



A bibliometric analysis of quality in higher education

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Abstract

Higher education institutions are expected to contribute to societal and individual development by producing graduates equipped with the knowledge and skills required by rapidly evolving global conditions. The growing volume of research on quality in higher education necessitates methods to synthesize and navigate complex literature while identifying emerging trends and reducing redundancy. This study aims to visualize the interconnections among articles and review articles on quality research in higher education through bibliometric analysis. Using a dataset of articles and review articles retrieved from the Web of Science between 1981 and 2024, network, overlay, and density visualizations were created with VOSviewer to examine author and source citations, keyword co-occurrence, author co-citations, and bibliographic coupling. The findings indicate a rising scholarly interest in topics related to quality, sustainability, and online education, with studies on quality assurance gaining prominence. Leading journals in the field include publications that focus on higher education quality, and certain regions demonstrate notable influence in shaping research trends. The study underscores the value of bibliometric approaches in mapping scholarly landscapes, facilitating knowledge integration, and guiding future research directions in higher education quality studies.

Keywords: Bibliometric analysis; higher education; quality assurance; research trends; sustainability.

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1. INTRODUCTION

Higher education, as a level of education that provides most of the workforce needed for society in all areas of life, enables individuals to develop their knowledge and skills over time in accordance with societal needs and offers them lifelong learning opportunities. Higher education institutions are responsible for positively impacting society through numerous functions, including quality education, research, innovation, and community engagement (Ai Tran et al., 2025; Khuram et al., 2023).

The concept of quality in higher education can be defined as the relevance of higher education institutions' objectives and the degree to which they meet their stated objectives across all units of higher education institutions. The increasing interest in improving the quality of higher education stems from the need for individuals who will be successful in adapting to the rapid changes of the dynamic world. Higher education institutions must keep their quality approaches current and functional to attract students and maintain or improve their rankings and reputations in global competition. The benefits derived from the existence and improvement of quality in higher education go beyond meeting the expectations of institutions and students and also contribute to growth at national and international levels. This has led to the emergence of quality in higher education as a globally relevant topic, gaining significant importance at both governmental and academic levels (Alzafari, 2017; Ai Tran et al., 2025; Marginson et al., 2022; Zawacki-Richter et al., 2019)

Conducting academic research in the field of administrative sciences requires working with multiple and complex concepts and frameworks due to the density of subfields in this field. The abundance and repetitive nature of previous studies can prevent researchers from learning about prestigious studies or influential researchers. This can prevent researchers from producing innovative and useful research and contribute to adding a new one to the list of duplicate studies. While some databases organize these studies, these characteristics of these studies have led to the need to address their dissemination. Due to similar characteristics, the field of quality research in higher education is also complex and includes a wide variety of elements (Brika, 2021; Alzafari, 2017; Donthu et al., 2021).

Bibliometric analysis, which has become a tool for assessing research impact and scientific productivity, provides a quantitative analysis of scientific academic literature. Technological advances, coupled with the proliferation of digital academic databases and the increasing publication of research articles, have reshaped the research landscape and increased the use of approaches such as bibliometric analysis in mapping scientific literature. The shift to digital publishing and the proliferation of digital academic databases have made research outputs more accessible and provided a rich data source for bibliometric analysis, while improved computing power and sophisticated data analysis tools have enabled the efficient processing of a vast scientific literature (Dagli, 2025).

Bibliometric analysis can provide an overview of academic literature by examining the formal characteristics of research fields using statistical and mathematical methodologies. Bibliometric analysis facilitates the search, organization, and evaluation of all required research data, while also providing researchers with the opportunity to understand the past and predict future research trends. This ability can be argued to offer researchers the opportunity to utilize bibliometric analysis to evaluate their fields of study (Khuram et al., 2023).

Since the literature lacks sufficient resources to provide a comprehensive overview by examining all studies related to quality in higher education and their interrelationships, we believe that conducting a bibliometric analysis of the quality in the field of higher education research would benefit researchers and the literature. This study conducted a bibliometric analysis of English articles and review articles indexed in the WoS database between 1981 and 2024 in the "quality in higher education" research field using the VOSviewer.

1.1. Purpose of the study

As academic production in every field of science steadily increases, identifying and evaluating academic advances becomes increasingly complex. This makes literature reviews crucial for deepening academic research and identifying gaps in research areas. For this very reason, researchers employing bibliometric methods are examining the connections between influential authors, studies, journals, countries, and historical

developments to analyze and interpret the rapidly growing body of work in their respective fields (Marzi et al., 2025).

Bibliometric analysis is a powerful research methodology that applies statistical and quantitative techniques (citation counts, co-authorship networks, keyword co-occurrence, and bibliographic matching) to analyze patterns in academic literature by examining very large bibliographic data, regardless of its size, and can provide an overview of the research field under study. It aims to reveal the intellectual and social structure of a particular field by identifying influential works, prolific authors, collaborative networks, and emerging research themes. By highlighting important work and emerging trends, it simplifies the challenging task of navigating the vast volume of scholarly literature, providing a roadmap for researchers and scholars to understand key contributions, influential players, and potential areas of impact within their chosen field (Kumar, 2025).

This bibliometric analysis of English articles and review articles in the WOS between 1981 and 2024 aims to reveal how the research field is clustered, mapped, and visualized, and to provide researchers with up-to-date and comprehensive information about the current state of the field.

This study aims to analyze the scientific production of the "quality in higher education" research field from various perspectives, identify its scope, and provide further insight into its development by identifying research trends. For this purpose, the following questions are aimed at being answered in the research:

Q1. How many research studies have been produced year by year in the specified period in studies on quality in higher education?

Q2. What keywords are frequently used in studies on quality in higher education?

Q3. Which authors, studies, sources, and countries are the most influential in studies on quality in higher education?

2. METHOD AND MATERIALS

In the last decade, there has been a steady increase in the number of bibliographic studies. These studies are considered more popular due to the increased accessibility of bibliographic data and software packages specialized in bibliographic analysis, as well as their ability to highlight interdisciplinary subject clusters, literature gaps, and the most influential authors, sources, and studies. Bibliographic studies utilize quantitative and statistical methods to achieve this goal, distinguishing them from other narrative literature reviews (Block & Fisch, 2020).

Review research is a study conducted using scientific methods to analyze and synthesize previous studies in a field to uncover gaps in research, explore under-researched areas, and help uncover new perspectives. With the increase in academic production, it is believed that literature reviews using bibliometric methods can address the need to propose new theoretical frameworks and explore under-researched areas by preventing researchers from repeatedly using old theories and methods. Bibliometric methods complement traditional methods by providing a broader perspective on the flow of information within a research field. Bibliometric methods use data from publication databases such as WOS, Scopus, and Google Scholar to visualize the connections between these data using co-occurrence analysis, citation analysis, co-author analysis, co-citation analysis, and bibliographic coupling methods (Marzi et al., 2025).

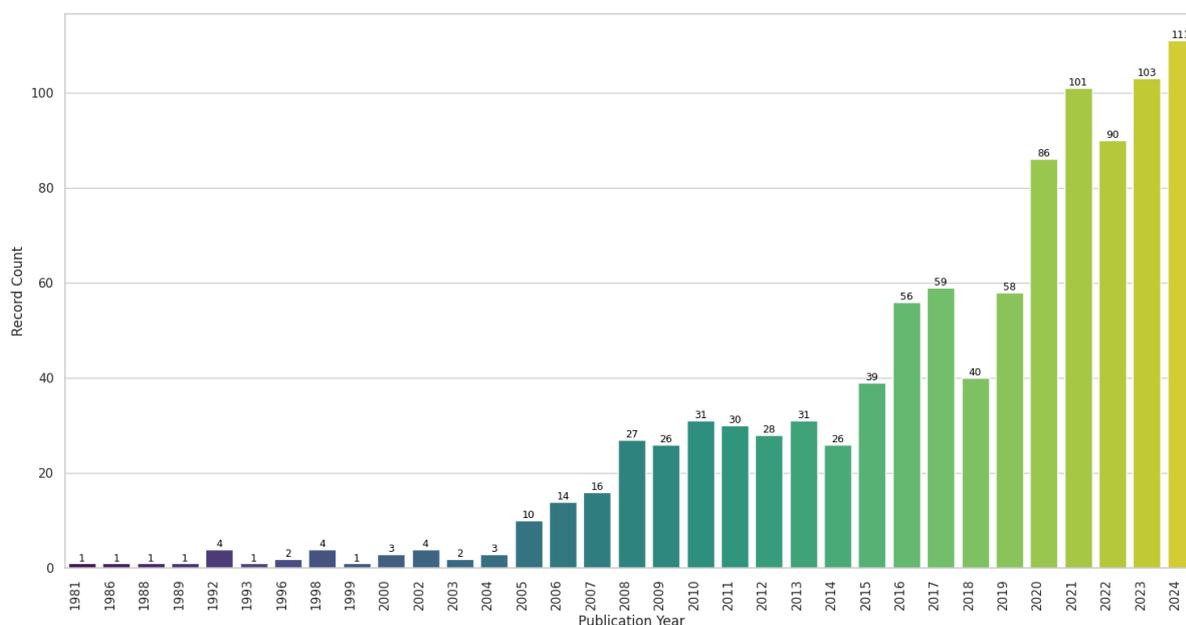
In this review research, bibliometric methods were used to examine studies on "quality in higher education." Due to the importance of reliable data in bibliographic analysis, WOS, the oldest, most popular, and most reliable database in the world of research publications and citations (Birkle et al., 2020), was selected for this study. A search query was created using keywords in the WOS Core Collection using the query builder. The search query was as follows: "(((TS=("quality in higher education")) OR TS=("quality of higher education")) OR TS=("higher education quality")) NOT TS=("teaching quality")) NOT TS=("student quality)". This search resulted in 2219 documents. For this study, the inclusion criteria were 1981-2024, document types were articles and review articles, and the language of the study was English. The data was exported from WOS with full record and cited references. Analyses were conducted on the exported data using VOSviewer. These

analyses included co-occurrence of keywords, citations of authors, citations of sources, citations of countries, co-citations of authors, and bibliographic coupling of documents.

3. RESULTS

The analyses began by analyzing data from the WOS database, using the analyze results tab within the database, to obtain information on the quality of higher education output over the specified years. As can be seen in Figure 1, this research area, which had seen limited studies until the 2000s, increased in appeal starting in 2005, and this interest continued to grow each year. While it lost momentum in 2018-2019, it reemerged as a research area, generating nearly a hundred studies annually between 2020 and 2024.

Figure 1
Number of Records by Publication Year



Conducting a bibliometric study involves several basic steps. The process begins by defining the purpose and scope of the research and ensuring that the research scope is one that requires the use of bibliometric methods. Next, the most suitable bibliometric analysis techniques should be selected in line with the study's purpose and scope. In collecting the data, researchers must ensure that the search terms accurately represent the study's focus, the selected database offers adequate coverage, and the dataset is free from errors such as duplicates or incorrect entries. It is also essential to confirm that the final dataset meets the requirements of the chosen bibliometric techniques. Once the analysis is conducted, the findings should be reported in a clear and accessible manner (Donthu et al., 2021).

Bibliometric mapping, which is the main part of the analysis, was carried out using the VOSviewer software. VOSviewer, a tool for scientific mapping, creates maps that show connections between publications in several ways. Co-authorship links authors who have worked together on the same paper. Co-occurrence identifies terms that appear together in a text more often than expected by chance. A citation shows when one work references another in its bibliography. The term bibliographic coupling is used to describe the situation where two works refer to the same third work (McAllister et al., 2022). To create the network for this study, data were entered into VOSviewer version 1.6.20.

3.1. Co-occurrence of keywords analysis

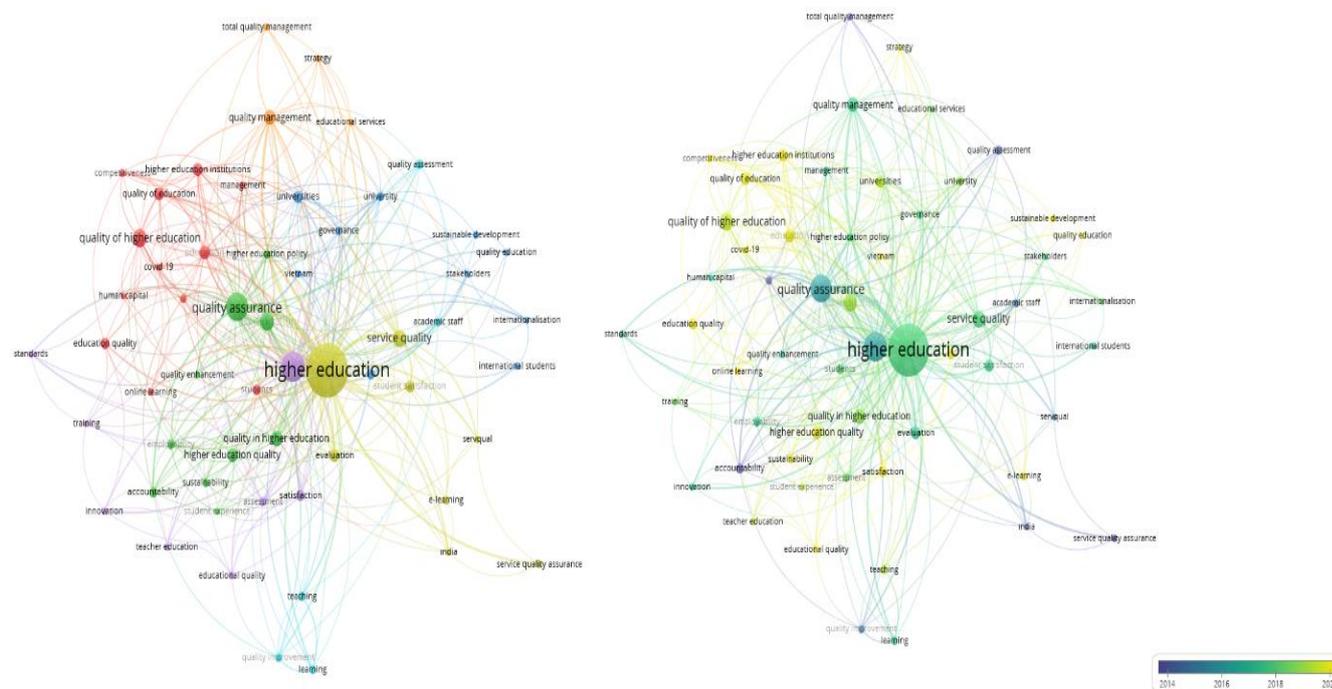
Keywords are widely used as a tool to identify the contents, main topics, and methods used in a particular research field. Co-occurrence was used to determine and analyze word distribution by showing the relationship between keywords (Farooq, 2024). Figure 2 presents a co-occurrence network of author keywords within the quality in higher education research domain. In this keyword co-occurrence analysis conducted with

VOSviewer, the minimum number of occurrences of a keyword was determined to be 7. A total of 57 out of 2659 keywords met this threshold. The results of the co-occurrence network indicate several keywords, such as higher education, internalization, e-learning, sustainable development, accreditation, quality, quality assurance, and service quality. Higher education (371), quality (115), quality assurance (103), accreditation (43), service quality (40), and quality management (28) were found to be both the most common and the highest-ranking keywords in terms of total link strength.

Network, overlay, and density visualization maps can be accessed through analyses conducted in the VOSviewer program. The network visualization is located on the left side of Figure 1, while the overlay visualization is located on the right side. As seen in Figure 1, the most frequently used words are located in the center of the network map and in larger circles. In the overlay visualization map on the right side of Figure 1, yellow and colors close to yellow indicate more recent work. The keywords e-learning (10), sustainability (10), service quality assurance (9), sustainable development (7), and internationalization (7), which have recently begun to appear in the keyword frequency ranking, appear in yellow and colors very close to yellow in the overlay visualization map on the right side of Figure 1, indicating that they have gained visibility in recent studies.

Figure 2

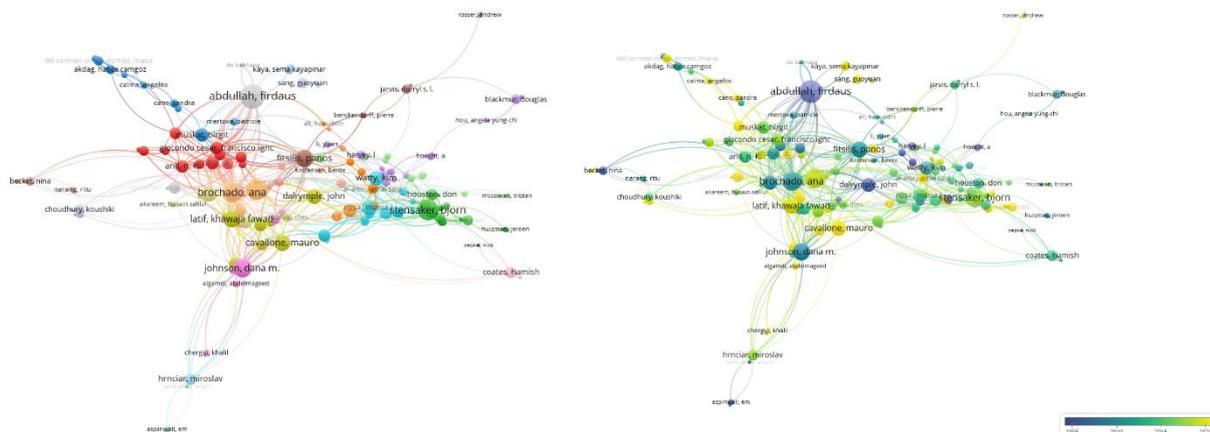
Network and overlay visualization of the co-occurrence of keywords



3.2. Citations of authors' analysis

Co-citation is the situation where two research studies are cited or acknowledged jointly by various authors in the literature, based on the assumption that there is a strong relationship between the two items when they are frequently cited together (Goel, 2025). Figure 3 presents a citation network of authors. In the citations of authors analysis, the minimum number of documents for an author was set at 1, and the minimum number of citations for an author was set at 10. A total of 877 of 2499 authors met this threshold. VOSviewer found that some authors were unrelated to each other, while 334 authors were included in the largest network. Abdullah and Firdaus ranked first with 3 documents, 362 citations, and a total strength of 72, while Brochado and Ana ranked second with 1 document, 159 citations, and a total strength of 51. Stensaker and Bjorn, who had the most documents, ranked sixth with 6 documents, 201 citations, and a total strength of 49. This indicates that citation impact does not necessarily correlate with the number of publications, as authors with fewer documents may hold a stronger influence within the network.

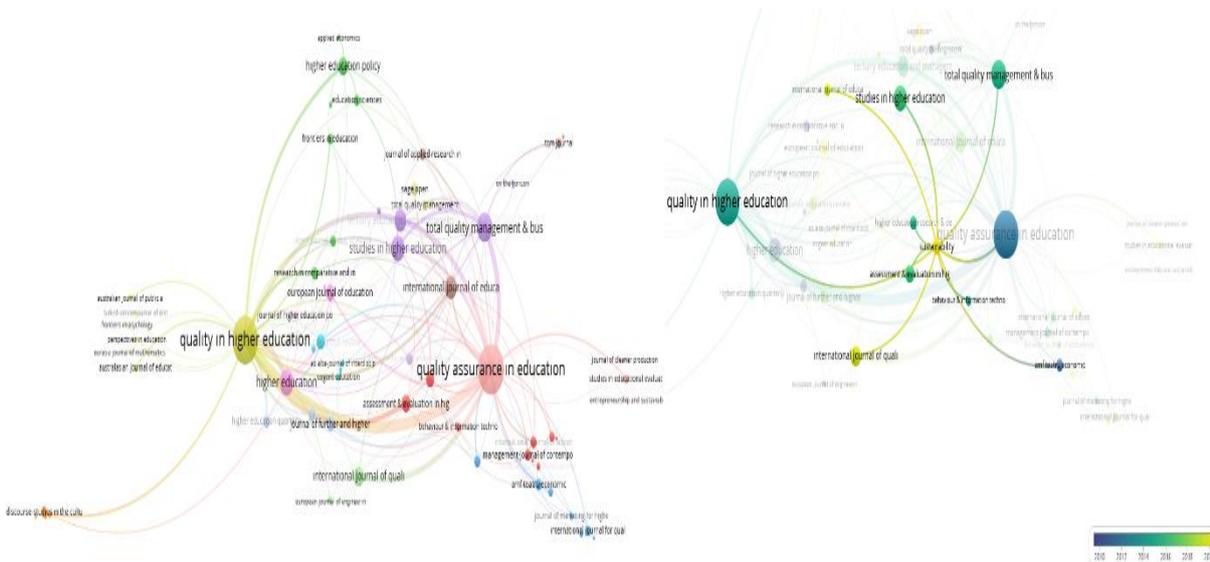
Figure 3
Network and overlay visualization of citations of authors



3.3. Citations of sources

In the citations of sources analysis, the minimum number of documents of a source is determined as 2, and the minimum number of citations of a source is 10. 92 meet the thresholds from a total of 489 sources. The largest set of connected sources consists of 70 items because some of the sources in our network are not connected. Figure 4 depicts a citation network of sources. Quality Assurance in Education ranked first with 42 documents, 1836 citations, 117 total link strength; Quality in Higher Education ranked second with 80 documents, 1513 citations, 108 total link strength; and Total Quality Management & Business Excellence ranked third with 11 documents, 512 citations, 40 total link strength. These results indicate that journals focusing specifically on quality assurance and quality improvement in higher education act as central sources in the knowledge structure of the field.

Figure 4
Network and overlay visualization of citations of sources

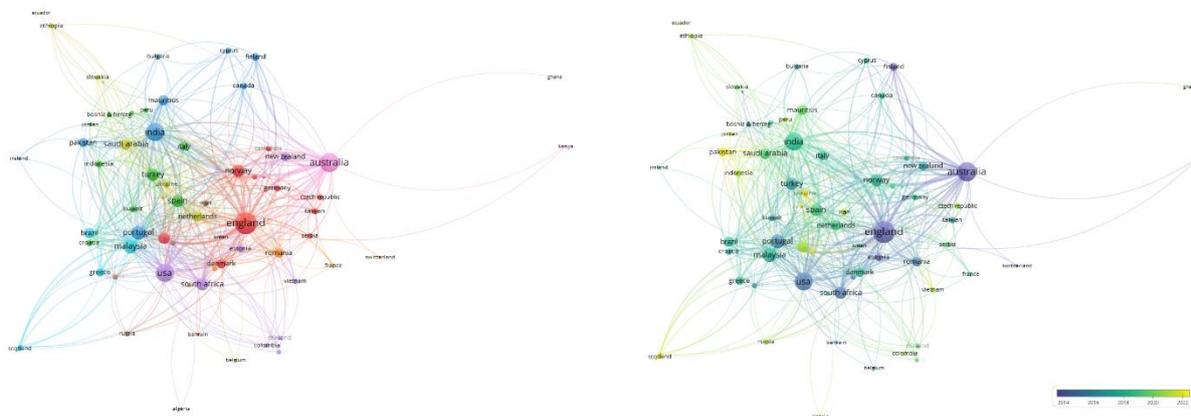


3.4. Citations of countries

In the citations of countries analysis, the minimum number of documents for a country was set at 2, and the minimum number of citations for a country was set at 10. Of the 112 countries, the largest set of connected countries consists of 79 countries. Figure 5 presents a citation network of countries. The United Kingdom ranked first with 64 documents, 2042 citations, and a total link strength of 179. Australia ranked second with

fewer citations for the same document. Although China has the most documents with 93 documents, it only ranks thirteenth in terms of total link strength due to its citation count, which is almost half that of the United Kingdom, which ranks first. The United States is the second country with the most documents, with 82 documents, and third with 1909 citations. Portugal, Malaysia, and Turkey, despite having relatively few documents, have become influential countries in this field with their citation counts.

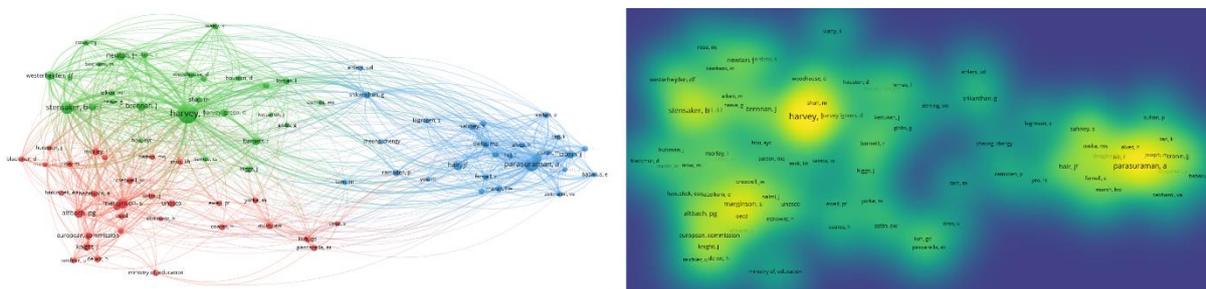
Figure 5
Network and overlay visualization of citations of countries



3.5. Co-citation of authors analysis

A co-citation occurs when two authors or two sources appear together in the reference list of a single publication. Co-citation analysis is a tool for measuring the contextual similarity of multiple publications and authors related to a similar topic, theory, methodology, or empirical discipline, as it is more likely that two authors cited together work on a similar topic area (Kumar et al., 2020). In this analysis, the minimum number of citations for an author was set at 20. Of the 25,361 authors, 86 authors met this criterion. Figure 6 presents a co-citation network of authors. There are 85 authors in the largest group of related authors. An analysis of co-citation using VOSviewer found that Harvey, L., ranked first with 300 citations and 2,242 total link strength; Parasuraman, A., ranked second with 148 citations and 1,199 total link strength; and Abdullah, F., ranked fourth with 76 citations and 707 total link strength. The prominence of these authors indicates that the field's theoretical and conceptual foundations are shaped by a small group of highly cited scholars.

Figure 6
Network and Density Visualization of Co-citation of Authors



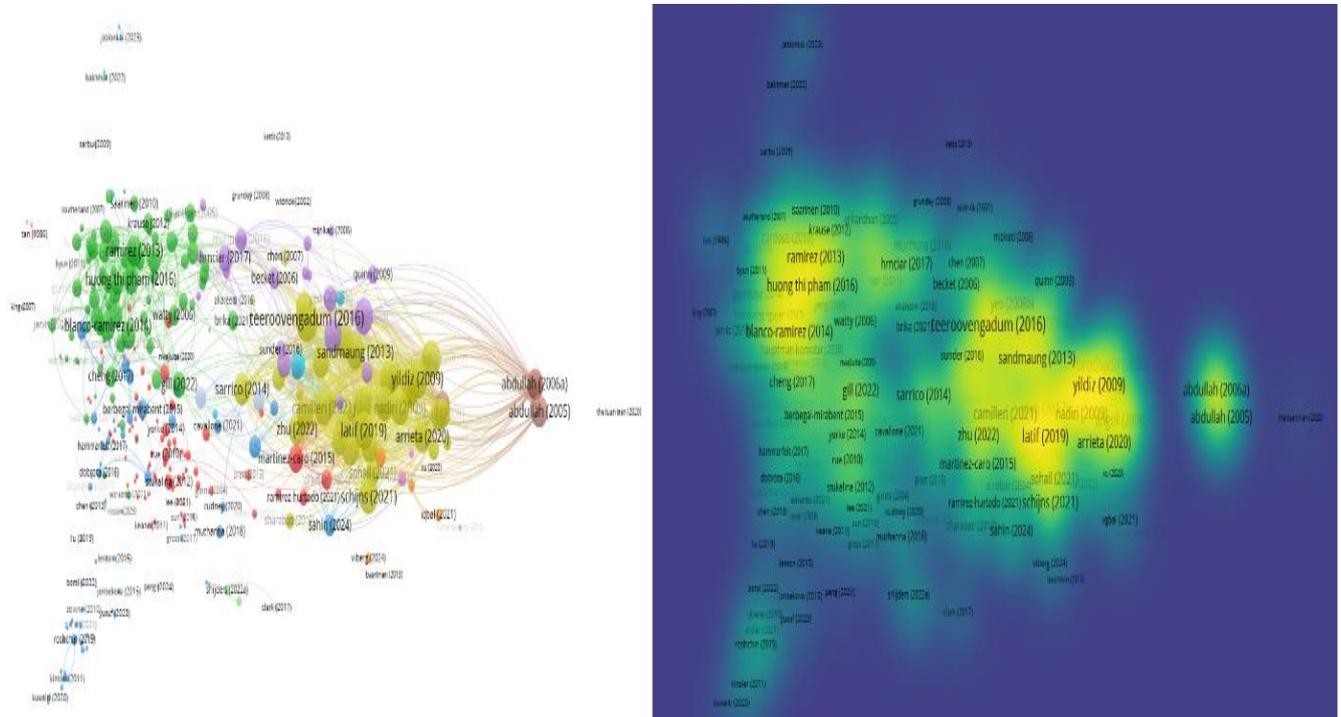
3.6. Bibliographic coupling of documents analysis

Bibliographic matching analyzes the overlap in bibliographies, enabling the association of documents with similar research perspectives (Piñeiro-Chousa et al., 2025). In the bibliographic coupling of document analysis, the minimum number of citations of a document was determined as 10. Of the 1010 documents, 358 met this criterion. Figure 7 presents a bibliographic coupling network of documents. In terms of total link strength, Teeroovengadam (2016) ranked first, Yildiz (2009) second, Latif (2019) third, Brochado (2009) fourth, Yeo

(2008) fifth, Sandmaung (2013) sixth, Schijns (2021) seventh, Camilleri (2021) eighth, Nadiri (2009) ninth, and Hussain (2011) tenth. This distribution suggests that a limited number of influential documents shape the intellectual structure of the field by frequently citing similar seminal works.

Figure 7

Network and Density Visualization of Bibliographic Coupling of Documents



4. CONCLUSION AND DISCUSSIONS

Our study reveals the connections between influential authors, sources, and countries in the field of quality in higher education, which has been regularly studied in recent years. It will help recognize that influential authors, who also contributed to previous studies, continue to be influential, but that studies drawing on new perspectives are also rapidly increasing in visibility and impact. Although some similar results were obtained with the previous study in this field, this study has reached new and different results from the previous study, due to the different inclusion and exclusion criteria, such as different time periods and databases of studies. The limitations of our study include the fact that bibliometric data were taken from a single database, studies for 2025 were not included, and the time period was wide and used as a single period.

We believe that in a research field like quality in higher education, which can involve different disciplines, access to information will facilitate the emergence of studies that address current needs and trends, addressing current research needs, and broadening the scope of research. A bibliometric analysis of the research area will always serve as a guide for researchers wishing to work in this field when determining their future direction. Similarly, it is believed to be a resource for anyone wishing to analyze the connections and current status within the field regarding research design and methodology.

5. RECOMMENDATION AND FUTURE DIRECTIONS

The rapidly changing world, driven by technological advances, is causing a constant fluctuation in the workforce equipped with the knowledge and skills necessary to exist and secure a position in the labor market. Considering that most of the workforce needed for the labor market is formed after completing higher education, the importance of the quality of higher education institutions is evident. Every year, hundreds of publications about quality in higher education are produced by researchers with this viewpoint and motivation.

It is observed that the direction of these publications has evolved from the classical total quality approach to a quality assurance approach. Furthermore, the issue of sustainability, which has been gaining increasing visibility in recent years, has been found to be reshaping quality research in higher education. In light of this information, researchers considering quality research in higher education are advised to focus on sustainability issues in future research. Online education, another topic whose importance has skyrocketed during the COVID-19 pandemic, is also likely to be the subject of future studies that can contribute to quality research in higher education. It would be appropriate for researchers to undertake studies that will help relevant decision-makers and stakeholders, taking into account the complex structure of higher education institutions, to facilitate this complex structure and to spread quality in every field where institutions contribute to both society and individuals.

Conflict of Interest: The authors declare no conflict of interest.

Ethical Approval: The study adheres to the ethical guidelines for conducting research.

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