



Research Article

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Received: 10 December 2023 / Accepted: 26 February 2024 / Published: 5 March 2024

Accounting Systematization in Commercial Enterprises: A Literature Review

Marco Agustín Arbulú Ballesteros¹

Sandro David Juárez Sánchez¹

Mirna Maely Carrasco Peña¹

Julio César Nuntón More¹

Williams Coronado Farroñán¹

Jheimmy Grace Arévalo Altamirano²

Jessica Karina Fernandez Salazar²

Jose Carlos Montes Ninaquispe³

¹Universidad Cesar Vallejo,
Av. Larco 1770, Trujillo 13001,
Perú

²Universidad de San Martín de Porres, Jr. Las,
Calandrias N° 151 - 291,
Santa Anita, Perú

³Universidad Tecnológica del Perú,
Av. Petit Thouars,
Lima, Perú

DOI: <https://doi.org/10.36941/jesr-2024-0031>

Abstract

This research focused on analyzing the transformation and adaptation of accounting systems in commercial enterprises through a detailed review of existing literature. Design/Methodology/Approach: A rigorous methodology of bibliographic inquiry was adopted, complemented by advanced techniques of document analysis, focusing on an exhaustive and coherent review of relevant literature, with "accounting systems" as the primary keyword. Results/Discussion: The research integrated bibliometric indicators to quantify authorial productivity, considering aspects such as publication volume, chronology, geographical diversity, and predominant key terms. Additionally, multidimensional collaboration indicators were employed, enriched with data extracted from renowned bibliographic platforms. Conclusions: The pressing need to establish systematic and efficient accounting systems became clear, facilitating agile financial data management, reducing potential deviations, and aligning with contemporary standards of business accounting. Originality/Value: This study not only offers valuable insights for subsequent research but also raises crucial questions about the direction and adaptability of accounting in the imminent digital landscape.

Keywords: Accounting systems; information; operational process and technological advances

1. Introduction

In the contemporary era, characterized by accelerated technological evolution and global interconnectedness, dominated by exports and imports (Montes et al., 2023), organizations find themselves immersed in a landscape of unprecedented challenges and opportunities. The digital revolution has permeated all facets of business activity, radically transforming the way companies operate, interact, and make decisions. In this context, accounting management emerges as a field particularly influenced by digitalization, where the adoption of advanced accounting systems has become indispensable not only for ensuring competitiveness but also for efficiency and accuracy in financial decision-making.

However, this transition to digitized accounting does not occur uniformly across all organizations. A clear division is evident between companies that have fully embraced emerging technologies and those that still cling to traditional manual recording methods. This duality reflects an operational and strategic dilemma, where companies are at a crossroads between maintaining entrenched practices and responding to the demands of a more agile, accurate, and market-adaptable accounting.

In this dynamic scenario, Dmytrenko et al. (2020) examine how business growth has influenced the adoption of advanced accounting systems, indicating that the increase in complexity and scope of commercial operations has generated a growing demand for more sophisticated accounting solutions tailored to current needs. These systems seek not only to improve efficiency in economic analysis but also to optimize accounting management, offering tools and functionalities that allow companies to operate with greater agility, precision, and competitiveness in a globalized and constantly changing market.

Despite technological advancements and the evident benefits of digital accounting, a considerable segment of organizations still maintains manual record-keeping practices. This resistance to change not only limits these companies' ability to fully leverage the advantages of advanced technologies but also represents a significant obstacle to effective and timely performance evaluation. The contrast between technological innovation and the persistence of traditional methods highlights the urgent need for a broader and more effective transition to digital accounting in the current business landscape.

Undoubtedly, accounting is at a turning point that redefines its nature, scope, and applications. Spilnyk et al. (2020) emphasize how technological innovation has radically transformed our reality, especially in the accounting field, where advances in information software have reshaped components, criteria, and structures of accounting systems, resulting in substantial improvements in various accounting areas.

Da & Núñez (2021) highlight that recent technological advances have driven the evolution of business strategies and models, as well as corporate competitiveness and communication. The recent global health crisis, the Covid-19 pandemic, has accelerated the need for adaptation, leading companies, particularly in Latin America and the Caribbean, to seek new ways to survive and compete, reinforcing the importance of systematizing financial information.

Chyzhevska et al. (2021) delve into the impact of digitalization, noting that it has driven fundamental transitions in economic departments and boosted business development, increasing production and consolidating effective progress of organizations. On the other hand, Moore and Felo (2022) observe a drastic transformation in the accounting career, where traditional accounting functions are being replaced by the need to incorporate technical skills and advanced tools, such as artificial intelligence, cloud computing, and data analysis. In this line, Ordoñez et al. (2019) underline how accounting programs have innovated as technological instruments, serving as information hubs among collaborators, companies, and governmental entities, and facilitating compliance with financial regulations.

Finally, Hernández & Ochoa (2021) identify that, among the most used digital tools in companies, advanced Excel programs hold a prominent place due to their accessibility and versatility

in various accounting areas. Additionally, ERP systems, especially the Accounting and Finance modules, also play a crucial role in the digitalization and optimization of accounting and financial processes in modern organizations.

This research is based on the imperative need to understand and analyze the implementation and impact of accounting systems in the context of the new normal, especially in the field of exporting companies. These organizations, faced with a highly volatile and challenging business environment, have experienced the urgency to reinvent and adapt quickly to maintain their competitiveness and viability amidst an unprecedented global crisis.

This research focuses on examining scientific evidence on advancements in accounting systems of commercial companies through an exhaustive review of existing literature. It aims to identify trends, innovations, and emerging practices in the adoption of accounting systems by commercial enterprises. Embracing a methodological approach of literature review, it seeks to conduct a detailed and systematic exploration of academic and empirical contributions in this field, with the goal of offering valuable and practical insights that contribute to the optimization and continuous improvement of accounting systems.

In an increasingly dynamic and competitive business environment, where adaptability and efficiency are crucial, this research presents itself as an essential tool for organizations seeking to maintain their competitiveness and generate sustainable value. By addressing this review, the study aims to fill a knowledge gap, providing a more comprehensive understanding of the evolution and current state of accounting systems in the contemporary business context.

2. Methodology

The methodology used focuses on bibliographic inquiry supported by document analysis techniques. It involves an integrated control of the literature, a strategy that allows for the critical synthesis and analysis of existing scientific knowledge on the subject under study. In this process, all available scientific evidence is considered, primarily comprising various scientific articles, which serve as a basis for validating or refuting specific hypotheses and theories related to accounting systematization in commercial enterprises.

For the selection of articles, an exhaustive search was conducted across different databases, such as Scopus, showcasing journals and scientific articles by filtering for terms like “accounting systematization,” resulting in a total of 7118 scientific articles. After narrowing down the search to journals and articles in Spanish and English, thematic area, and within the last 5 years, a total of 376 investigations were obtained, and finally, 19 articles were considered based on the research.

Additionally, research was conducted on Google Scholar, yielding scientific journals, theses, books, and other reports related to accounting systematization in companies, using terms such as accounting software, ERP, resulting in seven hundred investigations related to the topic and limiting to the last 5 years (2018-2022). In English, the search resulted in 9,840 theses, journals, and other reports related to the terms “Accounting + systematization + companies,” considering 08 significant articles based on the variable.

Similarly, a total of 1585 articles were found on ScienceDirect using keywords such as “accounting + systems,” also filtering for the last 5 years (2018-2022) and considering both Spanish and English, synthesizing 08 scientific articles related to the research topic. The ProQuest database yielded a total of 800 investigations using the terms “accounting systems,” with the same criteria for filtering and limiting scientific journals and articles to the last 5 years and in English. Furthermore, in the information analysis, 07 scientific articles related to the research were considered, thus excluding other information not relevant to the topic.

Finally, the Web of Science database obtained scientific articles searching for terms or keywords like “accounting + system” with a criterion of English language, resulting in 74 articles, and from the analysis, 07 articles related to the research were obtained.

For the careful selection of scientific literature in this research, inclusion and exclusion criteria

were established to ensure the relevance and timeliness of the selected studies. Firstly, publications no older than the year 2018 were included, ensuring that the content reflects the current dynamics of the "new normal" in the field of accounting systematization in commercial enterprises. Additionally, scientific journals and articles specifically addressing this topic were prioritized, ensuring thematic coherence with the research focus. In terms of language, the search focused on publications in English and Spanish to facilitate the understanding and analysis of academic content.

On the other hand, strict exclusion criteria were established to maintain the quality and relevance of the selected literature. Articles more than five years old were discarded, as the aim was to focus on recent developments and trends in the field of accounting systematization. Research not related to the topic at hand and those not available in the selected languages, English and Spanish, were also omitted.

Regarding the search strategy, a thorough review was conducted in five renowned academic databases: Scopus, Google Scholar, ProQuest, Web of Science, and ScienceDirect. This inquiry was carried out using key terms related to accounting systematization, and the results were limited to publications that met the established language and age criteria. Together, the meticulous application of these criteria and search strategies ensures that the selected literature is a solid and reliable basis for analysis and interpretation in the context of research on accounting systematization in commercial enterprises.

Table 1: Quantity of Consulted Documents

Source	Number of files	Dimension 1
Scopus	19	Accounting Systematization (English and Spanish language)
Google Scholar	09	Accounting Systematization (English and Spanish language)
ScienceDirect	08	Accounting Systematization (English and Spanish language)
ProQuest	07	Accounting Systematization (English and Spanish language)
Web Of Science	07	Accounting Systematization (English and Spanish language)
TOTAL	50	

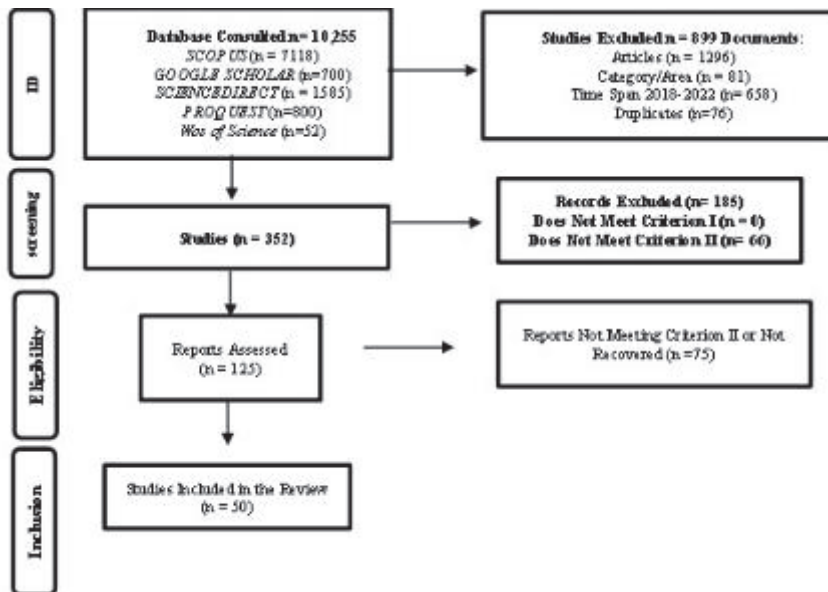


Figure 1. PRISMA flowchart

Table 2. Most Relevant Articles Concerning the Research Topic Between the Years 2018-2022

Authors	Title	Journal Name	Abstract
Zubrenkova, O.; Kozlov, S.N.; Mishina, Z.; Syssoeva, Y.; Zubenko, E.	Aspecto moderno e histórico de la automatización de la contabilidad.	Avances en sistemas inteligentes y computación	The accounting system faces the challenge of integrating several types of accounting: managerial, tax, social, environmental, among others, along with economic life data. Electronic reference and information systems are increasingly used in accounting, whose development perspective is the accumulation and systematization of professional knowledge in the field of accounting, analysis, and auditing in specialized knowledge bases.
Xiaoqi Chen	Research on the Systematization of Computer Accounting Information Based on Internal Control	Journal of Physics: Conference Series	The networked computer accounting information system has provided convenient and fast information services to humans and has become an important guarantee for the development of enterprises. However, due to the characteristics of computer networks, such as openness, interconnection, and infinite space-time, the problem of computer accounting information systematization on the network has become very prominent, and security control is particularly important.
Lipych L.; Melynk K.; Bortnik S.; Vizniak Y.; Kozoriz M.	Política de auditoría de entidades auditorías en condiciones de desarrollo sostenible	Actividad financiera y crediticia: problemas de teoría y práctica.	The application of the audit policy category for audit entities is justified by the need for a comprehensive systematization in a single internal document of both the description of approaches (policy disclosure) on quality management characteristics and pricing of their services as well as the disclosure of their positioning and social responsibility.
Barberan, M. F., & Fernández, L.	Sistematización contable aplicada al análisis financiero para la toma de decisiones	Suplemento CICA Multidisciplinario	Decision making at the managerial and operational level is facilitated by having accurate and timely information about the company's situation. Three stages are proposed for financial analysis, employing information analysis techniques, financial analysis tools, and preparing an interpretation report of the results. This way, accounting systematization is achieved.
Ziuba, T.	Modelo de información para mejorar el soporte contable y analítico para la gestión del potencial económico.	Horizontes científicos	Economic and mathematical modeling, systematization, and synthesis helped develop a strategy to improve accounting and analytical support for managing the economic potential of agricultural companies. The developed information model of selective adaptation helps managers at various levels monitor the implementation of business processes to improve accounting and analytical support for managing economic potential.
Shumilin, P.E; Petrenko, A; Shumilina, V.E	Indicadores contables y analíticos de un sistema de apoyo a la decisión en empresas del sector de servicios.	Apuntes de conferencias sobre redes y sistemas	A model for classifying accounting and analytical indicators is proposed; an enhanced presentation of service companies' credentials based on the introduction of key indicator visualization tools; structural elements of the quick audit method of management decisions in the service are proposed.
Hernes M.; Bytniewski A.; Mateńczuk K.; podredumbre A.; Dziuba S.; Fojcik M.; Nguyet TL; Golec P.; Kozina A.	Gestión de la calidad de los datos en sistemas ERP – Caso contable	Comunicaciones en informática y ciencias de la información.	The basic outcome of the conducted research is the systematization of knowledge about data that allow for quick and effective economic decision-making. Based on the research results, it was concluded that a large number of data control procedures integrated into the ERP ensure adequate data quality.
Spilnyk I.; Brukhanskyi R.; Yaroshchuk O.	Sistema de Información Contable y Financiera en la Economía Digital	2020 décima Conferencia Internacional sobre Tecnologías Avanzadas de la Información, ACIT 2020 - Actas	The most promising areas for improving the accounting and financial information system as a significant information resource of the global information economic environment are identified, including the use of contactless identification and Blockchain technology as a way to record and store economic facts, aggregated data, financial and non-financial reports, and their reliability filters, among others.
Rodrigues, R.	Automatización contable y el futuro de la profesión contable	Revista Científica Multidisciplinar Núcleo do Conhecimento	Information systems, new artificial intelligence technologies, and innovation, when connected with the experience of accounting professionals, can result in higher performance of companies and, consequently, of the economy.
Torres, A.	Elementos de un sistema de información contable efectivo	Revista Quipukamayoc	Whether manual or computerized, accounting information systems determine that the level of coupling and interaction is a crucial task in the analysis stage if one wishes to design an accounting information system that, after its implementation, turns out to be effective.
Guillén, J.; Tosca, A.	Importancia de las TIC en el sistema contable empresarial	Publicaciones e Investigación	Currently, ICT plays a very important role in the accounting area, as thanks to the evolution of these tools, the accountant's work has been made more feasible, reducing speed in various scenarios, requiring efficiency and quality in the recording of transactions and operations carried out by organizations, whether commercial, industrial, or service, to produce truthful, reliable, and timely information, and users are in a position to make correct decisions.
Baez, S.; Guzmán, C.; Tosca, S.	Importancia del sistema de información contable	IJRDO - Revista de Gestión Empresarial	The accounting information system provides tools that facilitate the collection of the company's financial data, through the generation of reports on its financial situation for the directive or management. In its evolutionary process and greater development, it provides greater benefits in the task of keeping a better accounting record and having financial projections in an effective and adequate way.
García, V.; García, X.; Pérez, D.	Sistemas contables una herramienta de gestión financiera para la toma de decisiones en las pymes del cantón Chimbo, provincia Bolívar año 2020	Revista De Producción, Ciencias E Investigación	The technological advancement of ICTs in the business field develops increasingly efficient accounting tools focused on controlling financial processes, achieving resource optimization, which face financial risks, i.e., losing their investment, competitiveness due to the opening of new markets, technological evolution.
Erazo, C.; Saquisari, D.; Renia, J.; Endara, I.	Sistematización de los procesos contables y su impacto en la sostenibilidad de las PYMES	RISTI - Revista Ibérica de Sistemas e Tecnologías de Informacao	Technologies Analyzes the strengths generated by systematization, as well as the vulnerabilities of SMEs to failure. This proposal aims to emphasize the importance of correct systematization for sustainable business development, innovation processes, and facing new challenges.
Stonciuviene N.; Usaite-Duonieliene R.; Zinkeviciene D.	Integración de modificaciones de costos basados en actividades y contabilidad LEAN en el cálculo de costos totales	Ingeniería Económica	The applicability of the data systematization model generates a more efficient control of pricing decisions in the company, ensuring its greater competitive capacity, justified through financial calculations. An analysis of modern cost accounting systems was conducted; The applicability, implications, and limitations of the designed model were evaluated using real data from the selected industrial company.
Bochkarev A.; Urasova A.; Balandin DA	Aspectos metodológicos del soporte de información en el sistema de gestión empresarial.	Serie de actas de conferencias internacionales de ACM	The information support of enterprises is characterized by high update intensity, an increase in incoming information volume, the expansion of its sources and transmission methods, the development of integrated management processes based on the modernization of computer equipment, software, information technologies, and professional training of information support specialists.
Oliveira HC; Lima-Rodrigues L.; Craig R.	La presencia de la burocracia en el cuadro de mando integral	Revista de Contabilidad-Revista Contable Española	It was analyzed whether Management Accounting Systems (MAS), known as Balanced Scorecard (BSC), represents a bureaucratic order. A set of concepts was proposed to identify a bureaucratic order: authority, jurisdiction, professional qualifications, knowledge, rationality, discipline, accountability, systematization, and transparency. Concluding that the BSC is an example of a neobureaucratic order.

Authors	Title	Journal Name	Abstract
Tsai W.-H.; Lan S.-H.; Lee H.-L.	Aplicación de ERP y MES para implementar los segmentos operativos de la NIIF 8: el modelo de decisión de producción de coste estándar basado en actividades de un grupo siderúrgico	Sostenibilidad (Suiza)	The case study of the steel group uses the organizational design of the ERP system to achieve the systematization of the financial statements of the reportable segments. Mathematical programming methods and ABSC can be used in this process to obtain optimal solutions for sales, costs, and profits.
Potasheva O.	Problemas de automatización del coste ABC en Rusia	Apuntes de conferencias sobre redes y sistemas	The most common partial ABC costing tool used by small and medium-sized enterprises is Microsoft Excel. 23% of the organizations examined use the Process Cost Analyzer product, OROS ABC products, AllFusion Process Modeller, and IDEFo.EM TOOL used by individual companies, associated with the relatively high cost of these software products.
Zamula I.; Prodanchuk M.; Kovalchuk T.; Myhalkiv A.; Simakov K.	Ingeniería de procesos empresariales en apoyo contable a la gestión de efectivo	Economía agrícola y de recursos	Microsoft Excel emerges as the predominant partial Activity-Based Costing (ABC) tool employed by small and medium-sized enterprises. This is attributed to its widespread availability and versatility in handling diverse accounting and financial tasks. In contrast, 23% of the surveyed organizations utilize specialized software products such as the Process Cost Analyzer, OROS ABC products, AllFusion Process Modeller, and IDEFo.EM TOOL. The adoption of these specific software solutions among individual companies is notably influenced by the relatively elevated expenses associated with acquiring and implementing such advanced software products.
Khoruzhy, L.; Gupalova, T.; Katkov, Y.	La integración como base para el establecimiento de un nuevo modelo de información contable en la organización agraria.	Revista internacional de tecnología innovadora y exploración de ingeniería	A three-factor model of integrated reporting in agribusiness organizations was presented. The model can provide its users not only with basic information but also with the expanded information necessary for making accurate management decisions in agribusiness organizations and ensuring their sustainable development.
Lopes de Araújo MA; Dornelas JS	Contabilidad como servicio: Percepciones de los profesionales sobre funciones y tareas tradicionales relacionadas con la actividad del contador en los despachos contables.	Atas da Conferencia da Associaçao Portuguesa de Sistemas de Informação	Currently, cloud computing is systematically offered as a service, with accounting modalities transformed into cloud services. The vision of the accounting tasks performed in offices, in an online format, was sought and verified as feasible as a service, achieving relative success. Finally, it is speculated that this systematization would not jeopardize all that routine activity in offices.
Markova, T.; Yu. Melynyk; Pchelianska, G.; Tilloyev, S.	Características de los sistemas de información de gestión y Tecnologías en la organización de lo automatizado. Proceso contable y analítico en la empresa.	Food industry economics	The systematization with applied programs of national and foreign experience, are used by companies to track financial statements, cash flows, invoicing, bank accounts, and purchase orders, as well as their characteristics.
Frolova OA; Milgunova IV; PN Sidorova; Kulkova NS; Kitaeva ES	Desarrollo de la contabilidad en la era de la economía digital	Apuntes de conferencias sobre redes y sistemas	In the current stage, automation and digitalization not only change habits and preferences but also other aspects. Like accounting that will not disappear, as neither will economic life itself, but will be systematized and continue in a different, more advanced, and progressive way.
Kochinev Y.; Antysheva E.; Putintseva N.	Formalización de procedimientos analíticos para evaluar los riesgos de incorrección material en los estados financieros debido a fraude.	Serie de actas de conferencias internacionales de ACM	The purpose of this study was to justify the selection and systematization of analytical procedures for assessing the risk of material misstatement in the accounting information of the audited entity. The development of this process is also facilitated by the well-known fact that auditing standards only contain framework requirements for the assessment of the risk of material misstatement with respect to the audited financial statements.
Gao X.; XuY.	Investigación sobre la conexión entre la oferta y la demanda de talentos contables en las escuelas superiores de formación profesional en el contexto de 'Big Data + Inteligencia artificial'	Actas - Conferencia internacional 2021 sobre Big Data, inteligencia artificial y gestión de riesgos, ICBAR 2021	In the big data + artificial intelligence era, accounting work has changed, showing cloud accounting, intelligence, socialization, industrialization, processes, standardization, systematization, and specialization. Higher vocational schools are actively exploring teaching resources, teaching methods, and talent training modes to adapt to the new era, innovative technologies, and business forms.
Mizikovskiy, I.; Gariña, E.; Andryashina, N.; Romanovskaya E.	Soporte de Contabilidad y Cálculo para Reducir las Pérdidas de Recursos Materiales no Utilizados en el Proceso de Producción	Apuntes de conferencias sobre redes y sistemas	The institutionalization of the developed calculation by accounting tools and its incorporation into management accounting systems or manufacturing plant management significantly improved the results of their activities ensuring the efficiency of production costs.
Dmytrenko, M.; Yarmoliuk, F.; Kudlaieva, K.; Sysioeva, S.; Borkovska, B.; Demianyshyna, D.	Aplicación de software moderno para mejorar la eficiencia contable del análisis económico en las empresas	Revista de Ciencias de la Decisión y la Información de Gestión	To automate, users use QuickBooks and Sage programs. The key functions that software products offer is invoice accounting, order accounting, and synchronizing payments with the bank. The use of modern software has a positive effect on improving accounting efficiency by transferring all data to a single plane, reducing operation time, and increasing opportunities for economic analysis and data control.

In the field of accounting and business management, current literature presents an intersection of ideas and approaches that, although sometimes divergent, converge on the need for adaptation and evolution. Authors such as Zubrenkova et al. and Barberan & Fernández, for example, agree on the importance of accounting systematization; while the former advocates for the integration of multiple accounting facets and the accumulation of expertise, the latter highlights its value for strategic financial decisions. Nonetheless, Guillén & Tosca celebrate the positive impact of ICT on accounting, a vision that contrasts with the perception of García et al., who highlight the financial challenges still faced by SMEs despite technology.

In the technological domain, the introduction of tools like the Balanced Scorecard (BSC), discussed by Bochkarev et al. and Oliveira et al., presents a complex scenario; Oliveira et al. even suggests possible bureaucratic traits in its implementation. However, Lopes de Araújo & Dornelas counter this idea, hinting that cloud accounting functions do not eliminate traditional practices. With an eye on technification, Tsai et al. and Potasheva emphasize accounting systematization and automation, while Khoruzhy et al. and Mizikovskiy et al. point to integration and accounting support

as keys to effective management. In summary, accounting is presented as a field in constant flux, where current and emerging research indicates the need to adapt and evolve in a rapidly transforming technological and organizational landscape.

2.1 Citation by Year

In Figure № 2, the visualization of the number of citations of scientific articles related to the study topic is presented. The journal Entrepreneurship and Sustainability Issues stands out, highlighting the years 2018 and 2019 with notable ratings of 5 and 7, respectively. On the other hand, the ACM International Conference Proceeding Series, shows a progressive increase in citations, reaching its highest point in 2020 with a score of 1.2. This bibliometric analysis offers a perspective on the relevance and dissemination of works in the scientific literature, highlighting the most influential publications in the field of the research topic.

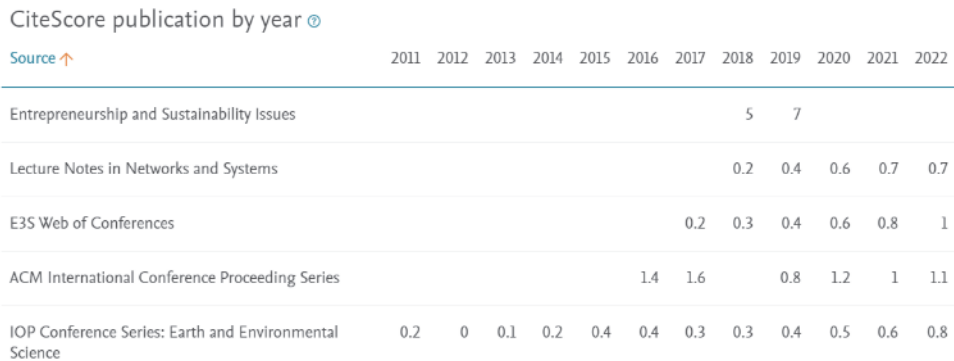


Figure 2: Citations from different journals

2.2 Keywords Considered in the Study

Keywords play a pivotal role in the efficient organization and retrieval of information in academic databases. These terms or short phrases serve as tags that facilitate the indexing and access to relevant documents. They function as a bidirectional tool: on one hand, they assist authors in categorizing and highlighting the central themes of their works; on the other, they enable researchers to quickly and accurately locate relevant literature in their areas of interest.

For the present literature review, the VOSviewer software was employed, recognized for its ability to construct, and visualize bibliometric networks. This constitutes an advanced tool that not only allows for a graphical representation of the relationships between key terms but also identifies the frequency with which they appear in academic documents. In other words, it facilitates the detection of co-occurrences, that is, the frequency with which certain keywords appear together in the analyzed works. This bibliometric examination contributes to identifying emerging trends, the most active research areas, and thematic connections within the body of literature reviewed.

In the context of this review, certain keywords emerge as central or recurring in the analyzed literature. Providing a panoramic view of the predominant themes and approaches in the field of study (Figure No. 4), which will be presented in detail below:


Selected	Keyword	Occurrences	Total link strength 
<input checked="" type="checkbox"/>	information management	2	31
<input checked="" type="checkbox"/>	systematisation	2	30
<input checked="" type="checkbox"/>	management accounting	4	28
<input checked="" type="checkbox"/>	information use	2	24
<input checked="" type="checkbox"/>	agricultural sector	2	19
<input checked="" type="checkbox"/>	digital storage	1	16

Figure 3: Keywords

The results obtained reveal a notable scarcity of research focused on the topic of accounting systematization in companies. It is crucial to recognize that the adoption of accounting systematization in the business environment would not only facilitate a more efficient management of financial information but would also offer the advantage of immediate and precise access to the accounting and financial data that are managed on a daily basis.

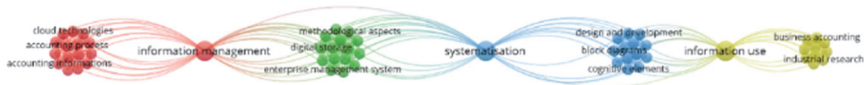


Figure 4: Keywords within the reviewed literature

2.3 Authorial Production

Authorial productivity stands as an essential indicator to discern which researchers have the greatest impact and contribution in a specific field of study. In the framework of this article, a total of 407 authors have been identified whose academic production is closely linked to the theme of accounting systematization (accounting and systems). Among these researchers stand out names like Chen, S., Deng, Y., Feng, D., Hu, L., Huang, S., Jiang, H., Li, B., Li, C., Ma, Z., among others. These authors make up the most prominent cluster, composed of 42 articles. They will be followed in order of relevance by cluster 2 with 41 items, cluster 3 with 37 items, cluster 4 with 35 items, and so on until reaching cluster 16 with 3 items. This analysis of authorial productivity provides a structured view of the leaders in the field and the distribution of their contributions in the scientific literature on accounting systematization.

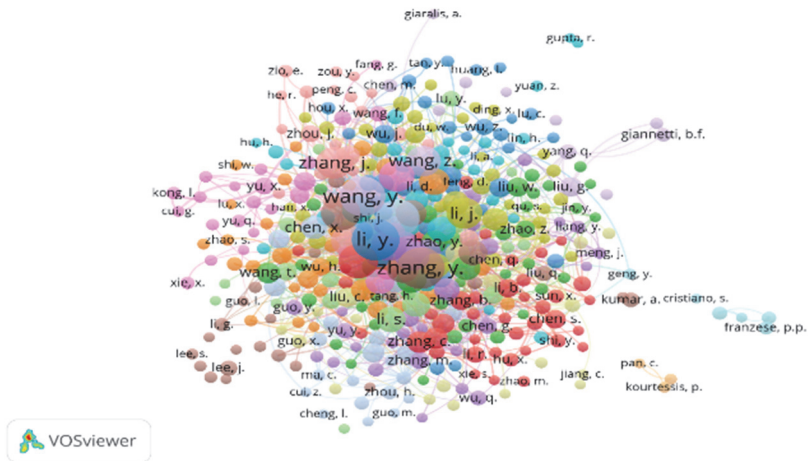


Figure 5: Productivity by authorial production

2.4 Countries

Regarding the geographical distribution, a total of 91 articles are identified, distributed in 9 different clusters according to their national origin. The countries with the most prominent presence in the literature are concentrated in cluster 1 and cluster 2, both with 23 articles each. This is followed in order of relevance by cluster 3 with 16 items, cluster 4 with 9 items, and so on until reaching cluster 9, which consists of 3 items. It is relevant to highlight that the United States and China emerge as the countries with the highest representativeness in terms of publications in this field. Figure No. 7 clearly shows that the year with the most significant production is 2020, while 2021 presents a smaller proportion of publications. Additionally, a density map is provided that offers a more detailed visualization of the geographical distribution of the research during the mentioned time.



Figure 6: Productivity by authorial production

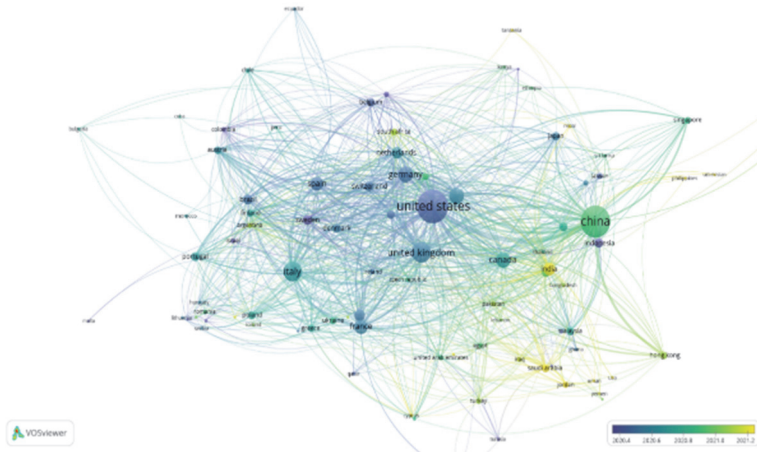


Figure 7: Productivity by countries

3. Results and Discussion

In the contemporary era, the rapid evolution of automation and digitization has profoundly influenced various sectors of our society, including accounting. Rather than facing obsolescence, accounting is reconfigured and evolves, adopting more advanced and adaptive forms (Frolova et al., 2021). This transformation is not accidental; it is the direct result of technological progress and the ability to efficiently manage vast amounts of data (Muñoz et al., 2019).

When examining the available literature, a variability in technological adaptation among different countries and sectors stands out. For example, in the Colombian context, although a trend toward technological adoption in accounting has been observed, significant gaps still persist. Pacheco et al. (2019) point out that many entities have begun to transform their accounting practices, but there is a lack of knowledge about technological systems that could further enhance their operations. Therefore, while the willingness to adopt technology may be present, effective implementation requires greater education and resources.

On the other hand, Poland's experience during the COVID-19 pandemic presents an interesting perspective on technological adaptation in accounting. As movement restrictions and social distancing measures intensified, Polish companies were driven to accelerate their transition to digital solutions (Halina and Magdalena, 2021). The health crisis served as a catalyst for many Polish organizations to reconsider their traditional accounting processes and seek more efficient and secure technological tools. As a result, a significant increase in the adoption of cloud accounting software, automation platforms, and integrated financial management systems was observed, which not only allowed companies to maintain the continuity of their operations in uncertain times but also laid the groundwork for more agile, transparent, and resilient accounting in the future (Mishuov et al., 2021). However, like in other contexts, the effective implementation of these technologies in Poland also faced challenges, such as staff training, ensuring data security, and adapting to new regulatory frameworks (Al & Ramo, 2020). Ultimately, the Polish experience underscores the importance of flexibility and preparedness for technological changes, especially in crisis situations.

3.1 Advancements in accounting systems

Technological advancements in accounting have been significant, enabling business transformations and remote reporting (Pacheco et al., 2020). Despite the obvious benefits, it is essential to critically

address some emerging challenges. For example, while the network-based accounting information system offers speed and convenience, it also introduces crucial concerns about data security and integrity (Chen, 2021). This duality raises questions about the true effectiveness and reliability of such systems in evolving business environments.

Additionally, the influence of technology on accounting is not limited merely to automation; it also reconfigures the dynamics of decision-making and performance management (Yang et al., 2021). Monserrate (2018) and Campos & Reis (2020) highlight the emergence of specialized software tools that, while facilitating information management, also raise issues about excessive dependence on such platforms and their adaptability to contextual changes.

The study by Zahed & Rafat (2020) highlights a concerning trend: the blind trust of executives in software, which could lead to complacency and a lack of proper oversight. This unexamined trust could have serious repercussions for the internationalization of accounting practices and adaptability to changing regulations. Finally, varied experiences, such as those observed in Ukraine (Magopets et al., 2022), underline the need for adaptive strategies in the field of accounting. Undoubtedly, these regional and contextual variations reinforce the importance of a critical and reflective approach to integrating emerging technologies into established accounting practices.

3.2 *Development of companies through accounting systems*

Adapting to new technological trends, especially in financial environments like the UK, has emerged as a central element in the efficient management of resources (Mosteanu & Faccia, 2020). While global innovations, according to Napalkova et al. (2020), have improved accuracy in data transformation, it is crucial to critically examine how these trends affect strategic decision-making. Despite promises of efficiency, Huang & Zeng (2022) raise a critical point: to what extent do monitoring systems guarantee effective supervision and prevent real-time errors?

The study by Vakhushina and Vakhushina (2021) emphasizes the importance of digitalization in international accounting. Despite this, it is essential to question how these tools address and correct anomalies, especially in the context of intellectual property. As companies seek to consolidate financial and economic data, systematization emerges as an essential component (Portilla et al., 2021). However, it is crucial to examine how this systematization translates into effective practices and organizations' adaptability to changing market dynamics.

Information technology in accounting, according to Yaremenko et al. (2021), offers valuable solutions for companies of varied sizes. However, it is critically important to address whether these solutions are truly aligned with the specific needs of each type of company. Lastly, the analysis by Khoruzhy et al. (2019) on agro-industrial companies highlights the influence of accounting models on globalization processes, raising questions about uniformity versus adaptability in adopting accounting practices in diverse contexts.

Technological evolution in the accounting field, while offering promises of efficiency and accuracy, also poses critical challenges that require careful attention. The adoption of new trends should not be merely a response to global innovation, but a deep reflection on how these tools and systems integrate and benefit the specific accounting operations of each entity. It is essential for organizations not only to implement technological solutions but also to maintain critical vigilance over their effectiveness, adaptability, and alignment with long-term strategic goals. In this dynamic context, accounting is not just about figures and records, but also about the ability to adapt, innovate, and ensure the integrity and relevance of financial information in an increasingly digitalized world.

The contemporary landscape of accounting is intrinsically linked to the evolution and adaptation of systems that respond to the changing demands of a dynamic business environment. Mendoza et al. (2019) underline the structured nature of systems, emphasizing their capacity to meet diverse functional demands in the accounting field. Although the effective implementation of these systems is not merely technical, as indicated by Ewert and Wagenhofer (2021), an adequate incentive framework, reflected in agency models, is required to motivate managers to invest in high-quality

accounting systems.

The dynamism of the business environment, as highlighted by Olga et al. (2020), introduces additional complexity. As business activities intensify, there is a pressing demand for innovative and well-structured accounting systems. This demand is not only focused on accuracy and operational efficiency but also on the transparency and relevance of information. In this regard, Monteiro et al. (2022) illustrate how robust systems can significantly improve transparency, thus enhancing business success.

However, it is essential to critically address how accounting policies are integrated and adapted within these systems. Lutsyk et al. (2020) emphasize the importance of aligning accounting policies with national regulations, underscoring the need for consistency and compliance. Similarly, Tomilova et al. (2019) explore the crucial role of technology in decision-making, especially in specific sectors like agriculture, where the quality and availability of information are vital. Consequently, the implementation of effective control systems emerges as an essential component to ensure the integrity and utility of data.

In summary, modern accounting goes beyond the simple compilation and recording of financial data. It involves a complex network of systems, policies, and technologies interconnected to provide valuable and relevant information in a changing business world. The implications of the reviewed literature highlight the need for adaptability, transparency, and quality in accounting management, emphasizing the importance of robust systems and aligned policies that support informed strategic decisions and promote sustainable business success.

Regarding the generation of truthful and useful information, the evolutionary process of accounting - influenced by IFRS - has involved profound transformations in the implementation of information systems.

This approach has also encouraged the integration of advanced tools in strategic accounting. Krutova et al. (2020) emphasize how the combination of a balanced scorecard, strategic budgeting, and systematization forms can improve the quality and usefulness of information. However, the question arises as to how to ensure consistency among the various tools and the real improvement of interdepartmental communication.

In conclusion, the literature reflects an accounting in constant change, where technological and regulatory advances pose complex dynamics. While modern tools promise improvements in information, they also entail challenges of integration, coherence, and adaptability. A critical and reflective approach is required to ensure that the adopted solutions generate value and facilitate informed decision-making.

4. Conclusions

This study has meticulously outlined the evolution of the Systemic Environment (SE) and Information System (IS) from 1989 to 2022. Through a robust bibliometric methodology, a detailed panorama of the trends, influences, and networks that have defined these fields has been provided. It is essential to underline that, despite the enrichment provided by this review, there is a clear challenge in linking these conclusions to the existing literature.

The expansion and growth observed in the epistemological constructs of SE and IS reflect significant interest and investment in these areas globally. The integration of more countries, the increase in the research community, and the proliferation of publications are testament to the recognition of the importance of these themes in the contemporary academic and practical landscape. However, although the bibliometric analysis highlights the magnitude of research in SE and IS, it must be recognized that mere quantity does not necessarily guarantee the depth or relevance of contributions to the discipline.

In the context of accounting, a paradigmatic shift has been identified in the process of systematizing financial information, particularly in exporting companies. This change is not merely technical but implies a redefinition of the fundamental principles governing business accounting.

Accounting systematization not only offers operational efficiencies, such as reducing errors and costs, but also stands as a fundamental pillar for informed and strategic decision-making.

Emerging reflections suggest that, while accounting systematization offers tangible benefits, critical consideration of its implementation and broader implications is crucial. In this regard, future research could focus on exploring more deeply how accounting systematization interacts with contemporary challenges, such as environmental and social issues, and how the State can play a more active role in shaping public policies in this area.

The study provides an exhaustive view of the evolution and trends in SE and IS, it is imperative to recognize the need for deeper reflection and connection with the existing corpus of knowledge. Accounting systematization, as highlighted, is a powerful tool in the arsenal of modern accounting. Nonetheless, its implementation and evolution require careful consideration of its ramifications and potential areas for future development.

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