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Exploring the Development of Geopolitical Studies: A Bibliometric Review of International Literature

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ABSTRAK

Tujuan utama penelitian ini adalah menganalisis perkembangan bidang geopolitik melalui analisis bibliometrik terhadap literatur ilmiah asing. Perlu dicatat bahwa metode bibliometrik kuantitatif digunakan, yang didasarkan pada publikasi mengenai geopolitik, risiko geopolitik, dan geografi politik, dengan data yang diambil dari Scopus. Alat-alat bibliometrik seperti analisis kolaborasi penulis, sitasi, dan kata kunci akan dilakukan menggunakan perangkat lunak bernama VOSviewer, yang memungkinkan pemetaan kolaborasi, struktur intelektual, dan evolusi tema. Hasil menunjukkan bahwa geopolitik mencakup pola kerja sama yang relatif terfragmentasi, namun pada saat yang sama, terdapat dominasi negara-negara maju yang diwakili oleh AS dan negara-negara Eropa, disertai dengan peningkatan jumlah negara berkembang, seperti Tiongkok dan India. Sebagai hasil dari analisis kata kunci, dapat diamati transisi yang jelas dari topik-topik terkait geopolitik tradisional dan kekuatan negara dalam hubungan internasional ke topik-topik multidisiplin, seperti keamanan energi, perubahan iklim, risiko geopolitik, dan inovasi. Pada saat yang sama, grafik overlay dan kepadatan menunjukkan evolusi temporal topik tersebut, serta pemahaman tentang prioritas baru, seperti keberlanjutan, analisis risiko, dan digitalisasi.

Kata Kunci: *Geopolitik, Analisis Bibliometrik, Risiko Geopolitik, Keamanan Energi, VOSviewer*

ABSTRACT

In turn, the main purpose of this research is to analyze the development of the subject of geopolitics using a bibliometric analysis of the foreign scientific literature. It should be noted that a quantitative bibliometric method is used, based on publications on geopolitics, geopolitical risks, and political geography, data of which was taken from Scopus. Such bibliometric tools as co-authorship, citation, and keyword analyses will be carried out using the software program called VOSviewer, which will allow mapping collaboration, intellectual structure, and evolution of themes. The results show that geopolitics includes relatively fragmentary patterns of cooperation, but at the same time, there is a dominance of developed countries represented by the USA and European countries, along with an increase in the number of developing countries, such as China and India. As a result of the keyword analysis, one can notice a clear transition from topics related to traditional geopolitics and the power of states in international relations to multidisciplinary topics, such as energy security, climate change, geopolitical risks, and innovations. At the same time, overlay and density graphs indicate the temporal evolution of the topic, as well as an understanding of new priorities, such as sustainability, risk analysis, and digitalization.

Keywords: *Geopolitics, Bibliometric Analysis, Geopolitical Risk, Energy Security, VOSviewer*

INTRODUCTION

Geopolitical studies have long occupied a central position in understanding the interplay between geography, power, and international relations. Since its early conceptualization in the late nineteenth and early twentieth centuries, geopolitics has evolved from a deterministic framework emphasizing territorial control to a multidimensional field incorporating economic, cultural, technological, and environmental considerations (Kononiuk & Magruk, 2023; Ljungholm, 2015). Classical theorists initially framed geopolitics as a strategic tool for state expansion and dominance, often rooted in geographic determinism (Lebrouhi et al., 2022). However, as global dynamics shifted—particularly after the two World Wars and the end of the Cold War—the discipline

expanded to include more nuanced perspectives that account for globalization, interdependence, and non-state actors (Chang, 2023). In recent decades, the development of geopolitical studies has been significantly influenced by rapid globalization and technological advancements. The rise of digital communication, transnational networks, and global economic integration has challenged traditional notions of territoriality and sovereignty. Contemporary geopolitical analysis now addresses issues such as cyber security, climate change, migration, and global supply chains. These transformations highlight the need to revisit and systematically evaluate how geopolitical knowledge has been produced, disseminated, and transformed across time and regions. As a result, scholarly interest in mapping the intellectual structure of geopolitics has grown substantially (Burnett, 2014).

Bibliometric analysis has emerged as a powerful methodological tool to examine the evolution of academic fields, including geopolitics. By quantitatively analyzing patterns in scientific publications—such as citation networks, authorship trends, and keyword co-occurrences—bibliometric studies provide insights into the development, impact, and direction of research domains. This approach allows scholars to identify influential works, emerging themes, and collaborative networks that shape the trajectory of geopolitical studies. In the context of increasing academic output, bibliometric methods offer a systematic and objective means to synthesize large volumes of literature that would otherwise be difficult to assess comprehensively (Donthu et al., 2021). Despite the growing body of literature in geopolitics, there remains a lack of comprehensive bibliometric reviews that specifically focus on its international development. Existing studies often concentrate on particular themes—such as critical geopolitics, environmental geopolitics, or regional power dynamics—rather than providing an overarching view of the field. Furthermore, much of the literature is fragmented across disciplines, including political science, geography, international relations, and economics. This fragmentation poses challenges for scholars seeking to understand the broader intellectual landscape and identify gaps or future research directions. Therefore, a systematic bibliometric review of international literature is necessary to consolidate knowledge and reveal underlying trends.

Moreover, the increasing complexity of global challenges underscores the importance of a well-developed and integrated geopolitical framework. Issues such as geopolitical tensions, resource competition, and shifting alliances require interdisciplinary approaches and evidence-based analysis. By examining the evolution of geopolitical studies through bibliometric techniques, researchers can better understand how the field has responded to these challenges over time. Such an analysis not only contributes to academic discourse but also provides practical insights for policymakers, analysts, and international organizations. Ultimately, exploring the development of geopolitical studies through a bibliometric lens enables a deeper appreciation of its relevance in addressing contemporary global issues. Although geopolitical studies have expanded significantly in scope and volume, there is still limited understanding of how the field has evolved systematically at the international level. The absence of a comprehensive bibliometric review creates a gap in identifying key research trends, influential publications, dominant contributors, and emerging thematic areas within the discipline. Additionally, the interdisciplinary nature of geopolitics has led to fragmented knowledge production, making it difficult to assess the coherence and direction of the field as a whole. Without a structured analysis, scholars and practitioners may overlook critical developments and opportunities for future research. Therefore, it is necessary to conduct a bibliometric review to map the intellectual structure and evolution of geopolitical studies in

international literature. The objective of this study is to explore the development of geopolitical studies through a bibliometric review of international literature.

RESEARCH METHODS

This study employs a bibliometric research design to systematically analyze the development of geopolitical studies within international academic literature. Bibliometric analysis is a quantitative method used to evaluate patterns in scholarly publications, including citation structures, authorship, and thematic evolution. The approach is particularly suitable for this study as it enables the identification of intellectual trends and the mapping of knowledge structures across a large body of literature. The study adopts a descriptive and exploratory framework, aiming to provide a comprehensive overview of how geopolitical studies have evolved over time. By integrating performance analysis and science mapping techniques, this research captures both the productivity and relational dynamics of the field (Donthu et al., 2021).

The data for this study are collected from Scopus, which are widely recognized for their extensive coverage of peer-reviewed literature. A structured search strategy is employed using relevant keywords, including “geopolitics,” “geopolitical studies,” and “political geography,” to retrieve publications related to the topic. The selection criteria include articles, reviews, and conference papers published in English within a specified time frame to ensure consistency and comparability. Duplicate records and irrelevant publications are excluded through a screening process based on titles, abstracts, and keywords. The final dataset is then exported in compatible formats for bibliometric analysis. The analysis is conducted using VOSviewer, which facilitate visualization and network mapping of bibliographic data. Several analytical techniques are applied, including citation analysis to identify influential publications, co-authorship analysis to examine collaboration networks, and keyword co-occurrence analysis to detect major research themes and emerging topics.

RESULTS AND DISCUSSION

A. Co-Authorship Analysis

This co-authorship analysis was performed in order to analyze the structure of collaboration in the field of geopolitics, revealing connections between authors, institutions, and even countries involved in the study. With the help of bibliometric mapping via the software package VOSviewer, one can see how much collaboration in science has progressed during recent years and what researchers play a leading role in producing scientific knowledge in this regard.

1. Author-level Visualization

Co-authorship network analysis is based on the use of the VOS viewer to show the connections between the authors who conduct research in geopolitics. In particular, this map shows how the scholars work together by publishing articles, thus creating collaboration communities. In the map, nodes are used to indicate individual authors, while links between them show their collaborations; also, the sizes of the nodes correspond to the contribution of the authors and the colors to their communities.

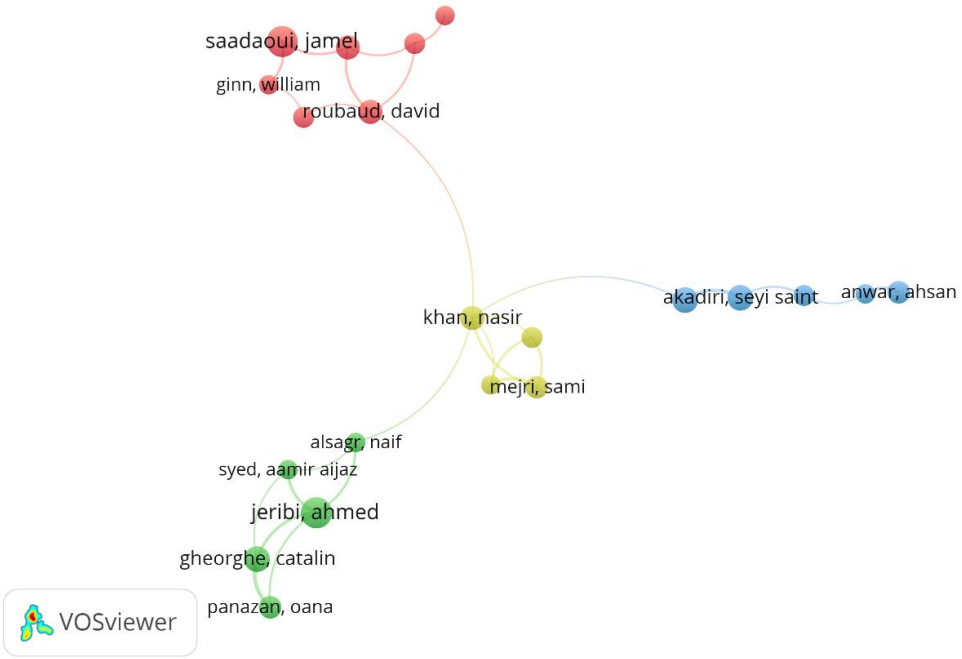

Figure 1. Author-level Visualization

Source: Data Analyzed

As seen in the Figure 1 above, there are some clear clusters in terms of collaboration within this research area. In other words, it can be concluded that the studies in geopolitical analysis and geopolitics have been conducted by specialized researchers working together in small groups. For example, one of the major clusters, as marked in red in the above image, consists of researchers like Saadaoui Jamel, Ginn William, and Roubaud David. It is evident that they work in the same research group and conduct research on a certain sub-theme in geopolitics, perhaps geopolitical risks or finances. Moreover, the existence of bridge authors, like Khan Nasir, is essential for linking various clusters, reflecting the significance of these authors in aiding the process of integrating knowledge among various sub-disciplines. It appears that although there is some fragmentation regarding the pattern of co-authorship in geopolitics research, there are certain significant individuals who help link various intellectual circles.

2. Institution-level Visualization

Collaborative network of institutions that have contributed in geopolitical research was analyzed using VOSviewer software. The graph below shows how various institutions, such as universities, research institutions, and academic departments, are linked in terms of joint publications. Nodes represent the various institutions, whereas links show collaborations between institutions, and node size reflects the level of publications.

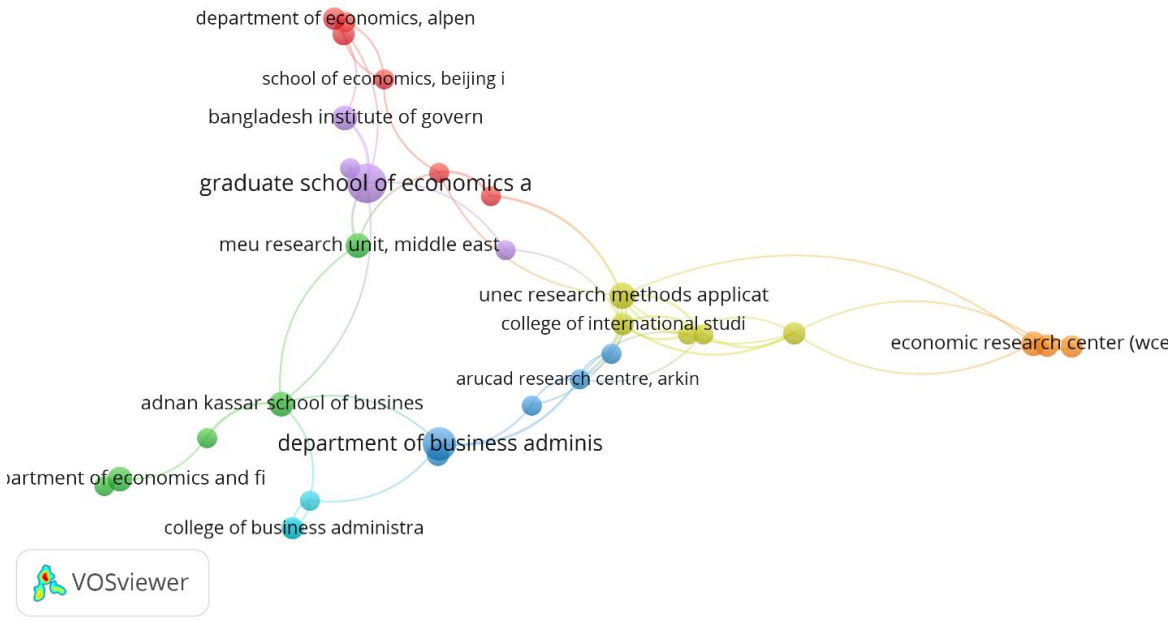

Figure 2. Institution-level Visualization

Source: Data Analysis

Figure 2 illustrates how the phenomenon of collaborative work among institutions in geopolitics entails not only a number of interrelated institutions but also their clustering on a regional basis. Graduate schools of economics and institutions of economics play important roles and, therefore, can be seen as central nodes since they collaborate with numerous partners, which implies that they act as hubs for the network. Clustering of institutions associated with the Middle East, Asian economic schools, and academic departments in Europe shows regional diversity of this type of cooperation. Moreover, the existence of bridging organizations, such as those connected to international colleges of studies and economic research centers, indicates a developing tendency of cooperation between different regions and disciplines. These organizations have a significant impact on linking otherwise isolated clusters, allowing for the transfer of information among various geopolitical environments. Nevertheless, the entire system still shows a high level of moderate fragmentation, implying that although collaboration does exist, there is scope for increasing global interconnectedness in future geopolitical studies.

3. Country-level Visualization

This network map of co-authorship among the country was generated using the software called VOSviewer for examining global research cooperation in geopolitical studies. This picture depicts how countries are connected to each other through their scientific collaboration in the publication process. In the diagram, a circle indicates a country, the size of which is representative of the total number of publications, and the lines represent the connections among countries in terms of their collaboration on research projects.

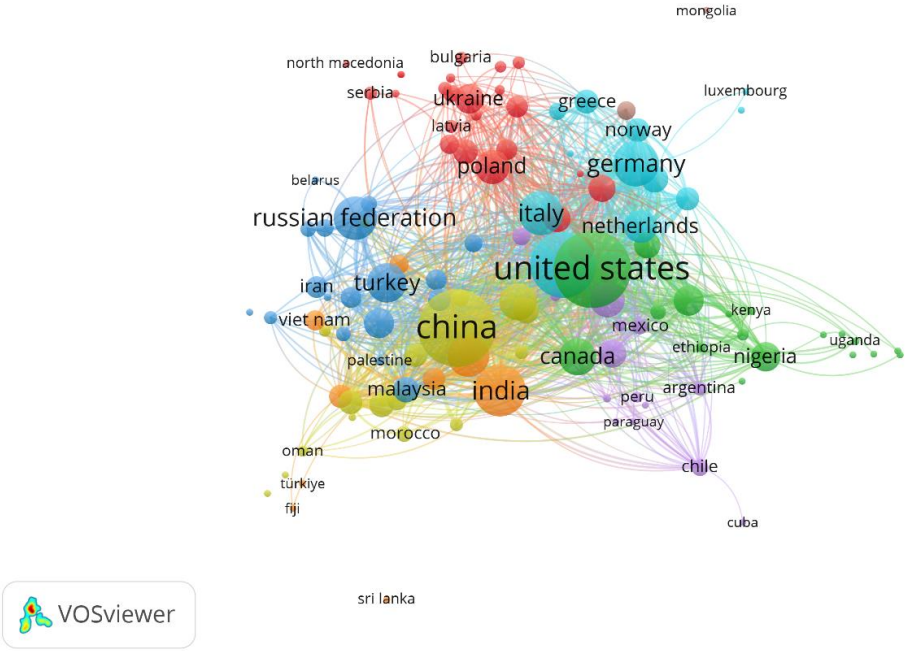

Figure 3. Country Visualization

Source: Data Analyzed

From the network map above, it is apparent that geopolitics is dominated by a number of key countries that have assumed pivotal roles in the conduct of geopolitical studies. The U.S., China, and other European states like Germany, Italy, and the Netherlands are located at the heart of the network. The U.S. emerges as the most conspicuous node in the network, signifying the country's significant influence on global research cooperation. On the other hand, China and India are also well-connected nodes, denoting the increasing contribution of developing nations to geopolitical research. Furthermore, the network has shown that there are both core countries as well as peripheral countries, where there are some nations like Nigeria, Kenya, and many more developing regions that have connectivity in the network but are relatively peripheral when it comes to working together globally. Multiple clusters show that despite being well established, there is some segmentation that exists in terms of international collaboration. Nations like Turkey, Russia, and Iran are some key players that link up these clusters due to their geopolitics.

B. Citation Analysis

The analysis of citations was done to determine the most important articles and scholars that have greatly influenced the progress of research in geopolitics. In this regard, the analysis of data received from the database Scopus can give an understanding of the contribution made by some academic works in terms of their popularity measured through citations.

Table 1. Top Cited Literature

Number of Citations	Author'(s)	Title
575	(Vakulchuk et al., 2020)	Renewable energy and geopolitics: A review

484	(Lebrouhi et al., 2022)	Global hydrogen development - A technological and geopolitical overview
231	(Belaïd et al., 2023)	Balancing climate mitigation and energy security goals amid converging global energy crises: The role of green investments
170	(Bednarski et al., 2025)	Geopolitical disruptions in global supply chains: a state-of-the-art literature review
138	(Deudney, 2020)	Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity
128	(Overland et al., 2022)	Are renewable energy resources more evenly distributed than fossil fuels?
86	(Hine & Floridi, 2024)	Artificial intelligence with American values and Chinese characteristics: a comparative analysis of American and Chinese governmental AI policies
76	(Vivoda et al., 2024)	A critical minerals perspective on the emergence of geopolitical trade blocs
72	(Ding et al., 2021)	The time-varying effects of financial and geopolitical uncertainties on commodity market dynamics: A TVP-SVAR-SV analysis
70	(Gong et al., 2023)	Study on international energy market and geopolitical risk contagion based on complex network

Keyword Co-Occurrence Analysis

The use of keyword co-occurrence analysis helped in investigating the conceptual framework and theme development in geopolitical research through the examination of the occurrence and association of keywords found in the chosen articles. With the aid of visual representation methods supported by VOSviewer, the analysis helps determine key research clusters and emerging themes that define the discipline. Keyword co-occurrence is a significant measure for determining the connectivity of research subjects within the field.

1. Network Visualization

Geopolitical studies were analyzed using the co-occurrence network of the keywords by means of the VOSviewer software to reveal the conceptual network and themes in the discipline. This network visualizes the co-occurrence and frequency of occurrence of keywords that were derived from the selected articles, whereby the nodes correspond to the keywords and links between them show the strength of the co-occurrence. The bigger the nodes, the more popular certain topics are in the discipline.

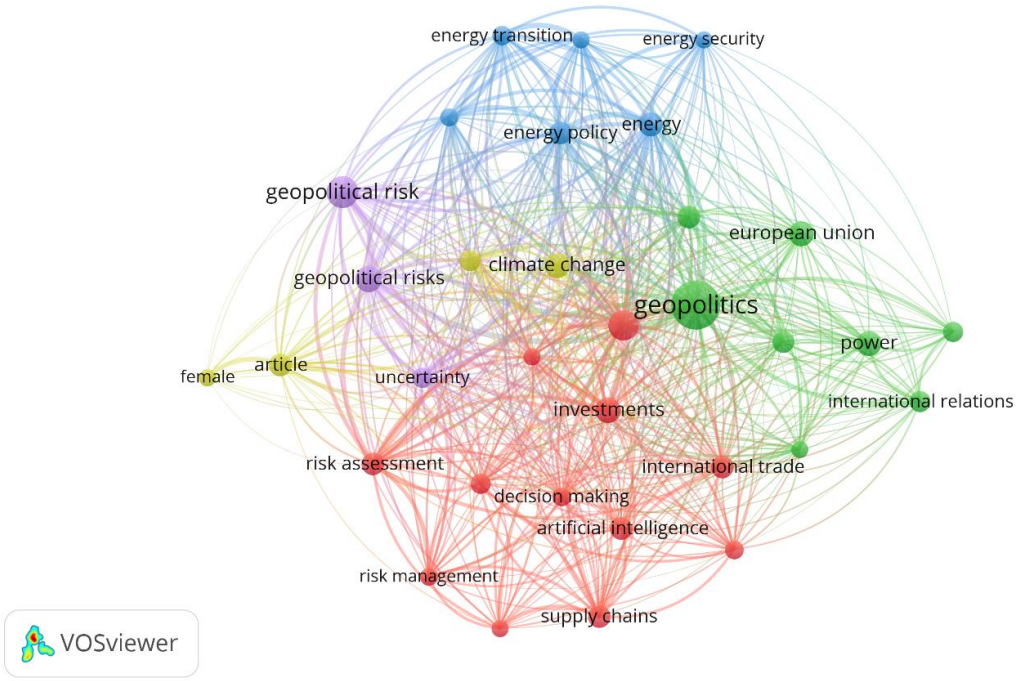

Figure 4. Network Visualization

Source: Data Analyzed

As can be seen from Figure 4, the term "geopolitics" is the keyword of the highest level of centrality, which is highly correlated with such topics as "power," "international relations," and "European Union." This means that classical geopolitics with its concerns about power relations and global political arrangements still remains the focal point of interest for modern geopolitics. The presence of these keywords implies that geopolitical studies maintain their roots in classical theories of international relations and, at the same time, transcend this framework moving into different fields. An important thematic area is associated with such energy-related keywords as "energy," "energy policy," "energy security," and "energy transition." This fact shows how relevant energy geopolitics has become for research today, becoming one of the main focuses of interest for scholars due to the world's current concerns about energy competition and sustainability.

Other notable clusters pertain to the economic/financial aspect, including keywords like "investments," "international trade," "supply chains," and "decision making." This shows how the focus has shifted to geo-economics in which economic tools and market processes across the globe are important elements in geopolitics. Moreover, the inclusion of "artificial intelligence" in the cluster shows how digital and technological elements are emerging as significant determinants in economic and geopolitical relations. Another trend can be seen with respect to risk-related keywords like "geopolitical risk," "risk management," "uncertainty," and "risk assessment." This highlights how risk has become an integral element of the study of geopolitics. In other words, more and more researchers are now analyzing the impact of geopolitics on financial matters and investments.

The network will additionally show how the fields of geopolitics and global concerns such as "climate change" are beginning to overlap more than ever. Such a development would imply that modern geopolitics is beginning to transcend its focus on security and power politics to include concerns about the environment and sustainability. With the inclusion of such topics within the

broader scope of geopolitics and economics, it becomes evident how complex the discipline has become.

2. Overlay Visualization

Overlay map showing keyword co-occurrence was produced using VOSviewer in order to analyze the temporal trends in geopolitical research. In the map above, the spectrum of colors used denotes the average year in which each keyword was published, from older keywords that appear in dark blue to newer ones in yellow colors. Such an analysis allows us to determine how the focus of research has evolved over time.

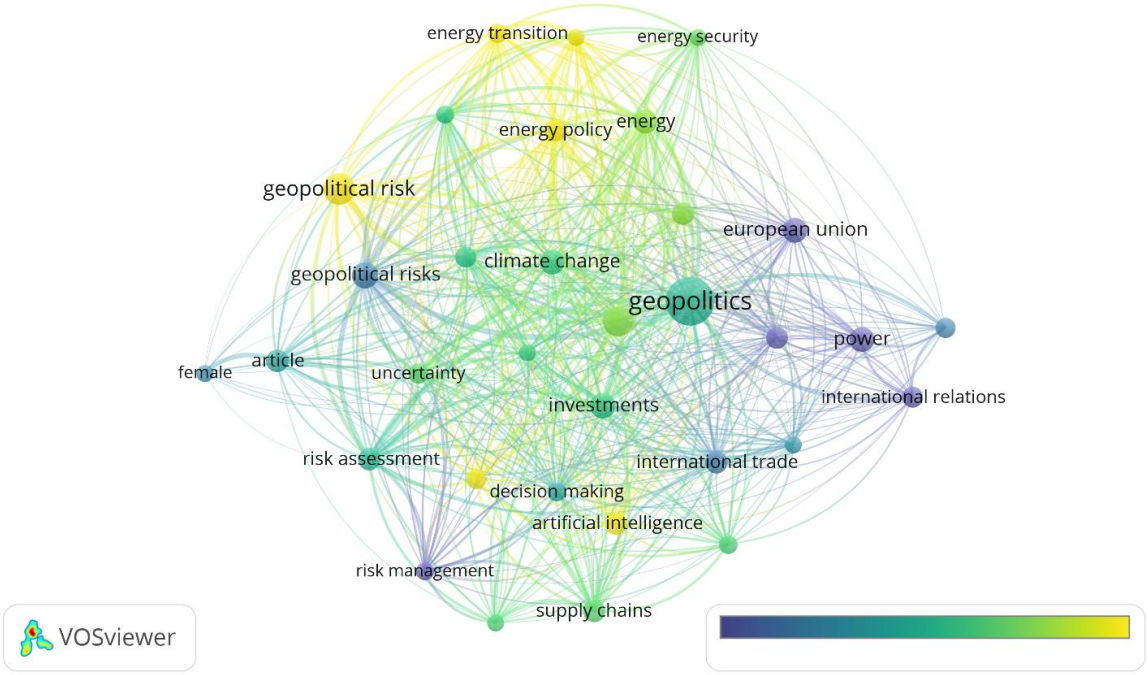

Figure 5. Overlay Visualization

Source: Data Analyzed

It is evident from the graph above that most of the earlier studies conducted in geopolitical science, shown in dark blue and purple colors, were based on themes such as "power," "international relations," and "European Union." The above-mentioned themes are associated with the fundamentals of geopolitics, which are concerned with the study of various theories on the power of states, territories, and international relations. Repeating of the above themes shows that despite its growth, this discipline relies upon theoretical fundamentals. But the recent trends in studies in this field, shown using green and yellow colors, show that there is certainly an incline towards modernism and multi-disciplinarity.

The use of terms such as "energy transition," "energy policy," "geopolitical risk," and "climate change" becomes significant and marks them as key concerns in the last few years. It highlights the importance of current and multidimensional concepts by pointing out the importance of environmental and resource security issues within geopolitics. In addition, the terms "artificial intelligence" and "supply chains" are made significant because of the introduction of technology and economics to the field of geopolitics. More importantly, the coloring of keywords based on their

connection indicates the increasing integration of geopolitical studies, where emerging areas of study are connected to traditional areas of concern. For example, "geopolitical risk" is connected to economic and environmental keywords.

3. Density Visualization

The density map of keywords was created by utilizing the VOSviewer program in order to examine the density and significance of research themes in geopolitics. In the below figure, color brightness indicates the relevance and significance of the keywords wherein bright colors (yellow) denote highly studied and frequently used concepts, while darker colors (blue) signify new research areas or themes that are yet to be explored.

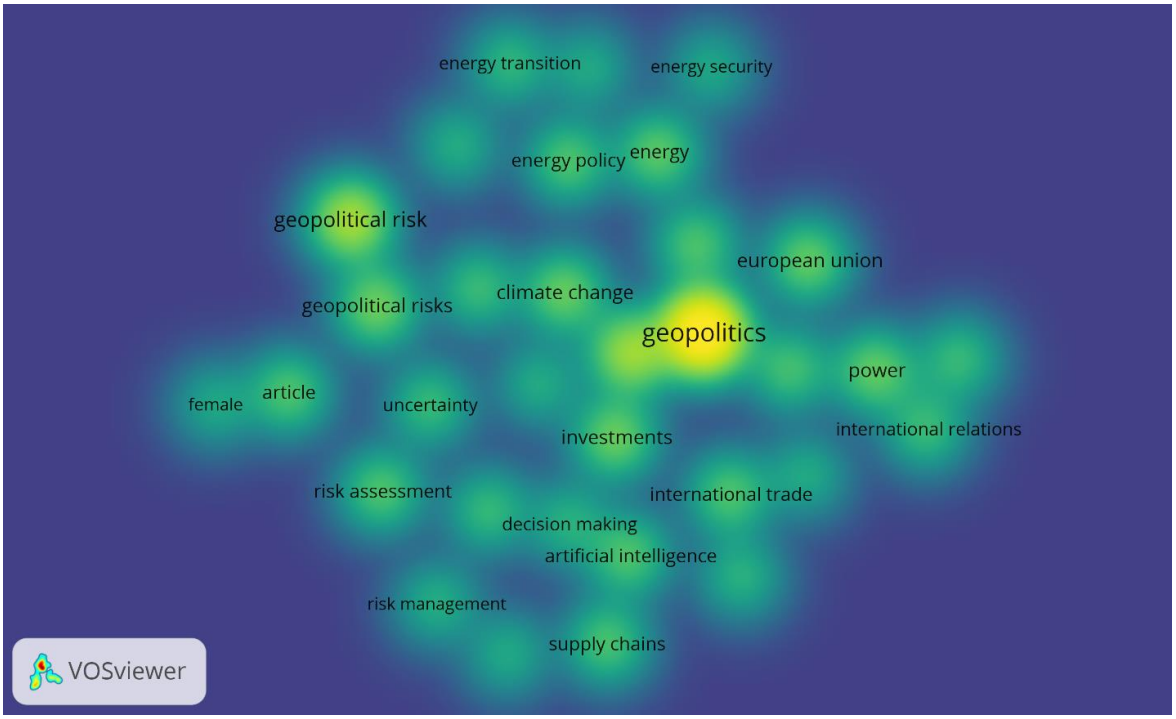

Figure 6. Density Visualization

Source: Data Analyzed

It can be seen clearly from the visualization that "geopolitics" forms the highest density keyword since it forms the brightest area in the map. It goes on to prove that geopolitics is indeed highly focused in its core and that scholars have taken interest in examining world power structures and relations. Some of the densely packed keywords that are clustered around the central keyword include "investments," "international trade," and "power." Furthermore, some of the moderately densely populated clusters reveal trends in expanding research themes like "energy policy," "energy security," "climate change," and "geopolitical risks." This shows that there is a gradual trend in moving towards more interdisciplinary issues especially regarding sustainability and risk management. On the other hand, some areas that are less densely populated include "artificial intelligence," "supply chains," and "risk management," which denote evolving areas of research with rising popularity but not yet fully developed.

Discussion

Based on the results of the bibliometric analysis of geopolitical research studies, it can be concluded that the process of developing geopolitics is associated with a growing complexity and integration of the knowledge structure. Co-authorship analysis has demonstrated that the level of collaboration within the discipline still remains quite fragmented; the major part of the studies is being carried out in narrow clusters. Nevertheless, the emergence of certain bridging researchers and institutions can be viewed as evidence of attempts to increase the cohesion of the scientific community. This means that although at present the field of geopolitical studies has not yet turned into a globally integrated research system, there is a gradual trend towards cooperation. As for the national and institutional level, it should be noted that the results prove the leading role of developed countries, specifically the USA and some countries of Europe, in determining the development direction of geopolitics. These countries act as key nodes in the global collaboration network and demonstrate high potential due to their advanced research environment and research funding programs.

Furthermore, the co-occurrence of keywords shows that geopolitical studies are not only focused on classic subjects like power, territory, and international politics. Rather, it has expanded into many other inter-disciplinary areas, such as energy security, climate change, and global trade flows. The prominence of energy-based keywords signifies that energy issues have become a major concern for geopolitics. It is evident from practical issues like the transition from fossil fuels to renewable energy sources and the relevance of the energy supply chain, which is now an essential part of international politics. Also, the rise in the use of terminology like “geopolitical risks,” “risks,” and “uncertainty” seems to point towards a more analytical and predictive approach to this subject area. There seems to be an increasing incorporation of economic and financial theories into geopolitical studies, especially in the sense of the effects of political volatility on investments. Another indication of this trend comes from the rise of terminology like “artificial intelligence” and “supply chains.” The inclusion of these technologies into the vocabulary of geopolitical studies shows that technology is increasingly important in geopolitical thinking. It is clear from the two maps that there exists an evident temporal pattern in geopolitical studies as the discipline has evolved from its classical base to become more modernized and issue-focused. While power and international relations continue to be relevant in this context, there exist new emerging issues related to sustainability, technology, and risk.

CONCLUSION

The present bibliometric analysis is aimed at providing an overall picture of the evolution of geopolitical studies, emphasizing the emergence of structure, key players, and directions of research focus. The results show that despite the reliance of the field on conventional concepts like power and international relations, the expansion towards multidisciplinary themes has already begun with new topics, such as energy security, climate change, geopolitics risks, and technology revolution. Collaboration analysis suggests that the major contribution to the field comes from developed countries but includes increasing participation from developing nations, which reflects both changes in academic and geopolitical realities. Moreover, the combination of various themes, namely

economic, environmental, and digital, reveals that geopolitical science itself evolves into a more intricate and multi-faceted science.

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