

General Overview of Dissertation Research in Azerbaijan: Bibliometric Analysis

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ABSTRACT

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Objective: Bibliometric analysis is a valuable method for assessing the scientific landscape of a given field. In this study, a comprehensive bibliometric analysis of dissertation research in Azerbaijan was given to highlight the chronological trends of academic scientific achievements in the country, aiming to provide a broad overview of the research output and trends in the country's academic community.

Methods: Based on various academic databases (HAC) and the collections of the National Library of Azerbaijan, the main repository of the country, a significant collection of existing dissertations has been assembled. With the help of bibliometric methods, the growth dynamics of these dissertations by decades and distribution by scientific fields were studied.

Results: The results obtained reflect the interest in academic research in the country and indicate a noticeable increase in the productivity of dissertation research in Azerbaijan over the years.

Conclusion: This bibliometric analysis is a chronological overview of dissertation research in Azerbaijan, offering valuable information to both the public and scholars and researchers. As Azerbaijan continues to evolve as a knowledge-based society, this study can serve as a valuable resource for advancing academic excellence and developing research in the country.

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Introduction

In the pursuit of academic excellence and the advancement of knowledge, scholarly research plays a pivotal role in shaping the intellectual landscape of a nation. As a diverse and culturally rich country nestled between the Caspian Sea and the Caucasus Mountains, Azerbaijan has a long-standing tradition of nurturing academic pursuits and fostering research endeavors across various disciplines. Over the years, countless scholars, students, and academics have contributed to the growing body of knowledge by conducting research and producing dissertations that reflect the country's historical and contemporary issues.

The present research endeavors to shed light on the historical evolution of scholarly research in Azerbaijan through the lens of bibliometric analysis. Bibliometric, a branch of quantitative analysis in the domain of information science, enables researchers to systematically assess and evaluate the patterns, trends, and impact of scientific literature. By applying bibliometric methodologies to the vast corpus of dissertation research produced in Azerbaijan, this study seeks to unravel the academic landscape, identify pivotal milestones, and highlight the thematic trends that have shaped the nation's academic journey.

The significance of this research lies not only in its academic merit but also in its potential to provide valuable insights to policymakers, educators, and researchers. Understanding the historical trajectory of dissertation research in Azerbaijan can offer key implications for refining educational programs, identifying research gaps, and fostering interdisciplinary collaborations to address societal challenges effectively. The objective of this research was to analyze the bibliometric data to identify temporal trends, patterns of collaboration, and key academic institutions contributing to the country's research output and to conduct a thematic analysis of the dissertation topics, discerning the evolution of research interests over time and highlighting prominent areas of academic inquiry. The following questions are related to the doctoral and Ph.D. theses examined in this research answers are sought:

- 1) What is the distribution according to years (decades)?
- 2) How are they distributed according to field of science and level?
- 3) How are they distributed according to their written language?
- 4) What is the distribution according to the countries they are defended (published)?

Materials and Methods

The research employs a mixed-methods approach, literature review, encompassing quantitative bibliometric analysis and qualitative thematic analysis. The quantitative analysis was involved data mining from various academic databases, including electronic catalogue of Azerbaijan National Library, and the database of the Higher Attestation Commission under the President of Azerbaijan Republic. The data were collected in July-August 2023. The retrieved data were utilized to generate

visual representations, such as graphs and tables using Excel software, to depict trends and patterns. In parallel, the qualitative thematic analysis will be conducted to explore the content of the selected dissertations, categorizing them into major themes and identifying significant research clusters that have emerged throughout the country's history. In the content analysis conducted in this study, it is related to the doctoral and Ph.D. theses made between 2013-2023 in all fields of science in Azerbaijan.

Literature review

Ellegaard (2018) states that bibliometric analysis is a statistical method used to analyze the literature of a specific field. It is used to identify the number of publications in a specific field, the most cited authors, and the most cited articles. It is also used to identify the most common keywords used in the literature.

There have been a number of bibliometric studies of dissertations in different fields and countries. For example, a study by Shi, X. et al (2022) used a statistical and visualization bibliometric analysis to delineate of DNP dissertations in their study. By Ahmid (2019) every PhD in the topic of Islamic Banking and Finance written in the UK between 2000 and 2018 has been examined. PhD dissertations were found in the database of the British Library, which connects to the databases of all UK universities, based on the precise search parameters. Aslan & Açıkgöz (2022), (2023) examined the doctoral dissertations in terms of their output quality. It is indeed true that many scholars have conducted bibliometric analyses of dissertations and theses in various contexts and regions, including those mentioned such as Çeliker (2015), Krymskaya (2022), Köseoğlu (2020), Hsieh (2013), and Salgado-Orellana (2021), Плешкевич (2019) and etc. Bibliometric analysis has become a popular research approach to gain insights into academic trends, knowledge dissemination, and scholarly productivity. These are just a few examples of bibliometric studies of dissertations. There are many other studies that have been conducted in different fields and countries. These studies provide valuable insights into the state of research and the development of new knowledge. The paper "Bibliometric Analysis books and dissertations abstracts as an element of bibliographic knowledge (2003-2013)" by Hajiyeva A. (2015) provides a comprehensive overview of the research that has been conducted in Azerbaijan through dissertations. The author used a bibliometric approach to analyze the data, which allows them to identify trends and patterns in the research landscape.

Overall, research papers on bibliometric analysis of dissertations is a valuable tool for gaining insights into the state of research and the development of new knowledge. However, it is important to be aware of the limitations of this approach before using it. And upon review all of these investigations it was determined that the bibliometric analysis of dissertations which are included to the repository of National Library of Azerbaijan (1920-2023) and the dissertations defended in Azerbaijan in the timeframe from 2013 till 2023 had not been studied.

Results and Discussion

The main point of the article consists of two parts. In the first part based on the database of the National Library of Azerbaijan (ANL, Azerbaijan National Library, 2023), all dissertations were analyzed by year, then in the second part, the dissertations defended from 2013 to date, stored in the database of the Higher Attestation Commission ((HAC), 2023), were divided according to the academic degree and the field of science to which they belong and were analyzed.

Table 1. provides a chronological overview of the total number of dissertations completed in Azerbaijan over various decades, along with the corresponding percentage of dissertations for each period. The total number of dissertations completed in Azerbaijan across all decades is 13,286 (ANL, Azerbaijan National Library, 2023).

Table 1. Dissertation research dynamics in Azerbaijan over the last century

Chronological period	Total number of dissertations in Azerbaijan over the decades	Percentage of dissertations over decades in Azerbaijan %
2020 - present	154	1,16
2010 - 2019	5586	42
2000 - 2009	5243	39,5
1990 - 1999	2291	17,24
1920 - 1989	11	0,08
Overall	13286	100%

Source: by author retrieved from ANL database in July-August 2023

The number of dissertations completed in Azerbaijan during the period from 1920 to 1989 is 11, constituting 0.08% of the total dissertations. The number of dissertations completed in Azerbaijan from 1990 to 1999, in a period of significant political and social changes in the country, is 2,291, accounting for 17.24% of the total. During 2000 to 2009 years total of 5,243 dissertations were completed in this decade, making up 39.5% of the total. From 2010 to 2019, 5,586 dissertations were completed, comprising 42% of the total. Finally, from the year 2020 to the present time as of now, 154 dissertations have been completed during this period, accounting for 1.16% of the total (ANL, Azerbaijan National Library, 2023).

Overall, Table 1 and Figure 1 present a historical progression of dissertation research in Azerbaijan over different decades. It indicates that the volume of dissertations has significantly increased over time, with the highest number of dissertations completed during the most recent decades (2010 - 2019 and 2000 - 2009). This suggests a growing focus on research and academic pursuits in the country, especially in recent years. The low number of dissertations during the earlier periods, such as from 1920 to 1989, may be attributed to various historical, political, and socioeconomic factors that might have influenced the academic landscape during those times.

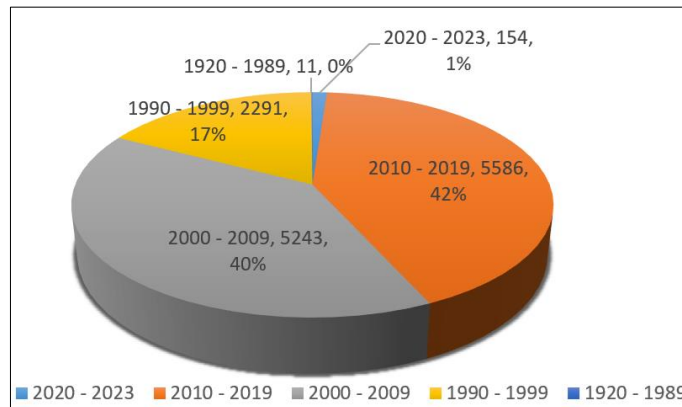


Figure 1. Distribution of dissertations in Azerbaijan by the decades

Source: by author retrieved from ANL database in July-August 2023

By the written languages of dissertations, there are 7,758 dissertations available in the Azerbaijani language (see on **Error! Reference source not found.**). Azerbaijani is the official language of Azerbaijan, and it is not surprising to find the majority of dissertations written in the country's native language. There are 5,385 dissertations available in the Russian language. Russian has historically been a significant language of communication and education in Azerbaijan, especially during the Soviet era. There are 75 dissertations available in the Turkish language. Turkish is likely included due to the cultural and linguistic connections between Azerbaijan and Turkey. Also, there are 56 dissertations available in the English language. These dissertations are likely written in English to reach a broader international audience or due to the increasing emphasis on English as the language of global communication in academia.

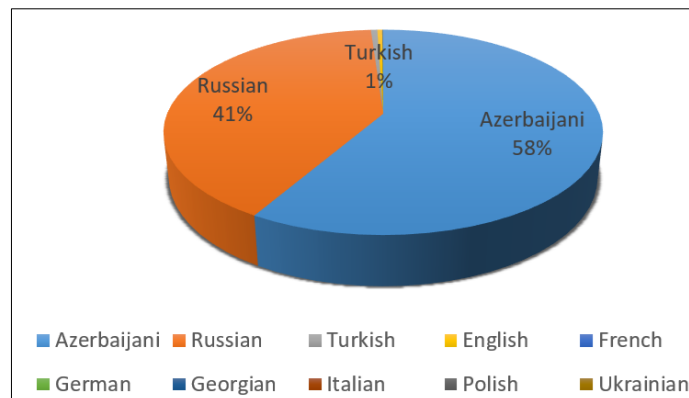


Figure 2. Distribution of dissertations available in the national library database by the languages

Source: by author retrieved from ANL database in July-August 2023

There are five dissertations available in French, three dissertations available in German. Georgian, Italian, Polish, and Ukrainian: Each of these languages has one dissertation available in the database. Dissertations in these languages might be a result of specific academic collaborations or the research interests of individual scholars. In summary, the National Library of Azerbaijan's database contains a diverse

collection of dissertations written in various languages. Azerbaijani and Russian are the most prevalent languages, reflecting the country's linguistic history and cultural ties. The presence of dissertations in other languages, such as English, French, and Turkish, indicates the global outreach and international collaborations of Azerbaijani researchers and scholars.

The findings of this study indicate that the majority of dissertations were defended and published in Azerbaijan, accounting for a significant portion of the dataset (13,035 dissertations out of 13286) (ANL, Azerbaijan National Library, 2023). Following Azerbaijan, the distribution of dissertations across other countries is relatively smaller in comparison. Russia (Federation) ranks second in the distribution, with 102 dissertations. Turkey and Ukraine follow with 79 and 13 dissertations, respectively. Several other countries are represented by a limited number of dissertations, ranging from 1 to 7, showcasing diverse international collaborations and research engagements. These countries include Germany, England, France, Kazakhstan, Israel, Kyrgyzstan, Korea (South), USA, Austria, Belarus, China, Uzbekistan, Belgium, Bulgaria, Georgia (Republic), Hungary, Iran, Italy, Japan, Latvia, Moldova, Netherlands, Poland, Scotland, Switzerland, and the Czech Republic.

The Higher Attestation Commission of Azerbaijan (HAC) plays a crucial role in the oversight and management of academic research and higher education in the country. One of the significant aspects of the HAC's responsibilities is the maintenance and management of a comprehensive database of dissertations produced by scholars and researchers across various academic disciplines. This database contains a vast repository of academic works, including both Doctor of Philosophy (Ph.D.) dissertations and Doctor of Sciences (D.Sc.) dissertations, starting from the year 2013. The establishment of the HAC's database of dissertations in 2013 marked a significant step forward in the advancement of academic research in Azerbaijan. This centralized and organized repository serves multiple purposes, facilitating to determine the priority among the science fields we explored this database, and the result is as below.

Interpreting the table, observations that we faced are as following: Philological sciences had the highest number of total dissertations with 929 completed during the period, followed closely by medical sciences with 639 dissertations. Economical sciences and technical sciences also had a substantial number of dissertations with 629 and 535 respectively. Mathematics, history, and chemistry had a moderate number of dissertations, ranging from 220 to 336. Several fields, such as astronomy, sociology, mechanics, and pharmaceutical sciences, had relatively lower numbers of dissertations, with 24 or fewer completed during the period. In most fields, the number of Doctor of Philosophy dissertations was significantly higher than the number of Doctor of Science dissertations, indicating that Ph.D. programs were more prevalent during this period.

Overall, the data suggests that Philological sciences, medical sciences, economical sciences, and technical sciences were the most active areas of research with the highest number of dissertations completed in Azerbaijan during the specified timeframe. The distribution of doctoral degrees also varied across different fields, with Ph.D. degrees being more common overall. When we consider all this data, the following question arises. What may underlie the notable surge in the number of successfully defended dissertations within the domain of philological sciences in Azerbaijan over the past few decades?

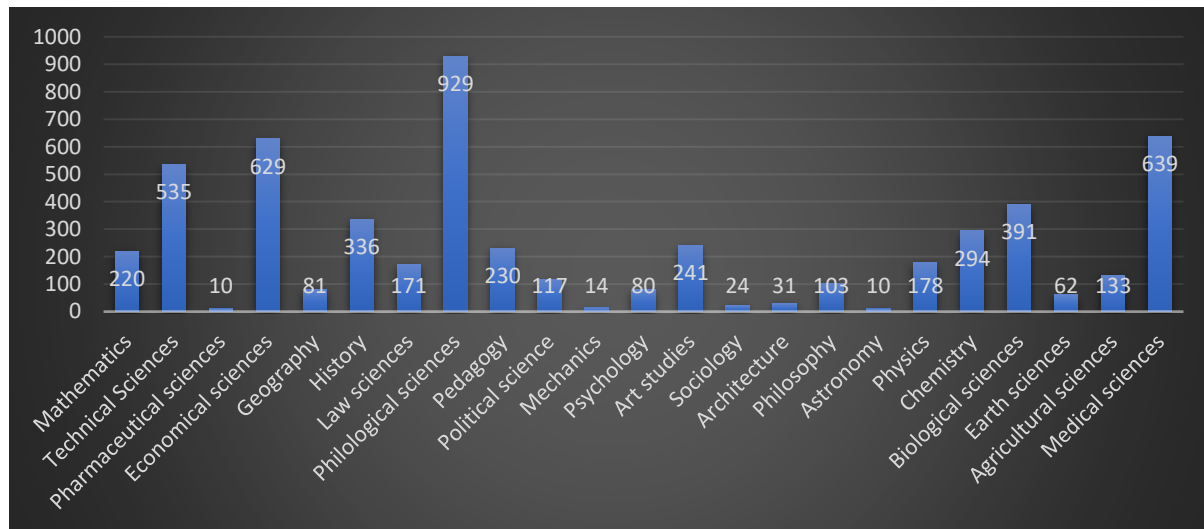


Figure 3. Total number of dissertations by the field of sciences (2013-2023)

Source: by author retrieved from HAC database in July-August 2023

There could be several reasons for a great number of defended dissertations in the field of philological sciences in Azerbaijan in the last decade. Some possible factors contributing to this trend include:

- Increased focus on education: Azerbaijan's government and educational institutions may have invested more resources and efforts in promoting higher education and research in recent years. This could have led to a greater number of students pursuing doctoral studies in philological sciences.
- Improved research facilities: Access to better research facilities, libraries, and databases could have facilitated the research process for scholars in the philological sciences. This, in turn, may have encouraged more individuals to undertake doctoral research.
- Growth in academic institutions: The establishment and expansion of universities and research centers in Azerbaijan might have created more opportunities for doctoral studies in philological sciences.
- Faculty support and expertise: The presence of experienced and qualified faculty members in philological sciences could have motivated students to pursue research in this field. Supportive and well-guided mentoring plays a crucial role in encouraging students to defend their dissertations.
- Funding opportunities: The availability of scholarships, grants, and research funding from the government or other organizations might have encouraged students to pursue doctoral studies in philological sciences.
- Recognition and importance of philological research: If there has been an increased acknowledgment of the importance of philological research in addressing cultural and linguistic aspects, it could have attracted more researchers to this field.
- Demand for specialized knowledge: The demand for individuals with expertise in philological sciences in various fields, including education, media, and cultural institutions, might have driven more students to pursue doctoral studies in this area.
- Publishing and dissemination opportunities: If there have been more opportunities for scholars to publish their research findings in reputable journals and present at international conferences, it could have encouraged more students to engage in doctoral research.

All these reasons should be investigated individually, and this is the subject of further studies. It is important to note that while a high number of defended dissertations may indicate a thriving academic environment, it should also be accompanied by rigorous academic standards and the quality of research conducted. The academic community and relevant authorities need to ensure that the rise in defended dissertations reflects genuine academic excellence and contributions to the field.

Table 2. Distribution of dissertations defended during 2013-2023 by the field of science and degree

Science fields	Total number of dissertations (2013-2023)	Number of Doctor of Philosophy dissertations (2013-2023)	Number of Doctor of Sciences dissertations (2013-2023)
Mathematics	220	169	51
Technical Sciences	535	444	91
Pharmaceutical sciences	10	8	2
Economical sciences	629	580	49
Geography	81	71	10
History	336	293	43
Law sciences	171	146	25
Philological sciences	929	801	128
Pedagogy	230	202	28
Political science	117	101	16
Mechanics	14	10	4
Psychology	80	76	4
Art studies	241	229	12
Sociology	24	23	1
Architecture	31	26	5
Philosophy	103	86	17
Astronomy	10	8	2
Physics	178	131	47
Chemistry	294	253	41
Biological sciences	391	327	64
Earth sciences	62	55	7
Agricultural sciences	133	113	20
Medical sciences	639	536	103
Total	5458	4688	770

Source: by author retrieved from HAC database in July-August 2023

Figure 4 presents data on the number of dissertations completed in various science fields in Azerbaijan between the years 2013 and 2023. The data is further categorized into two types of doctoral degrees: Doctor of Philosophy (Ph.D.) dissertations and Doctor of Science (D.Sc.) dissertations. ((HAC), 2023). When comparing Ph.D. and D.Sc. dissertations, Ph.D. dissertations were more prevalent across most fields, with

higher numbers in almost all categories. During the 2013-2023 period, a total of 5,458 dissertations were completed across all fields. Out of these, 4,688 were Ph.D. dissertations, and 770 were D.Sc. dissertations. Figure 4 provides a comprehensive overview of the research output in different science fields in Azerbaijan over the specified decade. It highlights the diversity of 23 academic pursuits in the country and demonstrates the focus on Ph.D. programs, which contribute significantly to the overall volume of dissertations completed.

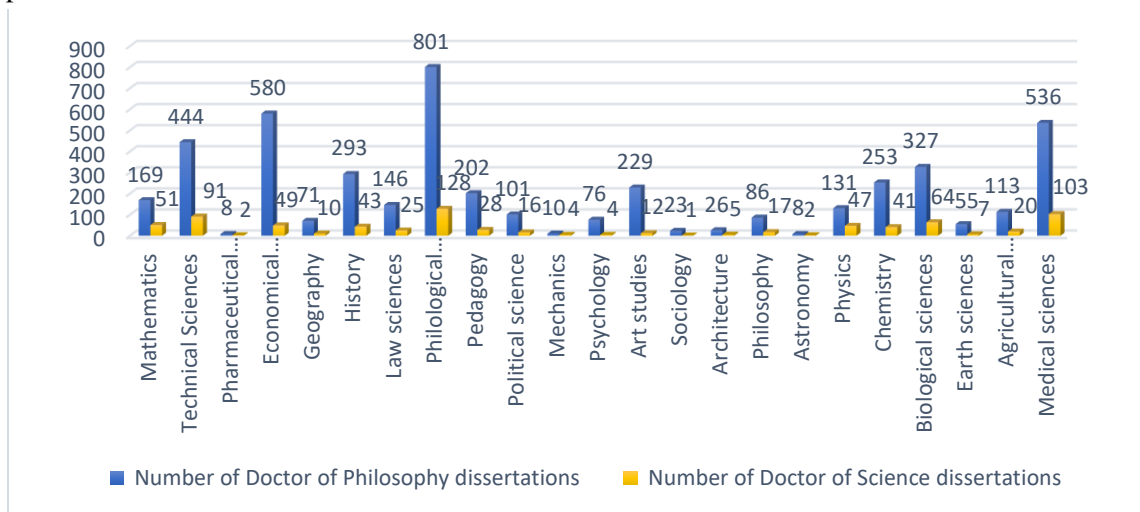


Figure 4. Total number of dissertations by the fields of science and degree (2013-2023)

Source: by author retrieved from HAC database in July-August 2023

Conclusion

This research aims to present a comprehensive historical overview of dissertation research in Azerbaijan through a bibliometric lens, providing a nuanced understanding of the nation's scholarly contributions. By evaluating the impact of academic work, identifying influential research trends, and fostering an evidence-based dialogue, this study aspires to contribute to the enhancement of research policies, educational programs, and the overall academic landscape in Azerbaijan. In conclusion, this bibliometric analysis of dissertations spanning the period from 1920 to 2023 reveals a total of 13,286 successfully defended dissertations, shedding light on the academic contributions and scholarly trends within the field.

Data Availability Statement

Not applicable.

Acknowledgements

Not applicable.

Ethical considerations

The author avoided from data fabrication and falsification.

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Conflict of interest

The author declares no conflict of interest.

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