Contents

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Overview of Economic Relationships Between Türkiye and Turkic Republics

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ABSTRACT

In the wake of the Soviet Union's collapse in 1991, the Turkic Republics, sharing a common history, languages, and cultures, embarked on establishing political and economic ties. Numerous scholarly inquiries have since delved into the economic connections and collaborations between these amicable nations. This study endeavors to contribute to the evolving landscape of research on the integration of these Turkic Republics by tracking the growth and development of academic studies concerning Türkiye's economic relations and cooperations with Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan, and Uzbekistan. Employing a bibliometric analysis approach, we delve into the theoretical foundations that underpin these academic investigations. Our analysis focuses on 119 publications drawn from the academic database Web of Science (WoS), spanning the years 1993 to 2023. These studies predominantly lean towards the utilization of econometric models and quantitative methods in their exploration of the economic relationships. Remarkably, the most frequently cited journals emerge from the domains of energy, environment, and sustainability, suggesting a clear thematic concentration. However, it is worth noting that the range of subjects covered in the research remains relatively limited, presenting a promising avenue for further exploration and diversification in future studies.

Keywords: Bibliometric analysis, Economic relations of Turkic Republics, Trade cooperation between Turkic Republics, Economic relations of Turkish States, Turkish States.

JEL Classification Codes: F13, F42, C88

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INTRODUCTION

In a rapidly changing global landscape, collaborative efforts play a pivotal role in addressing contemporary challenges and threats, offering a pathway to shared prosperity, stability, and economic growth (Guan & Qamruzzaman, 2022; Adanma & Ogunbiyi, 2024). At the crossroads of this dynamic global environment lie the Central Asian and Caucasian nations, where Türkiye's deepening political, economic, and military relations with the Turkic Republics assume critical significance. In recent years, the Turkic Republics in this region have gained increasing prominence, leading to a more comprehensive examination of their economic and socio-political performance (Çelik et al., 2023). Since the end of the Cold War, these nations, largely due to Türkiye's initiatives, have been actively working to strengthen their political, economic, and cultural ties (Kaplan et al., 2015). The prospect of fostering economic cooperation among these Turkic Republics, which share a common language, history, identity, and culture, holds the potential to contribute not only to the economic development of the Eurasian continent but also to global economic progress. This strategic alignment not only facilitates inclusive development but also serves as a counterbalance to the expanding influence of major global powers like Russia, China, and Iran. It enables Türkiye to create vital logistics infrastructure, expand transportation corridors, and access global markets, including the potential for a connection to China via Turkmenistan-Uzbekistan-Kyrgyzstan. This development of transport networks offers a cost-effective alternative, potentially bridging Asia and Europe (Al Shaher, 2022).

The Nahchivan Agreement of 2009 formalized the summits of the Heads of Turkic Speaking States, held since 1992, as the Cooperation Council of Turkic Speaking States. This council's overarching goal is to promote collaboration among Turkic Speaking States. The Turkic Republics share common ethnic, linguistic, geographical, and cultural characteristics, and can contribute to regional development through multilateral cooperation.

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Since the end of the Cold War, Türkiye has actively worked to strengthen its cultural, economic, and political ties with the Turkic Republics in the Caucasus and Central Asia, taking significant steps in foreign policy as these regions gained strategic importance (Kaplan et al., 2015).

To promote political unity among the Turkic Republics, the Organization of Turkic States (OTS) was established (Buyar & Uğur, 2022). The OTS is taking concrete steps to increase trade among Turkic Republics. The organization aims to facilitate more efficient trade flows between countries by accelerating customs procedures and eliminating trade barriers. Additionally, it seeks to connect the Turkic Republics through joint projects to enhance energy infrastructure and increase energy cooperation (Çetinkaya & Demirel, 2024). Economic collaboration is at the core of the OTS's objectives, which include facilitating financial and banking processes, promoting trade and investment by establishing favorable conditions, and streamlining customs and transit procedures. The summits held by the organization have covered important economic areas, including transportation, tourism collaboration, and assistance for small and medium-sized enterprises.

Baghirov (2022) underscored the untapped economic potential within the OTS, pointing out that its total trade volume constitutes a mere 3% of the global trade figures. In a similar vein, Akçapa (2023) emphasized that only 14 billion dollars out of the total 720 billion dollars in foreign trade among the member nations of the OTS is conducted within the framework of the organization itself. This disparity highlights that the full economic potential of the Turkic States has not yet been effectively harnessed or realized.

In a study based on IMF (International Monetary Fund) data, İstikbal (2022) projected that the total Gross Domestic Product (GDP) of the member countries of the OTS will reach 2 trillion dollars by 2027. This indicates the rise of a regional economic power (Akçapa, 2023). These developments will enhance the economic influence of the OTS and strengthen regional economic integration. Increasing cooperation among Turkic States will enhance their competitiveness in global markets and consolidate regional stability. Moreover, the geographical location of the OTS in strategically significant regions offers significant opportunities for countries along the trade corridors from China to Europe.

Additionally, global changes and regional developments are making the organization more important. The economic impacts of COVID-19, energy and food crises exacerbated by the Ukraine-Russia conflict, and other issues have made it difficult for states to address these challenges alone (Akçapa, 2023). In this context, it is crucial to assess the effectiveness of the OTS's activities and explore further opportunities for cooperation. The OTS provides a platform to strengthen positions in common markets and gain greater access to global markets.

Turkey plays a key role in scientific research, benefiting from its strategic position in Eurasia, which enables robust collaboration with both Western and neighboring countries. Nevertheless, there is a limited number of bibliometric studies focused on Turkey's economic partnerships, particularly with Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan, and Uzbekistan. Highlighting the need for more recent research on Turkey's economic ties with the Turkic Republics.

This study's primary objective is to scrutinize the academic literature concerning economic connections between Türkiye and the aforementioned Turkic Republics. Employing the bibliometric analysis method, this research explores the academic literature available within the WoS database, delving into the sources referenced by researchers and examining the interconnections and impacts of publications contributing to this subject. By identifying prevalent themes and influential authors in the domain of economic ties among the Turkic Republics, this study lays the foundation for future research endeavors. It provides insights into Türkiye-Turkic Republics' economic relations by analyzing references, publication journals, citations, keywords, and collaborative authorships.

The analysis of the results shows that most of the publications are classified as articles, with other types of academic publications, such as conference proceedings and reviews, being comparatively limited. Noteworthy keywords in the literature include "Turkey," "Azerbaijan," "energy," "trade," "financial development," "Central Asia," "China," and "Russia." It is worth highlighting that the literature predominantly centers around the energy sector. However, sectors such as cotton yarn, construction materials, leather, furniture, steel and metal, sports, education, and tourism—despite receiving investments among these countries—seem to attract comparatively less attention.

The study further indicates a robust interest in this field, primarily evident in research articles, underscoring the academic enthusiasm for exploring the economic dynamics of the Turkic World. Yet, the limited number

of proceeding papers highlights the need for additional academic events and collaborations to facilitate the exploration of economic, political, and cultural ties among these nations. Organizing conferences and promoting academic collaborations focusing on the economic relationships between these countries can play a pivotal role in enhancing these multifaceted relationships.

Academic focus on these topics has grown in direct response to key historical events, particularly the collapse of the Soviet Union in 1991 and the subsequent formation of the Organization of Turkic States (OTS) in 2009. These milestones significantly spurred scholarly interest. Despite the rising attention, however, the body of research remains somewhat limited, failing to fully capture the intricate nuances and multi-faceted nature of the subject matter.

Moreover, the analysis of bibliometric coupling data highlights a distinct preference for quantitative methodologies over qualitative approaches within the studies. Methodologies rooted in econometrics enable versatile analyses involving multiple variables and require expertise in mathematics, economics, and statistics. Notably, the presence of technically sound and up-to-date publications among the bibliographically matched references underscores a recent shift in scholarly interest toward more technically oriented research methods.

Authors in the field increasingly seek to optimize resource utilization, particularly in areas related to environmental sustainability and the integration of clean energy sources, signifying substantial investments in ambitious projects. These trends emphasize the need for comprehensive assessments of their effectiveness.

Economic policy-focused publications that cater to policymakers tend to take the form of review articles. These reviews make significant contributions to the existing literature by offering insights into progress within a given field, tracing the historical evolution of events, and fostering diverse perspectives.

Furthermore, this study compiles essential resources, serving as a foundational reference for future meta-analyses and quantitatively validated literature reviews. The study's outcomes are presented with accompanying discussions and illustrated through tables and figures. The concluding section offers recommendations for future research, along with an explication of the study's key findings.

LITERATURE REVIEW

Despite the long-standing independence of the new Turkic Republics, it is apparent that our socioeconomic connections with them continue to fall short of expectations. The current state of the literature in this field, encompassing aspects such as energy, trade, diplomacy, and more, can be characterized as a dynamic repository of studies that predominantly focus on various subtopics. It is important to recognize the considerable impact of dominant powers like Iran, the USA, and Russia in the region, in addition to the significant contribution of the Turkic Republics.

Notably, the ruling elites in these countries express a shared desire for the redefinition of the center-periphery relationship. However, it's important to underscore that none of them seek to break ties with Russia (Çınar, 2013). Russia's formidable authority over the Turkic Republics in this context remains a noteworthy factor that should not be underestimated. Within this context, it is reasonable to assert that Turkish foreign policy operates within a spectrum of both competition and cooperation, as it navigates the vast resources and potential offered by Central Asia and the Caucasus.

Beyond the well-recognized cultural and historical connections frequently discussed in the literature, Sobirov (2020) argues that the opportunities for political and economic integration among Turkic Republics remain limited. The expansion of commercial relations is specifically highlighted in the Charter of the OTS, which emphasizes the creation of "favorable conditions for trade and investment, the simplification of customs and transit procedures, and the facilitation of financial and banking processes to support the movement of technologies, services, goods, and capital". However, upon scrutinizing the overall trade volume between the Turkic Republics in this council, discernible growth trends are not readily apparent. Sobirov (2020) observed that prior to the establishment of the Council of Turkish-speaking countries, Azerbaijan and Kazakhstan maintained stronger commercial relations with Türkiye. While Türkiye's commercial connections with Azerbaijan and Kyrgyzstan have witnessed improvement since 2009, Kazakhstan's participation in the Council has not significantly impacted their commercial relations.

The establishment of the Turkic Council Turkic Universities Union serves as a significant initiative to foster cooperation among member nations of the Turkic Council within the realm of higher education. This organization's primary objective is to encourage

collaboration among higher education institutions in member countries, with the aim of cultivating friendship and cooperation among Turkish-speaking communities that share a common language, culture, and history (Turkish Council Turkic Universities Union, 2019). Research conducted by Budak and Terzi (2021) focuses on exchange programs among Turkic Council member nations through interviews with students. The research findings revealed that students emphasized factors such as a common language, a shared scholarship program, increased collaboration in the field of education, and cooperative sports competitions. Notably, the absence of a functional common communication language among the Turkic Republics remains the most substantial impediment to the cultural integration of Turkic Republics today. While historical origins suggest a shared linguistic background, contemporary languages spoken in the Turkic Republics exhibit significant differences in terms of communication. The authors also highlighted a marked distinction between the scholarship initiatives of the Turkic Council States and those of other global powers. Specifically, a significantly higher number of students participate in programs offered by the US, Russia, China, and European nations compared to programs within the Turkic Republics. The data obtained indicates that the budget allocated by the Turkic Council for these initiatives is insufficient when compared to the resources available to other major players. In light of these circumstances, there remains a limited number of endeavors to establish collaborative exchange programs to address the prevailing needs. Efforts such as the Orhun Exchange Program have been specifically designed for the Turkish population at the higher education level. Nevertheless, more universities must join such programs, and both faculty members and students at participating universities should be actively encouraged to participate (Akilli, 2019).

As established by Humbatov and Sari's (2017) analysis of the trade potential between Türkiye and the Turkic Republics, the current level of trade over time has remained remarkably low. Their analysis reveals that none of the Turkic Republics rank among the top 20 export or import destinations for Türkiye. This situation is perplexing given the mutual desire of these nations to engage in trade, which is supported by their significant trade potential. However, the major hindrance to establishing robust economic relations between these countries lies in the absence of efficient economic transportation means connecting them. In essence, the challenge arises from the lack of direct access to open seas and their geographical remoteness from Türkiye. While there is a genuine desire for economic cooperation, the absence of practical transportation options limits the realization of this potential.

Azerbaijan, characterized by its heavy reliance on oil for its economy, has recognized the necessity of economic diversification as a paramount goal in its pursuit of sustainable development. This commitment is clearly articulated in its "Azerbaijan 2020: Vision for the future" strategy, which underscores the imperative to reduce its dependence on natural resources. To achieve this vision, Azerbaijan acknowledges the need for cutting-edge technologies, innovative management approaches, and enhanced connectivity to international markets. These elements are pivotal in the process of restructuring the economy and addressing the challenges and constraints associated with transitioning away from oil dependency. Consequently, this intensified focus on economic diversification amplifies the demand for Foreign Direct Investment (FDI) and the invaluable experiences that FDI consistently brings to the table (Humbatov & Sari, 2017).

In their study on logistics and transportation, Humbatov and Sari (2017) highlight the detention attempts made by Russian customs officials when goods are being transported over the Georgian border in trade between Kyrgyzstan and Türkiye. The efficient functioning of logistics and transportation is pivotal in facilitating trade and economic activities, and these detention attempts pose a significant challenge to this process. Consequently, as a consequence of these challenges, Kyrgyzstan is compelled to reroute its trade via Azerbaijan and the Caspian Sea, which, in turn, leads to the imposition of high logistics costs. This complex situation underscores the critical role of smooth and unhindered transportation in fostering efficient trade relationships.

Additionally, it is imperative to acknowledge the pivotal role played by China in the context of trade with Europe (Sandkamp, 2024). In this geographic region, Türkiye and the Turkic Republics are strategically positioned, enjoying a highly advantageous location. Situated at the crossroads between Europe and China, where substantial trade volumes are prevalent, they are well-positioned to secure a significant share of this trade. Türkiye, in particular, exhibits strong performance in logistics and transportation when compared to other Eurasian nations (Bentyn, 2021). Nonetheless, there are certain areas within the realm of logistics and transportation that warrant further development. Notably, there appears to be an underutilization of railroad transportation both at the national and international levels (Zeybek, 2019).

Addressing this gap in the transportation infrastructure could significantly enhance the region's connectivity and trade capabilities.

This literature review underscores the presence of economic and commercial potential among these countries, alongside the evident obstacles that hinder the realization of robust economic relationships. It is imperative to delve into the underlying reasons why solid economic relations with a potential economic ally like Türkiye have not been fully developed, especially as these nations aspire to integrate into the global economy and diversify their economies. To comprehensively evaluate this potential and identify alternative solutions to the obstacles, the guidance and insights provided by studies within the academic world are invaluable. Therefore, to optimize our socio-economic relations, a comprehensive research effort is warranted. Such research aims to pinpoint the problems and disruptions that arise from both Türkiye and the other Turkic Republics and to propose effective solutions. In this context, questions like "In which years have studies been conducted on this subject?", "What are the focal points and topics of the studies in the literature?", and "Do academic sources indexed in WoS address these issues?" gain particular relevance. It's worth highlighting the significance of this study in seeking answers to these crucial questions. Throughout the preceding sections of this literature review, we have highlighted both the positive and negative aspects of the relationships among the Turkic Republics. In the forthcoming sections, we will explore examples of bibliometric studies in the literature and instances of research on the Turkish World conducted through different methodologies.

The advancement of technology has ushered in a new dimension in understanding distance, fostering closer relations and cooperation between nations while also nurturing human connections. Across diverse fields of collaboration, the cornerstone of international agreements lies in the sharing and dissemination of scientific knowledge. Consequently, a range of activities, such as academic partnerships, collaborative ventures, symposiums, workshops, and exchange programs, have flourished (Şahin & Candan, 2018). These events play a pivotal role in addressing shared regional challenges, seeking solutions, and elevating awareness of potential forces and threats.

Bibliometrics holds a key position in assessing the efficiency and impact of scientific endeavors, academic research, and collaborative efforts (Reyes-Gonzales et al., 2016). By analyzing citation patterns and publication trends, bibliometrics offers valuable insights into the evolution of research fields and the strength of academic collaborations. Bibliometrics emerged as a response to the growing need for innovative methods to assess scientific research in the rapidly changing academic environment. With the rise in publications and citations, as well as greater access to information, scientific production and collaboration have become increasingly strategic. Bibliometric data provides essential indicators for both nations and international organizations, offering insights into current science policies and shaping future decisions. Therefore, bibliometric studies are essential for the development of science policies at both the national and global levels (Şahin & Candan, 2018).

By employing bibliometric and citation analysis, one can uncover important insights about the influence of a publication, as well as the patterns of information flow and global collaboration (Allaham, 2022). This method not only helps in understanding the impact of specific publications but also sheds light on the processes of knowledge spread and international cooperative efforts.

Türkiye stands as a nation with a thriving culture of scientific inquiry, a facet intricately linked to its unique geopolitical standing within the Eurasian region. This vibrant scientific landscape is a testament to Türkiye's active engagement in scientific collaboration with both Western countries and neighboring nations, a fact clearly mirrored in publication statistics. Nevertheless, the realm of bibliometric studies focused on research endeavors related to Türkiye's economic cooperation currently appears to be relatively limited in scope. To the best of the authors' knowledge, there is a notable dearth of studies employing a bibliometric approach to investigate the economic ties between Türkiye and the Turkic Republics. This presents a notable gap in the existing literature, underscoring the pressing need for more contemporary bibliometric studies to shed light on the landscape of international economic cooperation between Türkiye and these Republics. Despite the limited presence of bibliometric investigations on this specific subject, it is worth noting that several related studies are believed to exist within the broader academic landscape.

In their detailed bibliometric analysis of scientific output and cooperation within the Turkish World, Şahin and Candan (2018) offer valuable insights into the academic collaborations and publication records of the Turkic Republics. Their findings highlight key trends in scientific productivity and collaborative efforts among these nations. Türkiye emerges as a prominent figure in this landscape, with a significantly higher number of

documents produced when compared to Kazakhstan, Azerbaijan, and Kyrgyzstan. Impressively, Türkiye's involvement is noted in a substantial 95.24% of joint research endeavors. Moreover, the study delves into citation rankings, ranking Türkiye at 28th place among 151 countries, while Azerbaijan, Kazakhstan, and Kyrgyzstan occupy the 98th, 111th, and 146th positions, respectively. This analysis reveals Türkiye's strong presence on the global academic stage and its pivotal role in scientific collaborations within the Turkish World. In terms of specific scientific cooperation, the study underscores that Türkiye-Azerbaijan collaborations surpass collaborative efforts between other member countries, signaling a strong foundation of scientific activities between these nations. Türkiye also emerges as a primary hub for such cooperative studies. Interestingly, the research indicates a shifting landscape over time. While the early 2000s witnessed a limited number of co-authored documents between Türkiye, Azerbaijan, Kazakhstan, and Kyrgyzstan, the study documents a significant uptick in academic cooperation among Turkic Council member countries from 2008 onward. The surge is visible in the increasing volume of research publications across all four member states in comparison to prior years. Notably, the study identifies the top 10 research areas of co-authored documents, including Physics, Mathematics, Chemistry, Environmental Sciences, Ecology, and Life Sciences. It is revealed that the countries most commonly partnered with Turkic Council member nations in publishing documents are Türkiye, the United States, and various European countries. Azerbaijan's scientific collaborations are closely tied to Türkiye and Russia, while Kazakhstan and Kyrgyzstan exhibit a propensity for cooperation with Russia and the United States. Kyrgyzstan further demonstrates close academic relations with Germany and Türkiye. Remarkably, the analysis underscores a concerning observation. Despite the collaborative aspirations, an examination of co-authored documents in the WoS database indicates that documents were not jointly produced at the higher education level between Türkiye and Azerbaijan, Kyrgyzstan, and Kazakhstan. This signals a gap in the institutional cooperation between these nations. In conclusion, Şahin and Candan's (2018) bibliometric study provides a valuable insight into the evolving landscape of scientific collaboration among Turkic Republics, showcasing Türkiye's leadership position and pioneering role in fostering scientific cooperation within the Turkish World. The findings underscore both the progress made and areas that warrant further attention in enhancing academic partnerships among these nations.

In a study conducted by Demir et al. (2016), an extensive comparison of the socio-economic and academic development of Turkic Republics was undertaken based on publications spanning the period from 1992 to 2014. The findings of this analysis reveal several key insights into the academic landscape and research output of these nations. First and foremost, the study highlights Türkiye's prominent position, ranking 1st in both the number of publications and publication efficiency among the Turkic Republics. This signifies Türkiye's robust commitment to academic research and its effectiveness in producing scholarly work. Additionally, the study notes that Kyrgyzstan and Turkmenistan secured the 2nd position in this ranking, indicating their noteworthy contributions to academic publications. A further examination of Türkiye's publications reveals that the field of Medicine emerges as the top area of focus, boasting the highest number of publications. This is followed by significant contributions in the fields of Chemistry, Physics, Materials Science, Computer Science, and Mathematics. These areas of research emphasize the diversity of academic interests and expertise within Türkiye, reflecting its multifaceted approach to scholarly activities.

Dölek et al. (2023) used the bibliometric analysis method to review medical research conducted in Turkic Republics. Medical research has a direct correlation with economic expansion, long-term, sustainable development, and raising living standards and quality in these Republics. It has been reported that while Türkiye has produced a large number of publications compared to other Turkic Republics, the number of citations has not grown at the same pace. According to some interpretations, this indicates that, in comparison to a developed nation, the scientific infrastructure is still immature. Kyrgyzstan has the highest number of citations per article (132.7), while Uzbekistan has the lowest number (6.5). Turkish researchers received a total of 84,692 citations across 147,147 articles, whereas Kyrgyz researchers' work garnered 396 citations for 164 articles. The countries' scientific output increased as the Soviet regime's influence declined. Beyond the impact of Soviet influence, several other factors may contribute to the low scientific productivity. These include limited funding for medical research, insufficient facilities for clinics and laboratories, and a shortage of researchers. Additionally, the lack of journals indexed in databases such as Scopus, WoS, and PubMed, as well as underdeveloped editorial skills, impede scientific progress. Other contributing factors are scientific isolation, high costs of publishing in open access journals, and a diminished desire to enter academic fields. Furthermore, the study mentioned that

numerous generations of scholars from other Turkic Republics outside of Türkiye were trained in Russian writing and publishing. This could be one of the main causes of the Turkic Republics' comparatively low levels of scientific productivity in terms of interacademic collaboration. Even though learning English is required in each of the member republics, researchers may have been forced to publish in less prestigious journals with little impact due to their poor English writing abilities.

Toklu (2023) analyzed the science and technology activities of the Turkish World using a comparative performance analysis and emphasized that the formulation of well-established and effective science and technology policies in these Republics will lead to significant improvements in the production of patents, industrial designs, and scientific publications. The study further indicated that fostering researchers' involvement in R&D and innovation, promoting stronger collaborations between universities and industries, and developing long-term strategic plans would have a constructive effect on advancing the science and technology infrastructure.

Hirv (2022) noted that internationally coordinated research projects exhibit a positive correlation with the number of citations. Developed countries tend to allocate more resources to internationally coordinated research efforts, resulting in a higher number of authored articles. Among the articles examined in the study, the proportion of articles with multiple authors is significantly lower. Many underdeveloped or developing countries are making a notable scientific impact relative to their research expenditures. Furthermore, the author suggests that the landscape of science is on the verge of a taxonomic transformation, where impact will no longer be measured solely in terms of citations, but rather in terms of its influence on all sectors of society. A well-balanced funding strategy may lead to a lower number of citations per article but can have a positive effect when considering its broader cultural and economic impacts.

It should be stated that one of the main difficulties is that Turkic Republics use different dialects such as Azeri, Turkmen, Kyrgyz, Tatar and Uzbek, as well as Turkish. In addition, cultural differences and management styles of the regions can be considered among other difficulties. Undoubtedly, the most reliable sources of information are scientific studies. For this reason, scientific research on the Turkish World is very important resources in terms of international relations, sociological, cultural, political and economic aspects. Güvendi (2023) examined a total of 1249 publications with the phrase "Turkish World"

among the publications scanned in the WOS database using the bibliometric method. 1159 of the publications that is, the majority of them, are of the research article type, and it has been observed that types of publications such as letters, editorial materials, and article reviews are comparatively scarce. While Turkish researchers mostly conducted research in the fields of Health Sciences, non-Turkish researchers worked in the fields of Social Sciences. The most published categories according to WOS categories with the expression "Turkish World" are field research, international relations, economy, environment, political sciences, occupational health, education, and sociology.

"Traditional Turkish Sports" refers to recreational sports that incorporate customs that have been developed over time in accordance with the nomadic lifestyle of the Turkish people. It is stated that major sports events organized within the scope of sports tourism affect the host country or city in many ways. While the global image of the country or city hosting such events increases, its economic, social, cultural, environmental and political development accelerates. New employment opportunities emerge for the people of the countries that organize these sports organizations, awareness of the country increases, tourism develops, social education improves, and the cultural level of individuals increases. It acts as a stimulus for major developments such as major sports organizations, new sports facilities, new roads, airports, public transportation development works, initiatives to revitalize the regional economy, beautification works, tourism businesses and social services. Especially organizations such as traditional sports games are an important tool in preserving cultural identity. According to the study by Korkmaz and Kızanlıklı (2023), traditional sports events have significant social, economic, cultural, environmental, and political impacts on tourism in Kyrgyzstan. Positive effects have been detected on issues such as increasing the country's image, increasing the number of tourists, and world-wide recognition. Sports games have contributed to political cooperation between participating countries. Traditional sports games, which are the common cultural heritage of the Turkish people, have brought the Turkish World closer together by bringing them together on a common ground. Thus, political, economic and cultural cooperation between the countries of the Turkish World has increased.

Kravtsov (2019) examined the scientific collaborations between Russia and the post-Soviet countries over the period from 2000 to 2017. The findings show that most of
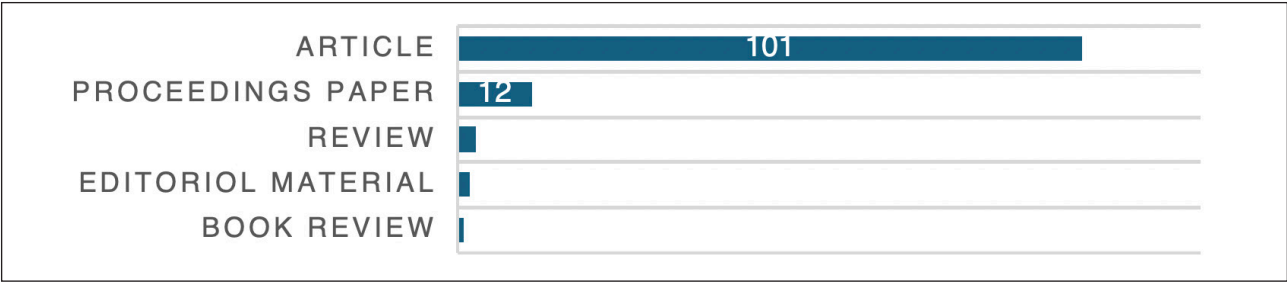
Figure 1: Publication Types

the research on Russia's collaborations with Azerbaijan, Kazakhstan, and Uzbekistan has been concentrated in the fields of chemistry and physics. This is largely due to the fact that the primary form of cooperation among these nations revolves around petrochemical industries. For Turkmenistan, the key areas of scientific cooperation with Russia are geochemistry and geophysics, and it is noted that Turkmenistan stands out as Russia's most engaged scientific partner.

Although the potential for socio-economic relations between the Turkic Republics and Türkiye is substantial, challenges such as geographical barriers, inadequate transportation infrastructure, and cultural differences hinder the development of these relations. These challenges make it difficult to fully realize the economic potential in the region. Furthermore, the lack of an effective communication language among the Turkic Republics negatively affects cultural integration and academic cooperation. The aim of this study is to provide recommendations for addressing these gaps in order to strengthen the economic relations between Türkiye and the Turkic Republics. Addressing these gaps will facilitate the increase of regional trade and enhance integration with the global economy.

FINDINGS

Methodology

Bibliometric analysis is a valuable tool for analyzing published data and generating a link map. It is a branch of study that examines publication patterns in the distribution of data among studies using statistical and mathematical methodologies. This method involves mapping, bibliometric coupling, co-citation analysis, and impact indicators. It is possible to compile information on published studies' keywords, typical citation patterns, country of origin, number of cited journals, and other elements with the asset of bibliometric analysis. Co-citation analysis is a method that examines works which reference a particular pair of sources, using information from academic databases and analytical techniques. It is

required to look for sources on a specific topic and gather pertinent information in order to conduct such analysis (Allaham, 2022).

Keywords and Publications

In this study, a keyword-based search was performed in the WoS database using terms such as "economic relationship", "economic ties", "economic cooperation", "bilateral economy", "trade", "trade relationship", "trade cooperation", "trade ties", and "bilateral trade" in order to determine academic studies on Türkiye's relationship with other Turkic Republics and the relevant results were listed. For example, a search was made for each keyword for each country, such as "Turkey and Azerbaijan economic relationship" or "Turkey and Kazakhstan economic cooperation". In the WoS database, there are 119 publications on Turkey-Azerbaijan economic relations, 79 on Turkey-Kazakhstan economic relations, 48 on Turkey-Turkmenistan economic relations, 34 on Turkey-Uzbekistan economic relations, and 26 on Turkey-Kyrgyzstan economic relations. Repeated publications and more than one in the same list have been removed since publications with a similar subject can be listed in each search list. 119 publications were studied after being sorted through a total of 187 publications. The analysis was carried out with the help of Vosviewer, a software tool specialized in visualizing bibliometric networks. Figure 1 illustrates the types of publications that were analyzed. Most of the studies are published as articles. 1 book review, 3 reviews, 12 proceedings papers, 101 articles, and 2 editorial materials make up the studies. Most of articles on this topic are evidence that researchers prefer to publish in scientific journal sources in general. The conferences are held with certain themes and subject limitations, which limits the publication's subjects accordingly. Even if it is only a tiny amount, the presence of editorial content indicates that a journal on Turkic Republics economic relations has a special issue or is particularly interested in this topic. Editors frequently offer a tool for assessing a special issue once it is published.
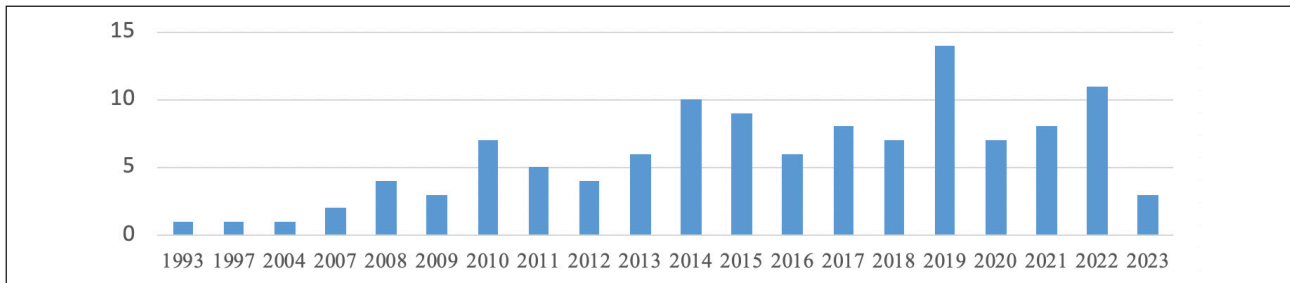
Figure 2: Publication Years

The articles were published between 1993 and 2023. The years the research was published and the number of publications per year are shown in Figure 2. One could say that interest in research on Turkic Republics has grown since 2007 and that the allocation by year is balanced. It should be noted that the studies are insufficient when the economic ties between 6 countries are taken into account.

Co-occurrence of Keywords

The keywords of the studies were analyzed using 652 different keywords. Figure 3 displays 26 keywords

"China", and "Russia". One of the most crucial components that enables researchers to locate a published article is keywords. Keywords are divided into 4 themes on the map. When analyzing the primary focus of the keywords, geographical region location, neighboring countries, energy and natural resource exchange play an important role in Türkiye's bilateral economic relations with other Turkic Republics. In addition, the methods used by the studies are also evident in keyword analysis (for example, panel data analysis or unit root tests). See appendix A for an example of individual co-occurrence of keywords by country.
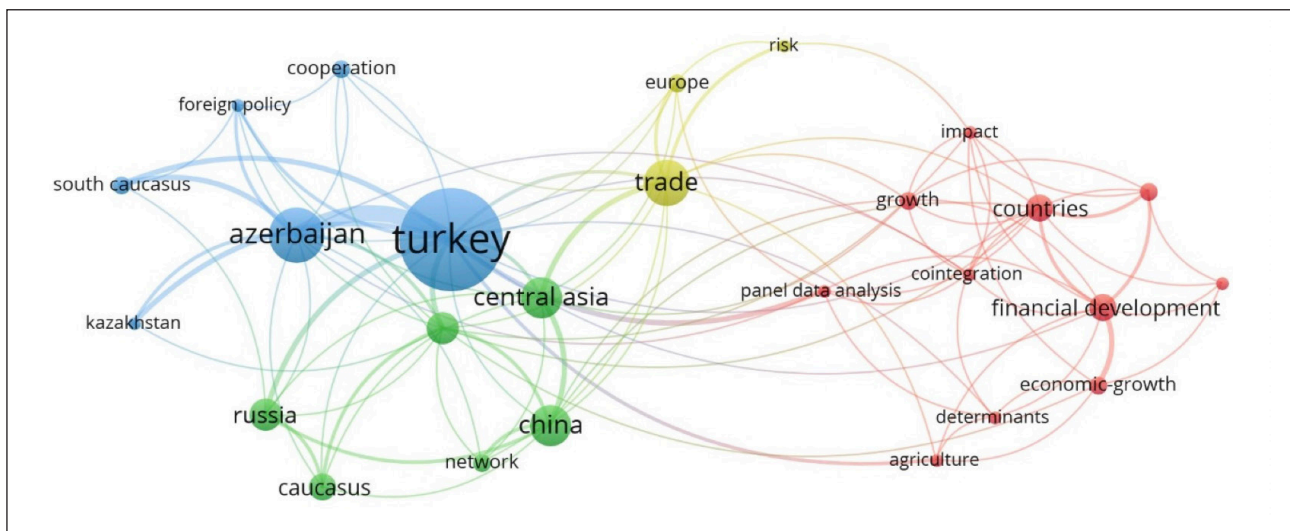

Figure 3: Co-occurrence Network of Keywords

that appear together a minimum of three times. On the map, the rounded nodes stand in for keywords. Each keyword's usage frequency is shown by the size of the nodes (Allaham, 2022). The intensity of a pair of nodes' relationship is expressed by the distance between them. When the distance is short, the relationship is stronger; when it is long, the relationship becomes weaker. "Turkey" and "Azerbaijan" are at the top of the list of the most searched terms. Other most used words are "energy", "trade", "financial development", "Central Asia",

Research Fields

Figure 4 illustrates the research areas covered by the publications. The most published fields are business and economics, government and law. International relations studies try to find answers to questions from various sources, regardless of the level of analysis. Like wars, nationalism, ideology, government, politics, genetics, economics. The study of economic relations between different countries also covers a kind of international relations issues. The subject of the research
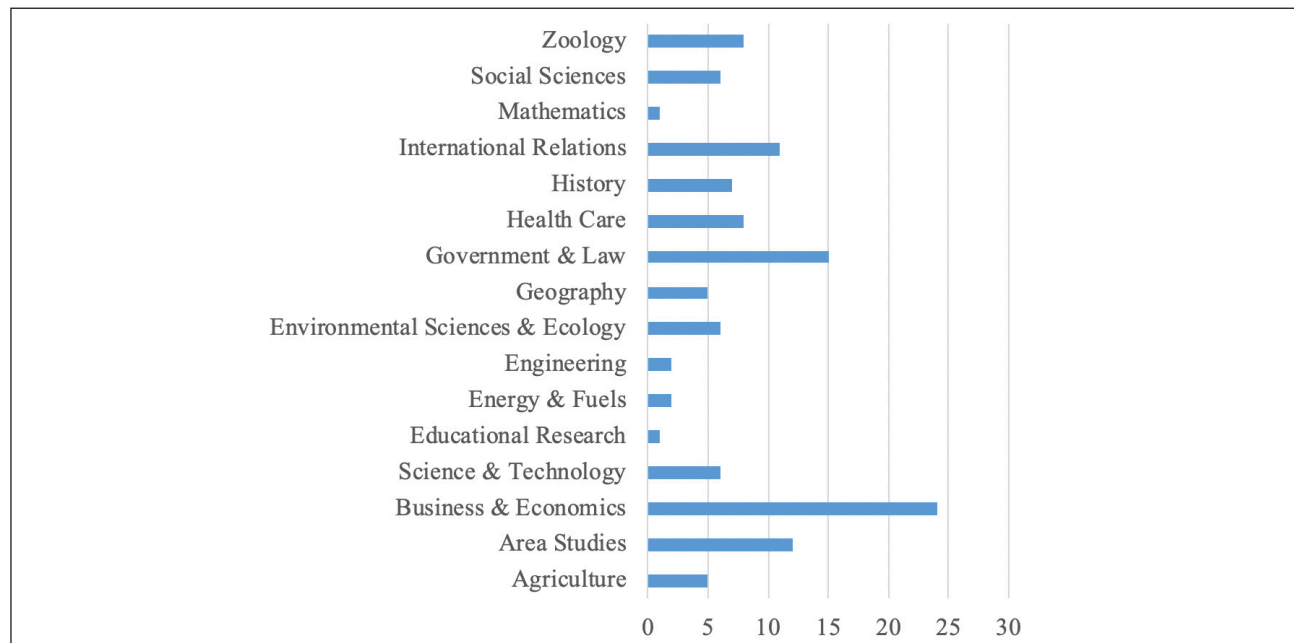
Figure 4: Research Fields

goes far beyond history and political science and includes economics, psychology, social psychology and anthropology. Because the studies cover a wide range, researchers prefer to focus on one aspect. At the same time, researchers approach the subject with a certain point of view. Since the economic relations between the Turkic Republics are mostly energy, oil and gas, it is expected that the study fields will be shaped within the framework of these and related issues. Studies in Figure 4 are spreading to different areas. Considering that there are cooperation and exchanges in specific fields such as construction, tourism, education, local products, textile, construction, service, agriculture, technology among these Republics, spreading the studies over a wide area is necessary to deepen the research field and evaluate it in a wider perspective.

Bibliographic Coupling - Documents

Bibliographic coupling is used to identify studies in reference lists that have been identified as citing one or more common references (Kessler, 1963). It is citing the same publication from two different sources. This approach is the opposite of the co-citation approach. It is measured how many times a publication cites the same references. This refers to the practice of citing one another within the publications themselves. Table 1 and Figure 5 display the common references found across all studies on the economic relations of the Turkic Republics. The studies that are most frequently cited are presented in Table 1, along with details about their authors, publication year, and their connections to other

works. The references with the strongest links across all studies are those by Yıldırım et al. (2020), Jamilov (2013), and Mercan & Azer (2013). See appendix B for an example of individual bibliometric coupling by country.

All the papers in Table 1 are similar studies, not just these three. Most of the research is current studies, and the methods and analysis techniques used in them are highlighted and brought to the fore. This circumstance demonstrates that the employment of various, more specialized analytical techniques is valued in the sources that discuss economic issues. Studies that are bibliographically matched are those that cover econometric models and methods.

The total strength of connections for an object is a measure of how many other items it is linked to and the intensity of these connections. For example, the strength of a researcher's co-authorship links with other researchers illustrates the overall power of their collaborative relationships.

Bibliographic coupling analysis assesses the closeness of researchers by examining how often they cite the same publications. The frequency of shared citations between two researchers correlates with the strength of their relationship. Specifically, "N" represents the total number of researchers involved in the study, while "M" refers to total count of publications examined. The citation matrix $C = [C_{ik}]$ is an N × M matrix where each element, C_{ik}, indicates the number of times researcher i has cited publication k. Furthermore, n_k refers to the total number of citations a publication has received from all
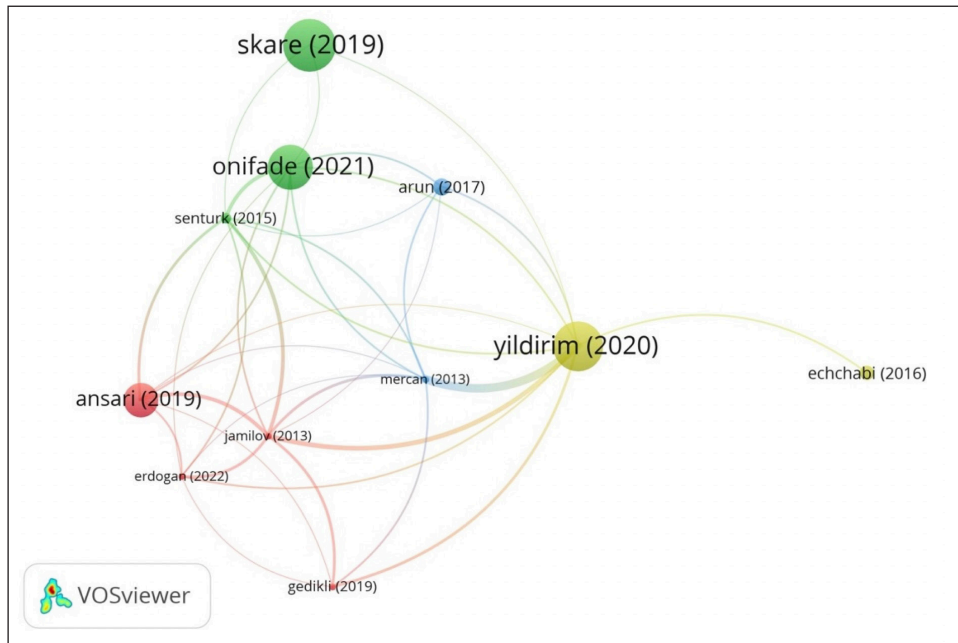
Figure 5: Bibliographic Coupling Network of Publications

researchers in the study, providing a comprehensive view of the publication's influence (Perianes-Rodriguez et al., 2016). Formula:

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

Publications with fewer than two citations are excluded from bibliographic analysis as they do not create any meaningful connections. Hence, it is assumed that each publication has at least two citations, ensuring that $n_k >$ for all publications. The matrix $V = [v_{ij}]$ represents the N × N full-count bibliographic coupling matrix. In this matrix, v_{ij} indicates the number of full-count bibliographic coupling links between researchers i and j, and is defined as follows:

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

Thus, the bibliographic coupling matrix V is represented as:

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

The total strength of connections for an object measures how many other items it is linked to and the intensity of these links. In bibliographic coupling analysis, the closeness of researchers is determined by how often they cite the same publications. "N" represents the number of researchers, and "M" refers to the number

of publications analyzed. A citation matrix tracks how many times each researcher cites a given publication, while a full-count coupling matrix indicates the number of connections between researchers. Publications with fewer than two citations are excluded from the analysis.

Co-citation - Cited References

In order to search for similar publications, publications in the same field are cited together. In particular, the presentation of publications that provide theoretical infrastructure and contribute to the field provides resources for researchers who want to study in this field. The intellectual organization of a discipline is analyzed and understood through co-citation analysis (Allaham, 2022). Co-citation analysis is performed by determining the reference pairs cited together in the resources. When publications on a subject cite the same reference pairs together, research clusters are created (Surwase et al., 2011). These citations also contain common themes. One useful technique for mapping the research field is co-citation analysis (Allaham, 2022). Figure 6 illustrates the co-cited references map, while Table 2 provides detailed information regarding these references. A total of 4923 references were analyzed, with the condition that they must have been cited at least three times. 15 significant connections were found. The most cited and related to each other references are Im et al., (2003), and Breusch & Pagan, (1980).

The co-cited references are studies involved in econometric methods. Indicates that these articles are analysis and technical research articles, not reviews.

Table 1: Details of Analyzed Publications

	Citations	Total Link Strength	Number of Authors	Type
Yıldırım (2020)	38	29	4	Article
Jamilov (2013)	4	25	1	Article
Mercan (2013)	4	22	2	Article
Senturk (2015)	8	19	2	Proceedings Paper
Onifade (2021)	34	16	4	Article
Ansari (2019)	26	14	3	Article
Erdogan (2022)	4	12	1	Article
Gedikli (2019)	5	10	4	Article
Arun (2017)	13	8	2	Article
Skare (2019)	40	3	2	Article
Echchabi (2016)	11	2	3	Article

Quantitative models also allow the use of qualitative variables. These techniques are used in important areas of economics such as industry and business to see upfront, make predictions and take precautions. The authors referenced quantitative numerical estimation methods in their studies, not subjective estimation techniques.

Co-citation - Cited Sources

The analysis of common citations across journals, journal selections, and journal collections that assist publication-oriented researchers on a given subject reveals significant insights. By examining journal titles, co-citation networks of journals provide a broad overview of the scientific domain. The co-citation analysis of the publications is presented based on the published sources in Table 3 and Figure 7. The study involved the analysis of 3310 cited sources.
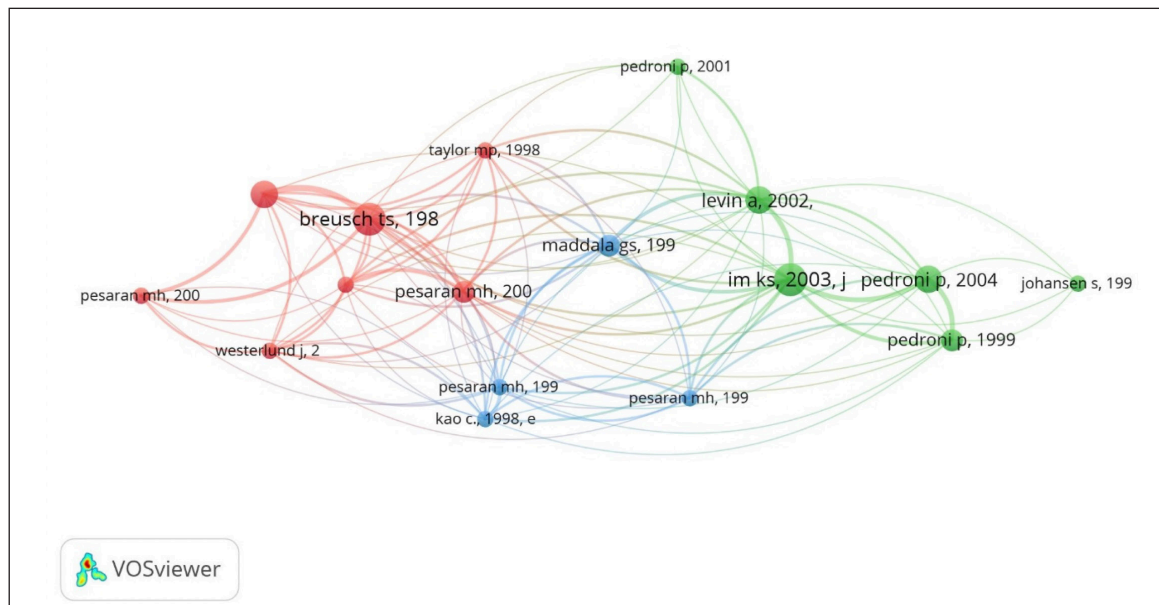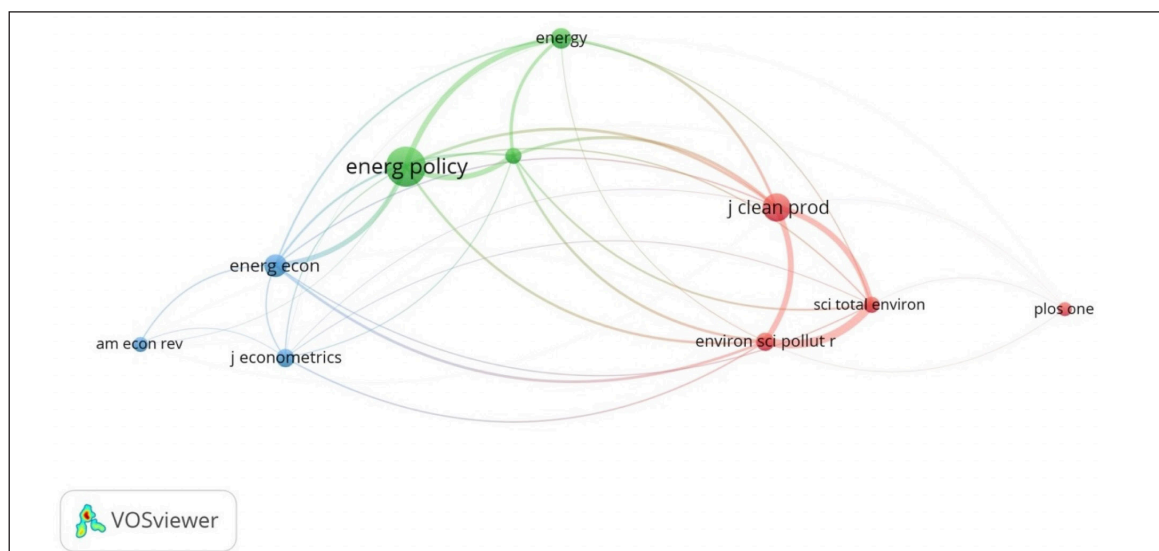
The journal with the highest citation count is Energy Policy, followed by Environmental Science and Pollution Research. When other sources are examined, most of the sources are journals with the scope of energy and sustainability.

Table 2: Co-Cited References

Reference	Citations	Total Link Strength
Im et al., (2003)	6	32
Breusch & Pagan, (1980)	6	29
Levin et al., (2002)	5	25
Maddala & Wu, (1999)	4	25
Pesaran, (2007)	4	24
Pesaran et al., (2008)	5	22
McCoskey & Kao, (1998)	3	21
Pesaran & Smith, (1995)	3	21
Pesaran et al., (1999)	3	19
Taylor & Sarno, (1998)	3	19
Westerlund & Edgerton, (2007)	3	19
Pedroni, (1999)	4	16

Table 2: Co-Cited References

Name of the Source	Citations	Total Link Strength
Energy Policy	54	510
Environmental Science and Pollution Research	25	506
Journal of Cleaner Production	39	462
Science of the Total Environment	22	436
Renewable and Sustainable Energy Reviews	23	404
Energy Economics	31	360
Energy	28	328
Journal of Econometrics	25	157
American Economic Review	21	58
Plos One	20	19

Figure 6: Network of Co-Cited References

Figure 7: Network of Co-Cited Sources

CONCLUSION

This study has provided a comprehensive bibliometric analysis of the economic literature concerning Türkiye's interactions with other Turkic Republics since 1993. The examination of 119 studies published in the WoS database from 1993 to 2023 has uncovered several significant findings. Firstly, the majority of publications in this field are research articles, indicating a strong academic interest in the economic dynamics of the Turkic World. However, the limited number of proceeding papers underscores the need for more academic events and collaborations to further facilitate the exploration of economic, political, and cultural ties among these nations.

This finding aligns with the findings of Güvendi (2023), whose dataset primarily comprises research articles centered around the concept of the Turkic World. Notably, conferences often impose specific subject constraints. Therefore, the organization of conferences and the fostering of academic collaborations that focus on the economic relationships between these countries can be instrumental in sustaining and enhancing their economic, political, and cultural ties. Through international cooperation, countries share scientific knowledge based on mutual agreements, which, in turn, leads to the establishment of collaborative initiatives such as symposiums, workshops, and exchange programs, as highlighted by Şahin and Candan (2018). These collaborative endeavors serve to illuminate regional challenges and promote a deeper understanding of the intricacies of economic relations among the Turkic Republics. The scarcity of proceeding papers underscores the existing gap in this domain and emphasizes the pressing need for more of these activities to rejuvenate and strengthen the economic relationships among these nations.

Authors' interest in these studies has demonstrated a direct correlation with significant historical developments. The dissolution of the Soviet Union in 1991 and the establishment of the OTS in 2009 marked pivotal moments that spurred increased scholarly attention. However, despite this growing interest, the available body of research still appears to be insufficient to comprehensively address the complexities of the topic. An analysis of the distribution of these studies over the years reveals a consistent trend, aligning with the uptick noted after 2008, as highlighted in Şahin and Candan (2018). Several underlying factors may contribute to the shortage of studies in this field. These include the lingering influence of the Soviet regime, limited research funding, the high costs associated with journal publications, scientific isolation, and the preference of some Turkic Republics to write in Russian, as discussed by Dölek et al. (2023). Language barriers, as mentioned in Akilli (2019), can also play a role in limiting the scope of research. Furthermore, challenges in English writing skills may lead authors to opt for publishing in journals that are not indexed in reputable databases like WoS. Addressing these barriers and promoting research initiatives may be vital to bridge the gap and encourage further comprehensive exploration of the economic relationships among the Turkic Republics.

The keyword analysis has revealed that the predominant themes in the studies revolve around energy and regional policies. Nevertheless, there are diverse sectors within these partner countries, including cotton yarn, construction materials, leather, furniture, steel and metal, sports, education, and tourism, where investments are being made beyond the energy sector. In future research endeavors, there is a significant opportunity to delve into the economic relations and advancements within these diverse sectors, enabling a more granular examination of the subject matter. For instance, the current literature lacks investigations into the economic dimensions of educational activities among the Turkic Republics, with only one study identified in this area. This gap presents an opportunity to explore the diversification of programs, such as the Orhun Exchange Program, and evaluate their effectiveness in achieving their intended goals and their economic contributions. Allocating resources from universities for both students and academics to partake in such programs can be a constructive step forward (Budak & Terzi, 2021; Akilli, 2019). Furthermore, there is a dearth of studies on the economic impacts of cultural and sports activities, as mentioned by Korkmaz and Kızanlıklı (2023). Conducting research in these areas can shed light on the economic consequences of such activities and their potential to foster economic ties among the Turkic Republics. An additional noteworthy finding from the keyword analysis is the dominance of Russia and China in the region, as pointed out by Çınar (2013), which is conspicuously reflected in the results of the analysis. Understanding the influence of these regional giants on the economic dynamics of the Turkic Republics remains a critical avenue for future research and policy consideration.

Natural resources constitute the backbone of the economies in nations such as Kazakhstan, Azerbaijan, and Turkmenistan. Consequently, the wealth of natural resources provides these nations with significant

economic and political leverage. However, to ensure sustainable economic growth, it is imperative to channel investments into technological advancements, research and development, and education. Failure to enact policies promoting the development of new technologies could perpetuate dependence on wealthier nations. As a crucial final point, enhancing the quality and quantity of the healthcare and education sectors is essential to bolster the human capital needed for technological innovation and development. For example, consider Azerbaijan's aspiration for non-petrol diversification, as articulated in its 2020 Vision goal. There exists a significant opportunity to explore the direction in which Azerbaijan should foster its relations with Türkiye to achieve this goal and identify the necessary investments in innovative technologies. It is noteworthy that this vision goal may not have been addressed in academic sources, leaving questions about its implementation and potential impact (Humbatov & Sari, 2017). In line with the findings of Kravtsov (2019), Russia's engagement with other Turkic Republics, aside from Türkiye, continues in fields such as chemistry, physics, and petrochemistry. This highlights the enduring collaboration among these Republics in specific domains and suggests the potential for further investigation into the dynamics of these collaborations.

The analysis of bibliometric coupling data reveals a distinct inclination within the studies towards quantitative methodologies as opposed to qualitative approaches. Methodologies anchored in econometrics enable versatile analyses involving multiple variables and demand proficiency in mathematics, economics, and statistics. Notably, the presence of technically sound and current publications among the bibliographically matched references underscores a recent shift in scholarly interest toward more technically oriented research methods. This is further substantiated by the strong coupling of references to econometric methods. It is essential to highlight that the majority of the articles are characterized by their quantitative, numerical estimation methods rather than relying on subjective estimations. In contrast to conventional economic or bilateral economic articles, method-oriented papers occupy a more prominent position, signifying their increasing relevance and recognition within this field of study.

The escalating demand for energy resources is an indisputable reality, closely tied to population growth and rising income levels. Furthermore, it is only natural that the interest in primary energy sources, such as oil and gas, intensifies in tandem with industrialization and urbanization. These resources, while crucial for various aspects of development, also come with substantial economic costs, exerting a significant influence on international business transactions between nations. The existing literature underscores a profound interest in these energy-related issues. Notably, authors are increasingly driven to explore ways to optimize the utilization of these resources, with a particular emphasis on factors related to environmental sustainability, such as the integration of clean energy sources. This drive has led to substantial investments in ambitious projects, highlighting the need for comprehensive assessments of their effectiveness. It is imperative to ascertain whether these projects successfully meet their objectives, the extent to which they contribute to society, and to carefully scrutinize any adverse effects that may emerge from their implementation (Hirv, 2022). This multi-faceted analysis is pivotal for informed decision-making in the realm of energy resource management and sustainability.

In forthcoming studies, there is a valuable opportunity to conduct a thorough analysis of the specific products that form the core of economic relationships among the Turkic Republics, both in terms of imports and exports. Notably, within the current body of research, there is a conspicuous scarcity of studies focusing on areas such as technology, military and defense, iron and steel, textiles, paper, plastics, machinery industries, food, agriculture, and education. Publications addressing economic policies and geared toward policymakers tend to assume the form of review articles. These reviews make significant contributions to the existing literature by offering insights into the progress within a given field, tracing the historical evolution of events, and fostering diverse perspectives. In addition to econometric methods, artificial intelligence and machine learning, which have come to the fore recently, and working with big data techniques can be an alternative for researchers. Because the studies are international and include economic factors, it may be necessary to conduct studies using open data. At this point, it can be ensured that the OTS takes steps for academic cooperation and academic research incentives and encourages projects.

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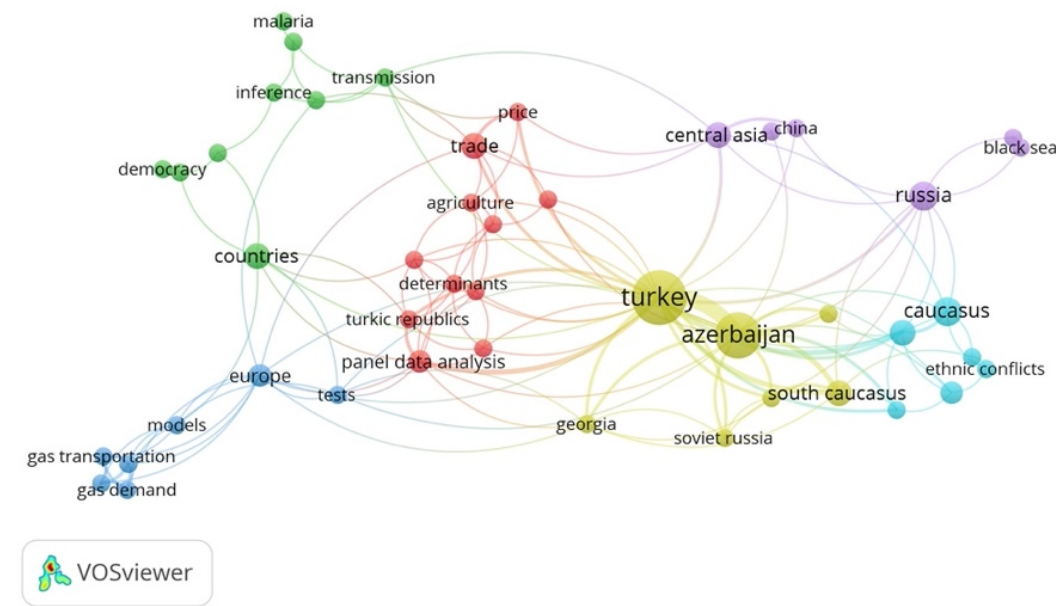
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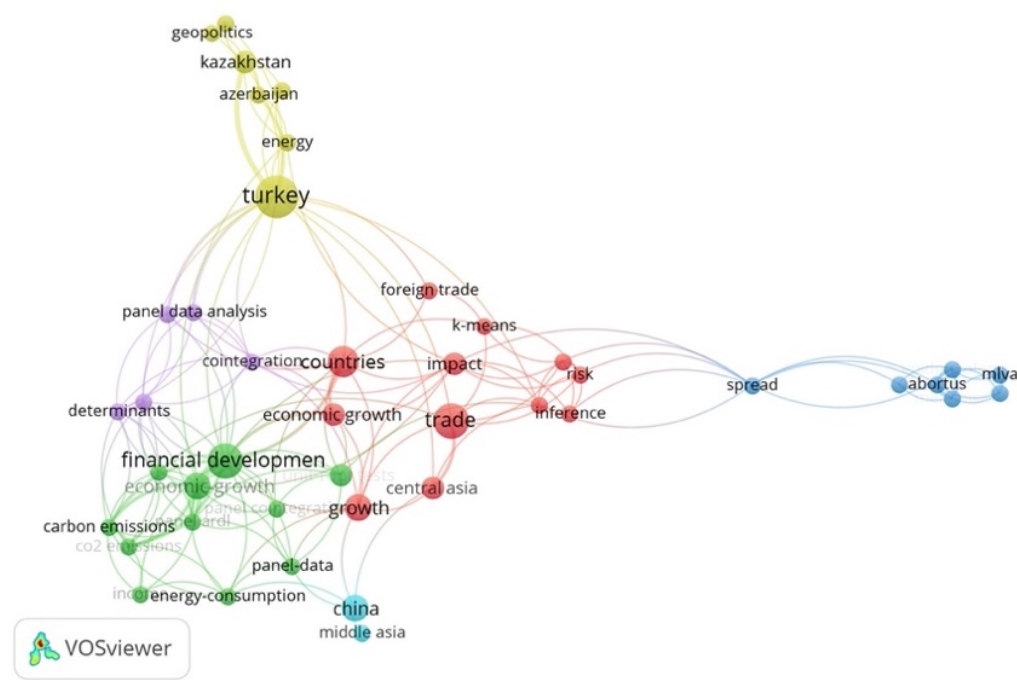
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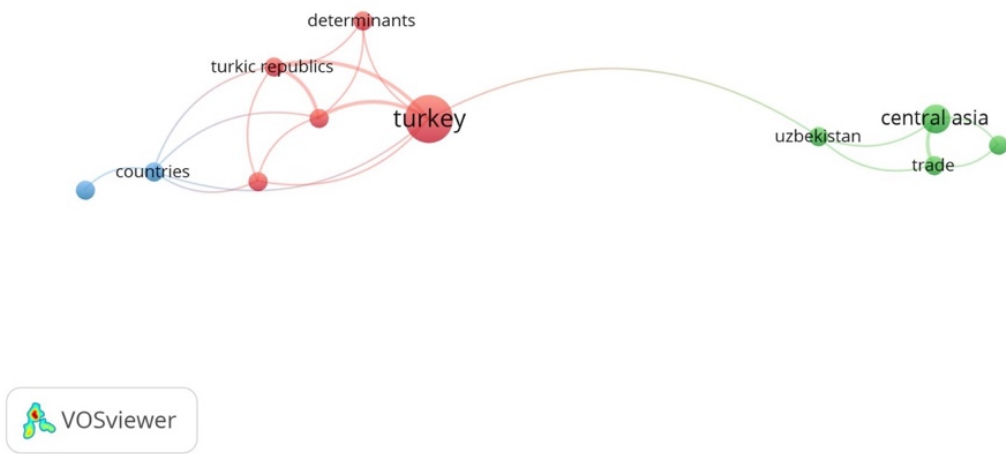**Appendix A.** Co-occurrence of Keywords by Country
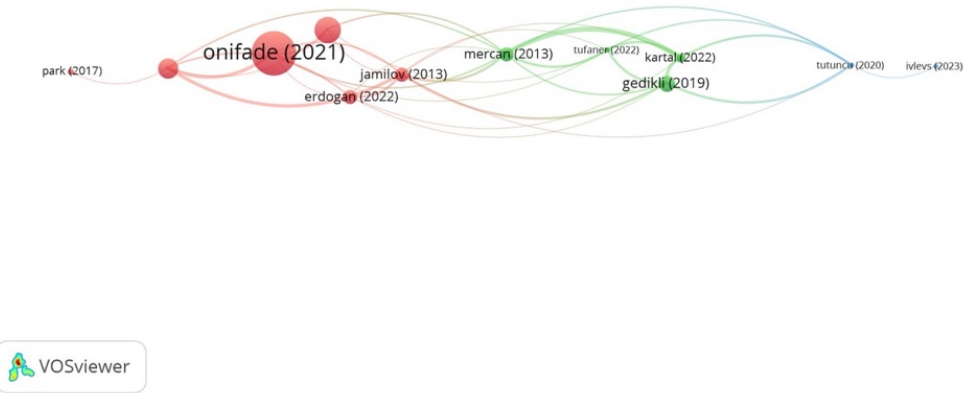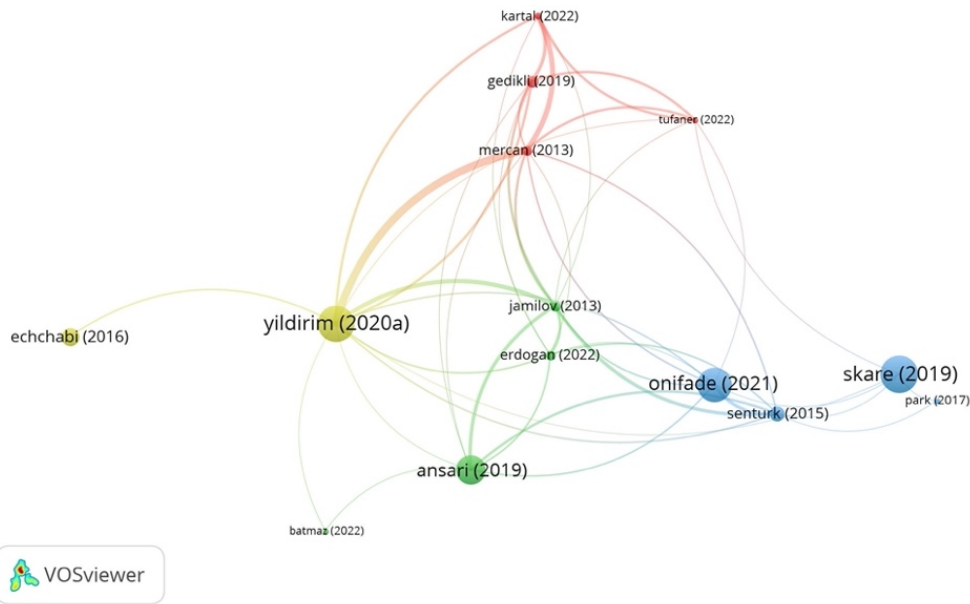
Azerbaijan

Kazakhstan

Uzbekistan

Appendix B. Bibliographic Coupling-Documents by Country

Azerbaijan

Kazakhstan

Kyrgyzstan