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Exploring the Impact of Research Conducted by Turkish Researchers on Open and Distance Learning

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Scientific productivity performance and scientific field mapping reveal the current status and trends of the relevant science field by examining the relationships between many components such as publication, source and author. The aim of this research is to examine the scientific productivity performance and scientific field map of international distance education research produced in Turkey. The bibliometric analysis method was used in this research. The search query for "distance education" was made in the Web of Science (WoS) database in April 2023, with no year limitation, and with only the fields of education. The analysis of the 12491249 data was made in the Biblioshiny application using the Bibliometrix package developed in the open-source R language. Main information results showed that 1249 studies in the dataset were published from 236 sources between 1994-2023. The most publications on distance education were produced in 2022. The most average citation per year on distance education was cited in 2002. The most relevant source was the "Turkish Online Journal of Distance Education". The most cited source was the "Computer Education" journal. The most relevant institution was Anadolu University. It was found that research has been directed to the theme of COVID-19 in recent years. In addition, it was found that the motor themes were interactive learning environments, computer-mediated communication, cooperative learning, content analysis, educational technology, and massive online open course themes. In conclusion, this research showed the scientific productivity performance, conceptual structure, intellectual structure, and social structure of the publications produced in Turkey related to distance education. It is thought that the results will shed light on researchers in the field of distance education.

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Introduction

Open and distance learning (ODL) is a field of study that focuses on offering flexible learning opportunities to all who wish to learn. According to Aydın (2024), there are three major ODL, or technology-based learning modalities. These are blended learning, distance education and open education. Blended learning is the first modality that brings in-person and distance learning activities together for ensuring the quality of learning. In this modality, the majority of learning activities are carried out remotely, with students and instructors meeting in-person only when necessary, often at the beginning and end of the course and somewhere in the middle. Those who cannot attend in-person sessions can also access the activities remotely. In other words, in-person sessions can also take place as a hybrid classroom. The second modality is distance education in which all the learning activities are offered remotely. This modality has two different implementation types: (1) traditional distance education and (2) online distance education. Traditional distance education refers to education programs that include the open university school such as Anadolu University, the use of traditional learning environments such as television, printed materials, radio, and exam-oriented assessment activities carried out at certain times and places. In Türkiye, the practices expressed with the concept of “Open Education” are actually examples of traditional distance education. Main differences of this type lie in the number enrollment allowed (larger than other types) and the use of revolving funds rather than regular institutional budget for fees and expenses, which gives a bit more flexibility. Online distance education, on the other hand, refers to those formal distance education courses offered via computer-mediated communication technologies. This type is entitled as “distance education” in Türkiye and main differences between the traditional distance education are that fewer students can be admitted, and also the revenues and expenditures are managed through the institution’s budget, not revolving funds. The third modality is open education, which refers to flexible learning opportunities either formal or informal, and offered either remotely via online or traditional media or in-person. In other words, although a big majority of the open education is technology-based, there are some open education initiatives that are offered in-person, such as open schooling. Massive Open Online Courses (MOOCs), Open Education Resources (OERs) or Practices (OEPs), or open pedagogy are all considered under this modality.

Although ODL and its modalities have been in use for over a century, they have attracted more attention and have been the subject of more scientific studies since the COVID-19 Pandemic. The recent research in open and distance learning has concentrated on leveraging technological advancements such as learner analytics (Palanci et al, 2024); understanding learner psychology such as distance learners’ self-efficacy, or students’ belief in their ability to succeed in specific tasks (Otto et al., 2024); adapting to unprecedented challenges like COVID19 and earthquakes to enhance educational delivery and outcomes (e.g., Namkung et al., 2022); adopting alternative assessment strategies such as collaborative assessment (Mphahlele, 2024); and causes and solutions for high drop-out (Appavoo et al., 2023). These studies contribute to a deeper understanding of the complexities of ODL and inform the development of more effective, inclusive, and resilient educational practices.

Bibliometric analyses have also been conducted to explore the research trends in ODL. For instance, as one of the early studies, Zawacki-Richter et al. (2009) used the bibliometric analysis to uncover these trends, including predominant focus on instructional design, learner characteristics, and interaction in learning communities, shortage of studies on globalization, cultural aspects. A later version of the study, Zawacki-Richter and Bozkurt (2023) found out overrepresentation of studies on individual teaching and learning processes and a lack of comprehensive understanding of broader systemic and organizational issues within ODL.



They also found out that the COVID19 Pandemic has accelerated the adoption of ODL and highlighted the need for effective online teaching and learning strategies. Meanwhile several bibliometric studies were also published aiming at revealing the trends in ODL research in Türkiye. For instance, Horzum et al. (2013) examined 35 Turkish distance education articles published between 2005-2011 and revealed that there is a limited number of distance education studies in Turkish and mostly focused on satisfaction, achievement and attitude. Hebebcı (2021) later examined 1032 studies on distance education published between 2000 and 2019 and revealed a predominant focus on higher education contexts and a preference for quantitative research methods within the field. Similarly, Kabakuş and Ayaz (2022) conducted a bibliometric analysis of the research in the field of distance education and revealed that studies on distance education increased over time and showed a significant rise, especially during the COVID19 Pandemic.

Although these studies have provided a clear insight about the trends in research studies conducted in Türkiye on ODL, it is important to conduct these studies in a regular base due to the fact that it enables researchers and policymakers to monitor shifts in focus, the emergence of new trends, and the sustained relevance of established areas of inquiry. Regular updates ensure that the impact of recent advancements, technologies, or global events—such as a pandemic—on research priorities is accurately captured. Moreover, repetitive analyses provide a longitudinal perspective, allowing for the assessment of progress, gaps, and the effectiveness of previous research investments. This iterative approach supports strategic planning, ensuring that academic and practical efforts remain adaptive to the changing needs of the field and society (Bornmann & Mutz, 2015). However, the lack of studies examining the global impact of ODL research in Türkiye constitutes a blind spot in the literature. Without such analyses, it is difficult to determine how Türkiye's contributions align with global trends, influence international narratives, or address common challenges such as digital equity, student engagement, and sustainability of ODL systems. The current study fills this gap, both increasing the visibility of research in Türkiye and situating it in the context of global ODL developments. Furthermore, as Wanger et al. (2017) indicated that, examining the impact of publications on a global scale is vital for understanding how research contributes to and influences knowledge creation, innovation, and societal advancement across diverse regions. It highlights the dissemination and adoption of ideas, allowing for the identification of influential studies, researchers, and institutions that shape global discourses. This analysis fosters international collaboration by uncovering connections between countries and regions, facilitating the exchange of knowledge and best practices. Ultimately, it provides a comprehensive view of the interconnected nature of scientific advancement and its role in solving worldwide problems. On the other hand, the lack or shortage of research on the global impact of publications by researchers in one country can lead to negative ideas on the country's scientific reputation and the global visibility of its research (Smith et al., 2014) and to hinder the spread of scientific innovation around the world and the utilization of the contributions of different cultures (Toney & Flagg, 2021), and more. Therefore, regular examination of the global impact of a country's research publications is a critical requirement for an accurate assessment of scientific progress and international impact.

Although previous studies have provided valuable information about the trends and characteristics of ODL research in Turkey, in this research, identifying the global impact dimension was seen as an important need. In an era where education is becoming increasingly borderless, understanding and improving the global impact of national research is not only an academic endeavour but a necessity to foster innovation, collaboration and inclusiveness in ODL.

Since there is no specific study focusing on examining the impact of published studies conducted by the Turkish researchers, one can easily claim that the field of ODL in Türkiye needed a study to be able to reveal the global impact of the Turkish researchers and publications. In conclusion, this research aims to bridge the gap between local and global perspectives by ensuring that Türkiye's contributions to ODL are both recognised and used for the benefit of the global education community.

Purpose and Research Questions

The main purpose of this study is to examine the global impact of publications in the field of open and distance learning by Turkish researchers. More specifically, the answers to the following questions were sought during this study:

- (1) What is the scientific impact of the research publications in the field of ODL produced in Türkiye?
- (2) What are the conceptual, social and intellectual characteristics of these publications?

Method

A bibliometric analysis was employed in this study to be able to explore the impact of the Türkiye oriented publications on ODL. Bibliometric analysis is defined as a quantitative method for evaluating scholarly literature, offering valuable insights into the development and influence of research within a specific field. According to Ellegaard (2018), bibliometric studies help identify emerging trends, key contributors, and the dissemination of knowledge by systematically analyzing publication patterns, citation frequencies, and authorship networks. This approach aids researchers and institutions in making informed decisions regarding research directions and resource allocation. For instance, bibliometric methods have been applied to assess research performance in various disciplines, providing a comprehensive understanding of scientific activities and their societal impact. Over the last decade, a great number of articles covering bibliometric analyses have been published almost in every field, including open and distance learning. A bibliometric analysis requires a clear data set to be able to answer the research questions (Gutiérrez-Salcedo et al., 2018).

The following procedure offered by Öztürk (2022) was followed to explore the impact of the Türkiye oriented publications on ODL:

- (1) Selecting the databases
- (2) Initial search - identification of the terms, concepts, phrases
- (3) Filtering - applying inclusion and exclusion criteria
- (4) Downloading the data set
- (5) Conducting the analysis

The Scopus and Web of Science databases were identified as the major ones based-on their potential to provide enough and appropriate data for answering the research questions. However, since Scopus does not have a standardized citation format (Aria & Cuccurullo, 2017), the Web of Science database alone was preferred for this study. The Web of Science (WoS), formerly Web of Knowledge, with 22k+ peer-reviewed journals indexed cover-to-cover, 2.3b+ cited references connecting research from around the world, 95m+ records for journal, conference, and book content and 254 subject areas spanning the sciences, social sciences, arts and humanities is trusted content from the world's leading sources (Clarivate, 2025). Originally created by the Institute for Scientific Information (ISI), WoS is now serving



as a part of the Clarivate Analytics Company. It includes Science Citation Index Expanded (SCIE), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (AHCI), Conference Proceedings Citation Index - Science (CPCI-S), Conference Proceedings Citation Index - Social Science & Humanities (CPCI-SSH), Book Citation Index - Science (BCI-S), Book Citation Index - Social Science & Humanities (BCI-SSH), Emerging Sources Citation Index (ESCI). Under these indexes, there are document types such as full-text publications, review publications, editorials, biographies, chronologies, abstracts, proceedings, book chapters. WoS is a database that allows users to filter all these document types by categories such as year of publication, discipline, type of publication, institution, country, journal, language and author.

During the initial search, several alternative phrases were used to identify the ones that provide more comprehensive and precise results. “Open and distance learning”, “open and distance education”, “open education”, “open learning”, “distance education”, “distance learning”, “online education”, “online learning”, “remote teaching” were the phrases used in initial search. Based-on the initial search the phrase “distance education” was identified as the major phrase to be used in the actual research for the data set.

During the actual search the following structure was employed to be able to include publications only including distance education phrase, produced in Türkiye, and in the field of education:

(ALL=(distance education)) AND (CU=(“TURKEY”) AND WC=(“EDUCATION EDUCATIONAL RESEARCH”))

A total of 1249 publications were reached. This data set was downloaded (exported) in plain text format in three parts, reassembled and transferred to the Biblioshiny application for analysis. The data were analyzed using the Bibliometrix package developed in the R language (Aria & Cuccurullo, 2017). There are softwares such as VOSviewer, CiteSpace, BibExcel, HistCite, Gephi for bibliometric analyses. One of the main reasons for choosing the Bibliometrix package in this research is the familiarity of the authors with the programme and the flexibility it provides in line with the methodology and needs of the research. It is open-source, offers flexible analysis thanks to its integration with the R programming language, supports various bibliometric methods such as network analysis, co-authorship analysis, word match analysis, easily visualises data and generates detailed reports. The package allows researchers to access the Biblioshiny application, which can analyze data from Web of Science (WoS), Scopus, Dimensions, Lens.org, PubMed and Cochrane Library databases. In the study, 1249 documents belonging to 236 sources indexed in the WoS database between 1994 and 2023 were analyzed. The general information of the documents is in the table below (Table 1).

Table 1. Descriptive information about the data set

	Results		Results
<u>Main Information</u>		<u>Publication Type</u>	
Time interval	1994:2023	Full Article	853
Publication type (journal, book, etc.)	236	Book chapter	22
Publications	1.249	Early view	34
Annual growth percentage	8,95	Proceeding	4
Average age of the document	7,73	Book review	85
Average citations per document	5,69	Editorial	31
References	35.132	Editorial book chapter	2
<u>Content of the publication</u>		Proceedings	189
Indirect keywords (Keywords plus)	788	Full Review (Opinion Paper)	23
Author keywords	2.592	Review; book chapter	2
<u>Author Collaboration</u>		Review; early view	4
Single author publications	459	<u>Author Info</u>	
Number of co-authors per publication	2,19	Authors	1.767
Percentage of international co-authorship	9,45	Single author	330

The suitability of the data for analysis was examined in the table of completeness of bibliographic metadata (Table 2). According to the table, the DOI number and indirect keywords are critical. Therefore, these data were not used in the analysis.

Table 2. Table of completeness of bibliographic metadata (Missing data table)

Metadata	Description	Missing Data	Percent of missing data	
AU	Author	0	0	Perfect
DT	Publication type	0	0	Perfect
SO	Journal	0	0	Perfect
LA	Language	0	0	Perfect
NR	Number of references cited	0	0	Perfect
WC	Field	0	0	Perfect
TI	Title	0	0	Perfect
TC	Total citations	0	0	Perfect
C1	Institution	1	0,8	Good
PY	Publication year	38	3,04	Good
CR	Cited references	41	3,28	Good
RP	Contact author	76	6,08	Good
AB	Summary	107	8,57	Good
DE	Keywords	167	13,37	Acceptable
DI	DOI	654	52,36	At-risk
ID	Indirect Keywords	675	54,04	At-risk

The keywords in the data set were analysed by word cloud in terms of frequency of use. Word cloud analysis is an analysis that counts the words in the data according to the frequency of use, determines the size of the words according to the frequency of use and visualises them as a word cloud consisting of different colours (Filatova, 2016).

The publication productivity of the authors as well as whether the field has reached saturation were analyzed with Lotka's Law (Lotka, 1926). Lotka's Law is a formulation that helps to determine the number of publications of researchers who contribute to a particular field by producing publications in a particular literature (Lotka, 1926). The keywords in the data set were analyzed by a word cloud in terms of frequency of use. The thematic map of keywords



was used for the conceptual structure of Türkiye-based publications; the co-citation network of publications was used for the intellectual structure; and the author collaboration network analysis was used for the social structure. In these analyses, Walktrap clustering algorithm was used by choosing 250 words for keywords and 50 nodes for publications and authors. The betweenness measure was used to analyze the co-citation network of publications and the collaboration network of authors. Betweenness is a measure of centrality that shows the degree to which a node is located among other nodes in the network (Gürsakal, 2009).

Results

In this section, the findings of the data analysed within the context of the research questions are presented.

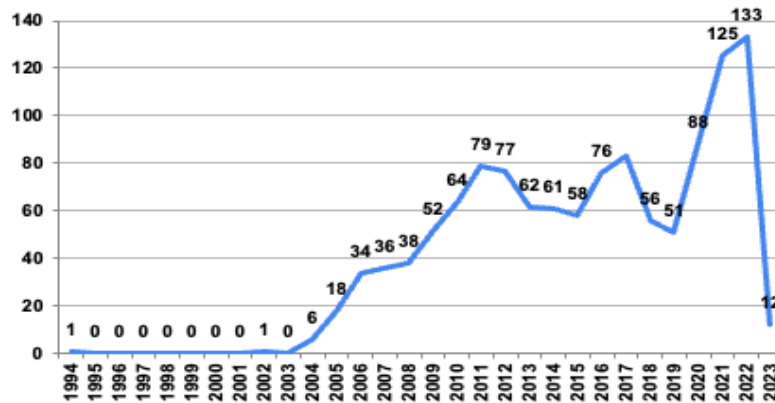


Figure 1. Number of publications by year

As can be seen in Figure 1, the first publication on distance education in Türkiye was in 1994, and no publication was indexed in the WoS database until 2002. Since 2004, the number of publications has been increasing continuously until 2011. The most publications were produced in 2022 (f=133).

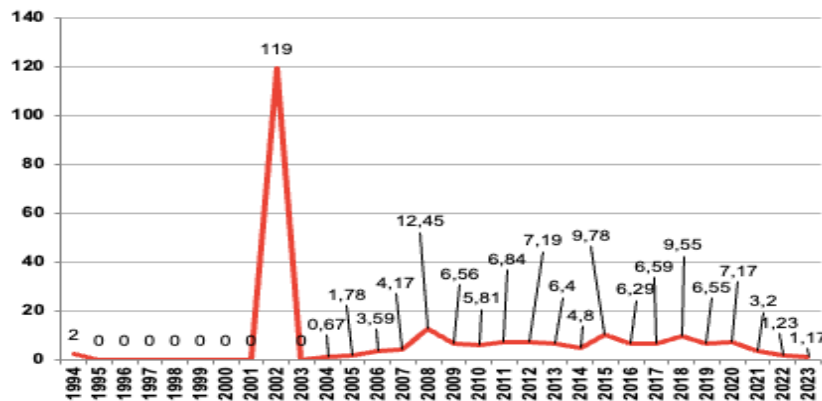


Figure 2. Average number of citations by year

Figure 2 shows that international distance education publications produced in Turkey received their first citation in 1994 and were not cited again until 2002. From 2004 to 2023, the number of citations is constantly changing. WoS publications produced in Turkey that include the concept of “distance education” received the highest number of citations (CitationOrt=119) in 2002.

Table 3. Top ten journals and their impact on the dataset

Sources	n	H index	G index	M index	Cites	Year of Start of Publication
1 Turkish Online Journal of Distance Education	495	15	22	0,789	1527	2005
2 Education and Information Technologies	41	9	15		282	
3 International Review of Research in Open and Distributed Learning	31	10	22	0,909	527	2013
4 Journal of Higher Education	23	5	10	0,385	105	2011
5 Turkish Online Journal of Educational Technology	22	7	11	0,438	145	2008
6 Hacettepe University Journal of Education Faculty	21	2	4	0,143	21	2010
7 Open Praxis	19	5	11	0,625	129	2016
8 Interactive Learning Environments	17	6	11		129	
9 Computers & Education	14	14	14	1	813	2010
10 Education and Science	14	3	5	0,231	28	2011

Table 3 shows the top ten journals published on distance education and their impact on the data set. According to the table, the journal with the highest number of publications is “Turkish Online Journal of Distance Education” (f=495). The analysis also showed that most of the publications in the dataset cited articles in the Computer & Education.

Table 4. Top ten authors and their impact on the dataset

	Authors	n	H-index within the data set
1	Bozkurt, A	30	13
2	Firat, M	28	8
3	Demiray, U	23	3
4	Aydın, CH	16	5
5	Altınpulluk, H	14	5
6	Karal, H	14	6
7	Kılınç, H	13	5
8	Cebi, A	12	4
9	Yüzer, TV	12	4
10	Kokoç, M	11	7

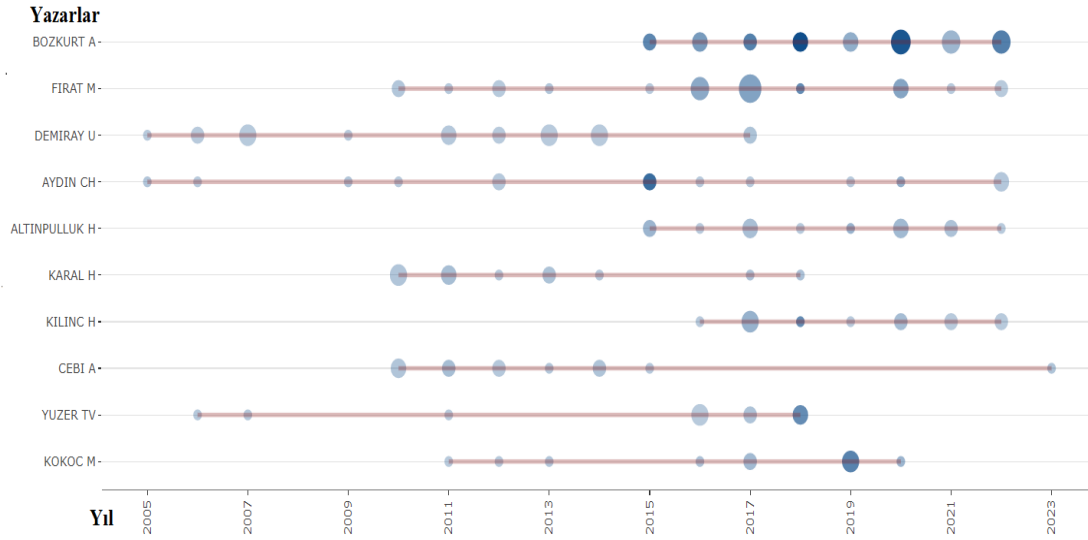


Figure 3. Productivity change of researchers over the years

Table 4 and Figure 3 shows the top ten Turkish researchers published in the field of ODL and the H indices calculated using only this data set. As can be observed in the table, the researchers in the top 5 among this list are from Anadolu University. In fact, Anadolu University has been the most productive institution in Türkiye (Table 5).

Table 5. Top ten universities producing the most research in Türkiye

Institutions	n
1 Anadolu University	406
2 Karadeniz Techinal University	67
3 Hacettepe University	56
4 Gazi University	55
5 Ankara University	51
6 Sakarya University	45
7 Akdeniz University	36
8 Atatürk University	35
9 Middle East Techinal University	35
10 Eskişehir Osmangazi University	31

Table 5 shows the top 10 institutions that have produced the most international distance education research in Turkey. According to the table, the institution that produces the highest number of international distance education research in Turkey is Anadolu University. According to Lotka's Law, 76.6% of the authors produced at least one publication; the ratio of authors producing two publications to authors producing 1 publication was 13 percent, while the ratio of authors producing 3 publications to authors producing 1 publication was 4.8 percent.

Table 6. Top ten cited references within the data set

	Publications	Year	n
1	Bozkurt, A, et al., 2015, Int Rev Res Open Dıs	2015	18
2	Karadağ, E, 2020, Yuksekogretim Derg	2020	17
3	İlgaz, H, 2015, Int Rev Res Open Dıs	2015	14
4	Şahin, I, 2008, Educ Technol Soc	2008	13
5	Erkut, E, 2020, Yuksekogretim Derg	2020	11
6	Yükseltürk, E, 2008, Educ Technol Soc	2008	8
7	Demir Kaymak, Z, 2013, Kuram Uygul Eğit Bıl	2013	8
8	Yılmaz, R, 2015, Hacet Üniv Eğit Fak	2015	8
9	Yılmaz, R, 2017, J Educ Comput Res	2017	8
10	Bozkurt, A, 2017, Int Rev Res Open Dıs	2017	8

According to the analysis, the most cited reference were two books titled Qualitative Data Analysis (f=59) by Michael Huberman published in 1994 and the Distance Education System (2011) by Michael G. Moore. Moore’s article was also cited among top three references. On the other hand, within these publications in the data set, the one by Bozkurt et al. in 2015 was the most cited reference (Table 6).

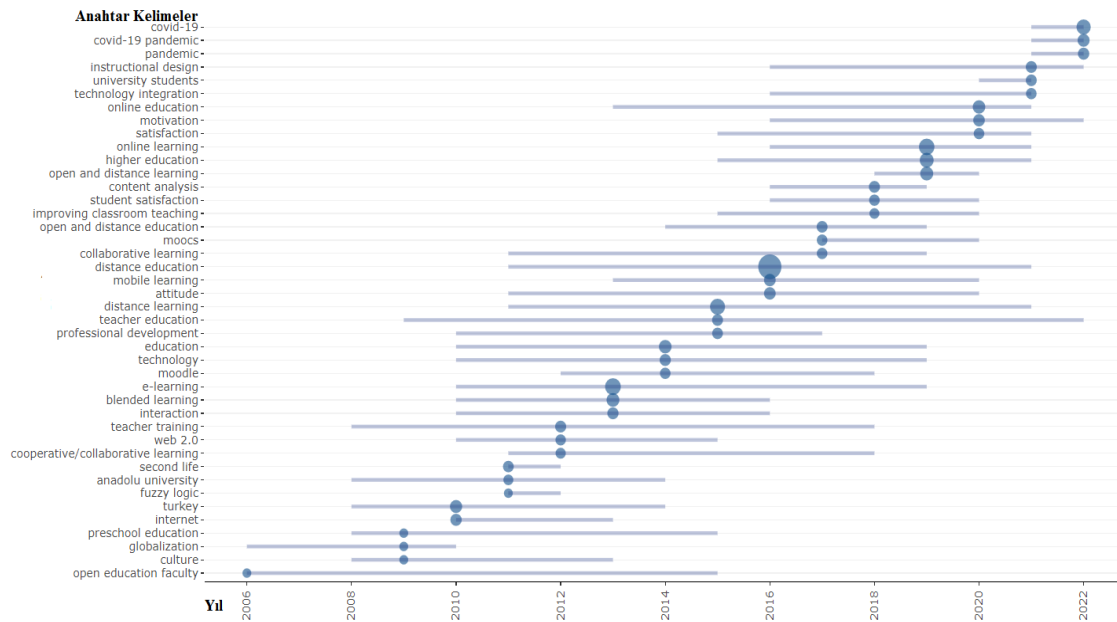


Figure 4. The most studies concepts

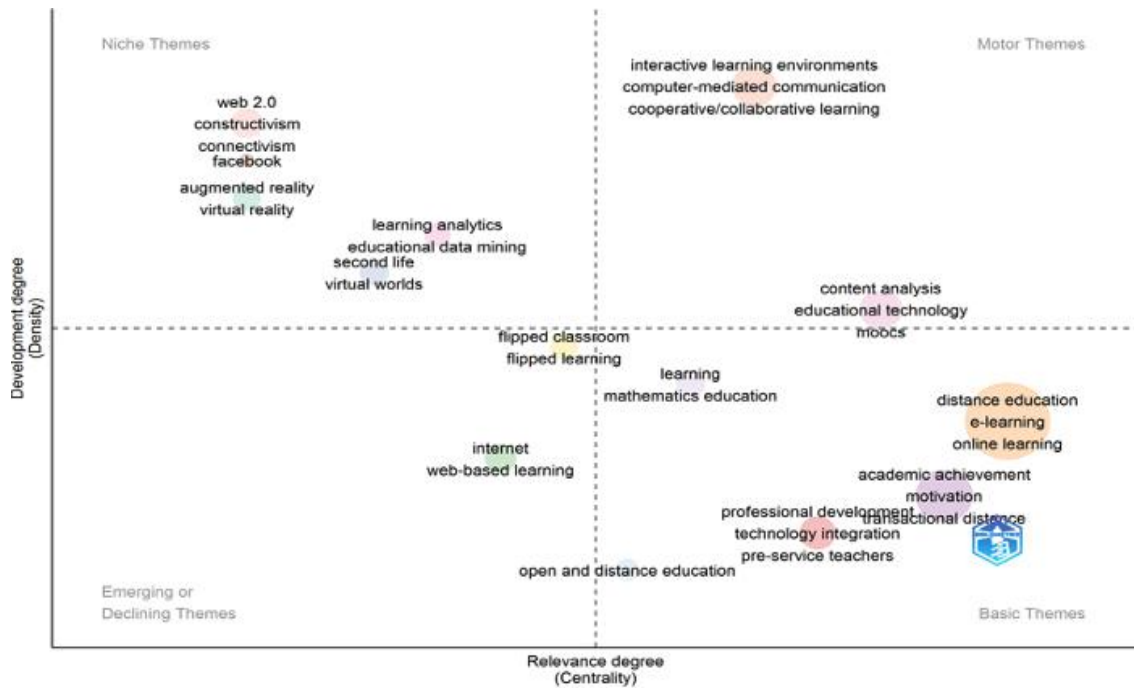


Figure 5. Thematic map of keywords

While Figure 4 shows the top ten topics studied by the researchers in the data set, Figure 5 reveals the thematic map of the keywords in this data set according to the Walktrap clustering algorithm. Themes included interactive learning environments, computer-mediated communication, collaborative learning, content analysis, educational technology and massive open online courses. Core themes covered distance education, e-learning, online learning, academic attainment, motivation, and transactional distance. Emerging or disappearing themes consisted of flipped classrooms, flipped learning, internet, web-based learning, while niche themes included WEB 2.0, constructivism, connectionism, Facebook, augmented reality, virtual reality, learning analytics, educational data mining, second life, virtual worlds.

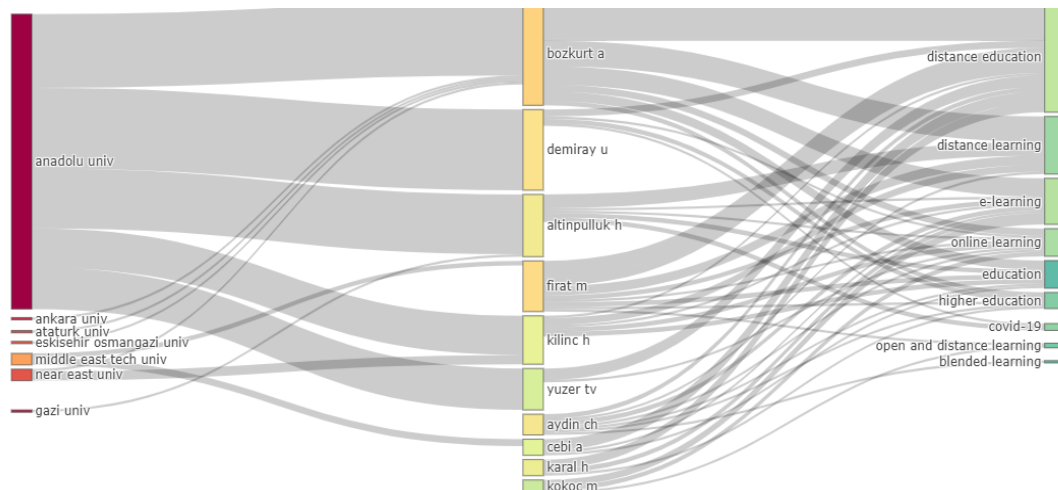


Figure 6. Institution, author, keyword network

When the institution, researcher and keyword network is examined, Figure 6 shows the 9 most relevant topics on which the 10 most relevant researchers of the most relevant

institutions in the data set work.

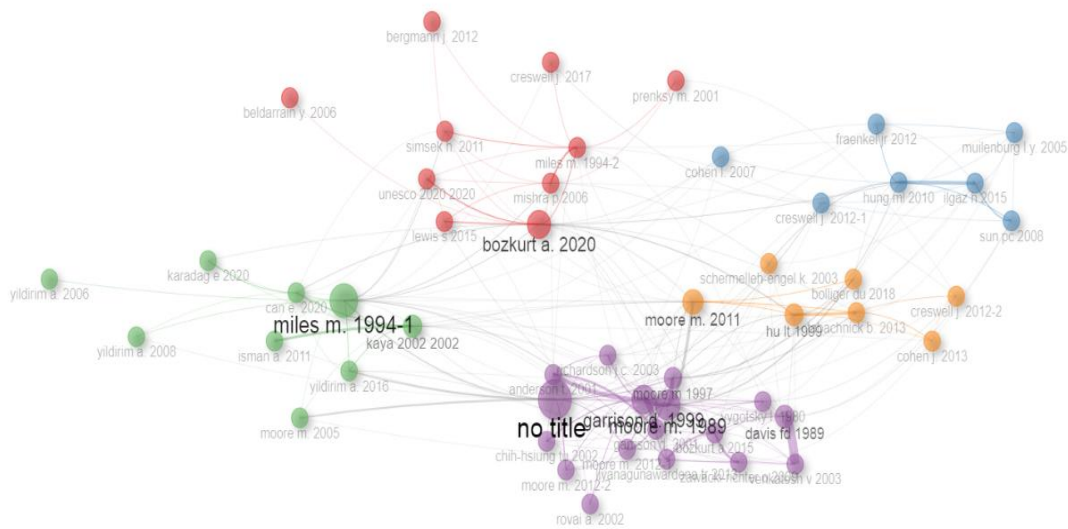


Figure 7. Co-citation network of publications

Table 7. Betweenness values of co-citation networks of publications

Seq.	Node	Cluster	Betweenness
1	Bozkurt a. 2020	1	234,652
2	no title	4	227,803
3	Miles m. 1994-1	3	208,204
4	Moore m. 2011	5	195,157
5	Hu lt 1999	5	122,598
6	Garrison d. 1999	4	122,430
7	Kaya 2002 2002	3	109,353
8	Creswell j. 2012-2	5	106,915
9	Davis fd 1989	4	90,6894
10	Moore m. 1989	4	78,534

Figure 7 shows the co-citation network of the publications in the dataset. As a result of the co-citation network, 5 publication clusters were formed. The betweenness values of the clusters that emerged in the co-citation networks of the publications in this data set are shown in Table 7. Accordingly, Bozkurt (2020) in the red cluster has the highest betweenness measure (234,652). Miles (1994) is the publication with the highest betweenness measure (208,204) in the green cluster. Moore (2011) is the publication with the highest betweenness measure (195,157) in the orange cluster.

Discussion and Conclusion

The main purpose of this study was to examine the global impact of publications in the field of open and distance learning by Turkish researchers. More specifically, this bibliometric analysis tried to reveal the scientific impact of the research publications in the field of ODL produced in Türkiye and the conceptual, social and intellectual characteristics of these publications.

Although distance education started to be discussed conceptually in the history of Turkish education with the establishment of the Turkish Republic (Aydın, 2011), the first publication



on distance education in Turkey in the Web of Science (WoS) database was published in 1994. The relevant date indicates that the first publication coincided with the end of the radio-television period between 1976 and 1995. Indeed, the first publication produced by Uluğ was titled “Distance education in the Turkish secondary education system”. Bozkurt (2017) states that the maturation of distance education accelerated in this period compared to the previous period and it became a part of the mainstream in education by being used in primary, secondary and higher education at the end of the period. In the light of this information, one can easily interpret that the first publication took its place in the WoS database as a reflection of this period. The fact that scientific publications aim to solve the problems of the day is desirable in terms of being real world research (Robson & McCartan, 2016).

After the first publication, a stagnant period occurred until 2004. From 2004 to 2011, the field of distance education achieved an increasing momentum in terms of scientific productivity and showed its peak performance in 2022 ($f=133$). Scientific productivity refers to publication performance in the field. When the data set is analyzed with the number of publications by year in terms of scientific productivity, it is seen that there is an increase in the number of publications. The publication titled “Determinants of school attainment of boys and girls in Turkey: individual, household and community factors” produced by Tansel in 2002 is the most cited (CitationOrt=119) publication on distance education in Web of Science (WoS) database. After this year, the citation average exceeded 10 (CitationOrt=12.8) only once in 2008.

While the majority of the articles in the data set was published in the “Turkish Online Journal of Distance Education” (TOJDE), the “Computer & Education” journal has been the most used source for the references in these publications. This situation was similar in another study by Sarı (2022) examining Turkey-based publications in another field. Turkey-based authors tend to choose national journals when publishing and use different international sources in their publications instead of the journals they publish in. Another prominent point in this regard is that the highly cited journal, the “Computer & Education”, has been on the top in the field of social sciences for years. This result may be interpreted as that Turkish authors based in Türkiye follow the widely accepted journal in the field in their publications. However, according to Bradford's Law, the main source used in the publications in the data set was the “Turkish Online Journal of Distance Education”. Based on this finding, it can be claimed that those researchers who would like to specialize in ODL in Türkiye should follow TOJDE.

The study showed that 76.6% of the authors in the data set produced at least one publication. According to Lotka's Law analysis, the ratio of authors who produced two publications to the ones produced 1 was 13 percent while the ones produced 3 was 4.8 percent. Lotka's Law is a formulation that helps to determine how many publications researchers who contribute to a particular field by producing publications have contributed to that field (Lotka, 1926). It also helps to identify whether the field has reached saturation or not. In order to reach this estimation with Lotka's Law, the proportions of authors with one, two and three publications in the field are used. Accordingly, if the proportion of authors producing one publication in a research field is around 60% of all authors, the proportion of authors producing two publications is around 25% of authors producing one publication, and the proportion of authors producing three publications is around 9% of authors producing one publication, there is a saturation in the relevant field. The ratios obtained in the study showed that the majority of authors who produce publications on distance education produce one publication and the field has not reached sufficient saturation for the production of two or three publications. This

result revealed that ODL is not a mature field in terms of publications in Türkiye. This may be related to the several reasons: first, a shortage of research and/or language competences of the academicians in the field could be effective on this result. Although there are impressive developments in the research competences of the academicians in Türkiye, the older generations of the academicians focusing on distance education did not have enough research skills. Another reason could be the field identity of ODL. The original expertises of researchers who published in the field are from other fields, not purely from ODL. In other words, experts from other fields often published one or two articles and went back to their original fields. This observation also supported the idea that ODL has not reached a maturation level in Türkiye.

The study has also uncovered that top researchers who published in the field of ODL were from Anadolu University. As Anadolu University is the first sustainable ODL provider in Turkey and has had an academic department offering graduate programs dedicated to ODL for over a decade, these results can be considered normal.

Furthermore, international collaboration has been identified as another aspect that needs improvement. The results presented that 1041 out of 1105 publications were done by the Turkish researchers and only 64 of them were produced in collaboration with authors in different countries. Thus the international collaboration is around 5 percent considering the internationalization goals of the Higher Education Council (YOK, 2017).

COVID19 has become one of the most frequently used key concepts in the data set, as many researchers have become acquainted with ODL, and even those who had no previous interest in ODL have started to conduct and publish ODL research during COVID19 Pandemic. The thematic map of keywords according to the Walktrap clustering algorithm also presented the conceptual structure of distance education. Motor themes included interactive learning environments, computer-mediated communication, collaborative learning, content analysis, educational technology, and massive open online courses. Core themes covered distance education, e-learning, online learning, academic attainment, motivation, and transactional distance. Emerging or disappearing themes identified as flipped classrooms, flipped learning, internet, web-based learning. And the niche themes were WEB 2.0, constructivism, connectionism, facebook, augmented reality, virtual reality, learning analytics, educational data mining, second life, virtual worlds. It was estimated that Artificial Intelligence (AI) will be the predominant keyword if this study is replicated in 2025.

In the light of these results, several recommendations have been developed that can help Turkish researchers and institutions in the field of open and distance learning to increase their productivity and impact in the field. First, the policy makers and institutions like Anadolu University should collaborate with others to develop targeted training initiatives for enhancing research and publication skills among early-career academics and practitioners in ODL; foster collaborations and mentorship programs within Turkish academic institutions to build a strong, specialized community in ODL as well as encouraging the establishment of new academic departments or centers solely dedicated to ODL to build expertise and a stronger identity within the field. Second, in order to increase the international impact, there is a need for more collaboration opportunities. Therefore, the institutions should offer grants, fellowships, or financial incentives for collaborative research between Turkish researchers and international scholars and should encourage Turkish researchers to join global initiatives and consortia in distance education and e-learning. Third, promoting collaboration across disciplines to enrich ODL research while encouraging researchers to remain actively engaged in ODL as well as directing research efforts towards emerging themes such as AI, augmented



reality, and educational data mining might also contribute to increasing the impact.

Moreover, it is important to conduct bibliometric analyses in the field of open and distance learning at regular intervals to identify Türkiye-specific research trends, gaps and priorities in the field, analyze the impact of publications and identify areas for improvement. Thus, Türkiye's recognition and leadership in the field with its research and researchers as well as its practices can be improved. It would be useful to carry out such studies in the form of systematic analysis as well as bibliometric analysis, and to include different databases such as SCOPUS and similar databases to determine the impact in a more valid and reliable way.

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