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# The Use of Augmented Reality (AR) in Accounting Education: A Bibliometric Analysis

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*Abstract: The use of Augmented Reality (AR) in accounting education is becoming increasingly important with the development of technology now. This study aims to reveal trends over the past ten years with bibliometric analysis to examine the results of articles related to the use of AR in accounting education. This study collected articles from the Scopus database from 2015 to 2025, using the Scopus Web analysis feature and visualizing the bibliometric network using VOSviewer. A total of 100 articles were accessed through various filtering processes. This study distributes the results based on publication year and most researched articles. The results found that AR has proven effective in improving accounting students' conceptual understanding and practical skills, especially in difficult materials such as accounting cycles and financial statements. AR technology facilitates visual, interactive, and contextualized learning. The implication of this study is the need for special training for educators to optimize the use of AR in accounting education.*

## Introduction

The development of increasingly advanced and sophisticated technology has brought about major changes in the world of education (Hincapie et al., 2021). Learning methods and systems are now different, such as how to teach and learn. The education system can now utilize technology that makes it easier to reach students. Likewise, students can easily access education through new technologies. One of the innovative technologies that are starting to be used in education is Augmented Reality (AR) (Duc et al., 2024). The use of AR is increasing in the world of education because it has offered various benefits for students. According to Utami, (2023), the use of AR in education has the potential to improve students' conceptual knowledge and understanding as well as important abilities such as problem solving, cooperation, and communication. As for Hincapie, (2021), AR offers tremendous pedagogical opportunities for users, including mobility, alternative perspectives, comparison of various perspectives, and integration of various perspectives.

Augmented Reality (AR) is a technology that can add virtual objects to the real world and can be seen through a camera (Anesti & Irwanto, 2025). AR is a technology that allows

the real world and virtual objects to interact simultaneously (real-time) using electronic devices (Hincapie et al., 2021). Abad-Segura, (2020) defines by saying AR as a technology that develops a combination of virtual images and the real world created by computers. AR can show the state of reality with virtual objects, information, and cues such as text, audio, images, videos, and 3D objects (Ariza-Colpas et al., 2023). Goel, et al (2023) mentioned 4 (four) achievements of AR in the teaching process to students, namely; (a) improvement of kinesthetic learning; (b) ability to analyze 3D objects from various perspectives; (c) increase student commitment to learning; (d) provider of virtual data-contextual information; and (e) provider of virtual data-contextual information.

In the context of accounting education, the use of Augmented Reality (AR) technology can bridge abstract learning, such as the accounting cycle and financial statements into a visual and concrete experience (Hadi et al., 2022). AR can help students to have direct interaction with accounting objects visually. According to research results from (Mulyono, et al., 2023), students can show significantly more specific knowledge about the basic concepts of non-profit accounting features and recording transactions on financial statements by using AR. AR-based 2D animation can improve students' higher-level cognitive abilities, so that students can more effectively complete the basic concepts of non-profit accounting characteristics and recording financial statement transactions (Omar et al., 2023).

Although Augmented Reality (AR) technology continues to develop from time to time until now. Research on the application of AR in accounting education is still very limited, both in number and distribution. There is no bibliometric mapping that examines trends and scientific contributions. AR research in accounting education is still scattered and has not been analyzed bibliometrically, so the main authors, keyword trends, collaboration between countries, and thematic developments are unknown. With that, the novelty offered in this study is to provide a visualization and scientific map of global and thematic trends on the role of AR in Accounting education. The purpose of this study is to reveal trends over the past ten years (2015 to 2025) with bibliometric analysis to examine the results of articles related to the use of AR in accounting education. The results of the analysis can be an insight in the development, focus, and contribution for students.

## Research Method

This research uses bibliometric analysis method to examine the use of AR in accounting education. The reason for using bibliometric is because it is a widely recognized and powerful tool for conducting bibliometric analysis (Donthu et al., 2021). This study aims to describe existing phenomena, both current and past, as well as various topics related to AR. This bibliometric study is comprehensive, investigating the existing state and trends regarding AR research from 2015 to 2025 according to the specifications set for the research process. The search was conducted in May 2025, and the Scopus database was used as the main source for obtaining bibliographic information.

This research uses the Scopus database to obtain bibliometric data to be studied. Scopus is considered the leading citation index in scientific circles and is recognized as the world's leading academic database. The following is the code generated regarding the way the content is scanned and the filtering options in the topic area (article title, abstract, keywords) of the Scopus search engine: TITLE-ABS-KEY (("Use of Augmented Reality (AR)" OR "AR Technology") AND ("Accounting Education")).

The exclusion and inclusion criteria applied consisted of: (a) Articles selected were published from 2015 to 2025; (b) Document type was limited to articles; (c) Research had to be published in English; and (d) Studies were categorized in digital technology and education.

Data analysis in the study used bibliometric and descriptive content analysis. Content analysis using the Scopus database system. Bibliometric analysis using VOSviewer mapping and visualization software version 1.6.19. VOSviewer is one of the most popular computer programs designed and developed to present several visualization techniques (Merigó & Yang, 2017). The distribution of the study by year and country was checked first among all the data obtained at the end of the data collection process. After that, the content analysis process included the most published research reference sources, authors, and the number of research citations. Bibliometric analysis was conducted to determine the trend of AR research that has been conducted in the field of accounting education.

**Result and Discussion**

*Distribution of Relevant Publications by Year*

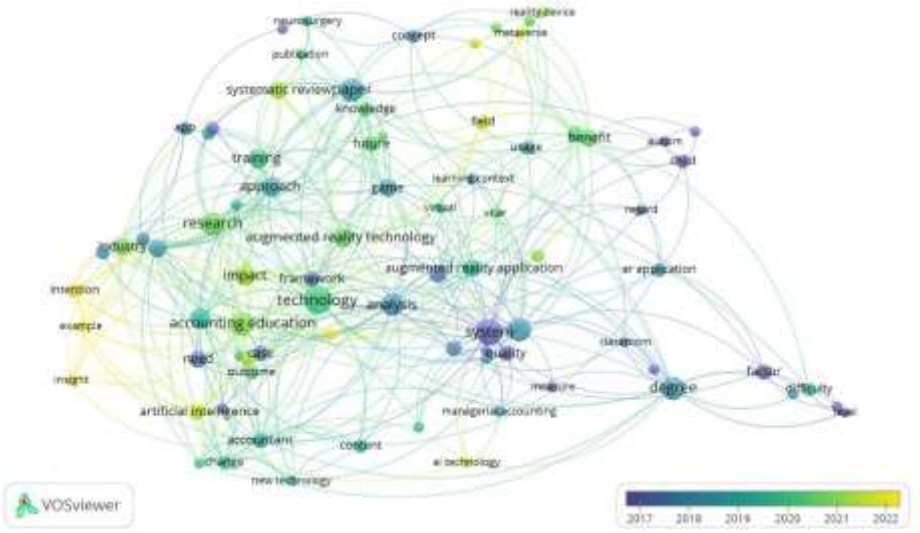


Figure 1. Publication Distribution by Year

The application of AR in accounting education began to emerge around 2018 to 2019, leading to the exploration of technology integration in accounting teaching. The peak of the development of AR application in accounting education in 2020 to 2021, focusing on research on the benefits, training, and integration of AR technology. While from 2022 until now, the focus of research leads to advanced uses, such as metavarse and AI, as well as an emphasis on benefits and new learning contexts.

*Keyword Co-Occurrence Analysis*

VOSviewer software analyzed 100 articles to extract AR-related topics in accounting education. The most frequently used keywords are Augmented Reality Technology, Technology, Accounting Education, System, Analysis, and Research. This research found 409 links with 82 items, which gives an average link strength of co-occurrence of 460.

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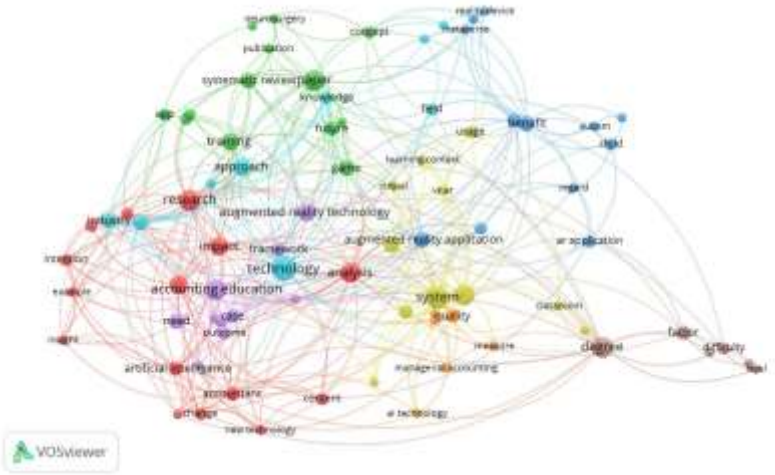


Figure 2. Keyword Network Based on Co-occurrence

The larger size of the circles indicates the subjects that researchers discuss more frequently in Figure 2. The red color brings up the keywords accounting education, AI, Insight, Intention, Impact, Example, and so on. The red color focuses on the relationship between AI, accounting learning, and user perception of new technology. Green color with keywords traning, systematic review, approach, research, and game. More emphasis on AR-based learning and training in academic and professional contexts. Blue color has more keywords child, autism, benefit, use, and possibility. Blue color focuses more on inclusive and specific education. While the yellow color is more often the keywords system, quality, learning context, AR application, degree, and difficulty. The yellow color focuses on the quality of the AR system, as well as the learning context and challenges of its use. Thus, research on AR in accounting education is developing into multidisciplinary, such as the application of technology (AR, AI) in education, evaluation of systems and learning quality, innovative learning contexts, and user perceptions of technology.

*VOSviewer Cluster Analysis*

The following figure shows the frequency of occurrence and importance of terms based on the analyzed literature. Yellow color indicates high density of literature, green color indicates medium density of literature, and dark blue color indicates low density.

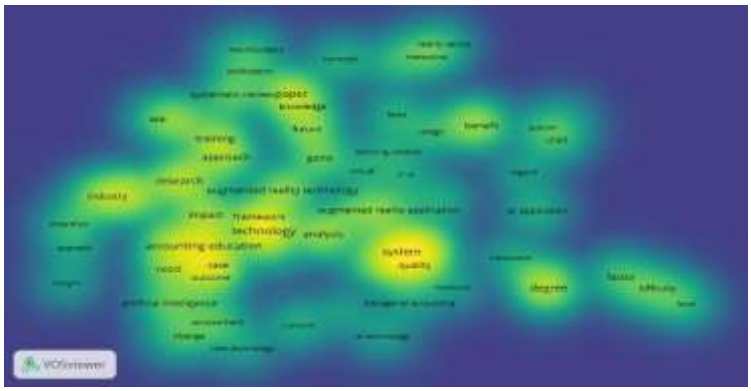

Figure 3. VOSviewer Cluster Analysis

Table 1. Cluster Keywords and Research Topics

| Cluster | Cluster Keywords | Cluster Topics | Description |
|---|---|---|---|
| 1 | Augmented reality technology, technology, system, quality, accounting education, impact, analysis, training, research, approach. | The application of technology, the influence on the education system, the quality of the system, and the role of AR are used in accounting training and learning. | Main topics that appear frequently |
| 2 | AI, game, mobile learning, motivation, outcome, benefit, integration | Technology as a complement, and psychology or education such as motivation and learning outcomes are part of the study. | Medium to low density topics |
| 3 | Autism, child, difficulty, factor, and possibility | Application of AR for accounting learning for students with special needs and difficulty factors in using AR | Potential for future research |

*Source: processed by researcher, 2025*

*Cluster 1*

Augmented Reality (AR) technology is often integrated in the accounting education system. Egiyi, (2022) said AR technology allows students to see accounting objects visually and interactively, such as the accounting cycle, recording transactions, and financial statements. Difficult accounting objects like this can be understood easily when using 3D visualization technology or AR-based animation (Rashed Baker Zakaria Alwardat, 2023). The use of AR technology in accounting education not only makes it easier for students, but has an impact on increasing student knowledge. AR can help students to improve critical thinking skills, understand abstract concepts, and have analytical and problem-solving skills in accounting (Hadi et al., 2022; Mulyono et al., 2023).

According to Iatsyshyn & Kovach, (2020), AR is also often used as a training tool that simulates a real work environment, such as the practice of compiling financial journals, and simulating financial management. Such training is certainly very important for students who prepare themselves to face the world of work with real practical experience (Bachher et al., 2022). Thus, AR technology used in accounting education can enhance visual, interactive, and contextual learning experiences (Al-Gnbri, 2022). Students can easily understand concepts, practical skills, and work readiness in accounting (Dangi et al., 2023).

*Cluster 2*

In the topic of Cluster 2, Augmented Reality (AR) is seen more as a complementary role in accounting education. Some previous research results show that the role of AR is closely related to student factors in the learning process, such as motivation, perception, psychological benefits, and learning outcomes (YAŞAR, 2022). According to Sukmawati & Majiri, (2022), AR can encourage learning motivation because it can present material in an interesting, interactive, and fun way for students. In addition, AR can help students to understand difficult concepts, strengthen memory, and encourage critical thinking skills (Ferrer-Torregrosa, 2016; Zhang et al., 2022). Interdisciplinary studies between educational technology and educational psychology are still lacking in this research. With that, the use of AR on students' learning motivation and learning outcomes, especially in the context of business and management education, is still lacking.

*Cluster 3*

According to Hadi, (2022), Augmented Reality (AR) can support students with special needs, such as providing concrete visuals and interactives, so that material such as the accounting cycle is easy for students to understand. AR can also help students to increase focus and interest in learning through kinesthetic and visual approaches (Köse & Güner-Yildiz, 2021). In addition, AR can provide lessons to students according to the needs of each student (Ferrer-Torregrosa, 2016). In addition to the advantages, weaknesses that often occur in the application of AR to students such as limited devices or tools that suit the special needs of students (Yenioglu et al., 2023). Difficult AR systems are also often a challenge for students to use it as a learning medium. With that, Islim, (2024) said that technical difficulties, accessibility, and system readiness are the main challenges in future research.

## Conclusions

Augmented reality has been proven effective in improving accounting students' conceptual understanding and practical skills, especially in difficult material such as accounting cycles and financial statements. AR technology facilitates visual, interactive and contextualized learning. AR also not only improves students' cognitive and analytical abilities, but also encourages learning motivation through the presentation of interesting and interactive materials. Thus, AR has the potential to support students with special needs with kinesthetic and visual approaches.

Although the application of AR in accounting education has many uses, it still has limitations such as tool limitations, technical difficulties, and accessibility. The readiness of the AR system and students' adaptation to technology are also factors inhibiting the application of AR in accounting education. Research on AR in accounting education is growing rapidly in 2018. The main focus of research on technology integration, system evaluation, and learning context of innovation with new technology. However, studies of the application of AR to educational psychology are still very minimal.

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