

THEMATIC TRENDS IN ACCOUNTING EDUCATION: A BIBLIOMETRIC STUDY FOR THE PERIOD 2021-2025

Muhasebe Eğitiminde Tematik Eğilimler: 2021-2025 Dönemine Ait Bibliyometrik Bir Çalışma

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Abstract

This study is based on a bibliometric analysis of 639 articles published between 2021 and 2025, using data obtained from the Web of Science (WoS) database. The research addresses various themes related to accounting education. These themes include the role of technological developments such as digital transformation, artificial intelligence (AI), blockchain, and the metaverse in accounting education, students' competencies in accounting education, the impacts of the COVID-19 pandemic on distance education and accounting education, the relationship between social media and accounting education, the influence of mobile applications on accounting education, ethics and sustainability issues, the theory-practice gap in accounting education, and the use of simulations, case studies, and curriculum development. This study argues that topics such as digitalization, AI, online learning, and sustainability have become key areas shaping the future of accounting education. The findings show that these themes are increasingly represented in academic literature and will likely become even more critical in the future, supporting this claim.

Keywords: Accounting Education, Online Learning, Sustainability, Artificial Intelligence, Digitalization.

Öz

Bu çalışma, 2021-2025 yılları arasında Web of Science (WoS) veri tabanından elde edilen verilerle 639 makale üzerinde yapılan bibliyometrik analize dayanmaktadır. Araştırmada, muhasebe eğitimi ile ilgili çeşitli temalar ele alınmıştır. Bu temalar dijital dönüşüm, yapay zekâ, blockchain, metaverse gibi teknolojik gelişmelerin muhasebe eğitimi üzerindeki rolü, öğrencilerin muhasebe eğitimindeki yeterlilikleri, COVID-19 pandemisinin uzaktan eğitim ve muhasebe eğitimi üzerindeki etkileri, sosyal medya ve mobil uygulamaların muhasebe eğitimiyle ilişkisi, etik ve sürdürülebilirlik konuları, muhasebe eğitimindeki teori-pratik uyumsuzluğu, simülasyonlar, vaka çalışmaları ve müfredat geliştirme çalışmalarından oluşmaktadır. Bu çalışmada, dijitalleşme, yapay zekâ, çevrim içi öğrenme ve sürdürülebilirlik gibi konuların, muhasebe eğitiminin geleceğini şekillendirecek temel alanlar hâline geldiğini savunuyoruz. Bulgular, bu temaların akademik literatürde giderek daha fazla yer bulduğunu ve gelecekte daha da önemli hâle geleceğini göstermekte ve bu iddiamızı desteklemektedir.

Anahtar Kelimeler: Muhasebe Eğitimi, Çevrim İçi Eğitim, Sürdürülebilirlik, Yapay Zekâ, Dijitalleşme.

Introduction

Accounting is the process of recording, classifying, summarizing, reporting, and analyzing financial transactions. Some researchers attribute the existence of writing to the recording function of accounting (Şeker and Şeker, 2019, p. 90). Although this function is one of the cornerstones of accounting, the common misconception that accounting is only a recording process is a fundamental problem that negatively affects students' professional competencies. The study of Gül, Demir, and Narlıkaya (2024) also supports this situation. However, accounting is a multidimensional information system that includes classification, summarizing, reporting, and analyzing processes beyond the record-keeping function. Therefore, it is essential to emphasize the decision-supporting and information-providing aspects of accounting in the early stages of accounting education.

The literature states that students who have difficulty in mathematics or feel inadequate in mathematics often have difficulty in accounting courses. Because accounting is a numerical course, it creates extra difficulty for these students. In addition, instructors who are experts in their field sometimes fail to simplify the topics sufficiently, making it difficult for students to understand, which can negatively affect their academic achievement (Voshaar, Wecks, Plate, & Zimmermann, 2025).

Accounting education is often designed as a technical form of learning in the service of neoliberal values (competition, profit maximization, market interests), devoid of critical thinking and social context. This makes students passive recipients of information and prevents them from questioning the broader meanings of accounting in society. Students in Pakistan have challenged this. Bigoni and Awais (2025) examine how neoliberal values are reflected in accounting education in Pakistan and the strategies of silent resistance developed by students. Their research revealed that education focused on technical knowledge neglects social and ethical dimensions, and students react to this system through disinterest or rote memorization. In the interviews, most students stated that the education is far from critical thinking and is only oriented towards professional attainment. As a result, their research emphasizes that neoliberal approaches in accounting education should be questioned, and alternative student-centered models should be developed (Bigoni and Awais, 2025). While the neoliberal conception of education emphasizes individual achievement, measurable outcomes, and market-oriented skills, the Community of Inquiry (CoI) framework argues that education should be a more collective, questioning, and meaning-oriented process. The CoI framework, developed in the US to understand the key components of online learning, is based on Lipman's (1991) notion of a "community of inquiry" and emphasizes that education should be a community experience that fosters critical thinking and deep learning (Guo, 2025). This brings to mind the question of whether what should be in accounting education is a neo-liberal education or a questioning education.

This study focuses on such themes in accounting education. Themes such as misconceptions, expert bias, technological developments, digital transformation, theory and practice differences, curriculum issues, sustainability, language proficiency, COVID-19, distance and online education are discussed in the context of accounting education; the effects

of these factors on students' perceptions of accounting courses and academic achievement are examined. We examined academic publications on accounting education using a bibliometric approach and aimed to identify various thematic trends. Our study is structured as follows: First, in the "Conceptual Framework" section, we discuss the concept of accounting education, and then briefly explore the relationship between accounting, education, and accounting education. In the Literature Review section, we review existing studies on the topic, and in the Methodology section, we explain in detail the dataset and methods used for the analysis. In the following sections, we present the study of the distribution of publications on accounting education by year, co-authorship analysis, keyword analysis, citation status of institutions, and citation status of countries. We then discuss 10 main themes in detail under the thematic trends section. Our study concludes with the findings and discussion section.

In this study, we claim that prominent thematic trends and innovations play a crucial role in the development of accounting education. We assert that topics such as digitalization, AI, online learning, and sustainability are becoming key factors that will shape the future of accounting education. Our findings support this claim, showing that these themes are increasingly represented in academic publications and will likely continue to strengthen.

1. Conceptual Framework

The focus of this research is "accounting education". In this context, the definition and history of accounting are briefly mentioned, followed by examples from the literature on accounting education.

1.1. An Overview of Accounting Education and Its History

According to Jim and Kay Stice, accounting professors at Brigham Young University, accounting is quantitative. It contains information about money. This information should be helpful and usable. Accounting helps people make decisions. It tries to guide present decisions with past data (Stice & Stice, 2022). Accounting records, classify, report, analyze, and interpret transactions expressed in money. Thus, it provides reliable and meaningful information (Güvemli, 2000). As in this definition, there are definitions based on accounting functions in the literature.

It is not known precisely how old accounting is. It is also not certain whether writing or accounting came first. However, research shows that the written history of accounting dates back about 7,000 years to clay tablets in Mesopotamia (Küçüker, 2019, p. 1). According to some sources, accounting began with the double-sided recording system in Luca Pacioli's work, written in 1494 (Yükçü and Yükçü, 2019, s. 13). It is accepted that the Sumerians discovered writing in 3200-3100 BC. The oldest examples of writing are the symbols on clay tablets in the Sumerian city of Uruk. These symbols are called "tokens," i.e., account stones. Trade and barter were practiced in Mesopotamia as early as 8000 BC. Sumerian scribes developed accounting systems in this period. Before writing, transactions were recorded with clay symbols called "tokens". Later, these symbols were engraved on clay tablets, and cuneiform writing developed

(Şeker and Şeker, 2019, s. 89). Tokens were in cone, sphere, disk, cylinder, tetrahedron, and oval shapes. Each represented a specific commodity and quantity. They were usually 1-3 cm in size (Schmandt-Besserat, 2014). Tokens were used for counting, measuring, and recording. This system is considered the first step in data processing. It also led to the development of writing. According to many experts, writing was born from the human need to keep accounts. Therefore, the invention of writing is directly linked to accounting (Şeker and Şeker, 2019, s. 90).

Some researchers argue that accounting began with the double-sided recording system in the *Summa de Arithmetica* written by Luca Pacioli in 1494 AD. However, both accounting and the double-sided recording system predate him. According to Recep Pekdemir, accounting was explained under the name of “Muhasabah” in *Mafatih-i Al Ulum* (Keys of Science) written by Al-Khwarizmi in 977/978 AD. In addition, the principles of double-sided recording are also included in the *Risale-i Felekiyye der İlmi-i Siyakat* (*Kitab-us Siyakat*), written by Abdullah ibn Muhammad ibn Kiya al-Mazenderani during the Ilkhanid period (Otar, 2005, p. 97). This work was written 131 years before Pacioli’s book. Four essential works are sources for the accounting system of the Ilkhanid state: *Saadetname*, *Kanun-u Saadet*, *Cami-ül Hesap*, and *Risale-i Felekiyye* (Otar & Küçük, 2012, p. 200). These works influenced the Ottoman and Middle Eastern accounting system (Sensoy & Guvemli, 2015, p. 159).

Risale-i Felekiyye consists of 250 pages and eight chapters. It was prepared based on fair value, periodicity, and accruals, and recorded using the ladder method (Küçüker, 2019, pp. 35-38).

Another important work, *Mecma'ü'l-Kavâ'id*, was written in 1494 AD by Muhyeddin Muhammad b. Hacı Atmaca al-Katib. The work aims to guide accountants who are new to the profession. It consists of three main chapters. The last section includes 40 sample problems and solutions that every accountant should know (Küçüker, 2019, p. 122).

Luca Pacioli was born in 1446 or 1447 in Borgo San Sepolcro in Northern Italy. He is known for his *Summa de Arithmetica Geometria Proportioni et Proportionalita*, published in 1494. The work is 615 pages; 27 are devoted to accounting and business. His friendship with Leonardo da Vinci is also noteworthy (Sangster & Scataglinibelghitar, 2010, p. 423).

Today, Pacioli’s double-entry system is still used in accounting education. However, the title of “father of accounting” should not ignore the work that preceded it (Otar, 2005). While *Kitab-us Siyakat* is a direct teaching of accounting, *Summa de Arithmetica* is a ten-volume collection of mathematics. Today, computers are capable of high-speed computations. However, it is still based on Pacioli’s framework (debit, credit, etc.) (Sangster & Scataglinibelghitar, 2010, p. 432).

1.2. Literature Review

Accounting education is experiencing significant changes with the development of technology and digitalization. These changes have been the subject of academic research. For example, Kercher et al. (2024) examined the employability of accounting students in Australia

and highlighted professional shortages and technological advances. These findings suggest that employment skills should be incorporated into the early curriculum. However, how to implement this recommendation in every education system is debated. Tinkelman (2025) argued that accounting should not only support decision making but also provide accountability. It is unclear how to embed accountability in accounting education. Montague et al. (2024) presented a new learning approach based on the PDSA cycle and showed that this method increased student engagement. However, whether this method will have the same effect on every student group is debatable.

Simplício et al. (2024) reported that conceptual maps were effective in accounting education in Brazil. However, there are different opinions on how to use these maps in every education. Dos Santos et al. (2024) argue that steps should be taken towards a more inclusive accounting education. However, it is unclear how to concretize this approach. Abou-El-Sood (2024) showed that creative learning methods can increase student engagement and achievement. However, it is debated whether these methods are suitable for accounting education.

Keyser & Neuman (2023), discussing the Coca-Cola transfer pricing case emphasized the importance of course materials in hands-on learning. However, how widely such cases should be used is still being debated. Krüger et al. (2021) stated that entrepreneurship-oriented accounting education aims to enable students to succeed in business. However, it is still not clear how to balance entrepreneurship and accounting education. Irafahmi & Williams (2021) examined the benefits of using Excel in accounting education and highlighted the importance of integrating digital tools. However, whether these tools can instruct students in accounting principles is questionable.

Nazarov & Sidorova (2021), in their research on agricultural accounting, focused on how to make education in this field more efficient. However, how to integrate agricultural accounting into the general accounting structure is unclear. Chiprianova et al. (2022) discussed the importance of sustainability and social responsibility in accounting education. However, there is no consensus on incorporating these issues into educational programs. Samuels et al. (2023) discussed the importance of accountants' written communication skills. However, there are different opinions on how much written communication should be prioritized in accounting education.

Conaway & Wiesen (2023) examined the challenges related to online academic integrity. This issue affects the credibility of online resources. However, it is still controversial how accounting educators should apply standards in this regard. Papageorgiou et al. (2023) investigated the effects of COVID-19 on accounting students' trust levels. The impact of online education processes on accounting education is still unclear. Baylis et al. (2024) emphasized the future of public sector accounting and the training of students working in the public interest. However, it is unclear how to integrate public sector needs into the educational curriculum. De Meyst & Hartmann (2025) examined the relationship between management accounting and professional identity. More research is needed in this area.

Güvemli & Yalçın (2025) emphasized the necessity of integrating the teaching of accounting history into the educational curriculum in Türkiye. However, the effective integration of innovative educational methods is still debated.

Demirel-Arıçı (2024), by addressing the historical development and current trends of accounting education on a global scale, shows that, especially in the post-2010 period, issues such as “competency-based education”, “online and blended learning”, “blockchain, big data, artificial intelligence” have come to the fore in the literature. This situation reveals that accounting education is no longer limited to technical knowledge but has been redefined by digitalization.

Similarly, Koç & Karabınar (2021), while emphasizing global trends, critically examined Turkey's position in this literature. It is noted that Türkiye has a certain productivity in the number of publications, but remains limited in quality, and the number of publications included in SSCI is low. In addition, it is noteworthy that the emphasis on “ethics” stands out among the most studied topics, and this theme shows that accounting education has both a technical and value-based aspect.

Bayrakçıoğlu (2021) and Gürbüz, Kiyomik, & Bitlisli (2021) focused on accounting education literature in Turkey and found that publication trends are concentrated around specific institutions and keywords. While Bayrakçıoğlu stated that author collaborations are weak and the literature lacks depth in associate degree level education, Gürbüz et al. revealed that the diversity of sources in graduate level publications remains limited and production at the doctoral level is insufficient. These findings suggest that accounting education studies in Türkiye remain systematic but limited.

In contrast, Bekci and Gürbüz (2024) provide a more structured assessment by comparing accounting education programs in the UK and Turkey. In particular, it is stated that accounting education in the UK is more practice-based and carried out in cooperation with the private sector. In Türkiye, on the other hand, the fact that the programs are included under general business education limits specialization and application skills. This situation indicates that education programs need to be restructured.

When these studies are evaluated together, it is possible to say that the accounting education literature is discussed along three main axes: (1) Research themes evolving over time, (2) Production and quality differences at the institutional and national level, (3) Structural analysis of education programs and their focus on practice. These axes reveal that accounting education needs to be renewed in terms of both content and methodology.

At the same time, 14 bibliometric studies were identified among 639 articles published in the five years between 2021 and 2025. Brief information about these studies and a comparison with our research is presented in Table 1.

Table 1. Comparative Overview of Related Bibliometric Studies in Accounting

No	Study	Dataset / Period	Focus	Themes	Comparison
1	Liu, Chiu, Muehlmann, & Baldwin (2021)	AIS journals, articles / 2004–2018	Integration of data analytics in accounting education	Educational applications	Closely aligned with the present study, particularly in terms of educational and technological integration.
2	Bayrakçıoğlu (2021)	Dergipark, Google Scholar, etc., 2004–2020 (Türkiye)	Associate degree level accounting articles / education trends	Authorship patterns, collaboration, and keyword usage	More focused on 2-year programs; limited scope but highlights structural weaknesses in Turkish literature.
3	Gürbüz et al. (2021)	National Thesis Center, 2005–2019	Turkish academic output in accounting + 81 theses / education	Publication trends, source usage, doctoral thesis gap	National in scope; contributes insight into academic production dynamics and suggests international benchmarking.
4	Koç & Karabınar (2021)	WoS, 1975–2020	719 articles / International trends in accounting education with a focus on Türkiye	Ethics, quality, and institutional contribution	Highlights Türkiye's modest but improving role in global research and suggests the need for more SSCI-level studies.
5	Öztürk-Yöndemli, (2022)	Dergipark and National Thesis Center, 1995–2022	Environmental accounting based, 146 publications /	Corporate reporting, education	Narrower in theme; partially overlaps with the sustainability theme in the present study.
6	Indrayani, Sukoharsono, Djamhuri, & Roekhudin, (2024)	Scopus, 1982–2024	Emerging technologies and accounting	5 technologies, and clusters	Similar to the present study in its focus on technologies, but with limited emphasis on the educational dimension.
7	Castro, Reines, Castilla, & Castilla (2024)	Google Scholar, 2013–2023	Accounting research 122 articles / English)	Regional theme (Spanish vs. differences)	Broader in scope, the present study offers a more theme-oriented and education-focused perspective.
8	Amin, Hassan, Ghoneim, & Abdallah (2024)	Scopus, 1982–2023	Accounting education in the digital era	Technology impact, skills, and curriculum	Explores technology-driven educational change; the present study expands with broader themes and a larger dataset.
9	Handoyo (2024)	522 articles / 1991–2023	Technological shift in accounting education	AI, big data, online learning	Focused on paradigm shifts, the present study offers a more extensive thematic analysis.

10	Theuri, Campbell, & Owens-Jackson (2024)	Selected accounting education journals (manual review), (2024)	Technology integration accounting (manual review), education 187 articles / 2010–2020	Research in trends gaps, Covers a specific time limit; the current study is more recent and comprehensive.	
11	Cao, Kristanto, & Gu (2024)	WoS, 673 articles / 2005–2023	Pedagogy and Pedagogical competencies in accounting education	Focused on competencies and ethics, it overlaps thematically with the present study.	
12	Demirel (2024)	Scopus, 1,250 articles / 1960–2023	Research trends in accounting education	Bibliometric mapping, competency-based education, digital tools (AI, blockchain), pandemic effects	One of the broadest studies adds historical depth and identifies educational-technology clusters clearly.
12	Bekçi & Gürbüz (2024)	Türkiye vs. UK, institutional data	Comparative study of accounting education programs	Curriculum design, credit system, industry collaboration, practical orientation	Offers a unique international curriculum comparison; complements broader bibliometric studies with qualitative insights.
14	Kustiawan & Nugraha (2025)	Data sourced via Publish or Perish, 998 articles / 2013–2023	Research trends in accounting education	5 clusters, 4421 links, bibliometric metrics	Emphasizes bibliometric impact; the present study adds educational-technological depth and recency.

Source: WoS, Scopus, Google Scholar, various

The 14 bibliometric studies in the table reveal different aspects of how accounting education has evolved with technological developments. Previous research has often focused on specific themes (e.g., data analytics, environmental accounting, pedagogical approaches) or limited time periods. Some studies have also focused on particular countries or types of publications (theses, journals, etc.).

In contrast, this study provides an up-to-date and multifaceted bibliometric analysis of accounting education based on 639 articles published during 2021-2025. This analysis, which is shaped around themes such as artificial intelligence, digitalization, online learning, sustainability, and ethics, differs from previous studies in terms of the diversity of topics and the scope of the data set. In this respect, it contributes to the literature and serves as a guiding resource for educational policies and curriculum development processes. Table 1 supports this claim.

2. Methodology

This study aims to reveal the current trends in literature by analyzing academic articles published in the field of accounting education between 2021 and 2025. Data were collected from

the Web of Science (WoS) Core Collection database. The search used the keyword “accounting education” (All Fields).

In this study, within the scope of the analysis in the field of accounting education, literature selection was carried out systematically per the PRISMA flow diagram. The diagram below summarizes the methodological steps from database search to thematic analysis. PRISMA flow diagram for the accounting education literature is presented in Figure 1.

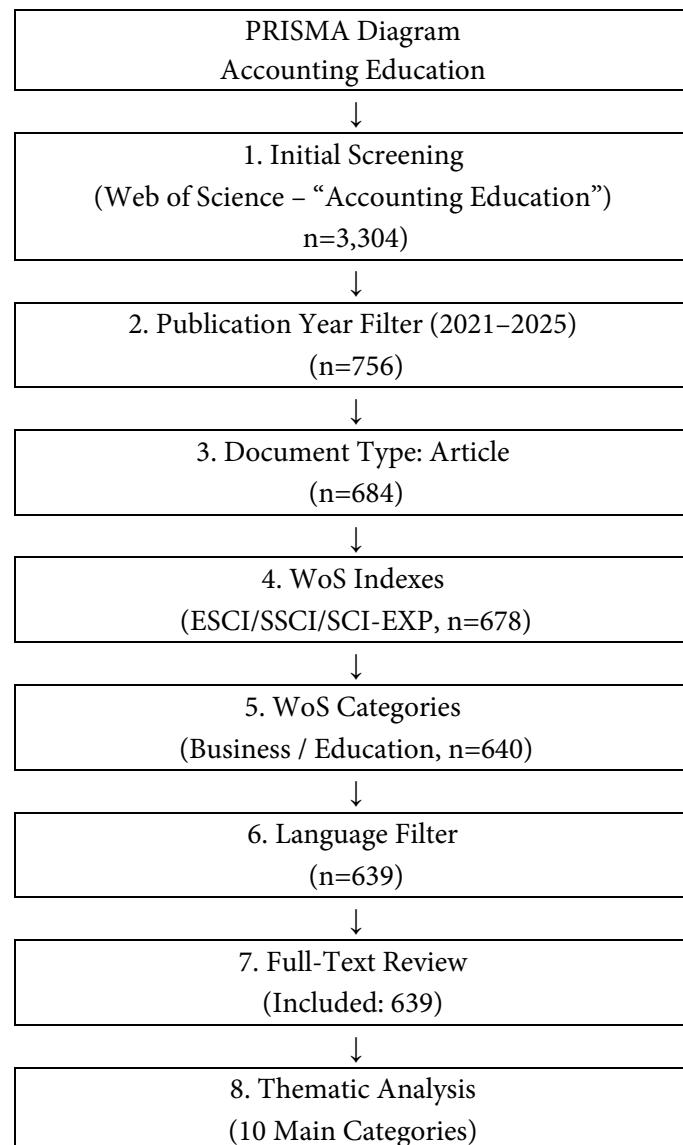


Figure 1. PRISMA Flow Diagram for the Accounting Education Literature

The methodological framework for the literature review on Accounting Education is presented in Table 2.

Table 2. Methodological Framework for the Literature Review on Accounting Education

Category	Description	Study Count
Keyword Search	“Accounting Education” (All Fields)	3,304
Publication Years	2021-2025	756
Document Type	Article	684
WoS Indexes	ESCI, SSCI, SCI-EXPANDED	678
WoS Categories	Business Finance, Educational Research, Business, Management, Economics	640
Article Languages	English	614
	Portuguese	11
	Spanish	11
	Ukrainian	2
	French	1
Total Eligible Studies	After language filters (Unspecified removed)	639
Final Included	Studies undergoing full-text review	639

Source: WoS

This table summarizes the methodological framework and study selection process of the “Accounting Education” literature review. In the first search with the keyword “Accounting Education” in the WoS database, 3,304 studies were identified, and this number decreased to 756 when the filter was applied between 2021 and 2025. When only article-type publications were selected, 684 studies remained, and the number decreased to 678 after evaluating publications in ESCI, SSCI, and SCI-EXPANDED indexes. Focusing on specific WoS categories such as business, educational research, and economics yielded 640 studies. Regarding language distribution, there are 614 studies in English, 11 in Portuguese, 11 in Spanish, 2 in Ukrainian, and 1 in French. Excluding 1 study in an unspecified language, 639 studies were finally included. All these stages show that the research was conducted systematically and transparently, focusing on up-to-date and quality sources.

As a result of the search, 639 articles were obtained. These articles were first scanned at the title and abstract level and evaluated in terms of suitability for the scope of the study. The themes, methodological approaches, and research topics related to accounting education were classified by content analysis method. Frequency tables and thematic maps were used to analyze the data. This method systematically revealed the prominent trends, gaps, and development areas in the accounting education literature. The 10 themes presented in this study are based on a systematic analysis of 639 articles. All articles were analyzed individually, and their thematic content was determined. These articles were categorized under 10 main headings in the final stage according to their common themes.

2.1. Limitations of the Study

This study is limited to articles indexed in the WoS Core Collection and included in specific indices (ESCI, SSCI, SCI-EXPANDED). Therefore, the analysis did not include studies

found in other databases (e.g., Scopus, ERIC, ProQuest, etc.). In addition, only articles published between 2021 and 2025 and categorized under certain WoS categories (Business Finance, Educational Research, Business, Management, Economics) were considered. This limitation may restrict the comprehensive reflection of all trends in the relevant literature.

3. Findings

This section presents the distribution of publications by year between 2021 and 2025, co-authorship networks, the frequency of keywords used, and citation analyses at the institutional and country levels.

3.1. Analysis of the Distribution of Publications on Accounting Education by Year

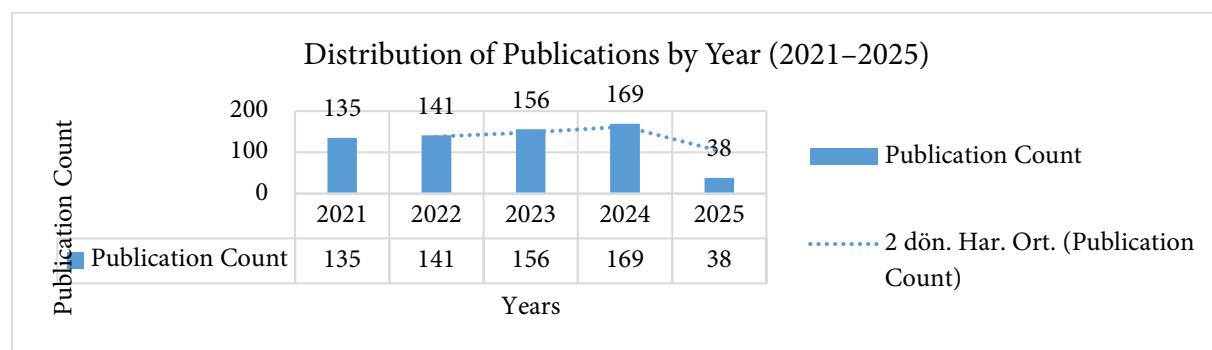
As of April 14, 2024, the analysis was conducted using only the keyword “accounting education,” and the number of publications by year is presented in Table 3 and Graph 1.

Table 3. Distribution of Publications by Year (2021–2025)

Year	Publication Count
2021	135
2022	141
2023	156
2024	169
2025	38
Total	639

Source: WoS

Table 3 presents the number of academic publications between 2021 and 2025. The data reveal a steady increase in publication counts over the years. The highest number of publications was recorded in 2024 (169), while the lowest was observed in 2025 (38), which may be attributed to the incomplete year. This upward trend indicates a growing academic interest in the field. In total, 639 publications were produced over the five years.



Graph 1. Graphical Representation of Publication Counts by Year

Graph 1 presents the graphical representation of the publication numbers by year.

3.2. Co-authorship Analysis

The study includes 639 publications authored by a total of 1,489 individuals, each contributing at least one document. The author with the most publications is Meredith Tharapos (10 documents), whose work focuses on cultural diversity and accountability in education. She is followed by Paul De Lange (7 documents), who specializes in accounting education and student motivation, and Amrinder Khosa (6 documents), whose research centers on pedagogical practices. The analysis identified 10 clusters, 194 links, and a total link strength of 228, with the largest connected author group consisting of 71 individuals.

Table 4. Co-author Analysis: Authors' Publication and Citation Performance

Author	Documents	Citations	Total Link Strength
Tharapos, Meredith	10	86	33
De Lange, Paul	7	33	36
Khosa, Amrinder	6	17	16
Wood, David A.	5	44	21
Boyle, Douglas M.	5	14	14
Burch, Steven	5	16	14
Hermanson, Dana R.	5	9	13
O'Connell, Brendan T.	5	40	11
Others (Average)	1,16	3,97	2,73

Source: WoS

According to Table 4, the author with the most publications is Meredith Tharapos (10 documents), with 86 citations and a total link strength of 33. Paul De Lange follows Tharapos with seven documents (33 citations, 36 link strength) and Amrinder Khosa with six documents (17 citations, 16 link strength). The other authors have an average of 1.16 documents, 3.97 citations, and 2.73 link strength.

Tharapos is the Head of the Accounting Department and an Associate Professor at RMIT University (Royal Melbourne Institute of Technology). She focuses on behavioral issues in accounting and is interested in cultural diversity, student satisfaction, and accountability in education. She has won numerous awards for her student-centered teaching approach. Additionally, she serves as the President of the AFAANZ Accounting Education Special Interest Group in Australia and works as an editor for various academic journals. Paul De Lange is a Professor of Accounting at the University of Tasmania. His scholarly work mainly focuses on accounting education, business expectations, student motivation, and distance education. Khosa is a Senior Lecturer in Accounting at the University of Tasmania, with his research concentrating on accounting education, graduate-level consultancy relationships, and pedagogical practices.

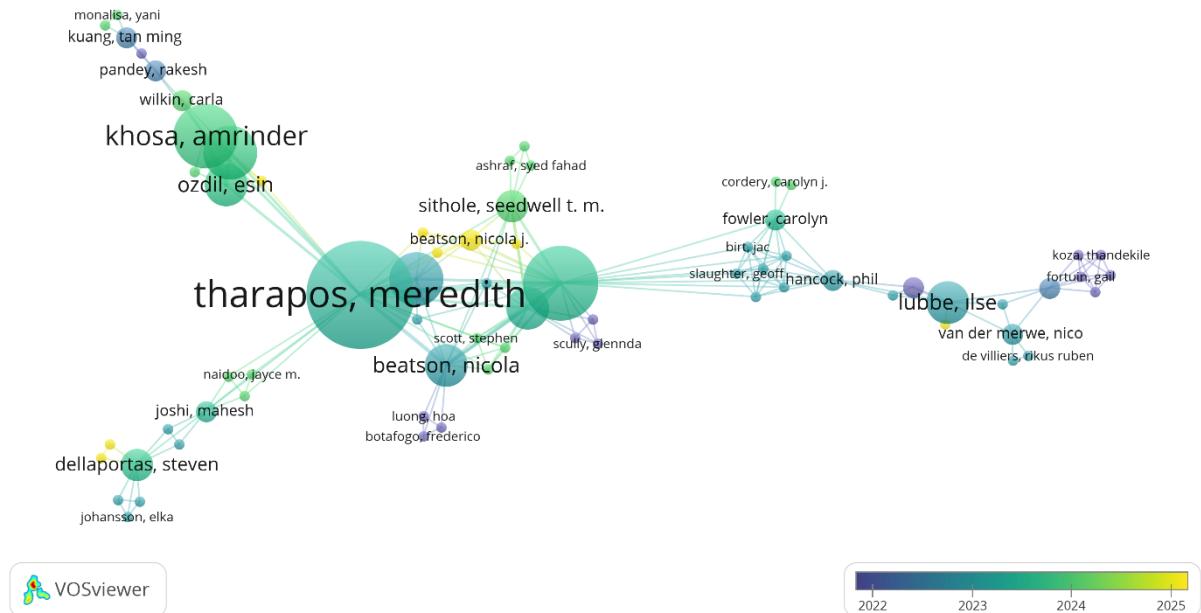


Figure 2. Co-Author Analysis Academic Collaboration Network Map

Figure 2 presents an academic collaboration network map created using the VOSviewer program. The map illustrates collaborative relationships and publication connections between specific researchers. Each node represents a researcher. The node's size indicates the intensity of the researcher's collaboration or their significant role within the research network. For example, Meredith Tharapos is seen as one of the central and largest nodes on the map, indicating that she has an important level of connections in the network and collaborates frequently with other researchers. The researchers shown in the visual have worked together on different research projects or have published in similar fields.

3.3. Keyword Analysis

In the analysis, 98 clusters, 7.017 connections, and a total link strength of 7.450 were identified based on 2.091 observations that appeared at least once and were related to each other.

Table 5. Keyword Distribution in Bibliometric Analysis of Accounting Education

Keyword	Occurrences	Total Link Strength
Accounting Education	246	1.056
Accounting	45	226
Higher Education	36	184
COVID-19	31	138
Data Analytics	29	128

Keyword	Occurrences	Total Link Strength
Accounting Students	22	91
Critical Thinking	15	76
Diversity	15	83
Active Learning	14	57
Sustainability	14	56
Accounting Curriculum	13	51
AI	12	69
Ethics	12	48
Experiential Learning	12	53
Soft Skills	12	59
Professional Skills	11	45
Self-Efficacy	11	48
Education	10	44
Others (Average/2073)	1,32	6,30

Source: WoS

Table 5 presents the distribution of keywords and their link strengths in the bibliometric analysis of accounting education. The most frequently encountered keyword is “Accounting Education” (246 occurrences), which also has the highest link strength (1.056). This indicates that accounting education is researched, and studies in this field have strong connections with other topics. Keywords such as “Accounting” and “Higher Education” also appear frequently, but their link strengths are lower. Keywords like “COVID-19”, “Data Analytics”, and “Accounting Students” have gained popularity in recent years and stand out as significant research topics. On the other hand, topics such as “Critical Thinking”, “Diversity”, and “Sustainability” appear less frequently but are still associated with essential links. The “Others” category represents fewer common keywords and has an average link strength.

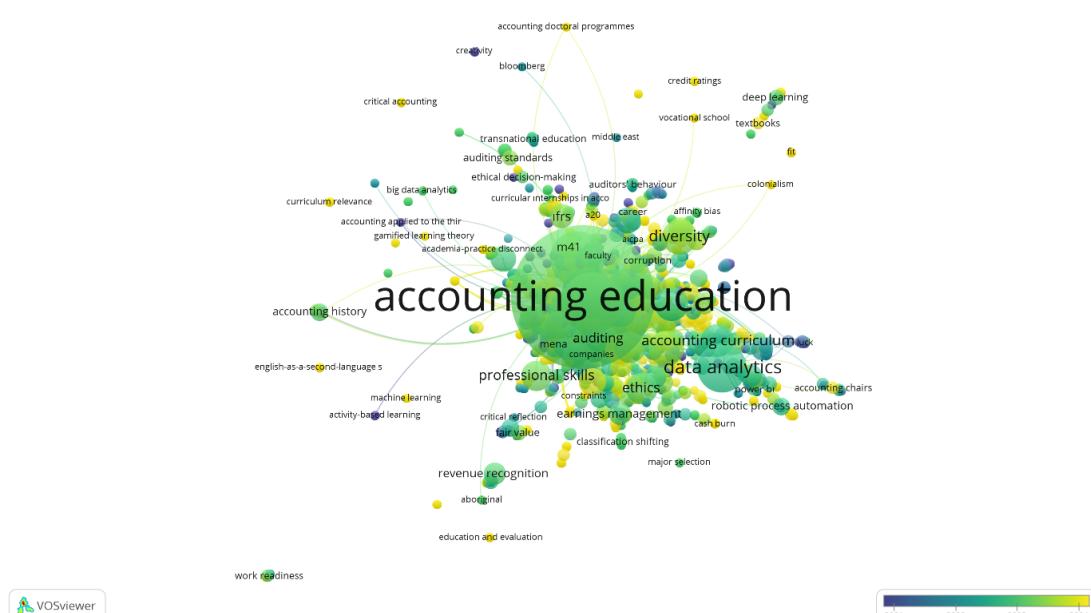


Figure 3. Keyword Distribution

Figure 3 presents the visual of the keyword distribution for the bibliometric analysis conducted on accounting education. The study shows that the keywords “accounting education” and “accounting” are used most frequently.

3.4. Analysis of Citation Status of Organizations

A network map was created by determining the citation counts based on the sources where the works related to the topic were published. The criterion for creating the network map was that each source must have at least one published work. The most extensive connected source analysis set consists of 507 sources from a total of 713 sources that have relationships with each other. The analysis was conducted to obtain more meaningful results by considering only the connected set of 507 items. In general, this analysis reveals the addresses through which research in the field of accounting education is accessed and the platforms that bring more visibility to this field. As a result of the analysis, 24 clusters, 507 items, 2,493 links, and a total of 3,006 link strengths were identified.

Table 6. Citation Analysis of Organizations in Bibliometric Analysis of the Accounting Education Concept

Organization	Document s	Citation s	Total Link Strength
RMIT University (Royal Melbourne Institute of Technology)	19	164	234
University of Tasmania	18	68	147
Monash University	13	61	92
University of São Paulo	12	16	85
Kennesaw State University	11	13	49
Stellenbosch University	11	23	38
Brigham Young University	9	68	33
University of Cape Town	9	22	33
Bentley University	8	11	9
University of South Africa	8	34	62
Others (Average/703)	1,55	5,22	7,45

Source: WoS

Table 6 shows the universities that have made the most significant contributions and received the highest number of citations in the field of accounting education. RMIT University stands out with the most documents (19) and the strongest total link strength (234). The University of Tasmania and Monash University also emerge as key contributors. On average, the contributions of the remaining 703 institutions are relatively limited.

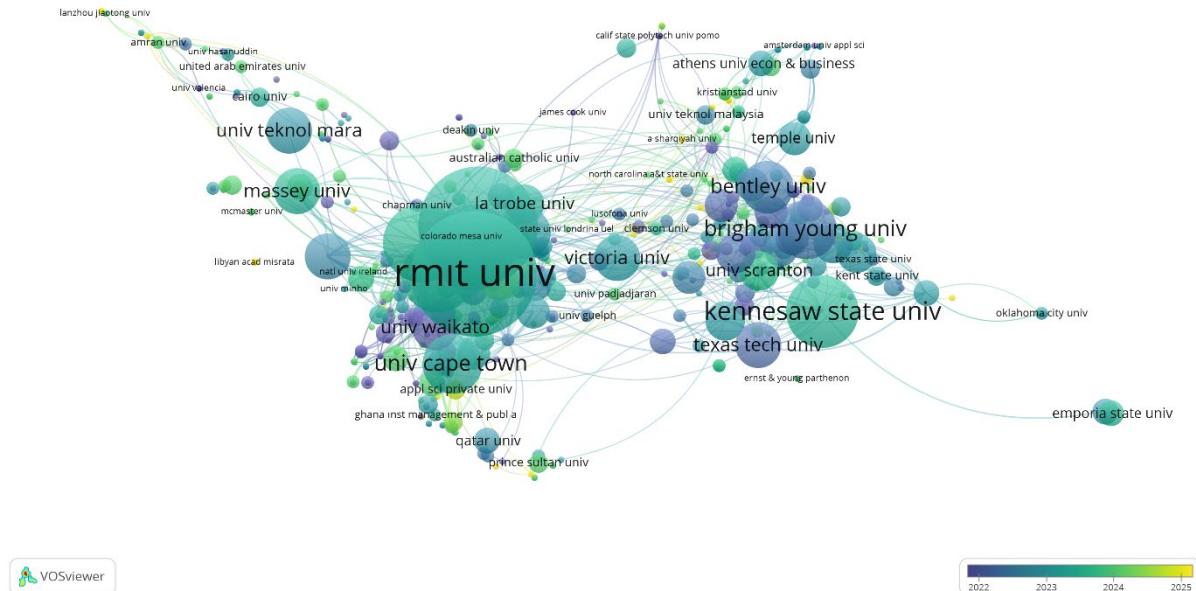


Figure 4. Visual of Citation Analysis of Organizations

Figure 4 presents the citation analysis of organizations based on the bibliometric analysis of the concept of accounting education. The study indicates that universities such as RMIT, Tasmania, Monash, and Brigham Young University hold a significant position in this field.

3.5. Analysis of Citation Status by Countries

A network map was created by analyzing the citation counts of articles on the topic based on their publication countries. In constructing the network map, the criterion used was that each country must have at least one published article. Among the 79 countries with interrelated data, the most extensive connected data set comprises 67 countries. The analysis was conducted using only the connected set of 67 countries to obtain more meaningful results. As a result of the study, 11 clusters, 67 items, 431 links, and a total link strength of 1,129 were identified.

Table 7. Country Analysis of Publications on Accounting Education

Country	Citations	Documents	Total Link Strength
USA	670	208	228
Australia	556	87	372
England	255	38	155
New Zealand	243	37	171
Canada	120	23	65
South Africa	115	39	119
People's R China	75	17	16

Country	Citations	Documents	Total Link Strength
Indonesia	50	27	113
Brazil	16	26	65
Others (Average/70)	15,38	4,58	13,62

Source: WoS

The country with the highest number of citations in the study was identified as the United States, with 208 documents receiving 670 citations. The U.S. is followed by Australia, with 87 documents and 556 citations. South Africa has 39 documents with 115 citations, the United Kingdom has 38 and 255 citations, and New Zealand has 37 documents and 243 citations.

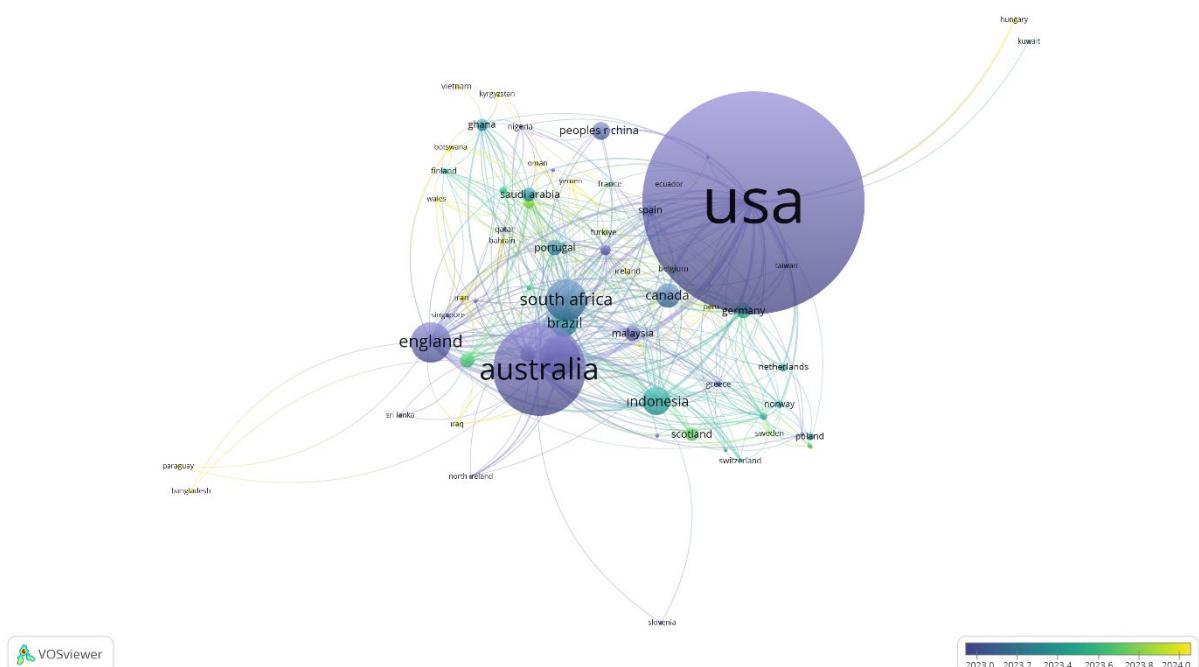


Figure 5. Country Analysis of Publications on Accounting Education

Figure 5 presents a visual of the country analysis based on the bibliometric analysis conducted on the concept of accounting education. Notably, the United States has the highest number of publications on accounting education and related topics.

4. Themes

This study reviews 639 published articles related to accounting education. The studies cover various topics, including forensic accounting, language proficiency, accounting history, gender, and accounting education. However, we have selected the 10 key themes that we found most important from these articles. The ten themes presented in this study were identified through an in-depth examination of the 639 articles in the dataset. Initially, the articles were

organized in an Excel file, and the original publications were accessed via their DOI links. Each article was then analyzed in detail based on its main subject. Following this analysis, the studied topics were grouped, and it was observed that the content largely concentrated around ten core themes. This summarizes the theme identification process. These 10 themes are as follows: The Role of AI, Technology, Digital Transformation, Metaverse, and Blockchain in Accounting Education, Student Competencies in Accounting Education, COVID-19 Pandemic and Digital Transformation: Impacts on Distance Education and Accounting Education, Social Media and Accounting Education, Mobile Applications and Accounting Education, Ethics and Accounting Education, Sustainability and Accounting Education, The Theory and Practice Gap in Accounting Education, Simulations, Case Studies, and Curriculum, Accounting Education: Challenges, Motivation, and Professional Development. The explanations of these themes are provided below.

4.1. The Role of AI, Technology, Digital Transformation, Metaverse, and Blockchain in Accounting Education

Developments in accounting education are rapidly evolving with the impact of technology and digitalization. Integrating next-generation technologies such as AI, digital transformation, the metaverse, and blockchain into accounting applications has significantly transformed this field. AI offers students a faster and more efficient learning process in accounting education. In particular, automated processes in accounting software and AI-supported analytical tools have revolutionized accounting data management. Studies in this area have examined how AI is utilized in accounting education and how students' accounting skills are enhanced through these technologies. AI-based software and simulations allow students to test application scenarios, which helps minimize computational errors. However, some studies have raised concerns about the impact of AI on accounting education and its future applications. In particular, questions have been raised about how AI will transform the role of accounting professionals and how this transformation will be reflected in educational curricula.

With the rapid advancement of technology, accounting education has also entered a digital transformation process. Research in this area indicates an increased use of digital tools in accounting education, leading to enhanced efficiency in educational processes. The effects of digitalization in education have brought about significant changes in both teaching methods and learning materials. Students now have access to more interactive and accessible educational materials on digital platforms, while educators have adopted more flexible and effective teaching methods.

The metaverse has gained prominence as a universe where virtual worlds merge and digital interaction blends with the real world. Research on the future of the metaverse in accounting education suggests that creating interactive learning environments in virtual classrooms contributes positively to the educational process. Students, therefore, have the opportunity to test accounting practices in a virtual world. However, integrating the metaverse into accounting education is still in its early stages.

Blockchain technology, with its ability to securely store and verify data while offering transparency and security, represents a revolutionary advancement for accounting systems. Studies in this field have shown that blockchain also plays a role in accounting education, particularly in helping students enhance their understanding of digital accounting processes. The security and transparency features of blockchain provide significant opportunities for accurate data management in financial reporting and auditing processes.

Accounting education is undergoing a significant transformation through the integration of next-generation technologies such as AI, technology, digital transformation, the metaverse, and blockchain. Research in this field demonstrates the potential of these technologies to improve student success in accounting education.

4.2. Student Competencies in Accounting Education

Studies on student competencies in accounting education focus on the development of professional skills, digital literacy, and employability. Cognitive development factors, such as social skills, student motivation, and Bloom's taxonomy, are also examined. Approaches for teamwork and supporting students with learning difficulties are key focus areas. Lastly, holistic thinking skills and socialization processes are also considered essential competencies in accounting education.

Recent studies reveal that accounting professionals often develop core competencies—such as problem-solving, decision-making, effective communication, and adaptability to technology—through informal learning processes. At this point, it becomes a critical issue of debate whether these skills are acquired solely through individual effort or strengthened by institutional support. While some findings emphasize the decisive role of experience-based learning in professional development, others argue that this process must be supported by mentorship, peer collaboration, and organizational structures. Therefore, it is evident that approaches to enhance student competencies in accounting education should consider individual and structural factors together.

4.3. COVID-19 Pandemic and Digital Transformation: Impacts on Distance Education and Accounting Education

The studies on the effects of distance education, online learning, and the COVID-19 pandemic on accounting education discussed factors such as teacher identity, teaching methods, student engagement, and digital literacy. With the pandemic, teachers' adaptation to online education caused significant changes in the teaching-learning processes. The studies highlighted both the positive and negative effects of online learning environments, examining the impact of digital literacy and student engagement on accounting skills. Moreover, it was emphasized that post-pandemic educational models need to be redesigned. Students' psychological needs and effective communication by teachers were identified as crucial factors in increasing success in online education.

In this context, the transformation of education during the COVID-19 pandemic has become a critical turning point that shapes the educational experiences of both teachers and students, online educational tools, digitalization, teacher training needs, and future educational strategies.

4.4. Social Media and Accounting Education

Social media has become a crucial tool in accounting education. Various studies have shown that social media is effective in knowledge sharing and learning processes in accounting. Students acquire knowledge by utilizing previous class experiences and peer interactions through social media. Additionally, they apply this knowledge in exams and internships by benefiting from online courses and others' experiences. Accounting practitioners are more open to sharing information, while students gain knowledge through interaction. The establishment of accounting forums on social media and the creation of groups to enhance interaction are emphasized.

4.5. Mobile Applications and Accounting Education

Mobile applications have emerged as effective tools in enhancing student engagement, interaction, and academic performance in accounting education. Numerous studies have shown that gamified or accounting software-based apps increase students' interaction with course materials, improve learning outcomes, and boost interest in the subject. For today's students, often called digital natives, mobile applications offer a more motivating and interactive learning environment. These tools are also noted to contribute significantly to graduation competencies and employability.

4.6. Ethics and Accounting Education

The accounting education and ethics literature focuses on professional development programs, experiential learning methods, and ethical leadership. Simulation-based practices aimed at enhancing decision-making skills in ethical dilemmas and building professional confidence. Studies emphasize that ethical education in accounting curricula should not be limited to transmitting knowledge but should also highlight the importance of developing participatory approaches. The interaction of ethical values with individual characteristics (age, religious beliefs, etc.) and cultural contexts has also been a research subject. Additionally, it has been found that faculty members' perceptions of ethical leadership are related to job satisfaction, and ethical awareness among professionals varies according to experience levels.

4.7. Sustainability and Accounting Education

The integration of Sustainable Development Education (SDE) into accounting education presents significant findings. Research conducted in various contexts shows that

teaching methods, particularly in courses such as environmental management accounting, have positively transformed student experiences and increased awareness of sustainability issues. However, it has been noted that both teachers and students face challenges when transitioning from the monologue approach they are accustomed to a more dialogical approach. In general, these studies highlight that integrating sustainable development into accounting curricula enhances students' sensitivity to social, environmental, and governance issues and emphasizes the importance of this knowledge for their future careers. Furthermore, activities aimed at increasing accounting students' collaboration and sensitivity towards sustainable development have particularly fostered a noticeable increase in female students. Looking ahead, it is anticipated that establishing a stronger link between sustainability and accounting education will enhance students' technical knowledge and contribute to their social responsibility and ethical values. The findings from these studies suggest that accounting education should not be limited to technical knowledge but should also promote deep thinking on social responsibility, environmental impact, and ethical values.

4.8. Theory and Practice Gap in Accounting Education

Studies focusing on the differences between theory and practice in accounting education emphasize that students should be supported with practical skills to ensure they possess both theoretical knowledge and are prepared for the business world. It is stated that real-world experiences should be provided to students through tools such as technology and business intelligence. These studies aim to equip students with critical thinking, data analysis, and professional skills. It is highlighted that the gap between theory and practice in accounting education should be closed.

4.9. Simulations, Case Studies, and Curriculum

Interactive teaching methods like simulations and case studies should be applied in accounting education to enhance students' engagement and understanding. These methods help students develop a deeper understanding of theoretical knowledge by applying it to real-world scenarios. Additionally, curricula should be aligned with current industry needs, ensuring that students are well-prepared for the challenges they will face in their professional careers.

4.10. Accounting Education: Challenges, Motivation, and Professional Development

These studies examine the impact of accounting education on students' academic performance and professional skills. They highlight challenges such as academic procrastination, burnout, and motivation that students face. The studies also focus on aligning accounting programs with industry needs and the role of faculty members. The findings suggest that teaching methods and curricula must be updated to provide students with a better education.

5. Conclusion and Suggestions

This study examines the key themes in accounting education through a bibliometric analysis of 639 articles published between 2021 and 2025. The findings indicate that innovative themes such as digitalization, AI, online education, sustainability, and ethics are crucial areas that will shape the future of accounting education. The review shows that these themes are increasingly represented in academic publications and will continue to strengthen in the future.

This study examines the transformation of accounting education through current and forward-looking themes. In addition to artificial intelligence, blockchain, and sustainability, it addresses pedagogical aspects like ethics, theory-practice alignment, and simulation. Rather than focusing solely on technology, the study offers a comprehensive discussion of the structural transformation in accounting education. In this context, it is considered to make a meaningful contribution to the literature by addressing existing gaps and offering new insights into the evolution of accounting education.

In conclusion, it can be said that this study has made significant contributions to the accounting education literature. Specifically, it emphasizes that innovative themes such as digitalization, AI, and online learning are key areas that require further research in accounting education. Future studies can conduct in-depth research on these themes to develop new strategies that enhance the effectiveness of accounting education.

Our recommendations are as follows:

- The integration of digital tools and AI into accounting education curricula should be further increased.
- Post-COVID-19 education models should be re-evaluated, and students' digital literacy should be enhanced in online learning environments.
- Sustainability-themed courses should be included in accounting education curricula.
- More emphasis should be placed on ethical values to increase accounting students' professional responsibility awareness.
- Practical methods such as simulations and case studies, where theory and practice converge, should be more widely implemented.

Future studies may benefit from including other databases, expanding the range of publication types (e.g., conference proceedings, book chapters), and examining a more extended period to obtain more comprehensive and in-depth insights into the accounting education literature. Moreover, conducting mixed-method research combining qualitative and quantitative approaches may allow for a more holistic evaluation of emerging themes.

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