

TARİX VƏ ANTROPOLOGIYA

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GENERAL OVERVIEW OF SCIENTIFIC LANDSCAPE OF AZERBAIJAN (Comparative bibliometric analysis based on SCOPUS and Web of Science databases)

Scientific research visibility is a critical factor for the advancement of science and technology. It allows researchers to share their findings with the global community, receive feedback from peers, and collaborate on new projects. However, research visibility can vary widely depending on a number of factors, including the country of origin of the research. This article presents a comparative bibliometric analysis of scientific research landscape in Azerbaijan based on data from the SCOPUS and Web of Science databases. The study examines the following indicators: Number of publications, Number of citations, h-index, International collaboration rate.

The key finding of the study is that Azerbaijan's research visibility is higher in certain fields than others. For example, Azerbaijan's research in the fields of physics and astronomy, engineering and technology is more visible than its research in the fields of humanities and social sciences. This suggests that Azerbaijan needs to invest more in research in the humanities and social sciences. The study concludes by providing a number of recommendations for improving Azerbaijan's scientific research visibility. These recommendations include: Increasing investment in research, promoting international collaboration among researchers, focusing on research in the humanities and social sciences, developing a national research strategy. By implementing these recommendations, Azerbaijan can improve the visibility of its scientific research and contribute more to the global advancement of science and technology.

Key words: bibliometric analysis, scientific publications of Azerbaijan, SCOPUS, Web of Science, research trends

Introduction

In an increasingly interconnected global landscape, the visibility and impact of a country's scientific output play a pivotal role in assessing its contributions to the world of research and innovation. Azerbaijan, a nation with a rich history and diverse academic landscape, has been steadily making strides in the field of science and technology. To gain insights into the science visibility of Azerbaijan on the international stage, this study conducts a comparative bibliometric analysis using two renowned databases, SCOPUS and Web of Science.

In the rapidly evolving landscape of scientific research, the visibility and impact of scholarly work have become paramount. The dissemination of knowledge, the recognition of academic contributions, and the advancement of scientific disciplines all hinge on the extent to which research outputs are disseminated, cited, and integrated into the global scientific community. As scholars, institutions, and nations strive to enhance their research profiles and

global standing, understanding the dynamics of research visibility has emerged as a critical pursuit.

This study embarks on an exploration into the realm of scientific research visibility, with a specific focus on the Republic of Azerbaijan. The importance of this endeavor lies not only in the intrinsic value of assessing the country's scientific output but also in its potential implications for policy, academia, and international collaboration. Azerbaijan, nestled at the crossroads of Eastern Europe and Western Asia, has demonstrated a keen interest in nurturing its research landscape, fostering innovation, and contributing to global scientific dialogues. To gauge the impact of these efforts, a robust comparative bibliometric analysis is indispensable.

Bibliometric analysis, a quantitative approach to evaluating scientific literature, has gained prominence as a means to assess research productivity, impact, and trends. Two prominent bibliographic databases, SCOPUS and Web of Science, stand at the forefront of this analytical landscape, offering comprehensive coverage of scholarly outputs across various disciplines. By delving into these repositories, this study seeks to shed light on the visibility of Azerbaijani scientific research on both platforms, uncovering trends, patterns, and disparities that can inform strategic decisions at the national and institutional levels.

The rationale behind employing a comparative approach, examining the same dataset in two distinct databases, lies in the recognition of the nuances and variations that exist in bibliometric indicators and coverage. SCOPUS and Web of Science, while overlapping significantly, each have their unique strengths and limitations. By juxtaposing these databases, this study aims to provide a comprehensive view of the visibility of Azerbaijani research, allowing for a more nuanced understanding of the nation's scholarly impact on the global stage.

Through this comparative analysis, we aspire to address a series of critical questions. What is the extent of Azerbaijan's presence in the global scientific community, as reflected in SCOPUS and Web of Science? How do the two databases diverge in terms of coverage and citation metrics for Azerbaijani research? What are the thematic and disciplinary trends within Azerbaijani scholarly output? And, most importantly, how can the findings of this study inform strategies to enhance research visibility, collaboration, and impact in Azerbaijan's scientific landscape?

This article presents the methodology, findings, and implications of our comparative bibliometric analysis, offering valuable insights into the visibility of Azerbaijani scientific research and, by extension, contributing to the broader discourse on research assessment and strategic planning in the context of a rapidly evolving global research ecosystem. In doing so, we hope to provide a roadmap for policymakers, institutions, and researchers alike, guiding their efforts to position Azerbaijan as a vibrant and impactful contributor to the global scientific community.

Methodology

SCOPUS and Web of Science are comprehensive bibliographic databases widely used for tracking and analyzing scientific publications. They encompass a vast array of scholarly journals, conference proceedings, and research articles across various disciplines. The comparative bibliometric analysis of Azerbaijan's science landscape based on SCOPUS and Web of Science databases can provide valuable insights into the research output and impact of the country. Several studies have compared the coverage and citation counting of SCOPUS and Web of Science, which can be relevant for this analysis. This study employs a comparative bibliometric analysis to assess scientific research visibility in Azerbaijan based on SCOPUS and Web of Science (WoS) databases. The following steps were undertaken:

✚ Data collection: The study collects data on scientific publications affiliated with Azerbaijani institutions during the whole period until today. This data includes the number of publications, citations, and the distribution of research output across academic fields. Data on scientific publications from Azerbaijan were retrieved from SCOPUS and WoS databases for the period since first indexation till today. The data was then aggregated at the country level.

✚ Bibliometric indicators: The following bibliometric indicators were calculated:

1. The total number of scientific publications published by Azerbaijan-based authors in SCOPUS and WoS databases.
2. The total number of publications by the fields of science- research trends
3. The total number of publications by the sources they published in (in both databases)
4. The total number of publications by the languages they published in (in both databases)
5. Distribution of publications by the affiliations in both databases

✚ The data was analyzed using statistical software to identify trends and patterns in scientific research landscape in Azerbaijan. Tables and graphs were created in MS Excel by the author.

✚ Limitations

This study has some limitations. First, it is limited to the data available in SCOPUS and WoS databases. Other databases, such as Google Scholar, may provide additional insights into scientific research visibility in Azerbaijan. Second, the study does not consider the quality of scientific publications. It is possible that some of the publications published by Azerbaijan-based authors have a low impact on the scientific community. Further research is needed to explore the factors that contribute to scientific research visibility in Azerbaijan and to identify strategies for improving the country's performance in this area.

Literature review

Bibliometric analysis is a valuable tool for researchers to analyze and evaluate publications in various fields. It involves the use of mathematical and statistical methods to assess the quality and quantity of published scientific literature, track research trends, and identify the contributions of different countries, institutions, and authors ("An Analysis of Scientific Articles on Science Misconceptions: A Bibliometric Research", 2021; Santos et al., 2022; Ma et al., 2023; Sweileh et al., 2017; Ellegaard & Wallin, 2015). The most commonly used databases for bibliometric analysis are Web of Science (WoS) and Scopus (Mongeon & Paul-Hus, 2015; Harzing & Alakangas, 2015; Sobral & Oliveira, 2021; Nyakurukwa & Seetharam, 2022; Rashid & Aziz, 2022; Aksnes & Sivertsen, 2019; Harzing & Alakangas, 2016; Falagas et al., 2007). These databases provide comprehensive coverage of scientific publications and allow researchers to analyze various aspects such as publication outputs, citation analysis, authorship details, and impact of publications ("An Analysis of Scientific Articles on Science Misconceptions: A Bibliometric Research", 2021; Rashid et al., 2022; Dominic et al., 2021; Sweileh et al., 2017; Ellegaard & Wallin, 2015; .

In a comparative analysis of Web of Science and Scopus, it was found that these databases are the most commonly used data sources for bibliometric analysis (Mongeon & Paul-Hus, 2015). However, it is important to note that there are differences in the coverage of these databases. Scopus covers a wider range of journals and is particularly strong in the social sciences and humanities (Aksnes & Sivertsen, 2019). On the other hand, Web of Science has a longer coverage period and is often preferred for citation analysis (Falagas et al., 2007). Therefore, researchers should consider the strengths and weaknesses of each database when conducting bibliometric analysis.

Bibliometric analysis can be applied to various research topics. For example, it has been used to analyze publications on science misconceptions, COVID-19, dementia, myelodysplastic syndromes, fireflies, artificial intelligence in tourism, and many other subjects ("An Analysis of Scientific Articles on Science Misconceptions: A Bibliometric Research", 2021; Mostafa et al., 2022; Pasin & Pasin, 2021; Sobral & Sobral, 2021; Ma et al., 2023; Dominic et al., 2021; Nyakurukwa & Seetharam, 2022; Liu et al., 2011; Sweileh et al., 2017; Rashid & Aziz, 2022). By analyzing the literature, researchers can identify research trends, predict new research hotspots, and evaluate important research directions (Ma et al., 2023).

Furthermore, bibliometric analysis can also be used to compare the contributions of different countries. It allows researchers to identify the countries with the highest publication outputs, collaborations among institutions and countries, and the relationship between the number of publications and other factors such as the number of total cases of a disease (Pasin & Pasin, 2021; Rashid et al., 2022; Lobato et al., 2021; Moed & Halevi, 2014). This information can be valuable for policymakers and funding agencies in assessing the research productivity and impact of different countries.

Meho & Rogers (2008) compared the citation counting, citation ranking, and h-index of researchers in the field of human-computer interaction using SCOPUS and Web of Science. They found that SCOPUS provides significantly more coverage of literature, including relevant conference proceedings, compared to Web of Science. However, there were no significant differences in citations in journals only. This suggests that SCOPUS may provide a more comprehensive view of research output in Azerbaijan, especially if conference proceedings are considered.

Vera-Baceta et al. (2019) examined the language coverage of SCOPUS and Web of Science. They emphasized the importance of ensuring that the scientific activity of non-English-speaking countries, such as Azerbaijan, is well-represented in the bibliometric databases used. This study highlights the need to consider language coverage when conducting a comparative bibliometric analysis.

The study by Mongeon & Paul-Hus (2015) compared the journal coverage of Web of Science and SCOPUS. They analyzed the fields, countries, and languages covered by both databases and found that there are differences in coverage. This study provides insights into the strengths and limitations of both databases, which can inform the comparative analysis of Azerbaijan's science visibility.

In summary, the selected references provide valuable insights into the comparative analysis of Azerbaijan's science visibility based on SCOPUS and Web of Science databases. These studies highlight the differences in coverage, citation counting, and language representation between the two databases. By considering these factors, the analysis can provide a comprehensive view of Azerbaijan's research output and impact.

Harzing & Alakangas (2015) provide a comprehensive comparison of the coverage of Google Scholar, SCOPUS, and Web of Science. They analyze the growth of publications and citations in these databases over time and across different disciplines. This study demonstrates the stability of coverage in all three databases and highlights their suitability for cross-disciplinary comparisons.

Zhu & Liu (2020) conduct a comparative study on the use of Web of Science and SCOPUS in academic papers. They analyze the trends in the usage of these databases over a 14-year period and discuss the challenges posed by SCOPUS to the dominant role of Web of Science. This reference provides valuable insights into the evolving landscape of citation databases and their usage in academic research.

Finally, Falagas et al. (2007) evaluate the strengths and weaknesses of PubMed, SCOPUS, Web of Science, and Google Scholar. Although this reference focuses on computational biology, it provides valuable insights into the characteristics of SCOPUS and Web of Science as citation databases. This information can be used to inform the comparative analysis of these databases in the context of bibliometrics.

In conclusion, by synthesizing the information from these references, a comprehensive and rigorous comparative bibliometric analysis can be conducted based on the SCOPUS and Web of Science databases. These references provide insights into the stability of coverage, language coverage, differences in citation counting and ranking, trends in database usage, journal coverage, and the strengths and weaknesses of these databases. By considering these factors, researchers can make informed decisions when conducting bibliometric analyses using SCOPUS and Web of Science.

Results and Key Findings

A comparative analysis of SCOPUS and Web of Science reveals valuable insights into Azerbaijan's scientific productivity. It highlights the number of publications originating from Azerbaijani institutions, shedding light on the nation's research activity.

Table 1

General overview publications (Azerbaijan) in each databases

Databases	Number of publications (Azerbaijan) in 2013	Number of publications (Azerbaijan) in 2023	Firstly indexed year
SCOPUS	10,084	24,901	1883
Web of Science	11,672	26,170	1975

Source: Table by author, 20/10/2023

The data in Table 1. provides a general overview of the research landscape in Azerbaijan. Azerbaijan has published over 24,901 SCOPUS-indexed papers, with the majority of publications in the fields of physics and astronomy, engineering, and chemistry and 26,170 Web of Science indexed papers, with the majority of publications in the fields of mathematics, materials science multidisciplinary, physics, engineering and Chemistry. It is important to note that this is just a summary of the data, and it does not provide a complete picture of the research landscape in Azerbaijan. For example, it does not take into account the quality of the publications, or the impact that they have had on the field.

The data shows that the number of publications indexed in SCOPUS belonging to authors from Azerbaijan has increased significantly over the past decade. In 2013, there were 10,084 publications indexed in SCOPUS belonging to authors from Azerbaijan, while in 2023, this number had increased to 24,901. This represents a growth rate of 146.9%.

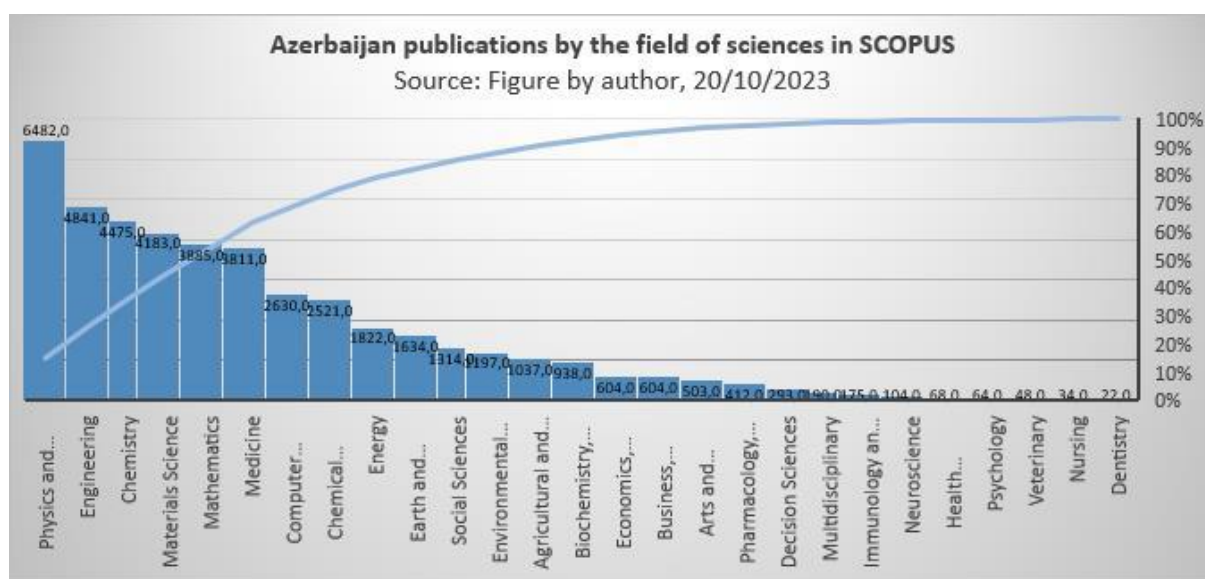
The data also shows that the number of publications indexed in SCOPUS belonging to authors from Azerbaijan is lower than the number of publications indexed in Web of Science. In 2023, there were 26,170 publications indexed in Web of Science belonging to authors from Azerbaijan. This suggests that Web of Science is a more comprehensive database of publications from Azerbaijan than SCOPUS.

One possible explanation for the increase in the number of publications indexed in SCOPUS belonging to authors from Azerbaijan is the increased investment in research and development in Azerbaijan in recent years. The Azerbaijani government has made a significant investment in research and development in recent years, and this has led to an increase in the number of researchers and the amount of research being conducted in

Azerbaijan. Another possible explanation for the increase in the number of publications indexed in SCOPUS and Web of Science belonging to authors from Azerbaijan is the increased collaboration between Azerbaijani researchers and researchers from other countries. The Azerbaijani government has encouraged collaboration between Azerbaijani researchers and researchers from other countries, and this has led to an increase in the number of publications indexed in international scientometric databases belonging to authors from Azerbaijan. Overall, the data on the number of publications indexed in these databases belonging to authors from Azerbaijan is very positive.

The data given in Figure 1 shows that the majority of publications indexed in SCOPUS belonging to authors from Azerbaijan are in the fields of physics and astronomy, engineering, materials science, and mathematics. These fields account for over 60% of all publications indexed in SCOPUS belonging to authors from Azerbaijan.

Figure 1. Publications (affil.country: Azerbaijan) by the fields of science in SCOPUS



Source: Figure by author, 20/10/2023

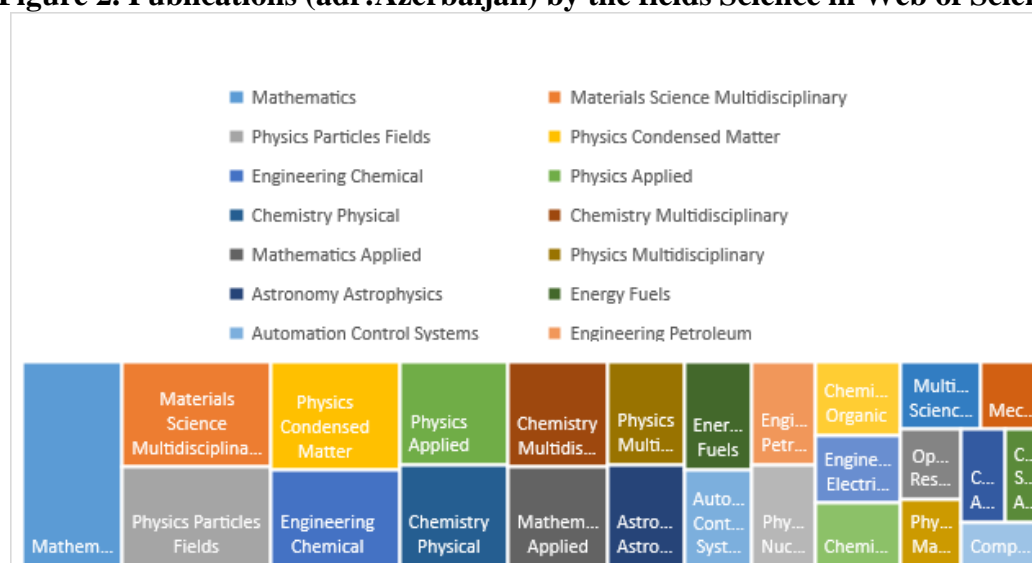
The other data given in Figure 2 shows the number of Azerbaijan's scientific publications in the top 25 Web of Science categories. The top 10 categories are: Mathematics (2268), Materials Science Multidisciplinary (1732), Physics Particles Fields (1631), Physics Condensed Matter (1552), Engineering Chemical (1366), Physics Applied (1243), Chemistry Physical (1214), Chemistry Multidisciplinary (1169), Mathematics Applied (1098), Physics Multidisciplinary (868). These categories cover a wide range of research topics, including mathematics, physics, materials science, engineering, and chemistry. The high number of publications in these categories suggests that Azerbaijan has a strong research base in these fields. Some specific research trends that can be identified from the table include: Strong focus on fundamental research: The top four categories are all related to fundamental research, which is research that is conducted to expand our knowledge of the natural world without any specific application in mind. This suggests that Azerbaijan has a strong commitment to basic science research. Growing interest in applied research: The next six categories are all related to applied research, which is research that is conducted with the goal of developing new products, processes, or services. This suggests that Azerbaijan is

increasingly investing in research that has the potential to have a direct impact on the economy and society.

Growing interest in interdisciplinary research: Several of the categories, such as Physics Multidisciplinary and Chemistry Multidisciplinary, represent a broad range of research topics. This suggests that Azerbaijan is increasingly embracing interdisciplinary research, which is research that combines knowledge from different disciplines.

Overall, the table suggests that Azerbaijan has a strong and growing research base in a wide range of fields. The country is investing in both fundamental and applied research, and there is a growing interest in interdisciplinary research. These trends are positive signs for the future of science and technology in Azerbaijan.

Figure 2. Publications (adr:Azerbaijan) by the fields Science in Web of Science



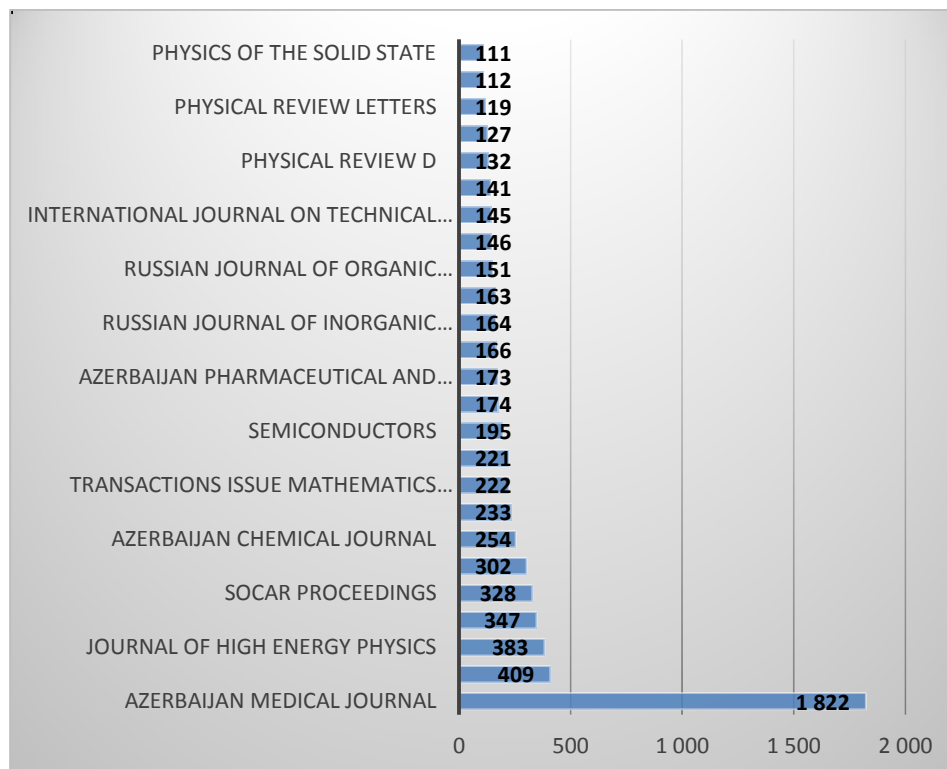
Source: Figure by author, 20/10/2023

The graph below in Figure 3 shows that the Azerbaijan Medical Journal has the highest number of publications, with 1,822. The European Physical Journal C and the Journal of High Energy Physics follow closely, with 409 and 383 publications, respectively. The other sources have fewer than 350 publications each.

It is interesting to note that the top 5 sources are all in the fields of science and engineering. This suggests that Azerbaijan has a strong focus on research in these areas. The graph also shows that the number of publications in each source has increased over time. This is a positive trend, and it suggests that Azerbaijan is becoming more productive in its research output. Overall, the graph provides a snapshot of the research landscape in Azerbaijan. It shows that the country has a strong focus on research in science and engineering, and that its research output is increasing over time. Here are some additional interpretations of the graph: The Azerbaijan Medical Journal is the most popular source for publishing research in Azerbaijan. This may be due to the fact that it is a general-interest medical journal, and therefore covers a wide range of topics. The European Physical Journal C and the Journal of High Energy Physics are also popular sources for publishing research in Azerbaijan. This suggests that Azerbaijan has a strong focus on research in physics and astronomy. The other sources on the list are more specialized, and they cover a variety of topics in science and engineering. Overall, the graph provides a positive picture of the research landscape in

Azerbaijan. It shows that the country has a strong focus on research in science and engineering, and that its research output is increasing over time.

Figure 3. Number of Publications (aff.country:Azerbaijan) by the sources published in SCOPUS



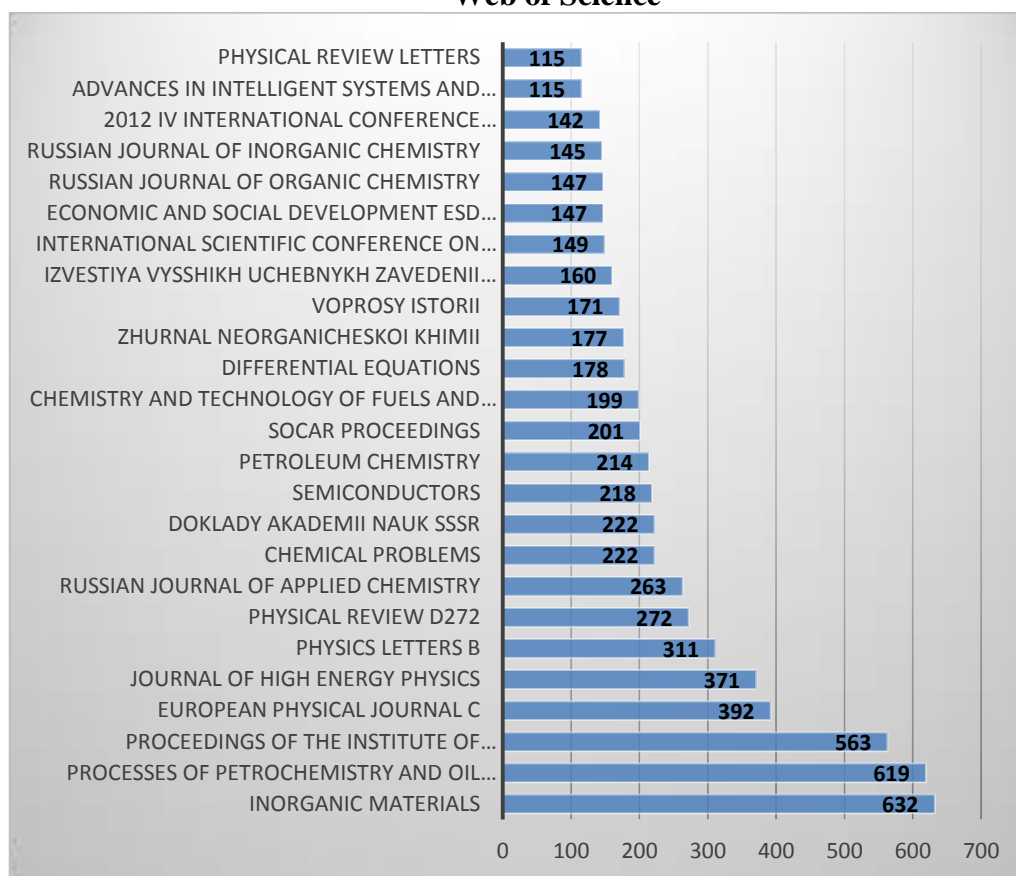
Source: Figure by author, 19/10/2023

The data given in Figure 4 shows that the majority of scientific publications from Azerbaijan are published in journals related to chemistry, physics, and mathematics. This is likely due to the strong tradition of scientific research in these fields in Azerbaijan.

The top three sources for publications are *Inorganic Materials, Processes of Petro chemistry And Oil Refining, And Proceedings of the Institute of Mathematics and Mechanics*. These journals are all highly respected in their respective fields, and the fact that a large number of Azerbaijani scientists are publishing in them is a testament to the quality of research being conducted in the country.

It is also worth noting that a significant number of publications are in Russian journals. This is likely due to the close historical and cultural ties between Azerbaijan and Russia. However, it is also encouraging to see that there is a growing number of publications in English-language journals, which suggests that Azerbaijani scientists are increasingly reaching out to the global scientific community.

Overall, the data shows that Azerbaijan is making significant contributions to scientific research in a number of fields. The high number of publications in high-quality journals is a testament to the quality of work being done by Azerbaijani scientists.

Figure 4. Number of Publications (address:Azerbaijan) by the sources published in Web of Science

Source: Figure by author, 19/10/2023

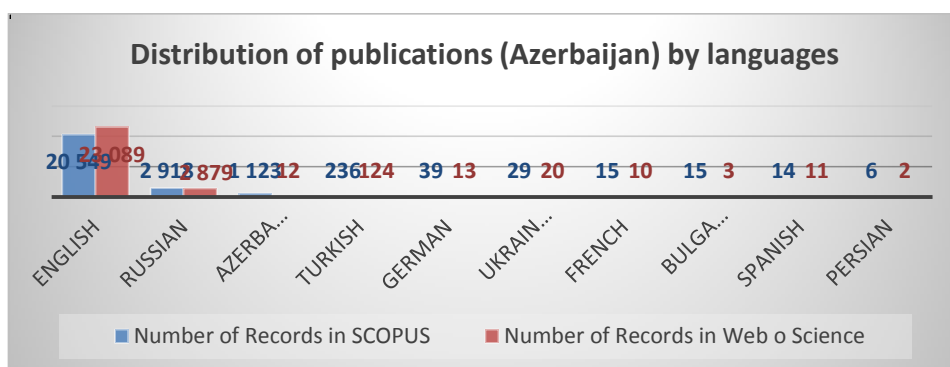
The graph in Figure 5 shows the number of scientific publications in the SCOPUS and Web of Science databases by language for the top 10 languages in SCOPUS (excluding Chinese). English is the dominant language of scientific publication in both databases, but SCOPUS has a slightly higher proportion of English-language publications than Web of Science. Russian is the second most common language in both databases, followed by Azerbaijani, Turkish, and German.

The table also shows that SCOPUS has a wider range of languages represented than Web of Science. For example, SCOPUS includes data for Bulgarian, Spanish, French, and Persian, while Web of Science does not. This suggests that SCOPUS may be a better resource for researchers who are interested in tracking scientific publications in languages other than English.

Overall, the table shows that English is the dominant language of scientific publication, but there is a significant amount of scientific research published in other languages as well. SCOPUS is a more comprehensive database than Web of Science for tracking scientific publications in languages other than English.

Which database is better for you will depend on researcher's specific needs. If researcher is interested in tracking scientific publications in languages other than English, or if you need access to open-access content, then SCOPUS is a good choice. If you are interested in tracking high-impact journals or using collaboration tools, then Web of Science is a good choice.

Figure 5. Distribution of publications (Azerbaijan) by languages in both databases

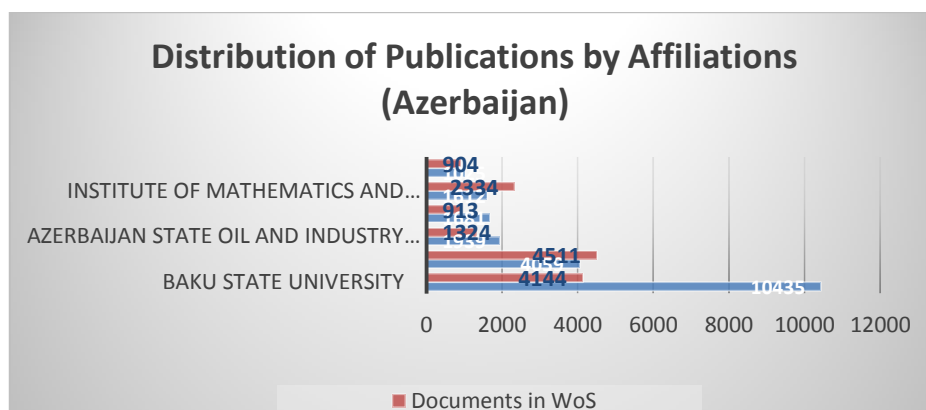


Source: Figure by author, 18/10/2023

The graph in

Figure 6 shows the number of scientific publications in SCOPUS and Web of Science (WoS) by the top 6 research institutions in Azerbaijan. Baku State University has the highest number of publications in both SCOPUS and WoS, followed by the Institute of Physics ANAS and the Institute of Mathematics and Mechanics ANAS. The table suggests that Baku State University is the leading research institution in Azerbaijan, followed by the Institute of Physics ANAS and the Institute of Mathematics and Mechanics ANAS. These three institutions have a significant number of publications in both SCOPUS and WoS, which indicates that they are producing high-quality research that is recognized by the international community.

Figure 6. Distribution of Publications by Affiliations (Azerbaijan)



Source: Figure by author, 19/10/2023

The Azerbaijan State Oil and Industry University and the Azerbaijan Medical University also have a significant number of publications in SCOPUS, but fewer publications in WoS. This may be because these two institutions focus on research that is more relevant to Azerbaijan's specific needs, such as research on oil and gas production and medical research on diseases that are common in Azerbaijan. The Azerbaijan State University of Economics has the lowest number of publications in both SCOPUS and WoS.

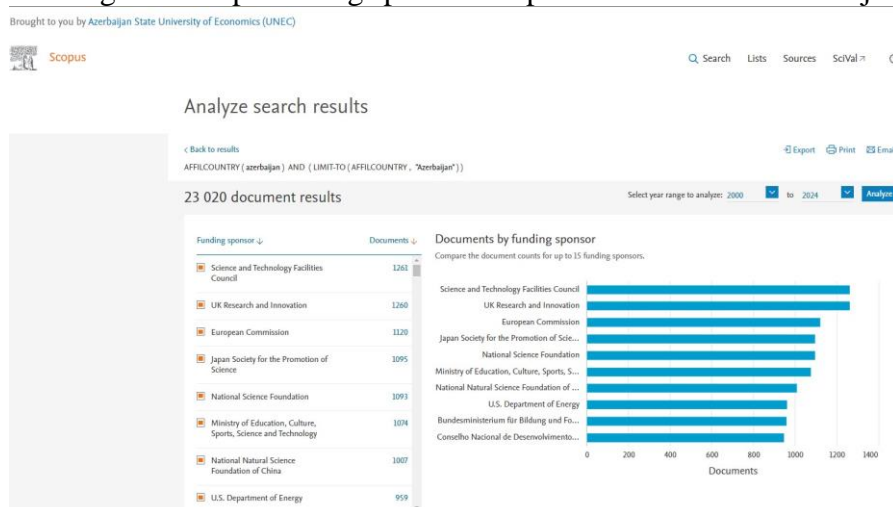
Overall, the table suggests that Azerbaijan has a strong research base in a variety of fields, including physics, mathematics, engineering, medicine, and economics.

The analysis of data pertaining to Azerbaijan within the SCOPUS scientometric database between the years 2000-2024 reveals a notable diversity in the financial sources attributed to scientific publications by Azerbaijani researchers. The top five sources contributing to these publications are as follows:

1. Science and Technology Facilities Council - 1261 articles
2. UK Research and Innovation - 1260 articles
3. European Commission - 1120 articles
4. Japan Society for the Promotion of Science - 1095 articles
5. National Science Foundation - 1093 articles

This diverse array of funding sources demonstrates the international scope of financial support for scientific endeavors pursued by Azerbaijani researchers during this period.

Figure 7. Top Funding sponsors of publications from Azerbaijan



Additionally, insight into the institutions within Azerbaijan that have contributed to the financing of scientific research is as follows:

- Science Development Fund - 473 articles
- Azerbaijan National Academy of Sciences - 142 articles

These findings underscore the involvement and commitment of local Azerbaijani institutions in facilitating scientific advancements and research initiatives within the country.

Discussion

Scientific research visibility is a crucial aspect of the academic world. It refers to the extent to which research findings are accessible, discoverable, and widely known within the scientific community and beyond. Enhancing research visibility is important for several reasons. Firstly, it allows researchers to disseminate their findings to a broader audience, increasing the impact and influence of their work (Matheka et al., 2014). Secondly, it facilitates collaboration and knowledge exchange among researchers, leading to further advancements in the field (Pinho & Diogo, 2018). Lastly, research visibility is often associated with career advancement and recognition within the scientific community (Sambunjak, 2006).

There are various strategies and factors that contribute to improving research visibility. One approach is to make research articles openly accessible through open access publishing (Matheka et al., 2014). Open access allows anyone to read and download research articles without paywalls, increasing the visibility and reach of the research (Miguel et al., 2011). Additionally, utilizing online dissemination strategies, such as social media and the internet,

can also enhance research visibility (Hébert et al., 2017). These platforms provide opportunities for researchers to share their work with a wider audience and engage in discussions with fellow researchers (Hébert et al., 2017).

In the context of publications indexed in Scopus related to Azerbaijan, the breakdown of open access papers indicates a substantial presence within different categories. The distribution of these open access papers is as follows:

All Open Access - 7,242 papers (<https://www.scopus.com/results/results.uri?sort=plf-f&src=s&st1=Azerbaijan&sid=d8d26384d5debe144c2d9a77b58261ed&sot=b&sdt=cl&sl=24&s=AFFILCOUNTRY%28Azerbaijan%29&origin=resultslist&editSaveSearch=&sessionSearchId=d8d26384d5debe144c2d9a77b58261ed&limit=10>)

Green Open Access - 4,161 papers

Gold Open Access - 3,319 papers

Bronze Open Access - 2,185 papers

Hybrid Gold Open Access - 947 papers

This data underscores the significant involvement of open access publishing in scholarly output related to Azerbaijan. The substantial number of papers in these various open access categories signifies a commitment to making research findings accessible and transparent, contributing to the dissemination and accessibility of knowledge within the academic community and beyond.

Search engine optimization (SEO) is another effective strategy for improving research visibility. By optimizing the content and structure of research articles, researchers can increase their visibility in search engine results, making it easier for others to find and access their work (Shahzad et al., 2017). Furthermore, creating visual abstracts can also enhance research visibility. Visual abstracts are concise and visually appealing summaries of research findings that can attract attention and engage readers (Iyengar et al., 2022).

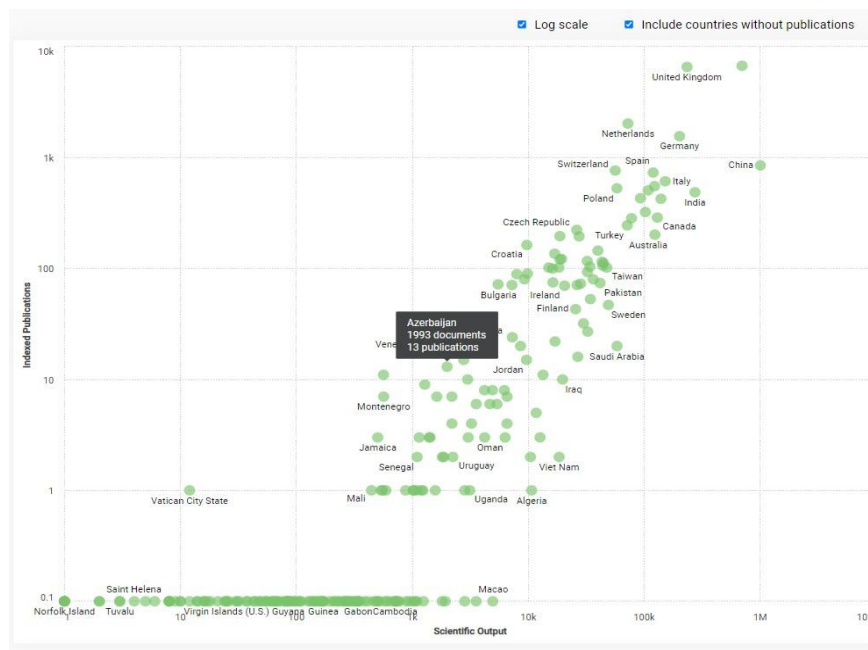
Collaboration and networking are essential for improving research visibility. By collaborating with other researchers and participating in conferences and workshops, researchers can increase the visibility of their work and establish connections within the scientific community (Benlidayi, 2021). Additionally, publishing research in high-impact journals and utilizing effective communication channels can also contribute to research visibility (Pulišelić & Petrak, 2006).

It is important to note that research visibility is not solely dependent on the efforts of individual researchers. The visibility of research is also influenced by the policies and practices of academic institutions, funding agencies, and publishers (Giusti et al., 2016). These stakeholders play a crucial role in promoting and ensuring the broad communication and impact of research (Packer, 2012).

SciMago Journal and Country Rank is an excellent resource for ranking scientific journals and countries' scientific output based on citation data. SciMago provides comprehensive information on the performance of academic journals, ranking them based on various factors such as citation count, scientific impact, and prestige in their respective fields. It is a valuable tool for researchers, scientists and institutions worldwide.

Whether tracking journal rankings or researching scientific contributions across the country, SciMago is an indispensable platform for understanding the scientific landscape and keeping up with the latest trends in research and science. According to the Scatter plot graph given in the picture, it can be said that in terms of the number of scientific journals indexed in Scopus by 2022, the United States (6727 journals) and China (1 004 745 articles) were in the first place in terms of the total number of articles. In 2022, Azerbaijan was represented in this list by 13 scientific journals and 1993 articles.

Figure 8.



Enhancing research visibility is crucial for the advancement of scientific knowledge and the career development of researchers. Open access publishing, online dissemination strategies, search engine optimization, collaboration, and effective communication channels are some of the strategies that can contribute to improving research visibility. However, it is important to recognize that research visibility is a multifaceted process that involves the efforts of individual researchers as well as the support of academic institutions and stakeholders in the scientific community.

Table 2

Journals published in Azerbaijan indexed in Scimago Journal Ranking (SCOPUS)

No	Title	Journal Publisher	SCR
1.	<u>Applied and Computational Mathematics</u>	Institute of Applied Mathematics of Baku State University	1.191 Q1
2.	<u>Azerbaijan Journal of Mathematics</u>	Institute of Mathematics and Mechanics NAS of Azerbaijan	0.370 Q3
3.	<u>Proceedings of the Institute of Mathematics and Mechanics</u>	Institute of Mathematics and Mechanics, National Academy of Sciences of Azerbaijan	0.345 Q3
4.	<u>Advanced Mathematical Models and Applications</u>	Jomard Publishing	0.342 Q3
5.	<u>ANAS Transactions, Earth Sciences</u>	Geology and Geophysics Institute at Azerbaijan National Academy of Sciences (ANAS)	0.289 Q3
6.	<u>SOCAR Proceedings</u>	"OilGasScientificResearchProject" Institute of State Oil Company of Azerbaijan Republic (SOCAR)	0.279 Q3
7.	<u>Transactions Issue Mathematics, Azerbaijan National Academy of Sciences</u>	Institute of Mathematics and Mechanics NAS of Azerbaijan	0.258 Q3

<i>Cədvəlin davamı</i>			
8.	<u>Azerbaijan Medical Journal</u>	WHO Office in Azerbaijan	0.194 Q4
9.	<u>New Materials, Compounds and Applications</u>	Jomard Publishing	0.136 Q4
10.	<u>Azerbaijan Chemical Journal</u>	Azerbaijan National Academy of Sciences	0.134 Q4
11.	<u>Chemical Problems</u>	Institute of Catalysis and Inorganic Chemistry, Azerbaijan National Academy of Sciences	0.111 Q4
12.	<u>New Design Ideas</u>	Jomard Publishing	0.111 Q3
13.	<u>Azerbaijan Pharmaceutical and Pharmacotherapy Journal</u>	Azerbaijan Medical University	0.101 Q4

This comparative bibliometric analysis serves as a comprehensive snapshot of Azerbaijan's science visibility on the global stage. It offers a nuanced understanding of the nation's contributions to various scientific disciplines, identifies areas of research strength, and highlights opportunities for collaboration and growth.

Table 3

Journals published in Azerbaijan indexed in Journal Citation Report (Web of Science)

№	Journal name	Publisher
1.	Applied and Computational Mathematics	Ministry Communications & High Technologies Republic Azerbaijan
2.	Azerbaijan Journal of Mathematics	Inst Math & Mechanics Azerbaijan
3.	Khazar Journal of Humanities and Social Sciences	Khazar Univ
4.	New Materials Compounds and Applications	Jomard Publishing
5.	Proceedings of the Institute of Mathematics and Mechanics	Inst Mathematics & Mechanics, Natl Acad Sciences Azerbaijan
6.	Processes of Petrochemistry and Oil Refining	Y H Mammadaliyev Inst Petrochemical Proc, Natl Acad Sci, Baku, Azerbaijan
7.	SOCAR Proceedings	State Oil Co Azerbaijan Republic, Oil Gas Scientific Research Project Inst
8.	TWMS Journal of Pure and Applied Mathematics	Baku State University Inst Applied Mathematics

The findings of this study underscore the importance of science visibility in the international arena and its role in shaping a nation's reputation in the global research community. Azerbaijan's scientific landscape continues to evolve, and a deeper understanding of its position in the global scientific network is vital for fostering collaboration, driving innovation, and promoting the nation's scientific achievements.

Limitations

While this research offers a comprehensive analysis of the scientific landscape in Azerbaijan based on SCOPUS and Web of Science databases, it is essential to acknowledge several inherent limitations:

1. The findings are predominantly reliant on data extracted from SCOPUS and Web of Science, which may not encompass all Azerbaijani research output. Other databases, gray literature, and non-English publications are not included, potentially leading to an incomplete representation of the scientific landscape.
2. The accuracy and completeness of the data within the selected databases are contingent on the diligence of authors, publishers, and database curators. Inaccuracies, inconsistencies, and missing data may affect the results and interpretations.
3. The analysis does not extensively explore interdisciplinary research trends. Investigating the intersections of various fields and their impact on scientific output could provide valuable insights but is beyond the scope of this study.

In conclusion, while this paper provides a valuable comparative bibliometric analysis of Azerbaijan's scientific landscape, readers should consider these limitations when interpreting the findings. Future research endeavors could address these limitations and further enhance our understanding of Azerbaijan's scientific development.

Conclusion

Enhancing the publication output and scientific visibility of Azerbaijani scientists is essential for the advancement of scientific research and the promotion of the country's intellectual capital on the global stage. This paper has outlined several recommendations that can aid in achieving this goal.

First, it is imperative that Azerbaijani scientists foster strong collaborations with international research institutions and researchers. By engaging in collaborative projects, scientists can access valuable resources, knowledge, and networks, ultimately leading to an increased number of high-quality publications. Moreover, collaboration with renowned scientists can enhance the visibility and reputation of Azerbaijani researchers within their respective fields.

Second, funding and financial support play a critical role in research productivity. Azerbaijani scientists should actively seek out various sources of funding, both domestically and internationally. This can include applying for government grants, participating in international research programs, and establishing partnerships with industry stakeholders. Adequate funding not only supports the conduction of research but also allows for participation in conferences, workshops, and other scientific events that help increase visibility.

Additionally, Azerbaijani scientists should prioritize the dissemination of their research findings through reputable scientific journals, conferences, and academic platforms. Publishing in high-impact journals and presenting at well-regarded conferences can significantly elevate the visibility of their work. Researchers should also consider open-access publishing to ensure their research is easily accessible to a broader audience.

Furthermore, an emphasis on interdisciplinary research is recommended, as it can open up new avenues for collaboration and innovative research projects. Interdisciplinary research not only broadens the scope of scientific inquiry but also attracts more attention from the academic community and the general public.

A strong commitment to education and mentorship is vital for nurturing the next generation of Azerbaijani scientists. By serving as mentors and supporting the professional development of young researchers, experienced scientists can contribute to the sustainable growth of the scientific community in Azerbaijan. This not only enhances the country's scientific potential but also increases its global scientific visibility.

Lastly, policymakers and institutions should continue to provide an enabling environment for scientific research. This includes establishing research-friendly policies,

investing in research infrastructure, and promoting international collaborations. Creating a culture of recognition and reward for scientific achievements can also motivate scientists to excel and increase their scientific visibility.

In conclusion, the recommendations outlined in this paper provide a comprehensive strategy for Azerbaijani scientists to increase their publication output and scientific visibility. It is through proactive collaboration, funding acquisition, effective dissemination, interdisciplinary approaches, mentorship, and supportive policies that Azerbaijani scientists can make significant strides in the global scientific landscape, contributing to the advancement of knowledge and the reputation of their nation in the world of science.

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REFERENCES

1. Aksnes, D. and Sivertsen, G. (2019). A criteria-based assessment of the coverage of scopus and web of science. *Journal of Data and Information Science*, 4(1), 1-21. <https://doi.org/10.2478/jdis-2019-0001>
2. Benlidayi, I. (2021). Ways to improve visibility of publications. *Central Asian Journal of Medical Hypotheses and Ethics*, 2(4), 233-235. <https://doi.org/10.47316/cajmhe.2021.2.4.09>
3. Dominic, D., Gisip, I., & Ahmad, T. (2021). Government social media research over a decade: bibliometric analysis. *Espergesia*, 8(2). <https://doi.org/10.18050/rev.espergesia.v8i2.1585>
4. Ellegaard, O. and Wallin, J. (2015). The bibliometric analysis of scholarly production: how great is the impact?. *Scientometrics*, 105(3), 1809-1831. <https://doi.org/10.1007/s11192-015-1645-z>
5. Falagas, M., Pitsouni, E., Malietzis, G., & Pappas, G. (2007). Comparison of pubmed, SCOPUS, web of science, and google scholar: strengths and weaknesses. *The Faseb Journal*, 22(2), 338-342. <https://doi.org/10.1096/fj.07-9492lsf>
6. Giusti, M., Villarreal, G., Nusch, C., Pinto, A., & Lira, A. (2016). Open access and open data on natural disasters. *Ifla Journal*, 43(1), 81-88. <https://doi.org/10.1177/0340035216678236>
7. Harzing, A. and Alakangas, S. (2015). Google scholar, SCOPUS and the web of science: a longitudinal and cross-disciplinary comparison. *Scientometrics*, 106(2), 787-804. <https://doi.org/10.1007/s11192-015-1798-9>
8. Harzing, A. and Alakangas, S. (2016). Microsoft academic: is the phoenix getting wings?. *Scientometrics*, 110(1), 371-383. <https://doi.org/10.1007/s11192-016-2185-x>
9. Hébert, J., Robitaille, H., Turcotte, S., & Légaré, F. (2017). Online dissemination strategies of a canada research chair: overview and lessons learned. *Jmir Research Protocols*, 6(2), e27. <https://doi.org/10.2196/resprot.6413>

10. Iyengar, K., Botchu, R., Jain, V., & Ish, P. (2022). Visual abstract: an innovative way to disseminate scientific research. *The National Medical Journal of India*, 34, 374-375. https://doi.org/10.25259/nmji_586_21
11. Kurtulush, M. & Tatar, N. (2021). An analysis of scientific articles on science misconceptions: a bibliometric research. *İlköğretim Online*, 20(1). <https://doi.org/10.17051/ilkonline.2021.01.022>
12. Liu, X., Zhang, L., & Hong, S. (2011). Global biodiversity research during 1900–2009: a bibliometric analysis. *Biodiversity and Conservation*, 20(4), 807-826. <https://doi.org/10.1007/s10531-010-9981-z>
13. Lobato, C., Cristino, T., Neto, A., & Costa, A. (2021). Lean system: analysis of scientific literature and identification of barriers for implementation from a bibliometric study. *Gestão & Produção*, 28(1). <https://doi.org/10.1590/1806-9649.2020v28e4769>
14. Ma, J., Zhang, W., Li, J., Zhai, Y., & Shen, L. (2023). Bibliometric analysis of the global myelodysplastic syndrome study 1998-2022.. <https://doi.org/10.21203/rs.3.rs-2789742/v1>
15. Matheka, D., Nderitu, J., Mutonga, D., Otit, M., Siegel, K., & Demaio, A. (2014). Open access: academic publishing and its implications for knowledge equity in kenya. *Globalization and Health*, 10(1), 26. <https://doi.org/10.1186/1744-8603-10-26>
16. Meho, L. and Rogers, Y. (2008). Citation counting, citation ranking, and h-index of human-computer interaction researchers: a comparison of SCOPUS and web of science. *Journal of the American Society for Information Science and Technology*, 59(11), 1711-1726. <https://doi.org/10.1002/asi.20874>
17. Miguel, S., Chinchilla-Rodríguez, Z., & Anegón, F. (2011). Open access and scopus: a new approach to scientific visibility from the standpoint of access. *Journal of the American Society for Information Science and Technology*, 62(6), 1130-1145. <https://doi.org/10.1002/asi.21532>
18. Moed, H. and Halevi, G. (2014). A bibliometric approach to tracking international scientific migration. *Scientometrics*, 101(3), 1987-2001. <https://doi.org/10.1007/s11192-014-1307-6>
19. Mongeon, P. and Paul-Hus, A. (2015). The journal coverage of web of science and scopus: a comparative analysis. *Scientometrics*, 106(1), 213-228. <https://doi.org/10.1007/s11192-015-1765-5>
20. Mostafa, M., Feizollah, A., & Anuar, N. (2022). Fifteen years of youtube scholarly research: knowledge structure, collaborative networks, and trending topics. *Multimedia Tools and Applications*, 82(8), 12423-12443. <https://doi.org/10.1007/s11042-022-13908-7>
21. Nyakurukwa, K. and Seetharam, Y. (2022). Corporate governance in a weak legal environment: a systematic review focusing on Zimbabwe. *Qualitative Research in Financial Markets*, 15(2), 319-335. <https://doi.org/10.1108/qrfm-01-2022-0012>
22. Packer, A. (2012). O modus operandi online e o avanço dos periódicos brasileiros de enfermagem. *Acta Paulista De Enfermagem*, 25(2). <https://doi.org/10.1590/s0103-21002012000200001>
23. Pasin, Ö. and Pasin, T. (2021). Bibliometric analysis of covid-19 and the association with the number of total cases. *Disaster Medicine and Public Health Preparedness*, 16(5), 1947-1952. <https://doi.org/10.1017/dmp.2021.177>
24. Pinho, I. and Diogo, S. (2018). Enhancing the visibility and impact of scholarly research: an exploratory study on knowledge production settings. *Revista Meta Avaliação*, 10(30), 502. <https://doi.org/10.22347/2175-2753v10i30.1606>

25. Pulišelić, L. and Petrak, J. (2006). Is it enough to change the language? a case study of croatian biomedical journals. *Learned Publishing*, 19(4), 299-306. <https://doi.org/10.1087/095315106778690733>
26. Rashid, M. and Aziz, M. (2022). A comprehensive overview of world mapping analysis research trends on impact of artificial intelligence in tourism from 2000 to 2022: a literature review and bibliometric analysis. *International Center for Research and Resource Development (Icrrd) Quality Index Research Journal*, 3(3). <https://doi.org/10.53272/icrrd.v3i3.4>
27. Rashid, M., Rahman, A., & Rashid, S. (2022). Research related to fireflies (coleoptera: lampyridae) around the world over the year 2000 – 2021: an overview and guidelines. *E-Bangi Journal of Social Science and Humanities*, 19(3). <https://doi.org/10.17576/ebangi.2022.1903.07>
28. Sambunjak, D. (2006). Press releases and email notices increase local and global visibility of a small medical journal. *Learned Publishing*, 19(4), 267-271. <https://doi.org/10.1087/095315106778690724>
29. Santos, M., González-Serrano, M., & Staniewski, M. (2022). Analytical editorial: ensuring the future of our world: innovation, management and governance for sustainable growth. *Academia Revista Latinoamericana De Administración*, 35(2), 117-130. <https://doi.org/10.1108/arla-07-2022-368>
30. Shahzad, A., Nawi, N., Hamid, N., Khan, S., Aamir, M., Ullah, A., ... & Abdullah, S. (2017). The impact of search engine optimization on the visibility of research paper and citations. *Joiv International Journal on Informatics Visualization*, 1(4-2), 195. <https://doi.org/10.30630/joiv.1.4-2.77>
31. Sobral, S. and Oliveira, C. (2021). Predicting students' performance in introductory programming courses: a literature review.. <https://doi.org/10.21125/inted.2021.1485>
32. Sobral, S. and Sobral, M. (2021). Computerized cognitive stimulation for people with dementia or with mild cognitive impairment: a bibliometric review. *Dementia & Neuropsychologia*, 15(1), 28-40. <https://doi.org/10.1590/1980-57642021dn15-020003>
33. Sweileh, W., Al-Jabi, S., AbuTaha, A., Zyoud, S., Anayah, F., & Sawalha, A. (2017). Bibliometric analysis of worldwide scientific literature in mobile - health: 2006–2016. *BMC Medical Informatics and Decision Making*, 17(1). <https://doi.org/10.1186/s12911-017-0476-7>
34. Vera-Baceta, M., Thelwall, M., & Kousha, K. (2019). Web of science and SCOPUS language coverage. *Scientometrics*, 121(3), 1803-1813. <https://doi.org/10.1007/s11192-019-03264-z>
35. Zhu, J. and Liu, W. (2020). A tale of two databases: the use of Web of Science and SCOPUS in academic papers. *Scientometrics*, 123(1), 321-335. <https://doi.org/10.1007/s11192-020-03387-8>
36. <https://www.webofscience.com/wos/woscc/summary/303b1c07-d823-47dd-b395-9267e58e5b25-acf063c3/times-cited-descending/1>
37. <https://www.SCOPUS.com/results/results.uri?sort=cp-f&src=s&st1=Azerbaijan&sid=d74c2ae366acfc9194ab204e0a6d891f&sot=b&sdt=b&sl=24&s=AFFILCOUNTRY%28Azerbaijan%29&origin=searchbasic&editSaveSearch=&yearFrom=Before+1960&yearTo=Present&sessionSearchId=d74c2ae366acfc9194ab204e0a6d891f&limit=10>

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AZƏRBAYCANA MƏXSUS ELMİ NƏŞRLƏRİN ÜMUMİ İCMALI
(SCOPUS və Web of Science elmmetrik bazalarına əsaslanan müqayisəli
bibliometrik təhlil)
XÜLASƏ

Açar sözlər: bibliometrik təhlil, Azərbaycanın elmi nəşrləri, SCOPUS, Web of Science, əsas tədqiqat istiqamətləri

Elmi tədqiqatların beynəlxalq arenada görünürsüzlüyü elm və texnologiyanın inkişafı üçün həlledici amildir. Bu, tədqiqatçılara öz nəticələrini dünya ictimaiyyəti ilə bölüşmək və yeni layihələr üzərində əməkdaşlıq etmək imkanı verir. Bununla belə, tədqiqatın görünürsüzlük qabiliyyəti bir sıra amillərdən, o cümlədən tədqiqatın aid olduğu ölkədən asılı olaraq çox dəyişə bilər. Bu məqalədə SCOPUS və Web of Science məlumat bazalarından alınan məlumatlar əsasında Azərbaycanın elmi tədqiqat landşaftının müqayisəli bibliometrik təhlili təqdim olunur. Tədqiqat aşağıdakı göstəriciləri araşdırır: nəşrlərin sayı, istinadların sayı, beynəlxalq maliyyələşmə səviyyəsi, bu bazalarda indekslənməyən Azərbaycana məxsus elmi nəşrlər və s.

Tədqiqatın əsas nəticəsi ondan ibarətdir ki, Azərbaycanda tədqiqatların məhsuldarlığı müəyyən sahələrdə digərlərinə nisbətən daha yüksəkdir. Məsələn, Azərbaycanın fizika və riyaziyyat, mühəndislik və texnologiya sahələrində apardığı tədqiqatlar humanitar və ictimai elmlər sahəsindəki tədqiqatlardan daha qabarıqdır. Bu onu deməyə əsas verir ki, Azərbaycanda humanitar və sosial elmlər üzrə tədqiqatlara daha çox sərmayə qoyulmalıdır.

Tədqiqat Azərbaycanda elmi tədqiqatların görünürsüzlüyünü yaxşılaşdırmaq üçün bir sıra tövsiyələrin verilməsi ilə yekunlaşır. Bu tövsiyələrə aşağıdakılar daxildir: Tədqiqata investisiya qoyuluşunun artırılması, tədqiqatçılar arasında beynəlxalq əməkdaşlığın təşviqi, humanitar və sosial elmlərdə tədqiqata diqqətin yönəldilməsi və milli tədqiqat strategiyasının hazırlanması. Azərbaycan bu tövsiyələri həyata keçirməklə öz elmi tədqiqatlarının imicini artırma, elm və texnologiyanın global inkişafına daha böyük töhfə verə biləcək.

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ОБЩИЙ ОБЗОР НАУЧНОГО ЛАНДШАФТА АЗЕРБАЙДЖАНА
(Сравнительный библиометрический анализ на основе баз данных
SCOPUS и Web of Science)
РЕЗЮМЕ

Ключевые слова: библиометрический анализ, научные публикации Азербайджана, SCOPUS, Web of Science, основные направления исследований

Видимость научных исследований является решающим фактором для развития науки и технологий. Это позволяет исследователям делиться своими выводами с мировым сообществом, получать отзывы от коллег и сотрудничать в новых проектах.

Однако видимость исследования может сильно различаться в зависимости от ряда факторов, включая страну происхождения исследования. В данной статье представлен сравнительный библиометрический анализ ландшафта научных исследований в Азербайджане на основе данных баз данных SCOPUS и Web of Science. В исследовании рассматриваются следующие показатели: количество публикаций, количество цитирований, индекс Хирша, уровень международного сотрудничества.

Одним ключевым выводом исследования является то, что заметность исследований в Азербайджане в определенных областях выше, чем в других. Например, исследования Азербайджана в области физики и математики, техники и технологий более заметны, чем исследования в области гуманитарных и социальных наук. Это говорит о том, что Азербайджану необходимо больше инвестировать в исследования в области гуманитарных и социальных наук.

Исследование завершается предоставлением ряда рекомендаций по улучшению видимости научных исследований в Азербайджане. Эти рекомендации включают: Увеличение инвестиций в исследования, содействие международному сотрудничеству между исследователями, сосредоточение внимания на исследованиях в области гуманитарных и социальных наук, разработку национальной исследовательской стратегии. Выполняя эти рекомендации, Азербайджан сможет повысить наглядность своих научных исследований и внести больший вклад в глобальное развитие науки и технологий.

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