

Global Literature on Higher Education: A Bibliometric Analysis of Top 15 Journals

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ABSTRACT

There has been a significant increase in the number of studies on higher education over the years. Higher education research has changed in terms of quantity and quality over time. However, there is a lack of a holistic study on higher education research. The purpose of this research study is to examine the higher education literature holistically based on the top 15 journals addressing higher education, to examine the contribution to the field on the basis of a particular journal, institution and country, and to discover the patterns of the higher education literature. For this purpose, bibliometric analysis was carried out with 19685 publications obtained from the Web of Science covering the years 1956-2022. According to the findings of the study, higher education literature has shown a growth trend. This growth has accelerated significantly in the last two decades. The largest contribution to the literature was made by the "Journal of College Student Development". In the higher education literature, the USA has pulled ahead of 120 countries demonstrated by a significant margin and has become the dominant of the higher education literature. The main themes of higher education literature are (1) assessment, (2) internationalization, (3) equity and social justice, (4) university, and (5) pedagogy/academic writing/curriculum. The countries with the most collaboration among 120 countries are USA, UK, and Australia, respectively. This study has provided a comprehensive perspective on the field by addressing the higher education research with long-term data. By revealing the structure of existing knowledge, it has prepared the ground for future research directions.

Keywords: Higher education, Research, Literature, Bibliometric analysis, Publication trends, Academic research.

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INTRODUCTION

Bibliometric analysis is a method used to reveal the holistic scientific knowledge and evolutionary structure of deep-rooted fields by meticulously making sense of large volumes of data and mapping the studied area.^[1] Well-structured bibliometric studies can lay a solid foundation for advancing a field in new and meaningful ways. It provides academics with an overview and helps them identify knowledge gaps and generate new ideas for research. It also helps the field to position the academics' intended contributions.^[1]

Bibliometric studies are frequently used to reveal the accretion of the literature on a subject or field in due course, and the contribution of important sources, authors, countries, and institutions in the literature to the field. Once the literature is examined, it is observed that the bibliometric studies are utilised

in various fields such as management,^[2] environmental sciences,^[3] computer sciences,^[4] health sciences,^[5] and education.^[6,7]

This wide-ranging and comprehensive use of bibliometric studies is also reflected in higher education research. Many bibliometric studies have been carried out on higher education in the literature. Bibliometric studies have been conducted on educational technologies, information and communication technologies, digital and mobile literacy, artificial intelligence, and blockchain applications in higher education.^[8-11] There are also bibliometric studies on e-learning, online learning, and distance education in the context of higher education.^[12-14] Certain studies have focused on learning such as language teaching, problem-based learning, and blended learning.^[15-17]

Besides all these, bibliometric studies have been conducted on the classroom environment such as virtual reality, flipped classrooms, class participation in higher education,^[18,19] sustainable education and development in higher education,^[20,21] human capital in higher education,^[22] leadership,^[23] quality,^[24] performance evaluation,^[25] studies on women,^[26] and entrepreneurial competence.^[27] In addition to these, there are also studies that examine the bibliometric review of journals that focus on specific



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topics and publish on higher education^[28,29] or the literature that is produced in a specific field of higher education in a country.^[30,31]

These studies set forth that higher education is examined from different perspectives and that the study subjects in higher education are rich in terms of bibliometrics. However, it is observed that there is no study available that deals with the rich knowledge in the field of higher education, rather than solely focusing on a specific subject. When the literature is examined, there are studies that specifically examine higher education research methodologically and content. Tight^[32] reviewed articles in three higher education journals outside and inside North America. Tight^[33] analyzed 406 articles written in English only published in 2000 outside of North America using a co-citation analysis. Tight^[34] examined the changing journal publication patterns of 15 journals based in Australia, Europe and North America in these two years, in 2000 and 2010. Tight^[35] methodologically examined 567 articles published in higher education journals in 2010. Tight^[36] discussed the features of journals on higher education from a descriptive point of view. Jung and Horta^[37] revealed the publication trends of higher education research in Asian countries. Jung and Horta^[38] examined the contribution of East Asian countries to international higher education research. Jung^[39] presented the development of higher education research in South Korea based on historical and scientific perspectives. In addition to these studies, there are also studies that specifically reveal the themes of a higher education journal,^[40] examine citation patterns,^[41,42] identify thematic trends,^[43] and address the change of country relations in the higher education research community.^[44] There are also studies that address this issue. However, these studies are focused on a specific geographical region, a specific journal, narrow bibliometric analyses, limited number of publications and more limited time period. Therefore, there is a lack of a study that deals with all higher education research from a broader perspective, with a holistic perspective without these limitations, with a wider timeframe and comprehensive bibliometric analyses.

As in many fields of education, the literature on higher education is growing day by day. This literature, which has been formed over the years, needs to be reviewed. One of the ways to achieve this goal is to examine the important journals of the field bibliometrically. Several bibliometric studies are available in which other disciplines are addressed holistically by using this method.^[45,46]

Publications in a field's top journals are among the most popular resources for academics. These journals serve as reference points for scholars and practitioners in a discipline.^[47] Publications in top journals can assure more recognition to authors and their institutions in comparison with the journals of a lower rank. Furthermore, for many scientists, publishing in well-recognized journals can provide opportunities for career advancement.^[48]

In conclusion, the purpose of this research study is to examine the higher education literature holistically based on the top 15 journals addressing higher education, to examine the contribution to the field on the basis of a particular journal, author, institution and country, and to discover the patterns of the higher education literature. By this means, it will be ensured that researchers and their research fields are directed to new and meaningful ways. In this respect, the research questions are set forth as follows:

1. What is the fundamental bibliography of the top 15 journals on higher education? In order to answer this question, the following basic bibliometrics were focused on: (1) Change in terms of the number of documents and citations over time, (2) Most influential publications, (3) Most influential publishers, (4) Most influential authors, (5) Most influential institutions, (6) Most influential countries, (7) Most frequently used words.
2. Which themes emerged in the higher education literature?
3. How does the social interaction occur between countries contributing to higher education literature?

METHODOLOGY

Identification of the resources

In this study, bibliometric analysis was used to review the top 15 journals publishing on higher education. The journals provided by Google Scholar in the "Higher Education" category and also the first 15 journals indexed in the Web of Science were included in the database. Table 1 shows the list of journals included in the analysis.

Bibliometric data for 15 selected journals were obtained from the Web of Science Core Collection (WOS) database. The data includes articles and review publications. Studies such as conference proceedings, book reviews, notes, and editorial material are excluded from the scope. The main reason for this is that such publications often lack quality and are not peer-reviewed. Early publications that will be published in 2023 are not included in the research. All publications appearing in the WOS database, including 2022, are included. This is because the year 2023 was not yet finalised when the data were collected. Such an approach allows a comparison of productivity for all years. The search was conducted for English language publications only. Retrospective time frame filtering is avoided in order to reveal the cumulative information of the field.

Data extraction and analysis

WOS database was used to collect data. The data for the publications of the specified journals were downloaded in the form of text documents using the "Publication Titles" search line in the WOS database. These text documents contain some descriptive information such as author, title, publication and citation data, and publisher. The reliability of the data was

checked before proceeding to the analysis of the data. During this control, it was determined that there was missing and erroneous information and that there was more than one concept with the same meaning. For this reason, the data-cleaning process was initiated prior to the analysis.

Although most of the data are reliable in bibliometric data, occasionally various errors and defects can be present in the data. Therefore, it is necessary to clean the data before analysis.^[49] Before the analysis, the data were made ready for bibliometric analysis by the author. For this purpose, the information of the publications with missing metadata such as publication year, publisher, country, or institution name is completed. Among these data, the words which have same meaning yet written in different formats have been corrected (For example, fed rep germany/east germany/ger dem rep/west germany/germany or South Africa/South Africa). Data for England, Northern Ireland, Wales and Scotland have been combined as UK. Similarly, Hong Kong and Macao data have been merged under China. Words with the same meaning but written in different formats were combined by preparing the "synonyms text" text file used in the R Bibliometrix software and VosViewer program.

MS Excel program, Vosviewer^[50] and Bibliometrix and Biblioshiny software packages in the R software tool were used in the analysis of the data. The Bibliometrix R package is an open-source software

tool that provides tools for quantitative research.^[51] Biblioshiny hosts the core code of Bibliometrix and is used with a web-based interface. Scientific measurement and visualization can be done with Biblioshiny.^[52]

In this research, basically, three questions are sought to be answered. Basic bibliometric analyzes were conducted to answer the first question of the study. In this analysis, the number of publications, the total number of citations, and the number of citations per publication were used as measures. The ratio between the number of publications and the number of citations is one of the best criteria for determining the impact.^[53]

In order to answer the second question of the research, co-occurrence word analysis was performed. This analysis is a useful method for identifying the most frequently studied topics and uncovering conceptual themes.^[54,55] Vosviewer uses keyword co-occurrence matrices to create a thematic map that visualizes the similarities between words.^[50] This analysis can reveal conceptual themes emerging in the literature.^[56,49] In Word Cloud analysis, the frequency of author keywords was analysed.

While answering the third question, country co-authorship analysis was performed. Co-authorship of scientific publications examines the collaboration of scientists, countries, and institutions on publications.^[57] Collaboration network analysis

Table 1: Top 15 journals on higher education.

Rank	Journal	JCR Ranking	Index-Quartile	Impact Factor	E & E CR	FY
1	Internet and Higher Education	789	SSCI-Q1	8.591	4/267	2008
2	Journal of Diversity in Higher Education	2351	SSCI-Q1	4.762	29/267	2008
3	Assessment & Evaluation in Higher Education	2628	SSCI-Q1	4.44	37/267	2008
4	Journal of Computing in Higher Education	3069	SSCI-Q1	4.045	45/267	2010
5	Studies in Higher Education	3104	SSCI-Q1	4.017	46/267	1976
6	Higher Education	3200	SSCI-Q1	3.947	47/267	1972
7	Active Learning in Higher Education	3402	SSCI-Q1	3.795	54/267	2012
8	Journal of Higher Education	4262	SSCI-Q2	3.204	79/267	1956
9	Higher Education Research & Development	4915	SSCI-Q2	2.849	98/267	2008
10	Teaching in Higher Education	5106	SSCI-Q2	2.75	106/267	2004
11	Journal of Studies in International Education	5171	SSCI-Q2	2.726	108/267	2008
12	Research in Higher Education	5401	SSCI-Q2	2.615	119/267	1980
13	Review of Higher Education	5918	SSCI-Q3	2.383	140/267	1994
14	Journal of College Student Development	6644	SSCI-Q3	2.051	166/267	1959
15	Higher Education Policy	7647	SSCI-Q4	1.64	208/267	2010

Note. E & E CR: The ranking within the Web of Science Core Collection (WOS) "Education & Educational Research" category, FY: The year of first publication of the journal in Web of Science Core Collection.

provides information on potential partnerships of the studied area for further research in future.^[58] Co-authorship is a measure of collaboration. This measure reflects social ties more strongly than other collaboration measures.^[49]

RESULTS

General view of the publications

The general view of the publications on higher education literature is given in Table 2. Higher education literature covers a period of 67 years, limited to the journals analysed. A total of 19685 publications were contributed to the higher education literature by 27,293 authors. The annual accretion rate of the literature is 4.38%.

The number of publications by year and the average number of citations per publication in the higher education literature are given in Figure 1. It is seen that the higher education literature demonstrates a stable and decreasing trend in the first ten years. Afterward, it started an accretion trend, but after this accretion trend, it displayed a generally stable appearance until 2004. The accretion that commenced back in 2004 has increased continuously until 2022. The accretion over this 19-year time period covers approximately 63% of all the literature reviewed.

Key publications in higher education literature

The top 10 most cited publications in the higher education literature are given in Table 3. The most cited publication is the work of Nicol and Macfarlane-Dick.^[59] In this study, higher education students develop their capacity to regulate their own learning in order to be ready to learn throughout their lives, and ways in which formative assessment and feedback can be organized to support this development have been identified. This study is also the most cited study per year. The fact that the study has still received a high number of citations since its publication in 2006 is an indication that the issue of feedback in higher education remains to be a current issue.

The second most cited publication is the work of Nulty,^[60] which aims to evaluate the adequacy of responses to online and hard-copy surveys and to provide guidance in this regard. In the third place is the work of Astin,^[61] who put forward the theory of student participation in higher education.

Key publishers in higher education literature

The top 15 journals selected in order to examine the higher education literature from a bibliometric point of view represent important journals that publish regarding higher education. The most productive and influential journals in higher education literature are presented in Table 4. "Journal of College Student Development", which has been published since 1959 with 3315 publications, has made the highest contribution to the higher education literature. This journal ranks first in the formation of higher education literature with a rate of 16.8%. "Higher

Education", which has been published since 1972, comes in second place, and "Studies in Higher Education", which has been published since 1976, comes in third place. It is seen that the first five journals with the highest contribution have a history dating back to old times. Among these journals, "Higher Education" was the journal with the highest number of citations and the highest h index. The journal with the highest CPP (Citations Per Publications) value is "Internet and Higher Education".

Key authors in higher education literature

The list of the 10 authors who contributed the most to the higher education literature is given in Table 5. The author who contributed the most to the higher education literature is Pascarella ET with 124 publications. He is followed by Boud, D. and Kuh, G.D. with 64 publications. In terms of the number of citations, Pascarella ET ranks first again, followed by Kuh G.D. and Terenzini P.T. In terms of citations per publication, Astin A.W. ranks first, Trigwell K. ranks second and Sax L.J. ranks third.

Key affiliations in higher education literature

The list of the top 10 affiliations that contributed the most to the higher education literature is given in Table 6. The affiliation that contributes the most to the literature is "University of Maryland", which is in the USA. It is seen that 6 of the 10 affiliations contributing the most are in the USA, four are in Australia. It is seen that the USA is quite dominant in the list of affiliations that contribute the most.

Key countries in higher education literature

A list of the 10 countries that have contributed the most to the higher education literature is given in Table 7. The USA made the highest contribution to the higher education literature, to which 120 countries contributed. That is, the data tell us that academics affiliated with US institutions published the majority of articles in 15 journals. Compared to the second-ranked United Kingdom (UK), the USA contributed more than three times. After the USA, the UK and Australia contributed the most to the higher education literature. The contribution of these three countries is more than the contribution of the remaining 117 countries. In terms of the number of citations per publication, Australia comes first, followed by Netherlands and UK.

Key concepts in higher education literature

In order to determine the important concepts of the higher education literature, Word Cloud analysis was conducted with the 100 most frequently repeated concepts. The key concepts map is shown in Figure 2. Since the subject examined is higher education, the most frequently repeated concept is "higher education". However, since the concept of higher education is the main field of study and is a general concept, this concept has been excluded from the analysis and it is aimed to focus on more specific concepts. The most common words in the literature

are “internationalisation”, “assessment”, “international student”, “university”, “student engagement”, “diversity” and “feedback”. These concepts also reveal the most studied subjects of higher education. It can be said that internationalisation, student engagement, and assessment in higher education are among the topics that are frequently examined.

Themes of higher education literature

The second question of the research is to aim to reveal the themes of higher education. The result of the co-occurrence keyword

Table 2: General information of higher education literature.

Timespan	1956-2022
Publications	19685
Articles	19386
Reviews	299
Annual Growth Rate %	4.38
Document Average Age	18.5
Average citations per document	20,95
References	401298
Author's Keywords	19076
Keyword Plus	1824
Authors	27293
Countries	120
Single-authored documents	7358
Co-Authors per document	2.21
International co-authorships %	9.5

analysis carried out to reveal the thematic map of the higher education literature is shown in Figure 3. As a result of the analysis, five main themes emerged in the higher education literature. Each color on the thematic map represents a theme. The first theme that emerged is shown in red and consists of 30 concepts. The central and important concept of this theme is “assessment”. This theme includes assessment studies in higher education. “Peer feedback”, “peer review”, “peer assessment”, and “feedback” are the evaluation concepts of this theme. Another dominant group within this theme is the “learning” group. The concepts related to this group include the concepts of “student learning”, “learning outcomes”, “learning analytics”, “self-regulated learning”, “active learning”, “collaborative learning”, problem-based learning”, “e-learning”. One other dominant group within the cluster is “student engagement”. Research in this group includes studies within the triad of student engagement, assessment, and learning.

The second set of the thematic map is shown in yellow and consists of 19 concepts. The basic and important concept of the theme is the concept of “internationalisation”. The concepts of “globalisation”, “international students”, “employability”, “study abroad”, “international education” and “transnational education” are the concepts of the cluster related to internationalisation in higher education. Research on internationalisation and employment in higher education is also within the scope of this cluster. In addition, the thematic map shows that internationalisation and quality are among the topics that are examined together.

The third cluster is shown in blue and consists of 21 concepts. The basic concept of this set is “diversity”. Other central concepts of this cluster are “faculty”, “gender”, “equity”, “student”, “student

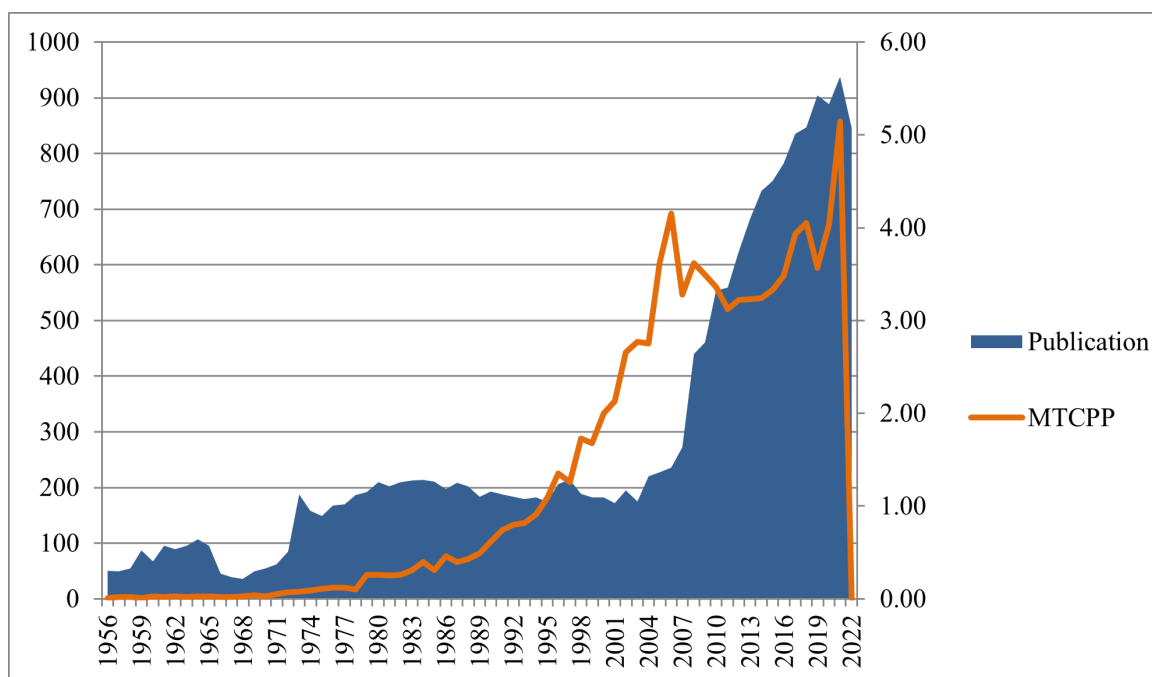


Figure 1: Publication and average citation numbers of higher education literature.

MTCPP: mean total citation per publication.

Table 3: Key publications in higher education literature.

Rank	Author(s)	Publication	TC	TCY
1	Nicol, D.J & Macfarlane-Dick, D. (2006)	Formative assessment and self-regulated learning: A model and seven principles of good feedback practice.	2085	122,7
2	Nulty, D.D. (2008)	The adequacy of response rates to online and paper surveys: What can be done?	1298	86,5
3	Astin, A.W. (1984)	Student involvement: A developmental theory for higher education.	1159	29,7
4	O'Flaherty, J. & Phillips, C. (2015)	The use of flipped classrooms in higher education: A scoping review.	901	112,6
5	Lea, M.R. & Street, B.V. (2006)	Student writing in higher education: An academic literacies approach.	887	35,5
6	Sax, L., Gilmartin, S.K., & Bryant, A.N. (2003)	Assessing response rates and nonresponse bias in web and paper surveys.	741	37,1
7	Dabbagh, N., & Kitsantas, A. (2012)	Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning.	713	64,8
8	Kuh, G.D., Cruce, T.M., Shoup, R., Kinzie, J., & Gonyea, R.M. (2008)	Unmasking the effects of student engagement on first-year college grades and persistence.	683	45,5
9	Abeysekera, L., & Dawson, P. (2015)	Motivation and cognitive load in the flipped classroom: Definition, rationale and a call for research.	673	84,1
10	Trigwell, K., Prosser, M., & Waterhouse, F. (1999)	Relations between teachers' approaches to teaching and students' approaches to learning.	673	28

TC: total number of citations, TCY: number of citations per year. Publications are ranked according to TC.

Table 4: Key publishers in higher education literature.

Rank	Publisher	NP	PRTP (%)	TC	CPP	h index	FY
1	Journal of College Student Development	3315	16.8	48532	14.6	82	1959
2	Higher Education	3175	16.1	75033	23.6	112	1972
3	Studies in Higher Education	2467	12.5	66662	27.0	109	1976
4	Journal of Higher Education	2461	12.5	46638	19.0	99	1956
5	Research in Higher Education	1567	8	43233	27.6	92	1980
6	Higher Education Research & Development	1330	6.8	21228	16.0	57	2008
7	Teaching in Higher Education	1273	6.5	20460	16.1	62	2004
8	Assessment & Evaluation in Higher Education	1166	5.9	23765	20.4	60	2008
9	Review of Higher Education	563	2.9	14728	26.2	60	1994
10	Journal of Diversity in Higher Education	522	2.7	6561	12.6	39	2008
11	Higher Education Policy	458	2.3	3806	8.3	26	2010
12	Journal of Studies in International Education	456	2.3	8859	19.4	48	2008
13	Internet and Higher Education	440	2.2	24998	56.8	79	2008
14	Journal of Computing in Higher Education	278	1.4	3995	14.4	31	2010
15	Active Learning in Higher Education	214	1.1	3964	18.5	32	2012

Note. NP: number of publications, TC: total number of citations, CPP: citations per publications, PRTP: publication rate in total publications, FY: Year of first publication on WOS. The list is ordered by NP value.

Table 5: Key authors in higher education literature.

Rank	Author	NP	TC	CPP	h
1	Pascarella ET	128	5466	42,7	39
2	Boud D	64	3207	50,1	25
3	Kuh GD	60	4615	76,9	32
4	Terenzini PT	54	3631	67,2	32
5	Mayhew MJ	50	936	18,7	19
6	Bowman NA	43	1413	32,9	21
7	Smart JC	43	1088	25,3	19
8	Sedlacek WE	42	775	18,5	17
9	Kezar A	40	1502	37,6	24
10	Nora A	36	2914	80,9	25

NP: number of publications, TC: total number of citations, CPP: citations per publications, h: *h* index. Authors are listed by NP.

Table 6: Key affiliations in higher education literature.

Rank	Affiliation	NP	PRTP %	Country
1	The University of Maryland	326	1.66	USA
2	The University of Iowa	305	1.55	USA
3	Indiana University	300	1.52	USA
4	University of Michigan	289	1.47	USA
5	Penn State University	277	1.41	USA
6	Monash University	270	1.37	Australia
7	Deakin University	267	1.36	Australia
8	University of Melbourne	242	1.23	Australia
9	University of Queensland	233	1.18	Australia
10	University of California	229	1.16	USA

Note. NP: number of publications, PRPT: publication rate in total publications. Affiliations are sorted with respect to NP.

Table 7: Key countries in higher education literature.

Rank	Country	NP	TC	CPP
1	USA	7659	166602	21,8
2	UK	2496	64561	25,9
3	Australia	2128	61311	28,8
4	China	775	14244	18,4
5	Canada	615	13303	21,6
6	South Africa	411	5605	13,6
7	Netherlands	378	9883	26,1
8	New Zealand	349	7384	21,2
9	Germany	321	5235	16,3
10	Spain	309	5837	18,9

Note. NP: number of publications, TC: total number of citations, CPP: citations per publications. Countries are sorted with respect to NP.

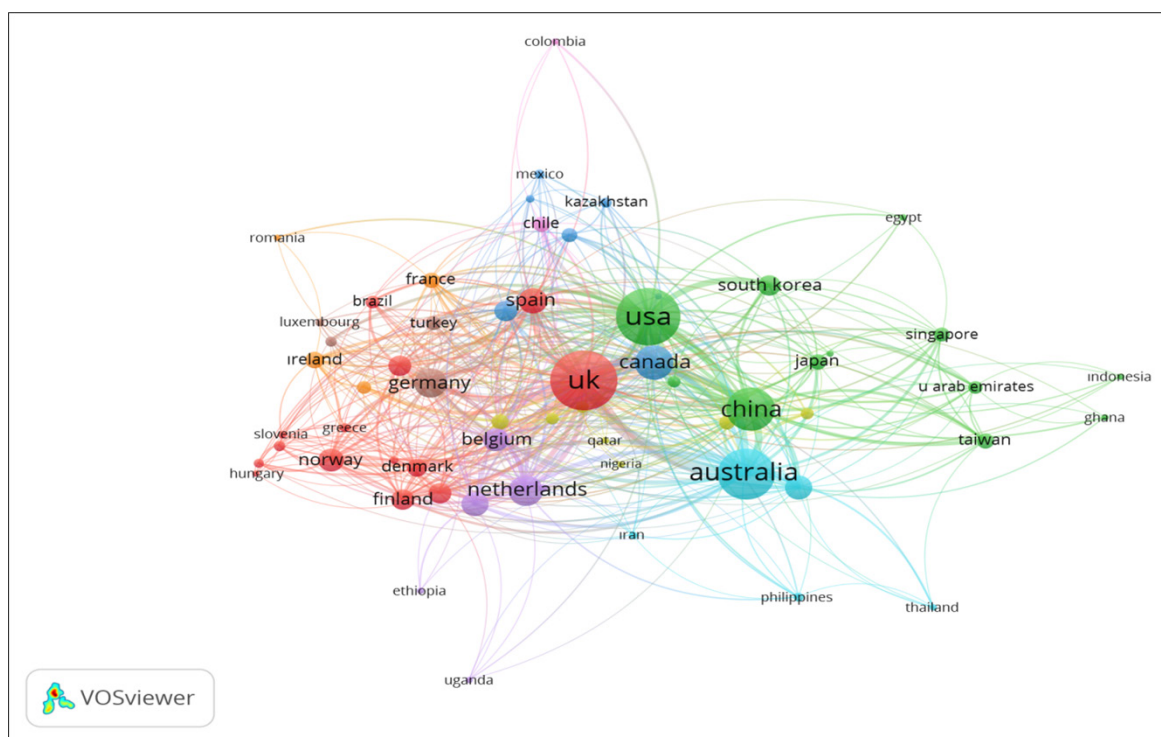


Figure 4: Country co-authorship analysis (N= 120 country, threshold minimum 10 number of publications, display 61 countries). The figure is designed according to the total link strength value.

experience”, “campus climate”, “retention”, and “race”. This cluster of higher education literature focuses on issues such as diversity in higher education, equity, access to higher education, attendance in higher education, student engagement, challenges and barriers in higher education, underrepresented individuals.

The fourth cluster is shown in green and consists of 25 concepts. The basic concept of this cluster is “university”. Other central concepts of this cluster are “doctoral education”, “teaching”, “learning”, “research”, “leadership”, “academic identity”, “professional development”, “supervision”, and “academic work”. This cluster focuses on basic subjects such as teaching, learning, research, and academic environment in higher education. This cluster is at the center of the thematic map in higher education. In other words, it is a cluster that interacts with more clusters than any other cluster. For this reason, it can be said that this cluster is the central and most basic theme of higher education literature.

The fifth cluster is shown in pink and consists of 8 concepts. The basic concepts of this cluster are “pedagogy”, “academic writing” and “curriculum”. This theme addresses the issues of assessment, teaching, learning, education, student participation, and internationalisation in higher education from a pedagogical perspective. Academic writing is one of the concepts included in this theme. It covers research on the academic writings of undergraduate, graduate, and doctoral students and academics working in higher education. In particular, the writing processes of graduate students such as thesis and scientific research are examined. Measurement of plagiarism, perceptions of students

and academicians towards plagiarism, causes, and solutions of plagiarism, cheating behavior, academic cheating, and academic honesty are the subjects examined under this theme. Another concept in this theme is the curriculum. Curriculum internationalisation, intercultural curriculum development, curriculum design, and evaluation, incorporating feedback into the curriculum, and reviewing the curriculum in the context of graduate characteristics are among the other areas of study in the theme.

Social Interaction Between Countries

The third question of the research aims to reveal the social interaction between countries contributing to the higher education literature. For this purpose, country co-authorship analysis was done. Analysis results are shown in Figure 4. Among the countries contributing to the higher education literature, United Kingdom (UK) has the highest level of collaboration. UK has co-authored with 57 countries in collaboration. After the UK, the USA, Australia, China, Canada, and the Netherlands cooperated the most. The USA has co-authored with 51 countries, Australia has co-authored with 46 countries, China has co-authored with 42 countries, Canada has co-authored with 34 countries and the Netherlands has co-authored with 33 countries.

DISCUSSION

In this research, it is aimed to deal with higher education research from a holistic perspective, to examine the contributions to the field from various dimensions, to reveal the intellectual and

social structure of the field, and to discover the patterns in the literature. For this purpose, 19685 publications of top 15 journals on higher education covering the years 1956-2022 were analyzed by bibliometric analysis.

The findings of the study revealed that higher education research has started to grow since 2004 and this growth has increased continuously until 2022. This period of nearly twenty years constituted 63% of the higher education literature. One possible reason for this is that only nine of the 15 reviewed journals were indexed in the WOS after 2004. The second reason can be cited as the rapid increase in the demand for higher education all over the world, the advancement of technology and scientific knowledge, the increase in globalization and the emergence of new research fronts on higher education, with higher education becoming interdisciplinary. This finding in this study supports the results of previous studies.^[36,37]

One of the important findings revealed in this research is the determination of the country-based contributions to the field. When the higher education research is examined both on the basis of institutions and countries, it is concluded that the USA has an important dominance. After the USA, the largest contribution was made by UK and Australia. In addition, in this study, it was determined that these three countries were the countries that cooperated the most. When the two results are evaluated together, it is seen that the cooperating countries are more productive. Previous research confirms this relationship between productivity and collaboration revealed in this research.^[62-65] It is known that highly cited publications are the result of the work of researchers from different countries.^[62,66] In addition, while author collaboration provides more citations, this situation is also related to the type of collaboration.^[67] With the increase in the number of local authors, there is a decrease in the effect of publication.^[63] The high influence of Scotland, Australia and the Netherlands can be explained by this situation. The analysis of the country cooperation network shows that UK and the USA are in the bridge position in the center of the two blocks consisting of eastern and western countries. This indicates the central role of these two countries in the advancement of higher education research.

Another important finding of this research is that higher education research is divided into five main themes. These themes are (1) assessment, (2) internationalisation, (3) equity and social justice, (4) university, (5) pedagogy/academic writing and curriculum in higher education. It shows that universities are at the center of the big picture of higher education research, and that basic concepts such as teaching, learning and students are conceptually at the center. Four clusters surrounding these core concepts highlight different aspects of higher education. Although the first cluster focused on assessment in higher education, it was seen that this cluster was closely related to learning, student participation and motivation. This cluster emphasizes the developing different

dimensions of the concept of learning, which is one of the main functions of higher education. However, the close relationship between assessment and learning in higher education and the fact that it is an interdisciplinary research topic stand out here.

With the increase of globalization, as a result of the effects of this situation on universities, one of the main research topics of higher education has been internationalization. Student and academic mobility, learning of international students, employment and policies in this direction have formed one of the basic parts of higher education. Increasing internationalization all over the world is an indication that this subject will be a critical research area of higher education in the future.

Another important subject of higher education research is social justice and equality in higher education. Research topics such as access to higher education, gender, equality, student participation, campus climate, race emphasize the sociological and psychological dimensions of higher education research. It can be said that the structure of universities has become much more complex, multicultural and global than in the past, creating research patterns for the sociology and psychology of universities.

Another core cluster of higher education research is on academic writing, pedagogy, and curriculum. As in the past, the role of universities in scientific knowledge production is important today, and the role of universities in knowledge production is increasing day by day. Academic writing plays an important role in this advancement of scientific knowledge. Issues such as academic integrity, plagiarism, academic literacy are the main subject of higher education research as a whole, but form a necessary part of scientific progress.

These themes revealed by this research represent stereotyped subject areas of higher education research. However, since the analyzes are based on certain threshold values, there is a limitation in revealing current research patterns on higher education. However, the fact that higher education research in the last 20 years constitutes an important part of the literature shows that the research patterns presented are partially up-to-date.

The findings of this study reveal some important implications for higher education research that may affect the trajectory of the field. Firstly, the rapid and continuous growth of higher education literature since 2004 demonstrates the importance of adapting to evolving research directions. This emphasises the need for researchers, policy makers and practitioners to actively follow emerging trends and developments in higher education research. By adapting to the trends in the field, the higher education agenda can be deepened and transformed according to changing conditions. A dynamic and evolving agenda emphasises the idea of being sensitive to the latest developments in higher education and seeking lasting solutions to existing problems. Recognising the dominance of the USA in higher education research shows that it is necessary to promote global cooperation

for productivity. Higher education institutions and researchers should seek cross-border partnerships to facilitate the exchange of knowledge, promote the dissemination of knowledge, and generate high-impact knowledge that will enable the development of underdeveloped and developing countries.

With globalisation increasing day by day, internationalisation is emerging as a key research area. Its implications for higher education and individuals and its social and economic impact should not be ignored. Governments and higher education institutions should prioritise policies that shape international education and their impacts. Similarly, the trend towards social justice and equality in higher education research is an encouraging field of study for practical initiatives such as inclusion in higher education, access to higher education in disadvantaged regions and countries. Equality and social justice, especially in access to higher education, are not the same for the whole world. It is important to address these problems based on international collaboration.

The first limitation of this research is due to the fact that the review of the higher education literature was conducted out of the top 15 journals according to JCR. Although the aim of this research is the bibliometric review of the higher education literature based on these top 15 journals, the higher education literature can be examined in a more comprehensive way. However, the reason that directs the researcher to the best journals is the assumption that these journals will best reflect the field of higher education. The second limitation is that the language of the included publications is English. The inclusion of studies in other languages in future research will expand the scope. The third limitation concerns the database used. In this study, only the WOS database was used. This situation excluded publications available in other databases. The use of other databases that provide bibliometric data in future research will contribute to a more comprehensive approach to the higher education literature.

CONCLUSION

This study analyses the field of higher education with a comprehensive dataset and methodology, using data from the top 15 higher education journals between 1956 and 2022. Although previous studies have examined higher education research from various perspectives, these studies have focused on a specific geographical region, a specific journal, narrow bibliometric analyses, a limited number of publications and a more limited time period. This study provides a comprehensive and holistic approach to higher education research and reveals the structure of the field. This study has revealed the accelerated growth trajectory of higher education literature over the last two decades. This growth in the field can be attributed to various factors such as the increasing demand for higher education worldwide, new developments and advances in scientific knowledge, and the interdisciplinary nature of higher education. This growth in

higher education research is expected to continue in the coming years. 120 countries have contributed to the literature on higher education, with the USA, the UK and Australia being the largest contributors. However, the field is largely dominated by the USA, which has the highest publication productivity. Also confirming previous research, collaboration between countries was found to be an important determinant of research productivity. In particular, the central role of the USA and the UK in bridging the gap between Western and Eastern countries in the co-authorship network highlights their high productivity and underlines their importance in promoting higher education research at a global level. This study has shown that higher education research is mainly characterised by five main themes. These themes are (1) assessment, (2) internationalisation, (3) equity and social justice, (4) the university, and (5) pedagogy/academic writing/curriculum. These themes highlight the multidimensional nature of higher education. The emphasis on internationalisation highlights the increasing importance of internationalisation in the higher education literature due to the impact of increasing globalisation. The findings have implications for the future direction of higher education research. The continued growth of the literature highlights the importance of adapting to emerging research directions. There is a need to increase the productivity of higher education research, to respond to changing global, economic and social situations, and to promote knowledge exchange between countries. In conclusion, this study has provided valuable insights into the structure and patterns of higher education research. In addition to highlighting the contributions to the field, this study has also shed light on the main issues in the field. By revealing the current structure of the field, it has provided researchers with a perspective for future research.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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