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PAGES: 227-246

ORIGINAL PDF URL: https://dergipark.org.tr/tr/download/article-file/3080305

A Bibliometric Study on Turkey - Azerbaijan Economic Relations

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ABSTRACT

This study presents a comprehensive bibliometric analysis of publications related to Turkey-Azerbaijan economic relations and cooperation spanning the years 1997 to 2022. Utilizing the Web of Science academic database with specific keywords such as "Turkey-Azerbaijan economic cooperation" and "Turkey-Azerbaijan economic relations," the research identified and analyzed 39 relevant publications. The research involves a comprehensive exploration of bibliometric data, encompassing aspects like bibliographic coupling, citation, co-citation, co-cited references, authors, topics, and research methodologies. The research comprises distinct sections, encompassing a concise review of literature focused on the economic relations between Turkey and Azerbaijan, additionally, it includes a thorough exploration of literature studies and bibliometric analyses related to the economic ties between these two nations. The research further incorporates an elucidation of the bibliometric analysis process and concludes with a section dedicated to evaluating the findings. The majority of publications, approximately 82%, are in the form of articles, with proceedings papers, reviews, and editorial materials contributing to the remainder. Keyword analysis revealed terms like "Turkey" and "Azerbaijan", "energy," "Caucasus," "Kazakhstan," "Russia," "pipeline," "oil," and "gas". Regarding research methods, qualitative research emerged as the preferred approach for review methods. The research findings also pointed to a notable inclination towards single-author contributions, a tendency likely influenced by the utilization of qualitative research methods. Conversely, studies adopting quantitative methods frequently involved multiple authors, often ranging from three to four. In conclusion, the research underscores the need for a more comprehensive, interdisciplinary, and quantitative examination of Turkey-Azerbaijan economic relations.

***Key Words:** Turkey - Azerbaijan, economic relation, economic cooperation, bibliometric analysis*

***JEL Classification:** F00, F50, C45, C88*

Türkiye - Azerbaycan Ekonomik İlişkileri Üzerine Bibliyometrik Bir Çalışma

ÖZ

Bu çalışma, 1997-2022 yıllarını kapsayan, Türkiye-Azerbaycan ekonomik ilişkileri ve iş birliğine ilişkin yayınların kapsamlı bir bibliyometrik analizini sunmaktadır. Web of Science akademik veritabanından "Türkiye-Azerbaycan ekonomik iş birliği" ve "Türkiye-Azerbaycan ekonomik iş birliği" gibi spesifik anahtar kelimelerden yararlanılarak ilgili 39 yayını belirledi ve analiz edildi. Araştırma, bibliyografik eşleştirme, alıntı, ortak alıntı, ortak alıntı yapılan referanslar, yazarlar, konular ve araştırma metodolojileri gibi hususları kapsayan bibliyometrik verilerin kapsamlı bir incelemesini içermektedir. Araştırma, Türkiye ile Azerbaycan arasındaki ekonomik ilişkilere odaklanan literatürün

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kısa bir incelemesini içermekte, ayrıca bu iki ülke arasındaki ekonomik bağlara ilişkin literatür çalışmalarının kapsamlı bir incelemesini ve bibliyometrik analizleri içermektedir. Araştırma ayrıca bibliyometrik analiz sürecinin açıklamasını da içeriyor ve bulguların değerlendirilmesine ayrılmış bir bölümle sonuçlanıyor. Yayınların çoğunluğu, yaklaşık % 82'si makale türünde olup geri kalanında bildiriler, incelemeler ve editoryal materyaller katkıda bulunmaktadır. Anahtar kelime analizi "Türkiye" ve "Azerbaycan", "enerji", "Kafkaslar", "Kazakistan", "Rusya", "boru hattı", "petrol" ve "gaz" gibi terimleri ortaya çıkarmıştır. Araştırma yöntemleriyle ilgili olarak, özellikle inceleme yöntemleri için tercih edilen nitel araştırma yaklaşımı ön plandaydı. Çalışma ayrıca, muhtemelen nitel araştırma yönteminin kullanımına atfedilen, tek yazarlı yayın tercihini de ortaya koymaktadır. Tersine, niceliksel yöntemleri benimseyen çalışmalar sıklıkla birden fazla yazar -genellikle üç ile dört arasında sayıları değişen- iş birliği içermekteydi. Sonuç olarak araştırma, Türkiye-Azerbaycan ekonomik ilişkilerinin daha kapsamlı, disiplinler arası ve niceliksel olarak incelenmesi ihtiyacının altını çizmektedir.

Anahtar Kelimeler: Türkiye - Azerbaycan, ekonomik ilişki, ekonomik işbirliği, bibliyometrik analiz

JEL Sınıflandırması: F00, F50, C45, C88

INTRODUCTION

The relationship between Turkey and Azerbaijan holds significant importance, particularly in the context of their shared history and geographical proximity (Goudarzi et al., 2015). Azerbaijan's substantial oil resources and its cultural and linguistic affinities with Turkey underscore the significance of their bond. The economic ties between the two countries continue to form a robust basis for their overall relations, with a notable cornerstone being their collaborative efforts in the field of energy. Thus, attracting investments from Turkey, particularly in non-energy sectors, is of strategic importance. Azerbaijan finds itself relatively isolated from global markets, and Turkey plays a pivotal role in creating economic opportunities in favor of Azerbaijan. The collaborative efforts between these two nations have been substantiated by academic studies.

Turkey is a country with a strong presence in the realm of scientific research. This robust scientific research environment can be attributed to Turkey's unique geopolitical position in the Eurasian region, fostering substantial scientific cooperation with Western nations and neighboring countries. Nevertheless, bibliometric studies investigating Turkey's research endeavors in the context of economic cooperation are currently limited. A bibliometric analysis focusing on economic relations between Azerbaijan and Turkey has not been identified within the available literature. Consequently, there is a need for more recent studies that explore international economic collaboration between these two nations.

Given this backdrop, a critical exploration of the qualities and the philosophical framework underpinning existing research in the literature is vital. This study aims to evaluate research on Turkey-Azerbaijan economic relations using the bibliometric analysis method. The bibliometric analysis method is applied to investigate academic literature found in the Web of Science database. This involves an examination of Turkey-Azerbaijan economic relations through an analysis of the references, publication venues, citations, authorship count, keywords, and collaborative authorships in relevant research.

The study's findings reveal that the majority of examined publications are in the form of articles, while other academic publication types such as proceeding papers

and reviews are relatively scarce. A keyword analysis uncovers prevalent terms like "Turkey" and "Azerbaijan," along with keywords such as "energy," "Caucasus," "Kazakhstan," "Russia," "pipeline," "oil," and "gas." Notably, the emphasis in the literature on Turkey-Azerbaijan economic relations primarily revolves around the energy sector. Despite this focus, there are additional sectors like construction materials, leather, petroleum gas, cotton yarn, furniture, metal and iron, steel, education, sport and tourism between these two nations, which receive investments. Yet, these domains seem to be either overlooked or inadequately addressed.

Regarding research methodologies, qualitative research methods are predominant, with political science journals being the primary avenue for publication, thus influencing the use of review and official document review methods. While this may align with the subject's nature, the presence of econometric model studies and quantitative analyses suggests that deeper economic relations between the two countries can be enhanced through the adoption of quantitative models and the exploration of different sectors. Although academic and scientific journals stand out, publications produced by newspapers and organizations are also cited as sources. This is the evidence that the journal sources that receive the most citations indicate that the topic has not yet reached the desired maturity.

The authorship analysis shows that the majority of studies are conducted by single author. This may be attributed to the use of qualitative research methods. In contrast, studies employing quantitative methods tend to involve three to four authors. This study underscores the limited number of works on this bilateral relationship in the literature. The literature primarily overlooks interdisciplinary themes and concentrates on specific topics, notably in the energy sector. Shifting the focus towards collaborative authorships and quantitative research is expected to enhance the quality of research and provide fresh perspectives. Further academic studies should delve deeper and explore a broader perspective in this context.

The study, pinpointing pivotal themes and influential authors shaping research on Turkey-Azerbaijan economic relations, provides a distinct perspective for future investigations in this field. Additionally, by compiling all available materials on the subject, this study serves as a foundational resource for meta-analyses. It offers a quantitative and verified literature review source that can be utilized in future research. The findings are presented and discussed using tables and figures, and the conclusions section elaborates on the results while providing recommendations for future research endeavors.

I. TURKEY-AZERBAIJAN ECONOMIC RELATIONS

With the dissolution of the Soviet Union and the establishment of independent governments in Central Asia and the Caucasus, Turkey now has the possibility to play a new economic and political role in the region (Rafi & Mazloumi, 2012). Turkey's geographic location, which connects the Caucasus to Europe, ties the region's energy and economy to the world economy, and redefines its strategic location, history, and geography as a center, which has an impact on the region's economic stability (Kardaş, 2011). Turkey's relations with Caucasus countries, particularly Azerbaijan, are very crucial (Goudarzi et al., 2015). Because of its cultural and linguistic proximity, as well as its significant oil resources, Azerbaijan is

of particular importance to Turkey. Azerbaijan wants to cut its ties with Russia and strengthen its ties with the European Union. For this reason, it supports the European Union-Turkey-sponsored Transport Corridor Europe-Caucasus-Asia (TRACECA Passage). This corridor will allow energy resources from the Caspian Sea and Central Asia to be transported to Europe (Goudarzi et al., 2015).

Although more studies have been done on political and military elements on Turkey-Azerbaijan relations, the economic factor is as important as these elements. Economic relations create one of the solid foundations of relations between the two countries day by day. One of these foundations is cooperation in the field of energy. Turkey is also a major investor in the non-energy sector for Azerbaijan. Since Azerbaijan's economy is largely based on the energy sector, it is strategically important to receive investments from Turkey in non-energy fields. These sectors, in which investments are made other than energy, can be counted as construction materials, leather, petroleum gas, cotton yarn, furniture, metal and iron and steel. Although the economic relations are not one-sided, Azerbaijan has also invested in Turkey in various fields in recent years. In similar areas; energy, refinery construction, and shipping investments (Aslanlı, 2018).

The fact that Azerbaijan is geographically isolated and locked off from the rest of the world markets makes it difficult to export its natural resources. Azerbaijan needed new avenues to transport its natural products and Caspian oil and gas to global markets as production and mining surged (İpek, 2008). Azerbaijan's response to this problem was to build new oil and gas pipelines with the help of Western countries. The Baku-Tbilisi-Ceyhan petroleum pipeline and the Baku-Tbilisi-Erzurum natural gas pipeline were two projects that helped Turkey and Azerbaijan build substantial energy links. The Baku-Tbilisi-Ceyhan pipeline is 1,800 kilometers long, with a construction cost of $2.4 billion. The pipeline began operations in 2006 and runs all the way to Turkey's Mediterranean coast (Bilgin, 2011). This initiative generates revenue for related countries, particularly Azerbaijan. Turkey feels that this project is critical to the country's foreign policy approach. The pipeline represents economic integration between Turkey and the region's Turkish-speaking countries (Goudarzi et al., 2015).

II.LITERATURE REVIEW

Despite the considerable time since gaining independence, achieving the anticipated socioeconomic relations with Azerbaijan remains unrealized. The current literature focuses on energy, economic ties, and diplomacy. When examining the regional dynamics in which Turkey and Azerbaijan are engaged, it becomes imperative to acknowledge the significant influence of major global powers such as Russia, the United States, and Iran, in addition to the Turkic States. These influential nations are redefining the dynamics of the center-periphery relationship without severing their ties with Russia, a crucial factor to consider (Çınar, 2013). Consequently, it's of paramount importance not to underestimate Russia's enduring impact on Azerbaijan and other Turkic States. In light of these complex dynamics, the pursuit of enhanced relations with Azerbaijan presents both collaborative and competitive opportunities for Turkish foreign policy.

The charter of the Turkish Speaking Countries Council, with Turkey and Azerbaijan as members, emphasizes enhancing commercial ties. It stresses creating favorable conditions for trade and investment, streamlining customs and transit processes, and facilitating the movement of goods, capital, services, and technologies through financial and banking transactions. Sobirov (2020) has pointed out that the economic and political integration opportunities among Turkish-speaking countries are limited. Before the establishment of the Turkish Speaking Countries Council, it has been noted that Azerbaijan had better trade relations with Turkey.

However, when we look at a more recent development, the Shusha Declaration signed between Turkey and Azerbaijan on June 15, 2021, can be considered a significant historical milestone for the Turkic world. This declaration, encompassing military, political, and economic aspects, serves as a crucial component for the future constitution of the Turkic world and outlines a roadmap for cooperation between Turkey and Azerbaijan (Shiraliyev, 2022). It has elevated their relationship from a "Strategic Partnership" to an "Alliance," not only addressing bilateral relations but also impacting regional ties and the broader Turkic world (Alkan & Mehdizadehyoushanlouei, 2023).

Humbatov and Sari (2017) found that trade between Turkey and the Turkic Republics, including Azerbaijan, has historically been at very low levels. Despite significant potential and willingness for increased trade, the absence of an economic transportation route among these countries hinders the establishment of robust economic relations. Geographically distant from Turkey and lacking coastlines on open seas, these countries face logistical challenges in enhancing trade.

Azerbaijan, whose economy is heavily reliant on oil revenues, has emphasized the importance of economic diversification in its sustainable development goals and has expressed the need to break free from dependence on natural resources through the "Azerbaijan 2020: Vision for the Future" concept. To restructure the economy and address some of the barriers and limitations to non-oil diversification, the country requires innovative technologies, new management practices, and stronger connections to global markets. All of these add up to the increasing need for foreign direct investment and the much-needed expertise and knowledge that typically accompany it (Humbatov & Sari, 2017).

Technological advancements have redefined distance, accelerating international relations and collaborations. Agreements in international cooperation often revolve around sharing scientific knowledge, leading to activities like academic partnerships, exchange programs, workshops, and symposiums (Şahin & Candan, 2018). These activities contribute significantly to addressing common regional and global challenges, as well as raising awareness of potential strengths or threats.

The field concerned with measuring the productivity and effectiveness of scientific activities, academic research, and collaborations is known as "bibliometrics" (Reyes-Gonzales et al., 2016). Bibliometrics can be regarded as a response to the need for new approaches in evaluating scientific studies in the evolving academic landscape, characterized by a rapid increase in publications and citations, easier access to information, and the strategic importance of scientific production and collaboration. Data obtained from bibliometric analyses serve as

crucial indicators in shaping science policies and making future decisions for countries and international organizations, essentially forming a scientific roadmap (Şahin & Candan, 2018).

Bibliometric analyses are a prerequisite for shaping both national and international science policies (Pinto & Fernandez, 2015). Through bibliometric analysis and citation analysis, it is possible to gain insights not only into the impact of a publication but also into the characteristics of knowledge dissemination and international collaboration (Sooryamoorthy, 2017).

Turkey, known for substantial scientific research, is actively engaged in collaborations with Western countries and neighboring nations, reflecting its unique geopolitical position in the Eurasian region. However, bibliometric studies on Turkey's economic collaborations are limited, with no known study using this approach to analyze the economic relationship between Azerbaijan and Turkey. More up-to-date research on international economic cooperation between these countries is needed, although some relevant studies have been encountered.

In their bibliometric study on scientific productivity in the Turkic World, Şahin and Candan (2018) highlighted Turkey's dominance, producing more documents than Kazakhstan, Azerbaijan, and Kyrgyzstan combined. Turkey is engaged in 95.24% of collaborative works and ranks 28th globally in citation, while Azerbaijan ranks 98th among 151 countries.

When assessing scientific collaborations within countries, Turkey and Azerbaijan demonstrate higher levels of bilateral scientific activities compared to other members, with the most common co-authored works occurring with Turkey. Despite limited co-authored documents in the early 2000s, academic collaboration among Turkic Council member countries, particularly Turkey and Azerbaijan, has steadily increased since 2008, with Azerbaijan closely collaborating with Turkey and Russia in scientific endeavors.

Dölek et al. (2023) conducted a bibliometric analysis of studies conducted in the field of medicine among Turkic States. Although the number of publications from Turkey is high among Turkic States in the field of medicine, it was observed that the citation count did not increase in the same proportion. This was interpreted as an indication that the scientific infrastructure has not yet matured as much as in more developed countries. As the influence of the Soviet regime waned, countries saw an increase in their scientific outputs.

Factors contributing to low scientific productivity in Turkic States, beyond Soviet influence, include inadequate financial resources, limited clinical and laboratory infrastructure, a shortage of researchers, journal index absence, underdeveloped editorial competence, scientific isolation, high publication costs, and a lack of interest in academic careers. The study notes that in Turkic States, excluding Turkey, researchers trained in Russian may be a significant factor leading to lower scientific productivity in terms of academic collaboration. Despite mandatory English education, weak writing skills may lead researchers to publish in lower-impact journals.

The use of not only the Turkish language but also the differences between Azeri and Turkish languages constitutes one of the fundamental challenges in finding common ground between Turkey and Azerbaijan.

In his study, Toklu (2023), conducted a comparative performance analysis of science and technology activities in the Turkic World. He emphasized that the establishment of solid foundations for science and technology policies in these countries, along with their healthy implementation, would result in an increase in patents, industrial designs, and scientific publications. Encouraging researchers working in R&D and innovation, enhancing university-industry collaborations, and formulating long-term strategies were identified as factors that would positively contribute to the development of science and technology mechanisms.

Güvendi (2023) conducted a bibliometric analysis on 'Turkic World' publications in the Web of Science database, finding 1159 research articles out of a total of 1249 publications which make up the majority, were research articles. It was noted that there was a relative shortage of other publication types such as article reviews, editorial materials, and letters. Turkish academicians predominantly researched Health Sciences, while researchers from other regions focused on Social Sciences. The highest number of publications related to "Turkic World" in WOS categories were in Area Studies, Education, International Relations, Economics, Political Science, Sociology, Environment, and Occupational Health.

Çelik and Güllü (2023) conducted a bibliometric analysis of a total of 238 articles on the topic of "Turkic World" available on the DergiPark platform. They found that the majority of these articles, specifically 194 of them, were published between 2017 and 2021. The publications were in Turkish, English, Azerbaijani, and Kazakh Turkish languages. Furthermore, the journals in which these articles were published were primarily public-owned (60%), and approximately 80% of the articles were authored by a single author. The prevalent keywords in these articles included terms such as "Turk," "Turkic World," "Turkic Republics," "Turkic Culture," "Turkic Council," "Turkic World Students," "Turkic Geographies," and "Azerbaijan."

The increasing role of science as a production factor and its impact on a country's competitive power have amplified the importance of international scientific collaboration. Scientific collaboration is especially crucial for countries located in a region where it can act as a driving force for economic integration. Kravtsov (2019) examined Russia's scientific collaboration with the post-Soviet States during the years 2000-2017. According to the research findings, Russia engaged in scientific collaboration, particularly in the fields of chemistry and physics, with Azerbaijan, Kazakhstan, and Uzbekistan. This collaboration can be linked to the primary involvement in the petrochemical sector among these countries.

III.BIBLIOMETRIC ANALYSIS

Bibliometric analysis, a tool using statistical and mathematical methods, examines publication patterns and creates link maps (White and McCain, 1997). It includes impact indicators, bibliometric coupling, citation and co-citation analysis, and mapping, offering insights into studies' keywords, common citation patterns, referenced journals, country of origin, and more. The effectiveness of citation analysis depends on whether the writers cite the relevant sources they use in their

research (Allaham, 2022), and the frequency of mentions indicates a publication's importance in the field (Culnan, 1987). Co-citation analysis, utilizing academic databases and analytical methods, examines papers referring to a specific pair of references (McCain, 1990). Conducting this analysis involves searching for sources on a subject and collecting relevant data (Allaham, 2022).

IV.FINDINGS

In this study, we conducted searches in the Web of Science academic database using the keywords "Turkey Azerbaijan economic cooperation" and "Turkey Azerbaijan economic relation," and we listed the relevant results. 39 sources were used in the research after the results were filtered based on their relevance to the subject under investigation. The data went through data preparation processes. Vosviewer, a scientific mapping tool created for the depiction of bibliometric networks, was used to conduct the investigation. Figure 1 displays the several study kinds that were examined. The majority of the investigations are published in articles and conference proceedings. 82% of the studies are articles, 13% are proceedings papers, 3% are reviews, and 2% are editorial materials. The majority of the studies consist of article publications.

The dominance of articles indicates a preference for scientific journal sources among researchers in this field. Conference limitations may affect publication subjects, potentially excluding Turkey-Azerbaijan relations publications from the Web of Science database. Even a small number of editorial materials suggests a journal's special interest in or dedicated issue on Turkey-Azerbaijan economic relations, often providing a valuable resource for evaluation upon publication.

Figure 1: Publication Types
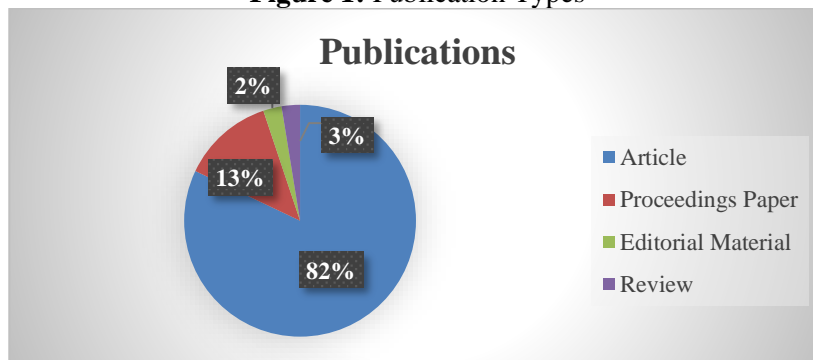
A. Publication Years

The articles were published between 1997-2022. Figure 2 lists the years that the studies were published as well as how many publications were made per year. Since the distribution of the publications by years is balanced, it is not possible to say that the studies gained momentum in some years. Although Turkey-Azerbaijan economic relations seem to be interesting for the authors after the declaration of independence of Azerbaijan, the number of studies is not sufficient. It can be said that the subject has been interesting but not studied enough since the 1990s.

Figure 2: Publication Years
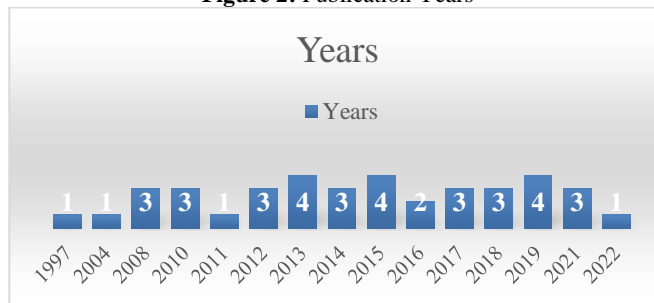
B. Co-occurrence of keywords

114 different keywords were used to analyze the keywords of the studies. Figure 3 shows 11 keywords that are used together at least twice. The round nodes on the map represent keywords. The size of the nodes indicates how often each keyword is used (Allaham, 2022). The distance between two nodes conveys the intensity of their bond. If the distance is short, there is a strong relationship, if it is long, there is a weaker relationship. In the ranking of the most frequently searched keywords, "Turkey" and "Azerbaijan" are at the top. It is expected that these words will be used the most as keywords due to the nature of the research. Other most commonly used words are "Energy", "Caucasus", "South Caucasus", "Kazakhstan", "Russia", "Soviet Russia", "Pipelines", "Central Asia" and "Oil and gas" as shown in Table 1. When the main theme of the keywords is examined, it is seen that geographically regional location, energy and natural resource exchange, and Russia-Turkey-Azerbaijan bilateral economic relations play an important role.

Table 1: Co-occurrence of Keywords

Keyword	Occurrence	Total Link Strength
Turkey	7	16
Azerbaijan	5	12
Energy	3	8
Caucasus	4	7
South Caucasus	4	7
Kazakhstan	2	5
Russia	4	5
Soviet Russia	2	5
Pipelines	2	4
Central Asia	2	3
Oil and Gas	2	2

Figure 3: Co-occurrence Map of Keywords

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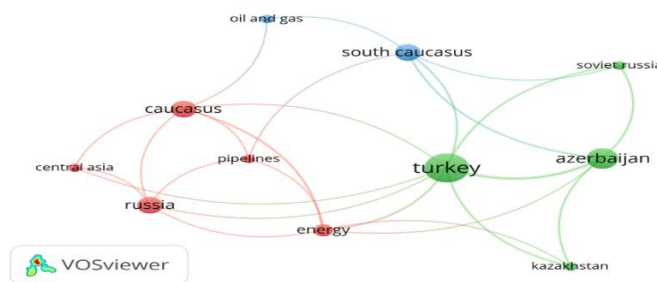
C. Research fields of publications

Figure 4 shows the research fields of the publications. The publications were mostly published in the research fields of "Area Studies", "Political Science", "Economics". Area studies are called regional studies. They are interdisciplinary research areas related to specific geographical, national or cultural regions. This term refers to a broad category of research that includes both the social sciences and the humanities and encompasses a wide range of topics. International relations, strategic studies, history, political science, political economics, cultural studies, languages, geography, literature, and other related disciplines are examples of typical area studies. Figure 4 shows that the research areas with the most publications are "Area Studies". The following topics fall within the scope of area studies in the fields of politics, economics, history, international relations, humanities, religion, geography. The political dimension of Turkey-Azerbaijan economic relations is more prominent than the economic dimension. While other field research elements follow this economic relationship, the prominent element is computer science. Although few in number, it is remarkable that it focuses on technological subjects such as computer science. Despite this, deeper and more specific studies such as tourism, education, local products, textiles, which may be economically important, were not included in the research fields. We believe that the relations between these two countries, which share a common culture and history, extend beyond oil, energy, and political factors. Academic studies need to be further deepened and evaluated in a broader perspective.

Figure 4: Research Fields of Publications
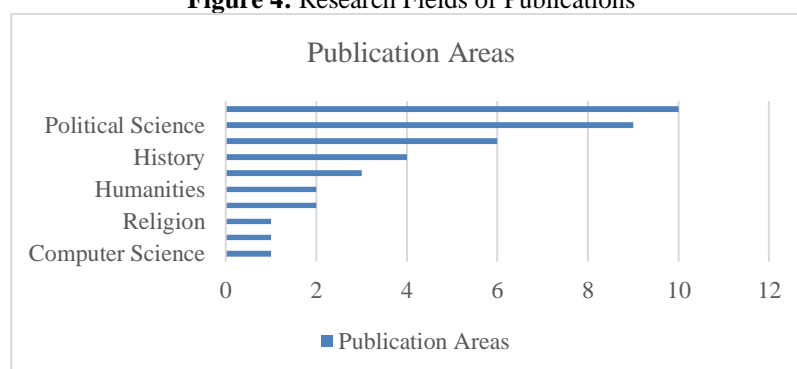
D. Bibliometric coupling - Documents

Bibliographic coupling, an approach identifying documents citing common sources, is utilized to measure the number of shared references among publications, indicating references made to each other within the publications (Kessler, 1963; Rehn and Kronman, 2014). This is the case of making references to each other within the publications themselves. Common references in studies on Turkey-Azerbaijan economic relations are detailed in Table 2 and Figure 5, listing frequently cited studies along with authors, publication year, links to other publications, and page count. The highest link among all the studies within themselves belongs to the references of Goudarzi (2015), Çavuşoğlu (2019), Saari (2011), Herzig (2004).

Çavuşoğlu (2019), Saari (2011) and Herzig (2004) sources form a cluster within themselves. The general theme of these studies draws attention to issues such as regionalism, regional cooperation, alliance and geopolitical importance. Iran relations are also included in this regional theme. Especially in 2014-2016, there were developments such as the good relations between Iran and Azerbaijan and Iran's support for the TANAP project for gas transportation from Azerbaijan to Turkey. These developments are in harmony with the fact that Goudarzi (2015), which deals with Iran-Azerbaijan relations, acts as a bridge between the two themes in the theme shown in the figure. The sources of Kim (2016), Nurmammadov (2016) and İbrahimov (2015) reveal a theme that focuses heavily on energy resources in the economic relations of Turkey and Azerbaijan. The geopolitical position of Turkey, the fact that the surrounding countries (Russia, Iran, Iraq, Azerbaijan) have natural gas resources and want to transport these resources to Europe through Turkey, the potential to host energy corridors is increasing day by day and the clustering of articles in this direction emphasizes the importance of the subject.

The articles' research methods were manually examined, revealing 5 studies using quantitative research and 34 studies using qualitative research. Most publications have a single author, while those using the quantitative method typically involve three or four authors, suggesting collaborative and diverse perspectives in these studies.

The total link strength attributes for a given object show the number of links an item has with other items as well as the overall strength of those links. The total link strength of a researcher's co-authorship links with other researchers, for example, reflects the overall strength of that researcher's co-authorship links with other researchers.

Bibliographic coupling analysis is done according to the degree of relatedness of the researchers and the citation of the same publications. The more often two researchers cite the same publications, the stronger the relationship between them. Expressed by formula, N is the number of researchers included in the analysis and M to indicate the number of publications, respectively. $C = [c_{ik}]$ is used to denote an N × M citation matrix. The c_{ik} element of this matrix is equal to the number of citations that publication k receives from researcher i. In addition, n_k is used to indicate the total number of citations received by k publications from all researchers included in the analysis (Perianes-Rodriguez et al., 2016). Formula;

$$n_k = \sum_{i=1}^{N} c_{ik} \tag{1}$$

Publications with less than two citations do not provide any bibliographic links. Therefore, it is assumed that each publication included in the analysis receives at least two citations. This means that $n_k > 1$ for each publication. $V = [v_{ij}]$ is used to define the N × N full count bibliographic coupling matrix. The v_{ij} element of this matrix is equal to the number of full count bibliographic coupling links between researchers i and j and is expressed as;

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$$v_{ij} = \sum_{k=1}^{M} c_{ik} c_{jk} \tag{2}$$

Therefore, the bibliographic coupling matrix V is given as:

$$V = CC^T \tag{3}$$

Table 2: Information of Examined Publications

	TLS	WoSC	Research Method	NA	Research Type	NP
Goudarzi (2015)	7	0	Review	3	Article	8
Cavusoglu (2019)	6	0	Interval number-based I/O analysis	4	Proceedings Paper	9
Saari (2011)	4	2	Review	1	Article	11
Herzig (2004)	4	17	Case-study	1	Article	16
Celikpala (2013)	3	1	Review	1	Proceedings Paper	18
Kim (2016)	3	6	Review	2	Article	19
İsmailov (2008)	3	7	Review	2	Article	16
Balci (2014)	3	1	Review	1	Editorial Material	10
Kim (2008)	2	7	Review	2	Article	22
Nagle (2008)	2	1	Review	1	Article	11
Nurmammadov (2016)	2	0	Experts Anecdot, Review, Comparative Perspective	1	Article; Book Chapter	25
Kok (2017)	2	0	Panel ARDL Method	3	Article	22
Emre (2021)	2	1	Case study (qualitative approach)	4	Article	15
Çınar (2013)	2	1	Review	1	Article	16
İbrahimov (2015)	2	0	Review	1	Article	18
Onifade (2021)	2	8	Empirical approach (Panel cointegration test, DOLS, FMOLS, Granger causality analysis)	4	Article	12
Bilgin (2010)	2	3	Review	1	Article	25
Shiriyev (2013)	1	0	Review	1	Proceedings Paper	15
Aslanli (2017)	0	1	Review	1	Article	25
Garibova (2018)	0	0	Survey, experimental observation, diachronic analysis, interview with experts	1	Article	27
Strakes (2013)	0	12	Analyzing the bilateral diplomatic instruments	1	Article	31
Naieni (2012)	0	2	Reviewing reports, interview	8	Review	7
Guzansky (2014)	0	8	Comparative Analysis	1	Article	18
Ambartsumyan (2019)	0	0	Review	1	Article	9
Mousavi (2010)	0	1	Review	1	Article	10
Uslu (2015)	0	0	Review	1	Article	14
Gahramanov (2019)	0	0	Review	1	Article	6
Dikkaya (2017)	0	0	Econometric model	3	Proceedings Paper	1
Karimli (2019)	0	0	Quantitative method	1	Proceedings Paper	8
Goksel (2015)	0	2	Review	1	Article	21
Yorgun (2018)	0	0	Review	1	Article; Book Chapter	25
Kluge (2010)	0	1	Review	1	Article	20

German (2012)	0	6	Review	1	Article	14
De Tapia (2012)	0	0	Review	1	Article	22
Bond (1997)	0	1	Review	2	Article	16
Yulu (2014)	0	0	Review	1	Article	16
İbrahim (2018)	0	0	Review	1	Article	6
Stergiou (2022)	0	0	Comparative Analysis	2	Article	18
Gunay (2021)	0	0	Comparative Analysis	2	Article	14

TLS: Total Link Strength, WoSC: Web of Science Citations, NA: Number of Authors, NP: Number of Pages

Figure 5: Bibliographic Coupling Publications
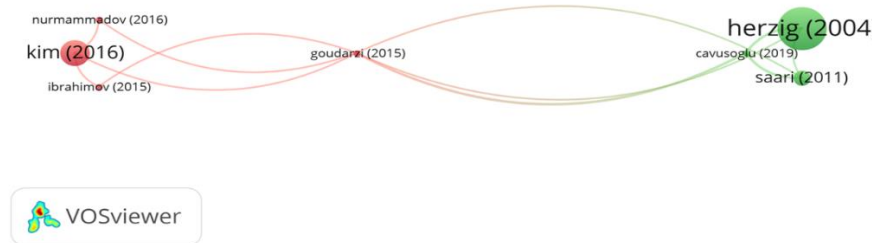
E. Number of authors

The number of authors of the publications is given in Figure 6. 26 of them have single author, 6 of them have 2 authors, 3 of them have 3 authors, 3 of them have 4 authors and 1 of them has 8 authors. It was observed that the majority of the studies were single-authored. It is thought that the lack of collaboration in the studies is not related to the interdisciplinary nature of the subject, but due to the conducting with qualitative research method as a research method. At this point, it is thought that the research method and the number of authors are related to each other.

Figure 6: Number of Authors
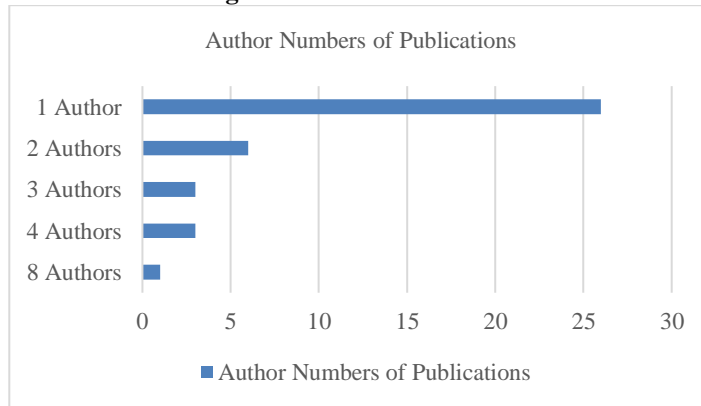
F. Citation - Countries

The country-based analysis of the most cited studies is given in Table 3. Country-based bibliometric analysis refers to the origins of publications. We believe that this analysis will contribute to laying the groundwork for future studies and collaborative authorship endeavors. England is the leading country with 2 publications and 23 citations. Ranking is based on the number of publications with the highest number of citations. Turkey follows England with 14 publications and 16 citations. Since there is no relationship or connection between the cited countries, mapping has not been done.

Table 3: Cited Countries

Country	Number of Publications	Number of Citations
England	2	23
Turkey	14	16
South Korea	3	13
USA	5	9
Azerbaijan	6	8
İsrael	1	8
Georgia	1	7
İran	3	3
Finland	1	2
Germany	1	1
Russia	2	1
Tajikistan	1	1
Cyprus	1	0
France	1	0
Greece	1	0

G. Co-citation – Cited references

Citations within the same field aid in finding similar publications and offer theoretical resources for researchers. Co-citation analysis, determining reference pairs cited together, helps understand the intellectual organization of a discipline and forms research clusters with common themes (Surwase et al., 2011). This method is suitable for mapping the entire research field (Allaham, 2022). Figure 7 shows a map of co-cited references, Table 4 shows information on co-cited references. 1182 cited references were examined on the condition of being cited at least twice. It was determined that 13 references were cited in a common way, and only 3 of them were linked. The most cited references are; Baran (2008), Starr and Cornell (2005), and Yalowitz and Cornel (2004). References that are related to each other are; Baran (2008), Torbakov (2008) and Aydin (2004).

The most cited and linked source is Zeyno Baran's "Will Turkey Abandon NATO?" published in Wall Street magazine in 2008 is a corner post. In the column about the American intervention in the crisis between Georgia and Russia and which side Turkey will take on the security of the Black Sea and whether it will leave NATO if it is on the Russian side, Azerbaijan and Armenia also follow this crisis closely and that Turkey's move has been the subject of interest. It draws attention because it is written with a critical paradigm, deals with a regional crisis and evaluates the situation in terms of other Black Sea neighboring countries.

Table 4: Co-Cited References

Cited References	Number of Citations	Total Link Strength
Baran Zeyno, 2008, Wall Street Journal	2	6
Starr S. F., 2005, Baku Tbilisi Ceyhan	2	3
Yalowitz Kenneth, 2004, Orbis,	2	3
Davutoğlu A, 2008, Insight Türk, v10, p77	2	2
İm ks, 2003, j econometrics, v115	2	2
Kalicki jh, 2001, foreign aff, v80	2	2
Kardaş s, 2011, Turk Stud, v12	3	2
Levin a, 2002, j econometrics, v108	2	2
Torbakov i., 2008, Georgia Crisis Russi	2	2
Aydın Mustafa, 2004, Turk Stad, v5	3	1

Figure 7: Network Structure of Co-Cited References

ıydin mustafa, 2004, turk stud   torbakov i., 2008, georgia cri   baran zeyno, 2008, wall stree

H. Co-citation – Cited sources

The cited sources are interesting in terms of evaluating the common citations of the journals, the journal selections, and the journal collection serving to publication-oriented researchers on a particular subject. Through the examination of journal titles, journal co-citation networks show the macrostructure of the scientific field. Table 5 and Figure 8 give the evaluation of the co-citation analysis of the publications in terms of published source. 883 cited sources were analyzed. The most cited source is "Çerçeve" magazine published by Müsiad. This resource is not in the status of an academic journal, but in the type of magazine that deals with the business world. Among the co-cited sources, the most linked source is the journal Environmental Science and Pollution Research.

The cited sources and journals are newspapers and magazines and columns that attract the attention of the business world rather than academic publications. This situation shows once again the inadequacy of academic resources on the subject. Authors can find what they are looking for in other media rather than academic views in their research.

Table 5: Co-Cited Sources – (Journals, magazines ect.)

Source Name	Number of Citations	Total Link Strength
Çerçeve Magazine (Müsiad)	23	92
Environmental Science and Pollution Research	14	252
Central Asia and The Caucasus Journal	13	137
Energy Policy	13	133
Europe-Asia Studies	11	125
Eurasia Daily Monitor	11	71
Science of the Total Environment	9	207
Hürriyet	9	28
New Geopolitics of Central Asia and the Caucasus	8	64
Turkish Studies	8	44
The New York Times	7	124
Haaretz (Israel)	7	70
Ynet (Israel News)	7	70
International Security	7	66
Post-Soviet Geography & Economics	7	0
Journal of Cleaner Production	6	156
Journal of Southeast European and Black Sea Studies	6	96
Reuters: Breaking International News & Views	6	60
News.az	6	26
Eurasian Geography and Economics	5	81
Orbis: FPRI's Journal of World Affairs	5	68
Turkish Policy Quarterly	5	51
AzerNews	5	36

Figure 8: Map of Co-Cited Sources – (Journals, magazines ect.)
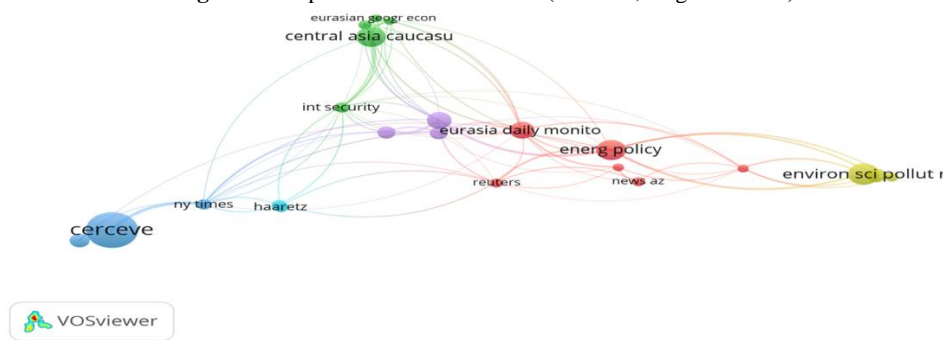
CONCLUSION

This study presents a bibliometric analysis of publications on Turkey-Azerbaijan economic relations and cooperation between 1997-2022. By searching the Web of Science academic database with the keywords "Turkey-Azerbaijan economic cooperation" and "Turkey-Azerbaijan economic relations", 39 related publications were included in the research. 82% of the publications are articles, 13% are proceedings papers, 3% are reviews and 2% are editorial materials. Journal channels are mostly chosen as the publication organ in which the publications are published. Conferences are called for publication with a certain theme and subject limitation. A paper that deals with this bilateral country relationship can target conferences in the field of social sciences, which deal with the themes of political science and international relations. Especially the organization of conferences on Turkey and Azerbaijan relations will positively affect the number of papers on this bilateral relationship. Editorial materials are reviews by journal editors for journal issues published on a particular topic. They are important for the dissemination of scientific knowledge. Editorial materials summarize the publications published in the special issue in a general framework. It is seen that there is only one special issue published on Turkey-Azerbaijan economic relations. There are considerable specific issues on Turkey-Azerbaijan economic relations. The special issues show that their subjects are separated from traditional subjects, that the interest in the subject is high and that the editors care about this subject.

It was observed that the publications were distributed equally over the years. The distribution of publications was noted to be consistent across the years, and analyzing the yearly count of publications aids in understanding the inception of research, as well as fluctuations in authors' interest in the subject. In the year-based analysis made for this purpose, it was seen that this subject was studied in equal numbers every year, but the number of publications was not more than 4 per year. In any period, the intensity of interest in the subject has not been determined.

When the combined use of keywords is examined, it is seen that the keywords of Turkey and Azerbaijan are mostly used, followed by the words energy, Caucasus, Kazakhstan, Russia, pipeline, oil and gas. It has been seen that Russia and energy issues are important actors in Turkey-Azerbaijan relations. The publications were mostly published in the field research, policy and energy genres. Studies in the

literature also evaluate Turkey-Azerbaijan economic relations mainly in terms of energy and pipeline issues. However, there are sectors such as construction materials, leather, petroleum gas, cotton yarn, furniture, metal and iron and steel, which are invested in, apart from energy, between these two countries. It is also known that Azerbaijan receives Turkish tourists. It can be said that tourism, education, leather and textile issues are ignored or not adequately addressed.

Upon examining the methods discussed, it becomes evident that the qualitative research method is the most frequently chosen approach. Publishing mostly in political science as a research field brings along the use of review and official document review method, which is a method frequently used by this field. It is thought that publishing in the review type and using the qualitative research method is due to the nature of the subject, but the existence of econometric model studies and studies in which different quantitative analyzes are adopted shows that the economic relations between these two countries can be deepened by establishing quantitative models and considering different sectors.

The number of authors showed that the majority of the studies had a single author. It is thought that the lack of cooperation in the studies is not related to the interdisciplinary nature of the subject, but due to the use of qualitative research method as a research method. It has been observed that the number of authors in the studies adopting the quantitative method varies between three and four. In this study, how Turkey-Azerbaijan economic relations are studied within the framework of the literature has been examined. It has been observed that there are not enough studies in the literature on this bilateral relationship. Studies ignore interdisciplinary issues and focus on specific topics such as energy. It is thought that focusing on author collaborations and focusing on quantitative studies will increase the quality of the studies and add different perspectives. It is thought that the relations of these two countries, which have a common culture and history, are largely based on oil, energy and political elements. Academic studies need to be further deepened and evaluated in a broader perspective.

LIMITATIONS

Like any study, this one has limitations. The data are derived from publications in the Web of Science database, searched with specific keywords. While there are likely studies on Turkey-Azerbaijan economic relations outside this timeframe in the literature and other databases, not all are searchable in the Web of Science database. The study's scope is confined to the available data within this limitation.

Research and Publication Ethics Statement

Throughout the entire process of the article, we have adhered to the research and publication ethics principles of the Journal of Management and Economics.

Author Contributions

The authors have contributed to the article as follows: The 1. author contributed 40%, the 2. author contributed 40%, and the 3. author contributed 20%.

Declaration of Interests

The authors declare that they have no conflicts of interest with any individual or organization.

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