THE TRANSFORMATION OF ACCOUNTING THROUGH INFORMATION TECHNOLOGIES: A BIBLIOMETRIC ANALYSIS OF TRENDS AND INNOVATIONS

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Abstract: *This article explores the impact of information technologies on the transformation of accounting by employing a bibliometric analysis of the relevant scientific literature. The study aims to identify the main trends, research directions, and thematic interconnections between the field of accounting and digital innovations. The findings highlight a profound reconfiguration of the accounting profession, characterized by the increasing integration of digital solutions that reshape not only operational processes but also the strategic role of accountants within organizations. The analysis reveals a growing academic interest in recent years, with a focus on the transformation of traditional reporting and audit models, as well as the adaptation of professional skills to a continuously evolving context. Furthermore, the study emphasizes the emergence of scientific centers of excellence in various regions of the world, contributing to the development of a global research framework in the field of digital accounting.*

Introduction

In recent decades, technological advancements have fundamentally influenced the field of accounting, transforming both the methods of managing financial data and the structure of reporting processes. The automation of accounting activities has led to a significant increase in operational efficiency, while new computing tools have enabled more detailed and precise analysis of financial information. The emergence and integration of technologies such as artificial intelligence, blockchain, and big data analysis have brought about major changes in practice, requiring continuous adaptation from accounting professionals, as well as a reevaluation of the specific regulatory framework. In an environment where innovations are rapidly evolving, the ability to understand emerging trends and assess their impact on accounting activities is becoming increasingly important.

In academic literature, there is a growing concern for the adoption of digital solutions, which are associated with increased efficiency, regulatory compliance, and support for decision-making processes. However, the accelerated pace of technological changes demands a structured approach to identifying the dominant research directions and understanding how they shape contemporary accounting practices. In this context, a bibliometric analysis proves to be useful in highlighting the

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connections between different subdomains of digital accounting, evaluating the relevance of existing studies, and outlining their impact on the evolution of the accounting profession.

This study aims to investigate the impact of information technologies on accounting through a bibliometric analysis of the existing scientific literature. By applying quantitative methods to assess research, the study seeks to identify the main areas of study, how academic interest in technological innovations has evolved over time, and the most influential publications, authors, and institutions in the field. Furthermore, the analysis will highlight the interconnection between different areas of digital accounting, providing a clear perspective on emerging trends. The results of this endeavor will contribute to a deeper understanding of the transformations brought about by information technologies in accounting practice, providing a reference point for both researchers and professionals in the field.

To achieve these objectives, the study will follow a systematic approach to academic literature, grounded in bibliometric analysis. This process will involve gathering data from globally recognized databases, using pertinent terms to identify key works. After data collection, the information will be processed to eliminate duplicates and retain only those studies critical to the topic under investigation. The quantitative assessment will encompass the analysis of publication volume, the geographic distribution of research, the frequency of specific concepts, and the identification of co-citation links between various studies. Results will be interpreted using specialized tools that can highlight author collaboration networks and identify significant thematic clusters, providing a comprehensive overview of the scientific landscape in the field of digital accounting.

Literature Review

The Evolution of Accounting in the Digital Age

In an economic context increasingly dependent on technological progress, accounting is undergoing profound transformation under the influence of digitalization. The digital transformation of accounting represents a crucial step towards optimizing and ensuring the sustainable development of the modern business environment. The use of specialized software solutions enables not only automation but also the streamlining of processes for collecting and aggregating accounting information, contributing to better-informed managerial decisions through accurate, real-time data (Matchuk, et al. 2024).

As these technologies are actively integrated into accounting activities, they are driving major changes in the structure of the profession. Digitalization facilitates quick access to data, contributes to the automation of routine tasks, and alters the way accountants collaborate with other functions within the organization. At the same time, new forms of responsibility and professional accountability are emerging, requiring the adaptation of traditional techniques and the reconfiguration of the specific skills of the profession (Arkhipova, et al. 2024).

An essential role in this transition is played by artificial intelligence (AI), which is redefining the profile of the modern accountant. AI-based automation replaces repetitive tasks and paves the way for analytical and strategic activities, while requiring the acquisition of new skills, such as advanced data analysis, data-driven decision-making, and a high level of digital literacy (A. Ahmad 2024).

This transformation is part of the broader trends toward Industry 4.0, where technologies such as the Internet of Things, Big Data analysis, augmented reality, and AI are used to enhance the efficiency and flexibility of organizations (Guagcha, Sanchez and Narvaez 2024). In this landscape, accounting becomes a strategic function, supported by strong technological skills, including the advanced use of accounting software, cybersecurity, and digital communication.

At the same time, this intense digitalization brings the ethical aspects of the profession to the forefront. It is essential to maintain confidentiality, integrity, and transparency in processing digital data, with accountants needing to uphold high ethical standards and constantly adapt to the changes imposed by new technologies (Guagcha, Sanchez and Narvaez 2024).

Therefore, modern accounting is no longer just a technical activity but is transforming into a strategic component of the organization, profoundly influenced by new technologies. This transition requires continuous adaptation of skills and a strong ethical approach that enables professionals to face the challenges of the digital era.

Key Technologies Used in Accounting

We will highlight the key technologies contributing to the modernization of accounting and adapting it to the challenges of the digital era: Cloud Computing, Internet of Things, Big Data, Artificial Intelligence, Robotic Process Automation, and Blockchain.

Cloud Computing

Cloud computing is a rapidly evolving technology that continually impacts both the IT industry and the academic field. It performs all computing tasks via the Internet, utilizing virtualization methods, and operates independently of complex hardware and software systems (Ahmad, Bakht and Mohan 2017). Cloud computing provides flexibility, enhances operational efficiency, and ensures accessibility, while also lowering costs and supporting scalability and real-time collaboration.

Real-time accounting information provided by cloud computing solutions offers several advantages over traditional periodic reporting, enabling managers to make immediate, dynamic, and strategic financial decisions. This is possible due to the flexibility regarding the timing, location, and devices used to access information. The reliability and flexibility of these systems contribute to making important decisions and help companies gain a competitive advantage.

Cloud-based platforms address the need for real-time accounting information by providing secure, reliable, and efficient management of accounting data. In contrast to server-based accounting information systems, which carry risks like data loss from hardware failures or natural disasters, cloud solutions shift these risks to the service provider and eliminate the need for maintenance. Additionally, companies can customize cloud systems according to their needs, which improves system performance in providing credible, accessible, and on-demand financial information (Husrizal Syah, et al. 2023).

Internet of Things (IoT)

By using IoT, as physical objects collect data about their conditions and surroundings and transmit them to the cloud, these data form a virtual model of the physical world, called the "mirror world." In this mirror world, each physical object has a virtual representation that records its current conditions and historical transactions. This model can monitor the activities and state of the physical world in real time and enables agile planning and budgeting, providing predictions in a constantly changing environment (Dai and Vasarhelyi 2023).

The vast potential of the Internet of Things (IoT) largely arises from its ability to remotely monitor, control, automate, and optimize products and processes, as well as its capability to detect patterns and analyze trends by examining the data it collects (Ferretti and Schiavone 2016) (Saarikko, Westergren and Blomquist 2017).

IoT could significantly change current accounting information systems and improve their quality due to new sources of transactional data. Manual data entry is replaced by devices equipped with sensors, and the collection and processing of accounting information can be done with real-time visibility, without human interaction (Wu, Xiong and Li 2019).

Big Data

Data is fundamental to the accounting profession, but big data extends beyond just financial and accounting information. It encompasses both financial and non-financial, accounting and non-accounting, quantitative and qualitative data, all available in large volumes, varied formats, and in real time. There are several key intersections between big data, accounting, and auditing, such as its role in financial reporting, performance measurement, audit evidence collection, risk management, corporate budgeting, and activity-based approaches (Ibrahim, Elamer and Ezat 2021).

When high-quality data is accessible and processed in real time, businesses can produce more accurate financial reports, improved performance measurements, and more reliable budgeting. Big data enhances data quality by improving its accuracy and completeness, while also ensuring its immediate availability.

Within the context of the fourth industrial revolution, companies leverage big data analysis and artificial intelligence algorithms to identify and visualize key trends that inform decisions and organizational actions (Aboagye-Otchere, et al. 2022). For instance, businesses today use these technologies to predict customer behavior, make optimal investment choices, evaluate strategic alternatives, conduct risk assessments, and analyze competitors (Sheng, Amankwah-Amoah and Wang 2019).

Artificial Intelligence (AI)

Artificial intelligence is used in accounting to automate repetitive tasks, process and analyze large volumes of data, detect anomalies and fraud, as well as support the decision-making process through predictive models and machine learning algorithms. Some of the most common applications include the use of neural networks for transaction classification, expert systems for decision support, NLP (Natural Language Processing) for interpreting unstructured financial documents, and RPA (Robotic Process Automation) for automatic report generation or account reconciliation. Additionally, AI is integrated into continuous auditing, risk analysis, bankruptcy prediction, and the development of hybrid systems that combine multiple methods to enhance the accuracy and efficiency of accounting processes (Emetaram and Uchime 2021).

In the context of accelerated technological evolution, AI has become a major factor impacting managerial accounting, with the potential to profoundly transform its functions and contribute to the decision-making process. By automating repetitive and routine tasks, AI allows managerial accountants to redirect their attention to complex analytical activities and strategic decisions (Zamain and Subramanian 2024).

Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is a rule-driven software technology designed to automate repetitive business processes. As a software solution, RPA is limited to performing digital tasks, with its programmable element referred to as robots or bots. RPA operates according to predefined rules, where the knowledge and expertise of a business process expert are translated into if/then conditions and embedded into the software (Boydas Hazar and Toplu 2023). In this context, RPA is intended to replicate human actions. Routine business processes involve repetitive tasks with identifiable patterns, making rule-based software like RPA the ideal solution for handling tedious and time-consuming processes (Plattfaut and Borghoff 2022).

By automating tasks such as transaction recording, financial reporting, payments, inventory management, bank reconciliation, receivables, tax reporting, and activity monitoring, RPA helps improve accuracy, reduce execution time, and enhance productivity. Since it operates based on explicit rules, RPA does not require data programming but instead relies on human expertise converted into logical conditions.

Blockchain

Blockchain is a technology that employs entirely new methods for storing information and conducting financial transactions. With its remarkable advantages, it is transforming the accounting profession and enhancing the operations of organizations and businesses. Blockchain enables clear

identification of ownership rights over assets and corresponding liabilities, significantly boosting accountants' efficiency. It also aids auditors in tracking the audit trails they create. These features make blockchain a revolutionary tool for managing documents, business processes, and financial data. It brings about a paradigm shift in how data is recorded, stored, and verified, providing a higher level of trust, security, and efficiency across various sectors (Giang and Tam 2023).

In accounting, three essential components of blockchain technology are applicable: smart contracts, decentralized ledgers, and the immutability of transactions (FreshBooks 2024). Smart contracts automate repetitive accounting transactions such as salary payments or bank reconciliations, reducing errors and administrative costs. Distributed ledgers eliminate financial intermediaries, enabling fast, secure, and transparent transactions validated by decentralized networks. The immutability of transactions guarantees data integrity, as any modification is detectable through a change in the hash value, enhancing security and authenticity in digital payment processing (Sellhorn and Gornik-Tomaszewski 2006).

In conclusion, cloud computing forms the foundation of modern infrastructure, enabling the real-time storage, access, and sharing of accounting data, making the efficient functioning of other technologies possible. On this infrastructure, the Internet of Things contributes by automatically collecting data from the physical environment, eliminating human intervention and paving the way for real-time accounting. The data generated is captured and integrated through big data, providing a complex framework for analyzing information from various sources. This data becomes valuable when leveraged through artificial intelligence, which, through machine learning algorithms and predictive models, supports strategic decision-making and automates accounting analysis. Operational automation is further advanced by RPA technology, which takes over repetitive tasks based on predefined rules, closely connected with AI and cloud systems. Complementarily, blockchain ensures transparency, security, and immutability of data, strengthening trust in accounting information and facilitating secure data exchange between entities.

Methodology

To achieve the objectives set out in this paper, a bibliometric approach was used, a method increasingly employed in the analysis of scientific research due to its ability to identify the structure, evolution, and trends in a specific field of study. Bibliometric analysis allows for the evaluation of publication volume, the frequency of concept appearances, collaborations between authors or institutions, and the semantic relationships between key terms (Van Eck and Waltman 2014).

For processing and visualizing bibliometric data, the VOSviewer software was used, a specialized tool for creating network maps based on bibliographic data, developed by Leiden University (Netherlands). VOSviewer is recognized for its ability to build co-occurrence maps of terms, collaboration maps between authors or institutions, and for analyzing the temporal and geographical distribution of research (Van Eck and Waltman 2010).

The data used in this analysis were extracted from two major international scientific databases: Web of Science (WoS) and Scopus. The searches were conducted in October 2024, using combinations of relevant keywords for the research topic – digital accounting and the application of emerging technologies in the financial and accounting field.

The keywords used were: "digital accounting," "accounting information systems," "financial technology," "automated accounting," "technological innovation," "AI," "blockchain," "big data," "cloud computing," "robotic process automation."

The number of results obtained on the Web of Science platform was 626 articles (CSV download format), and on the Scopus platform, 1242 articles (CSV download format).

The selected articles cover a period relevant to the analysis of emerging trends and allow for the observation of the evolution over time of research in the field of digital accounting and disruptive technologies.

The downloaded data was processed and imported into VOSviewer, where, to facilitate understanding of thematic relationships, temporal evolution, areas of interest, and international collaborations, six distinct visualizations were generated and interpreted:

❖ Co-occurrence map of keywords (Network Visualization) – which highlights the main concepts researched, their frequency, and thematic connections between them.

❖ Temporal visualization of terms (Overlay Visualization) – which provides an insight into the temporal evolution of scientific interest in various concepts, indicating emerging directions.

❖ Density map of terms (Density Visualization) – which emphasizes dominant thematic centers and less explored areas, useful in identifying research niches.

❖ International collaboration network (Co-Authorship by Country) – which analyzes the intensity of academic collaborations between countries, revealing the global structure of research in the field.

❖ Temporal visualization of countries – which reflects the dynamics of scientific contributions by country, allowing for a clear understanding of recent shifts in the international academic landscape.

❖ Density map of countries – which shows the geographical distribution of scientific contributions, highlighting international centers of excellence in digital accounting and fintech research.

By integrating the analysis of these maps, we will highlight not only the thematic structure of research in the field of digital accounting and emerging technologies but also recent trends, active geographic areas, and possible future directions for scientific investigation.

Results and Analysis

Co-occurrence map of keywords (Network Visualization)

The visual analysis of the bibliometric map (Figure no. 1) reveals significant connections between the key concepts associated with the digitalization of accounting and the so-called emerging technologies. At the center of this relationship are terms such as digital accounting, accounting information systems, and financial technology, which outline the accounting-financial dimension of the research. These intersect, in a relevant way, with terms that describe current technological innovation, such as technological innovation, artificial intelligence (AI), blockchain, big data, cloud computing, Internet of Things (IoT), and robotic process automation (RPA).

Figure no. 1. Co-occurrence Map of Keywords (Network Visualization)
Source: Authors' processing using Vosviewer

The concept of accounting information systems is integrated into a cluster visually marked in light blue, typical of traditional IT and accounting informatization areas. It is closely related to terms such as information systems, cloud computing, and big data, indicating concerns related to digital infrastructure and data management. Although it does not directly connect to all emerging technologies, there are indirect connections, through intermediary nodes, with terms like AI and blockchain, signaling the beginnings of integration with new technological paradigms.

The term digital accounting appears in a less crowded area of the map, in a peripheral cluster but conceptually close to technologies like cloud computing and robotic process automation. Its positioning suggests a relatively new theme, still in development, but strongly linked to automation processes and the digital transformation of accounting activities.

In contrast, financial technology or fintech occupies a central position on the map, being one of the largest and most connected nodes. This concept functions as a genuine hub between the accounting and technological areas, with direct and consistent connections to terms like blockchain, AI, big data, Internet of Things, and technological innovation. This positioning confirms the essential role that fintech plays in the convergence between the financial-accounting field and new digital technologies, acting as a binding element between these two dimensions.

Co-occurrence map of keywords (Overlay Visualization)

The temporal components visualization in the map (Figure no. 2) provides a relevant perspective on the evolution over time of scientific interest in the analyzed concepts.

Figure no. 2. Co-occurrence Map of Keywords (Overlay Visualization)
Source: Authors' processing using Vosviewer

The color assigned to each term reflects the average year in which it was addressed in the selected publications. Thus, terms colored in blue correspond to themes predominantly discussed in the years prior to 2020, indicating well-established research directions. Those in green highlight

increased interest during the 2020–2021 period, while yellow shades suggest current topics that have been intensively researched in recent years, especially during the 2022–2023 interval. This color scale is visible in the bottom right corner of the map and provides an intuitive guide for the chronological interpretation of the data.

Applying this temporal dimension to the research topic, it is evident that terms associated with digital accounting, such as digital accounting, accounting information systems, or information systems, predominantly appear in cold colors, indicating that they were extensively addressed in the past but have lost some of their current centrality in the scientific landscape. This reflects a stage of maturity for these concepts, but also the need for revitalization through integration with emerging technologies.

In contrast, terms such as fintech, blockchain, artificial intelligence, or machine learning are colored in green, suggesting that they have experienced a significant increase in interest in recent years. Moreover, terms like robotic process automation, natural language processing, data science, regulatory frameworks, and green economy appear in warm colors, close to yellow, confirming that they are highly relevant topics, expanding rapidly in the academic literature.

It is also notable that technologies like RPA and IoT occupy an intermediate position. Robotic process automation is a relatively new topic, currently in development, while the Internet of Things appears to be in a phase of consolidation, with a recent peak of interest, though not as fresh as RPA.

Co-occurrence map of keywords (Density Visualization)

This "density map" visualization (Figure no. 3) highlights the frequency of term appearances in the scientific literature, as well as the degree of connection between them.
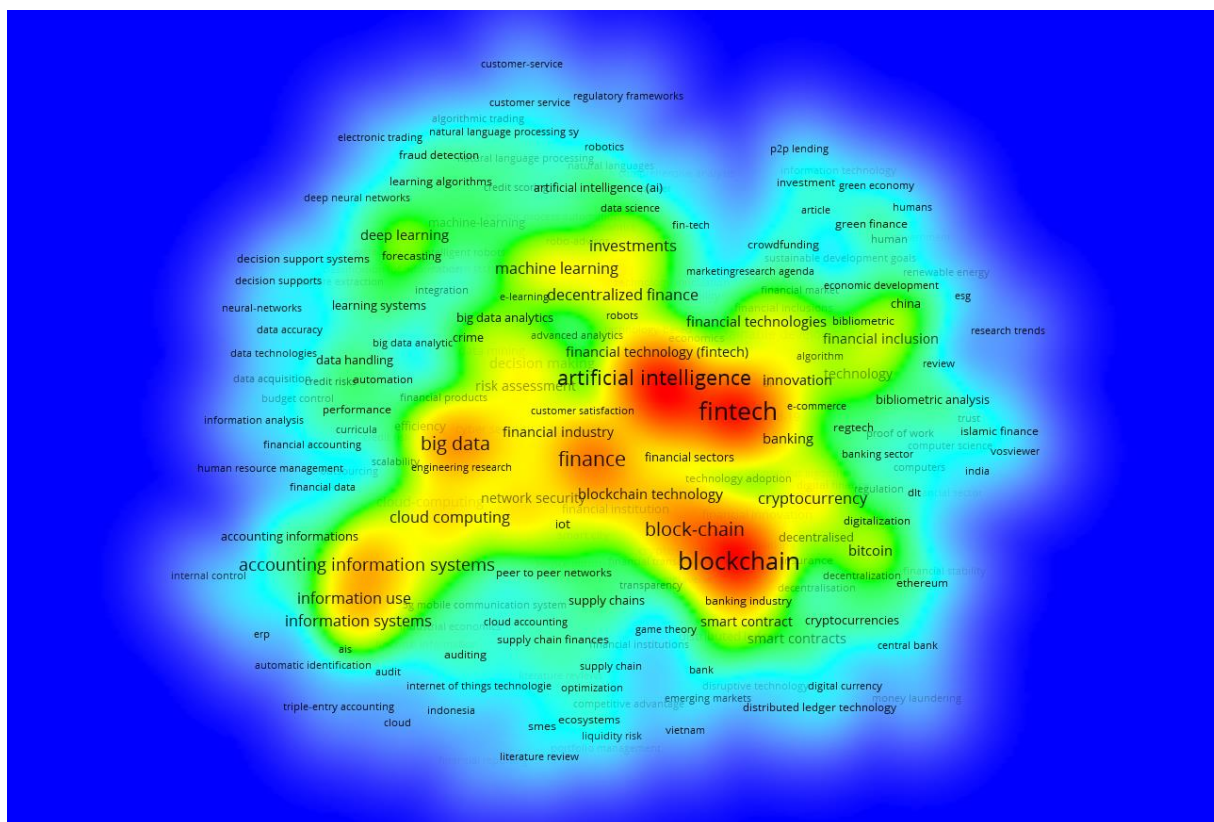
Figure no. 3. Co-occurrence Map of Keywords (Density Visualization)
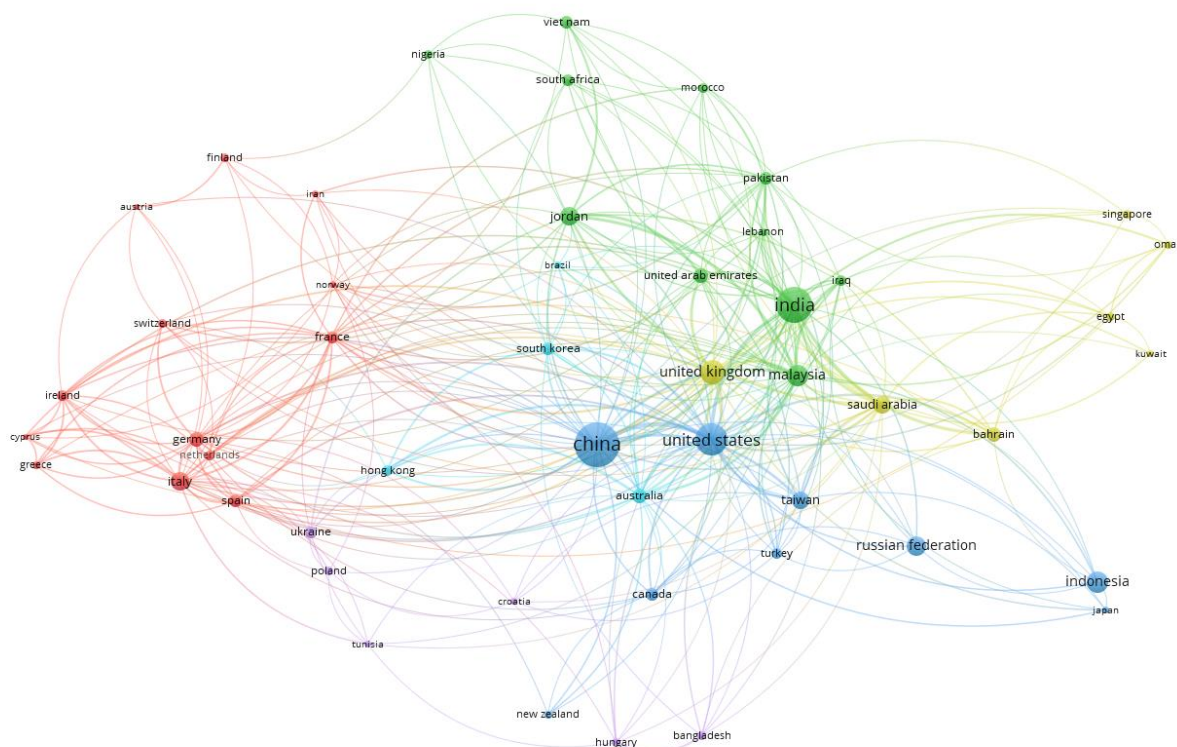Source: Authors' processing using Vosviewer

Using an intuitive color code, the map reflects the intensity of research associated with each concept. Areas colored in red indicate high interest and strong presence in the network, being associated with terms that are frequently used and strongly connected to other concepts. Terms such as Artificial Intelligence, Fintech, Blockchain, and Finance fall into this category, representing central points of gravity in the literature at the intersection of technology, finance, and accounting.

In the medium-density region, marked by shades of yellow and green, terms like Big Data, Cloud Computing, Machine Learning, and Cryptocurrency appear. These terms have a notable presence and are well-integrated into the network but do not achieve the same level of centrality as the terms in the high-density area.

At the opposite end, areas colored in blue indicate terms that are less frequently used or occupy a peripheral position within the analyzed network. Among these are Accounting Information Systems, Digital Accounting, ERP, Triple-entry Accounting, and Green Economy. Although they are more specialized or perhaps older in the academic literature, these terms hold significant potential for scientific exploration, especially as they can be combined with intensively researched concepts from the central area of the network.

International Collaboration Network - Co-Authorship by Country (Network Visualization)

The international collaboration visualization (Figure no. 4) illustrates how different countries contribute to research in the field of digital accounting, emerging technologies, and fintech. Each node in the map represents a country, and its size reflects the volume of scientific publications related to the analyzed topics. The connections between nodes symbolize collaboration relationships between countries, specifically co-authorship in scientific articles. The color distribution indicates the formation of collaboration clusters, i.e., groups of countries that frequently cooperate in research activities.

Figure no. 4. Co-authorship Map by Country (Network Visualization)
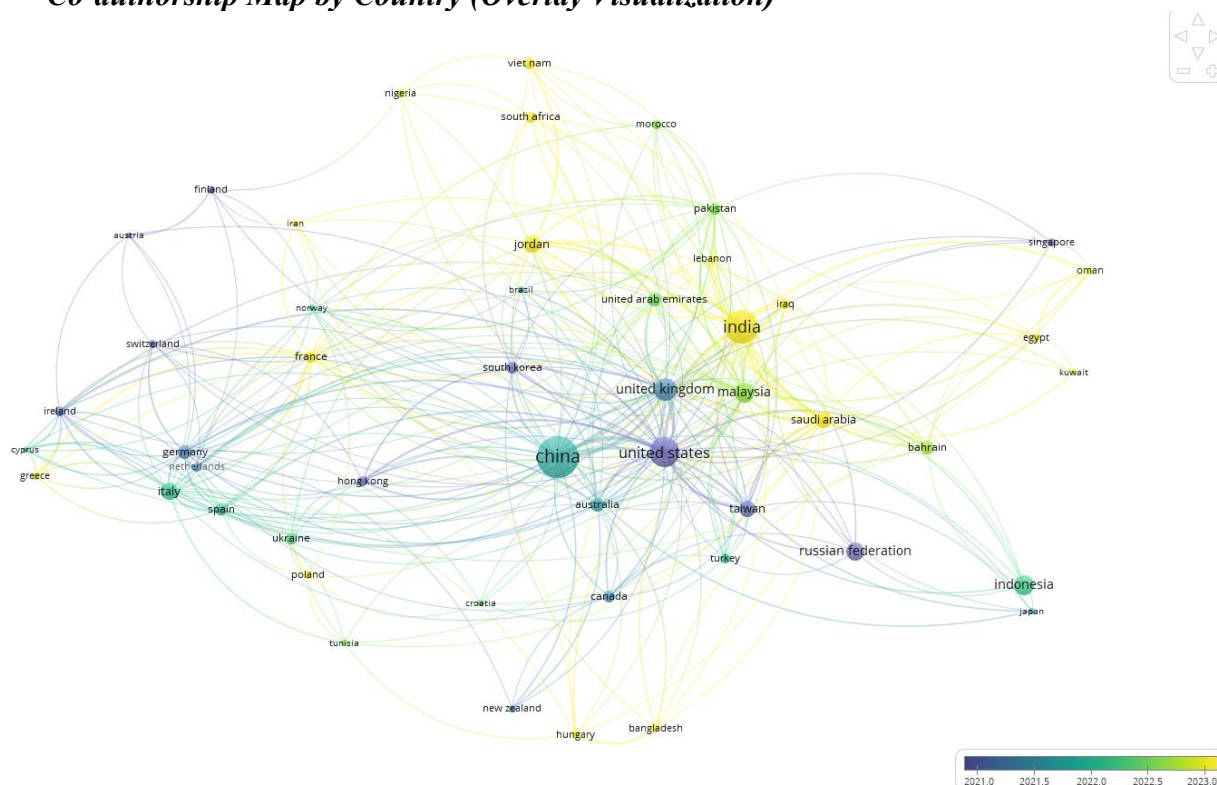Source: Authors' processing using Vosviewer

In the context of the analyzed topic, several countries stand out for their intense scientific activity, including China, the United States, India, the United Kingdom, and Malaysia. These nations can be considered centers of excellence, making significant contributions to the development of research in fintech, artificial intelligence, blockchain, and digital accounting, both quantitatively and qualitatively.

The relationships between these countries are characterized by strong collaborations, evident in the dense network of connections. A global research network is forming, with China, the USA, India, the UK, and Malaysia at its core. European countries like Germany, France, Italy, and Spain create a regional cluster with strong internal ties and notable connections to transatlantic partners, particularly the UK and the US. Additionally, a collaboration group is emerging among Arab and Asian nations, such as Saudi Arabia, the UAE, Egypt, Singapore, and Oman, which frequently collaborate with one another and with India and Malaysia, indicating the rise of a new cluster in this region.

Geographically, Asia and North America dominate applied research in digital technologies for the accounting and financial sectors. Europe, while active, tends to focus more on traditional or regulatory aspects, participating in global innovation. In contrast, the Middle East and Southeast Asia are in a phase of scientific expansion, showing growing interest in applying emerging technologies to the digital transformation of the financial sector.

This complex network of collaborations highlights both the scientific leaders and the areas of growth in the field under investigation.

Co-authorship Map by Country (Overlay Visualization)

Figure no. 5. Co-authorship Map by Country (Overlay Visualization)
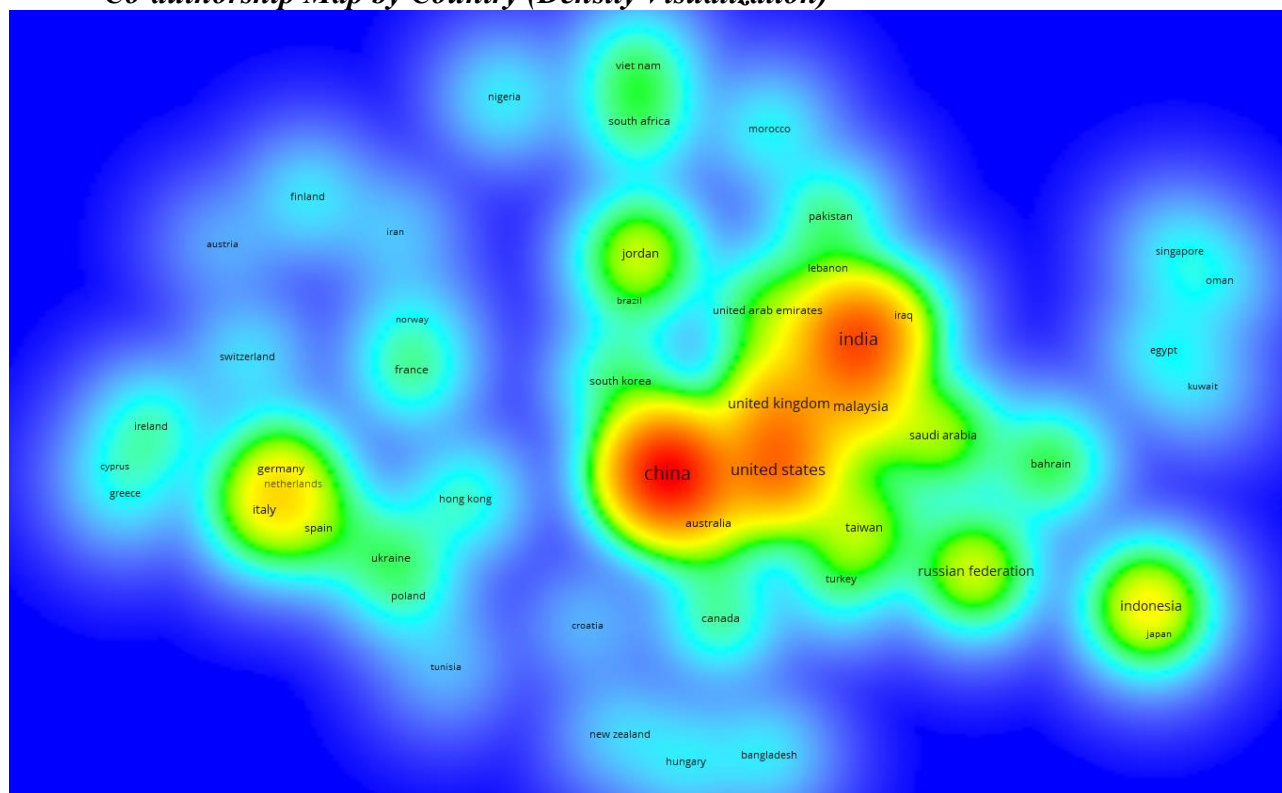Source: Authors' processing using Vosviewer

The colors on the map (Figure no. 5) represent the average publication year, offering a snapshot of the temporal evolution of research in the analyzed field. Blue and purple areas indicate a

high level of scientific activity between 2018 and 2020, green tones show an increase in interest around 2021, and yellow shades highlight the most recent contributions from 2022 to 2023. The legend in the bottom right corner clarifies the period covered, from 2018 to 2023.

Applying this timeline to the countries involved in the research, it is evident that some nations, such as China, the United States, Russia, Germany, and France, were active in the early stages of fintech, AI, blockchain, and digital accounting research, solidifying their leadership in the field. Countries like the UK, Canada, Australia, Italy, Turkey, and Croatia maintained a steady presence, with a peak in academic activity around 2021, suggesting continuous involvement and adaptation to emerging trends.

In recent years, new players like India, Malaysia, Indonesia, Saudi Arabia, Pakistan, Singapore, Vietnam, and Nigeria have emerged with notable academic activity. This surge likely reflects both growing academic interest and increased investments in digitalization and emerging technologies. It also points to the development of new regional research hubs, offering opportunities for international collaboration and contributing to the geographical diversification of scientific output in the field.

Co-authorship Map by Country (Density Visualization)

Figure no. 6. Co-authorship Map by Country (Density Visualization)
Source: Authors' processing using Vosviewer

The map (Figure no. 6) uses color to indicate the density of research activity, reflecting both publication volume and international collaboration intensity. Red areas represent high scientific activity, with many publications and extensive global connections. Countries like China, the United States, India, the United Kingdom, and Malaysia are key players in fields such as fintech, AI, blockchain, and digital accounting.

Yellow-green regions show intermediate activity levels, where research is growing and sustained. Countries like Australia, Saudi Arabia, Russia, Indonesia, Germany, Italy, the Netherlands,

and Taiwan are in this category, with potential to become regional research hubs by expanding collaborations and diversifying research topics.

Blue areas represent lower scientific activity, seen in parts of Central and Eastern Europe, the Middle East, and some African and Latin American countries. While their involvement in international research is limited, these regions present opportunities for developing collaborations, broadening research areas, and offering valuable comparative insights.

Conclusions

The results of the bibliometric analysis conducted in this study highlight the depth and dynamics of the transformations generated by information technologies within the accounting field. The study allowed for the creation of a complex picture of how key concepts from the sphere of digitalization – such as artificial intelligence, blockchain, cloud computing, big data, robotic process automation, and the Internet of Things – interconnect with accounting-specific terms such as digital accounting, accounting information systems, and financial technology (fintech).

The co-occurrence analysis reveals that fintech acts as a central linking element between traditional accounting and emerging technologies, while concepts like digital accounting or accounting information systems tend to belong to older thematic clusters but are in the process of recontextualization through integration with new technologies.

The temporal dimension of the visualization suggests that academic interest in technologies such as AI, blockchain, and machine learning is continuously growing, while other concepts, such as green economy, regulatory frameworks, and robotic process automation, represent emerging research directions. This dynamic indicates a constant evolution of scientific priorities, correlated with the rapid pace of technological innovation.

Geographically, countries like China, the USA, India, the United Kingdom, and Malaysia stand out for their intense scientific production and active roles in international collaboration networks. At the same time, there is an expansion of academic interest in emerging regions such as Southeast Asia and the Middle East, signaling the emergence of new centers of excellence in accounting digitalization research.

Although it offers a useful perspective on trends in digital accounting, the study is limited by the exclusive selection of articles from Web of Science and Scopus, its reliance on keywords, and the quantitative approach, which does not allow for an in-depth analysis of the content and quality of each study.

Future research directions in the context of transforming accounting through information technologies revolve around deepening the relationship between new technologies and the redefinition of the accounting profession's role. A better understanding is needed of how artificial intelligence influences accounting decision-making processes and how it can be ethically and responsibly integrated into audit, reporting, and financial analysis activities. At the same time, research can explore in depth the use of blockchain not only as a data security technology but also as a foundation for reconstructing traditional models of recording and verifying transactions.

Another promising area is investigating how robotic process automation and big data can lead to the development of predictive and proactive accounting systems, where the accountant becomes a strategic consultant, relying on real-time analyses. Additionally, the impact of integrating the Internet of Things into accounting information systems remains a relatively unexplored area with the potential to generate accounting data of unprecedented granularity.

An increasingly relevant dimension is the comparative analysis of accounting digitalization levels in different regions of the world, identifying cultural, economic, or legislative barriers that influence technology adoption, and the role of international collaborations in accelerating innovation.

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