusion. But in order to fully realize this potential, policymakers, technologists, financial institutions, and other stakeholders must work together to create a regulatory framework that is supportive of innovation in technology, encourage responsible use of digital currencies for the good of society at large, and foster technological innovation.

The rise of digital currencies marks a new era in financial transformation, characterized by increased efficiency, inclusiveness, and security. However, realizing the full potential of these innovations requires careful consideration of challenges, particularly in regulation and security. As we approach this financial revolution, it's crucial for policymakers, technologists, and financial institutions to work together to create an environment that maximizes the benefits of digital currencies while minimizing their risks.

This paper adds to the digital currency literature by providing a thorough analysis of their current impact and future potential, suggesting that ongoing research is needed to monitor the evolving digital currency landscape and its implications for the global financial system. As the digital currency ecosystem develops, its impact on global finance will grow, necessitating continuous vigilance and adaptation by all stakeholders involved.

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