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HAKKÂRİ RESEARCH FROM 1976 TO THE PRESENT: BIBLIOMETRIC ANALYSIS OF ACADEMIC PUBLICATIONS[1]

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ABSTRACT

This study presents a bibliometric analysis of academic studies indexed in the Web of Science database with the keyword Hakkari. In the study, a total of 217 documents were examined and analysed as of 15/10/2024. The study aimed to determine the types of publications, their distribution by years, the most active authors, the most cited articles, and sources. Keyword analysis revealed that 'Turkey', 'ethnobotany', 'Hakkari' and 'medicinal plants' are the most frequently used keywords in the field. In addition, Turkey stood out as the most active country with 42 documents and 1164 citations. While Yüzüncü Yıl University and Bingöl University were among the most cited institutions, it was observed that studies in the fields of energy and ethnobotany had a wide resonance in the literature. This study comprehensively examines academic studies' development and scientific contributions of the academic studies on the Hakkari region. Interdisciplinary approaches, documenting local knowledge, and increasing international co-operation are recommended for future research.

Keywords: *Hakkari, Bibliometric Analysis, Web of Science, VOSviewer, Scientometric Analysis*

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1976'DAN GÜNÜMÜZE HAKKÂRİ ARAŞTIRMALARI: AKADEMİK YAYINLARIN BİBLİYOMETRİK ANALİZİ

ÖZET

Bu çalışma, Hakkari anahtar kelimesi ile Web of Science veri tabanında indekslenen akademik çalışmaların bibliyometrik analizini sunmaktadır. Araştırmada, 15/10/2024 tarihi itibariyla toplam 217 doküman incelenmiş ve analiz edilmiştir. Çalışmada, yayın türlerinin, yıllara göre dağılımının, en etkin yazarların, en çok atıf alan makalelerin ve kaynakların belirlenmesi amaçlanmıştır. Anahtar kelime analizi sonucunda, "Turkey", "ethnobotany", "Hakkari" ve "medicinal plants" gibi kavramların alandaki en sık kullanılan anahtar kelimeler olduğu tespit edilmiştir. Ayrıca, Türkiye, 42 doküman ve 1164 atıf ile en etkin ülke olarak öne çıkmıştır. En çok atıf alan kurumlar arasında Yüzüncü Yıl Üniversitesi ve Bingöl Üniversitesi yer alırken, enerji ve etnobotanik alanlarındaki çalışmaların literatürde geniş yankı bulduğu gözlemlenmiştir. Araştırma, Hakkari bölgesi üzerine yapılan akademik çalışmaların gelişimini ve bilimsel katkılarını kapsamlı bir şekilde incelemektedir. Gelecekte yapılacak araştırmalar için disiplinler arası yaklaşımlar, yerel bilginin belgelenmesi ve uluslararası iş birliklerinin artırılması önerilmektedir.

Anahtar Kelimeler: *Hakkari, Bibliyometrik Analiz, Web of Science, VOSviewer, Bibliyometrik Analiz*

I.INTRODUCTION

Bibliometric analyses have emerged as an important tool for evaluating scientific literature and identifying research trends. This method provides an understanding of research networks and information flows through quantitative and qualitative analyses of publications in a given field. In particular, analysing studies revolving around certain keywords is critical for mapping the academic interest and research intensity in that field.

Hakkari is one of the important regions of Turkey with its geographical location, rich cultural structure, and historical background. The region is the subject of research in various disciplines, -with both its natural beauties and social structure. Academic studies on Hakkari cover a wide range from social sciences to environmental sciences. These studies provide basic data to understand the living conditions, economic situation, environmental problems and cultural dynamics of the local people.

This study aims to perform a bibliometric analysis of academic publications containing the keyword 'Hakkari'. The study aims to examine the number of publications related to Hakkari, their publication dates, author distribution, identification of the most cited studies, and research trends. In addition, with this analysis, it is aimed to provide an up-to-date perspective on the place and importance of Hakkari in scientific research.

The place of the region in the academic literature is also of great importance in terms of determining the direction of research at both local and national levels. By better understanding the potential research areas in Hakkari and the development opportunities of these areas, researchers can direct future studies. Moreover, such a bibliometric analysis will also provide important information to policy makers in order to contribute to the social and economic development of Hakkari.

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In conclusion, a bibliometric analysis of academic studies on Hakkari is of great value both in terms of understanding the current situation of the region and creating a basis for future research. This study aims to contribute to the relevant literature by emphasizing Hakkari's scientific potential and its place in the research field.

II. METHODOLOGY

Bibliometrics is an interdisciplinary science that quantitatively examines information sources and is widely used to analyse published data. The bibliometric approach, which is generally accepted to be more reliable and unbiased than alternative techniques (Li et al., 2022; Ay, 2024), provides an important understanding of the characteristics and structure of a particular field through a systematic, transparent, and reproducible procedure (Aria & Cuccurullo, 2017; Liu et al., 2022). Bibliometric techniques offer the possibility to quantitatively assess the development of research in a particular field (Dal et al., 2023; van Raan, 2005). It is not possible to analyse all academic literature of scientific disciplines with classical methods. Therefore, bibliometric analysis and visualization methods offer an effective approach to quantitatively examine the academic literature that sheds light on the epistemological and intellectual development of disciplines (Anaç et al., 2023; Ay & Dal, 2024a; Gümüşburun Ayalp & Anaç, 2024).

Bibliographic review is of great importance in examining correlations between topics, keywords and authors in to identify trends and focal points in academic publications. Such comprehensive analyses provide researchers with valuable insights into the development of previous scholarship and shed light on future developments (Burkut & Dal, 2023, 2024).

The selection of appropriate visualization software is also critical in bibliometric analyses. Current visualization and analysis software include CiteSpace, HistCite, Gephi, SciTool and VOSviewer. For this study, VOSviewer was chosen as a suitable option because it can perform self-occurrence, co-occurrence and clustering analyses of scientific data and clearly present the connections between subjects (Chen, 2006; Chen, 2017). Therefore, visual analysis of the literature was carried out with VOSviewer.

The study was conducted in four stages. In the first stage, the purpose and scope of the study were determined. The main objective is to create bibliometric maps on variables such as keywords, journals, publications, authors and collaborations in the field by using metadata obtained from academic studies on 'HAKKARİ'. The data analysed within the scope of the study include publication type distribution, publication language distribution, most influential journals, most remarkable articles, keyword analysis, most influential countries and institutions, and most co-cited sources, journals and authors.

In the second stage of the study, the techniques to be applied in the bibliometric analysis were selected and designed. The study started with a search process that focused on identifying databases to comprehensively examine all relevant studies rather than being limited to specific journals. In this context, Web of Science (WoS) was preferred to analyse the research area. WoS is considered the gold standard in bibliometric analysis (Ay, 2024b; Enshassi et al., 2019) and offers advanced analytical capabilities to generate representative numbers covering almost all important publications (Yu et al., 2020). Moreover, WoS has superior citation matching algorithms compared to Scopus (Valderrama-Zurian et al., 2015),

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making it a valuable data source for our study.

In the third stage of the study, data sets were created using the Web of Science database for the analysis. Four steps were followed in this process: keyword detection and screening, data extraction according to various parameters, evaluation of the relevance of the studies to the subject, and exporting the obtained data. Figure 1 shows the process of creating the data sets prepared in the Web of Science database.

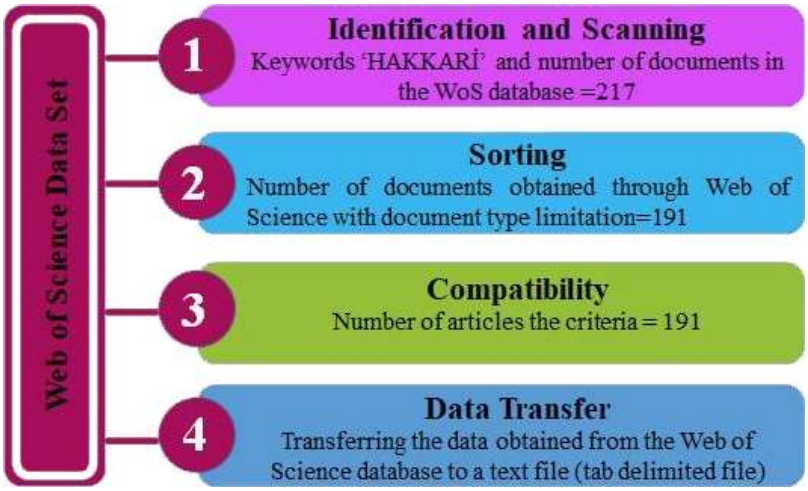

Figure 1. Data set preparation in Web of Science database

In the fourth and final stage, the data obtained were analysed and visualised and the results were reported. The VOSviewer analytical tool (version 1.6.20) was used to visualise and report the data. The rationale for choosing VOSviewer lies in its capacity to provide a more objective assessment and thus increase the scientific rigour of the research (Ay & Dal, 2024b; van Eck & Waltman, 2010). Furthermore, visual interpretation of the relevant literature with VOSviewer allows for the identification of emerging common themes and relationships between elements.

In this study, in order to identify studies containing the keyword Hakkari and to determine the trends that the field has evolved, a search was conducted on 15/10/2024 in the Advanced Search section of the Web of Science database using the keyword 'HAKKARİ' in the Topic tab. A search including the title, abstract and keywords of the articles was carried out in the Topic tab and a total of 217 documents on the subject were reached, 191 of which were identified as articles. Only articles were included in the study and analyses were made on these articles; other academic literature was excluded from the study.

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III. RESULTS

According to the relevant search result in the Web of Science database on 15/10/2024, a total of 217 documents, including 191 articles, were identified. When the distribution of academic studies is examined, apart from articles, papers (13), review articles (6), book reviews (3), meeting abstracts (2), letters (1) and record reviews (1) were found. The publication type distribution of academic studies on the related keyword is given in Figure 2.

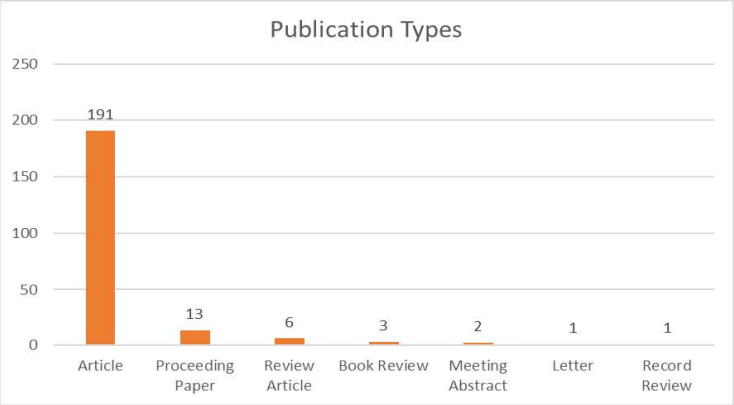

Figure 2. Distribution of Academic Publication Types

When the distribution of the studies according to years is analysed, it is observed that the first study on the related subject is 'Rediscovery of the Nestorian Churches of The Hakkari (South Eastern Turkey)' by Dauphin (1976). The number of articles according to years is shown in Figure 3.

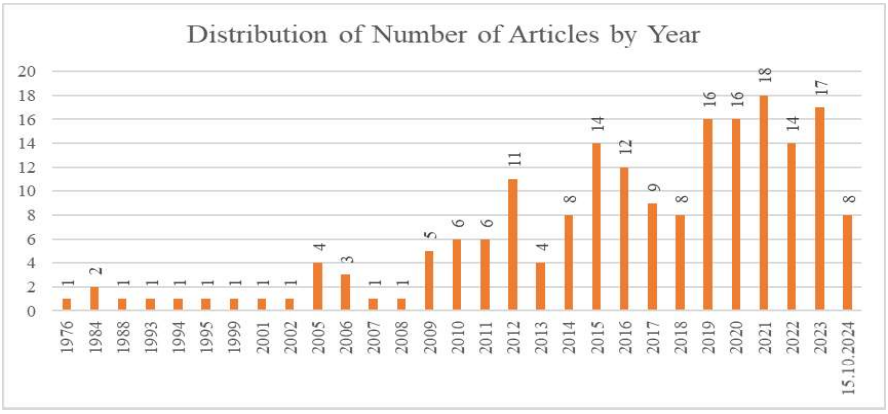

Figure 3. Distribution Graph of Number of Articles by Year

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When the publication languages of the articles subject to the study were analysed, it was seen that 169 articles were written in English. In addition to these, 21 articles were written in Turkish and 1 article was written in French.

A. Keyword Analysis

Co-occurrence / author keywords were used to determine the most effective keywords in the field by revealing the conceptual structure of the study subject. The aim was to present the subject contents in which the study topics are concentrated and evolved to the reader. In this analysis, 93 keywords were found to be used in 191 articles, which constitute the sample of the study. This analysis was conducted through the occurrence link formed by the repetition of at least one word from the key concepts determined by the authors of the articles, the titles of the articles, and the words in the abstract sections of the articles in different studies.

To identify the most frequently repeated key concepts of the study topic and to determine the areas in which the field has evolved, the criterion of a keyword being repeated at least 2 times was applied, resulting in 15 key concepts related to each other. These 15 items were mapped into 4 clusters by the program and are shown in Figure 4.

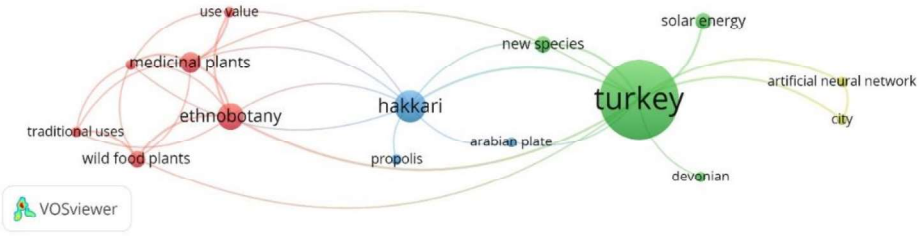

Figure 4. Keyword network analysis

In cluster 1 (red), the keywords ethnobotany, gateway, medicinal plants, use value, and wild food plants are included, and the most effective keyword of the cluster is ethnobotany with 5 links. In the 2nd cluster (green), the keywords Devonian, new species, solar energy, and Turkey are included, and the most active keyword of the cluster is Turkey with 15 links. In the 3rd cluster (blue), the keywords Arabian Plate, Hakkari, and propolis are included, and the most active keyword of the cluster is Hakkari with 6 links. In cluster 4 (yellow), the keywords artificial neural network and city are included, and both keywords have 2 links.

The 10 keywords with the highest co-occurrence power are shown in Table 1, together with co-occurrence, total link strength, and average publication year.

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Table 1. Keyword co-occurrence chart

Key Concepts	Co-Occurrence	Total Link Strength	Average Year of Publication
Turkey	15	16	2012,20
Hakkari	4	9	2013,00
Ethnobotany	5	11	2017,00
Medical Plants	4	10	2017,00
Wild Food Plants	3	7	2016,33
New Species	3	3	2017,00
Solar Energy	3	2	2012,00
Geçitli	2	7	2014,50
Use Value	2	6	2017,00
Traditional Uses	2	5	2015,50

When the co-occurrence ranking of the key concepts of the study is analysed, the keyword "Turkey" ranks first with 15 co-occurrences and 16 connection strengths; Hakkari (4 co-occurrences and 9 connection strengths) and Ethnobotany (5 co-occurrences and 11 connection strengths) keywords rank second and third, respectively.

B. Most Efficient Authors Analysis

Citation/author analysis was performed using data obtained from the Web of Science database to reveal the most influential authors who received the highest number of citations based on the relevant keywords. In the analysis conducted with the VOSviewer program, each node represents an author, and the size of the nodes varies in proportion to the number of citations they receive. In the 191 articles that constitute the sample of the study, a total of 149 authors were identified by VOSviewer and are shown in Figure 5.

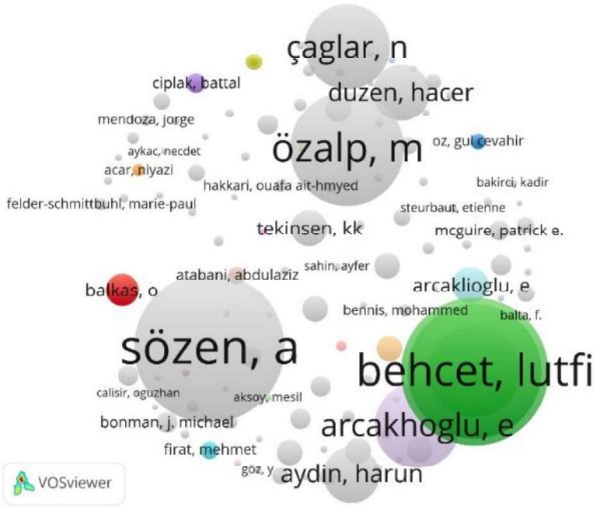

Figure 5. Most efficient authors network analysis

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In the analysis, it was determined that there were 149 authors in 191 articles and it was reduced to 10 authors with the condition that an author publishes at least 1 document and at least 20 citations. The 10 related authors were mapped as 3 clusters by the programme and shown in Figure 6.

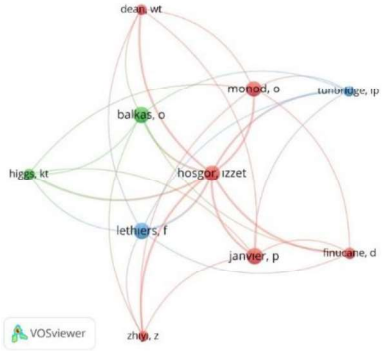

Figure 6. Analysing the most effective interrelated author network

The authors forming the red cluster were Dean, W.T.; Finucane, D.; Hoşgör, İ.; Janvier, P.; Monod, O.; and Zhiyi, Z. The most active author in the cluster was Monod, O. with 55 citations. The authors forming the green cluster were Balkas, O. and Higgs, K.T. The most active author in this cluster is Balkas, O. with 53 citations. The authors forming the blue cluster were Lethiers, F. and Tunbridge, I.P. The most effective author in the cluster was Lethiers, F. with 53 citations.

The 10 most influential authors of the research topic, according to the citations they received, are presented in Table 2. The 10 most influential authors of the research topic according to the citations they received are presented in Table 2.

Table 2. The most effective authors with the subject of study

Author Name	Citation Count	Average Citation Number	Average Year of Publication	Number of Documents	Total Link Strength
Sözen, Adnan	246	82,00	2005,00	3	0
Çakılcıoğlu, Uğur	241	48,20	2016,60	5	32
Behçet, Lütfi	219	54,75	2016,25	4	30
Arcaklioğlu, Erol	200	100,00	2005,00	2	0
Özalp, Mehmet	186	93,00	2005,00	2	0
Kaval, İdris	149	74,50	2014,50	2	26
Çağlar, Naci	140	140,00	2005,00	1	0
Aydın, Harun	92	92,00	2012,00	1	0
Düzen, Hacer	92	92,00	2012,00	1	0
Tekinşen, Kemal Kaan	60	30,00	2005,50	2	0

According to the number of citations related to the study subject, the most active author

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is Sözen, Aydın. Sözen, Aydın has 3 documents on the related subject. Sözen, Aydın is followed by Çakılcıoğlu, Uğur and Behçet, Lütfi respectively.

C. Most Effective Sources Analysis

Citation/Sources analysis was performed through the VOSviewer programme to identify the most effective sources according to the number of citations of articles containing the keyword Hakkari indexed in the Web of Science database. In the visualization, each node represents a source and the size of the nodes varies in proportion to the number of citations. Based on the data obtained from the Web of Science database, 44 sources on the subject were identified and shown in Figure 7.

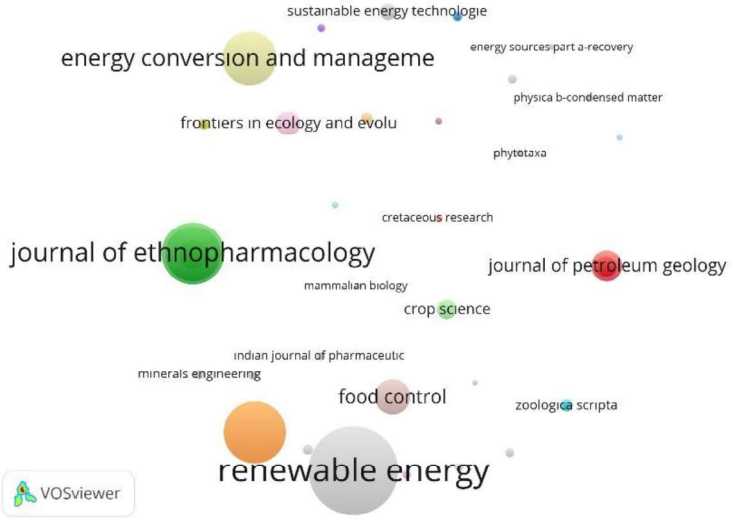

Figure 7. Most efficient source network analysis

In order to identify the most effective sources and to present the cooperation between them to the reader, the 44 sources identified on the subject were reduced to 16 sources with the conditions of publishing at least 1 document and receiving at least 20 citations. The were visualised by VOSviewer as 4 interconnected sources and 2 clusters, as shown in Figure 8.

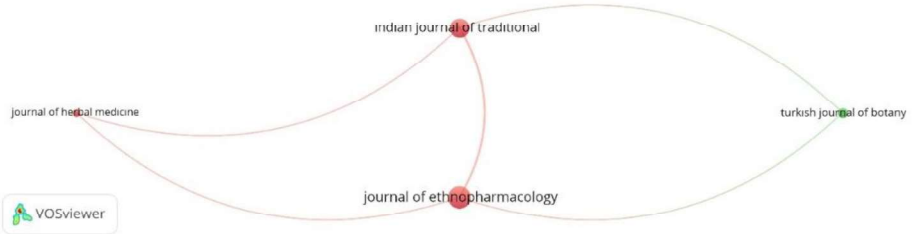

Figure 8. The most effective interrelated resources

In cluster 1 (red) are the Journal of Ethnopharmacology with 108 citations, the Indian

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Journal of Traditional with 95 citations and the Journal of Herbal Medicine with 39 citations. In cluster 2 (green), there is the Turkish Journal of Botany with 49 citations.

When the 44 sources of 191 articles, which constitute the sample of the study, are evaluated according to the number of citations, the most cited sources are presented in Table 3.

Table 3. Most effective journals by number of citations

Journal Name	Citation Count	Average Citation Number	Average Year of Publication	Number of Documents
Renewable Energy	154	2	2007,00	0
Journal of Ethnopharmacology	108	1	2014,00	6
Applied Energy	106	2	2005,00	0
Indian Journal of Traditional Knowledge	95	3	2016,33	6
Energy Conversion and Management	92	1	2012,00	0
Food Control	60	2	2005,50	0
Journal of Petroleum Geology	53	1	1984,00	4
Turkish Journal of Botany	49	2	2017,50	2
Frontiers in Ecology and Evolution	42	1	2019,00	0
Journal of Herbal Medicine	39	1	2019,00	2

According to the table, based on the number of citations received by the journals, it is observed that the most effective journal is Renewable Energy with 154 citations. Renewable Energy is followed by the Journal of Ethnopharmacology (108 citations) and Applied Energy (106 citations).

D. Most Effective Articles Analysis

Citation / documents analysis was performed to determine the most effective articles according to the number of citations using the keyword Hakkari. Through VOSviewer, 191 articles constituting the sample of the study were visualised by the program as the 50 most effective articles and 35 clusters. Only the first authors are indicated in the visualization and shown in Figure 9.

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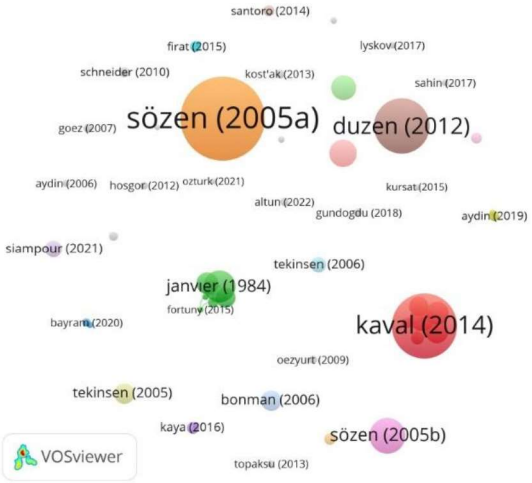

Figure 9. Most effective articles network visualization

In order to present the most effective articles of the study and the relationships between them to the reader, the analysis was repeated with the condition that an article study should receive at least 10 citations and visualised as 7 items and 4 clusters by VOSviewer and presented to the readers in Figure 10.

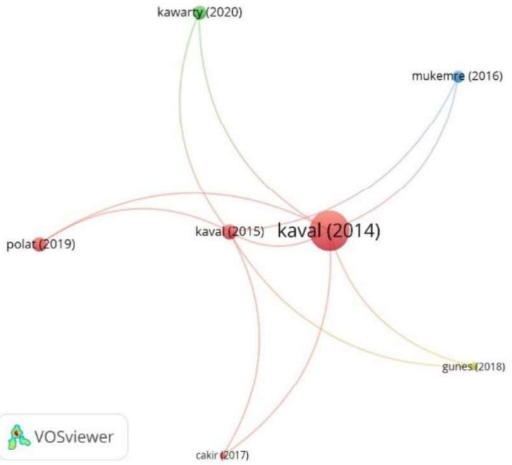

Figure 10. The most effective interrelated article network visualization

When the articles are analysed, Çakır (2017), Kaval (2014), Kaval (2015) and Polat (2019) are in the red cluster. The most effective article of the cluster is 'Ethnobotanical study on medicinal plants in Gecitli and its surrounding (Hakkari-Turkey)' with 108 citations. In the green cluster, Kawarty (2020); in the blue cluster Mükemre (2016) and in the yellow cluster Güneş (2018).

The 10 most effective articles according to the number of citations received by the studies are presented in Table 4.

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Table 4. Most effective articles by number of citations

Author(s) (Year)	Article Name	Published in Journal	Citation Count	Total Link Strength
Sözen et al., (2005)	*"Forecasting based on neural network approach of solar potential in Turkey"*	Renewable Energy	140	0
Kaval et al., (2014)	*"Ethnobotanical study on medicinal plants in Gecitli and its surrounding (Hakkari-Turkey)"*	Journal of Ethnopharmacology	108	4
Düzen & Aydın (2012)	*"Sunshine-based estimation of global solar radiation on horizontal surface at Lake Van region (Turkey)"*	Energy Conversion and Management	92	0
Sözen & Arcaklıoğlu (2005)	*"Solar potential in Turkey"*	Applied Energy	60	0
Janvier et al., (1984)	*"Discovery of a Vertebrate Fauna at The Devonian-Carboniferous Boundary in Se Turkey (Hakkari Province)"*	Journal of Petroleum Geology	53	2
Sözen & Özalp (2005)	*"Solar-driven ejector-absorption cooling system"*	Applied Energy	46	0
Noroozi et al., (2019)	*"Patterns of Endemism in Turkey, the Meeting Point of Three Global Biodiversity Hotspots, Based on Three Diverse Families of Vascular Plants"*	Frontiers in Ecology and Evolution	42	0
Kaval et al., (2015)	*"Survey of wild food plants for human consumption in Gecitli (Hakkari, Turkey)"*	Indian Journal of Traditional Knowledge	41	4
Polat (2019)	*"Ethnobotanical study on medicinal plants in Bingol (City center) (Turkey)"*	Journal of Herbal Medicine	39	2
Kawarty et al., (2020)	*"An ethnobotanical survey of medicinal plants in Ballakayati (Erbil, North Iraq)"*	Turkish Journal of Botany	38	2

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According to the results of the analysis, the study titled 'Forecasting based on neural network approach of solar potential in Turkey' was the most effective article in terms of citations, while the articles titled 'Ethnobotanical study on medicinal plants in Gecitli and its surrounding (Hakkari-Turkey)' and 'Sunshine-based estimation of global solar radiation on horizontal surface at Lake Van region (Turkey)' were among the most effective articles.

E. Most Effective Countries Analysis

A citation/countries analysis was conducted to determine the countries contributing to the literature by receiving the highest number of citations for the publications on Hakkari. According to the results of the analysis, it was determined that there are 19 countries conducting studies and it is shown in Figure 11.

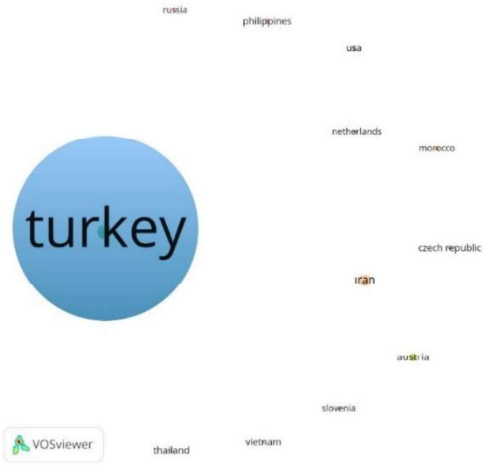

Figure 11. Most effective countries network analysis

In order to determine the most effective countries based on the number of citations they receive, 19 countries were reduced to 7 countries that meet the conditions of publishing at least 1 document and receiving 30 citations, and mapped as 4 clusters by VOSviewer and shown in Figure 12.

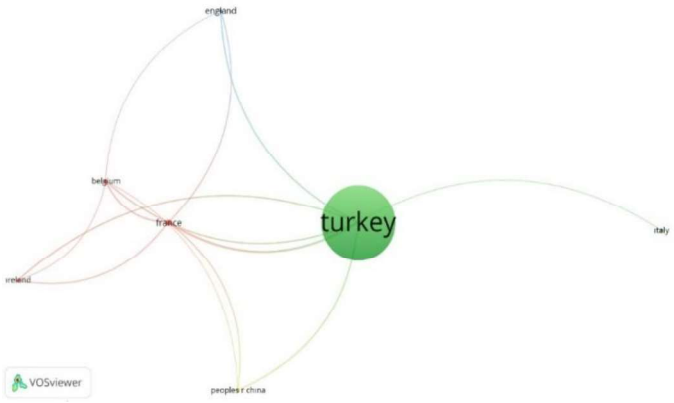

Figure 12. Most efficient countries analysed

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Cluster 1 (red) includes Belgium, France and Ireland; Cluster 2 (green) includes Italy and Turkey; Cluster 3 (blue) includes the United Kingdom; and Cluster 4 (yellow) includes the People's Republic of China.

Considering the number of citations received by the documents, the 10 most effective countries of the research topic were determined and shown in Table 5.

Table 5. Most effective countries by number of citations

Country Name	Citation Count	Number of Documents	Average Citation Number	Total Link Strength	Average Year of Publication
Turkey	1164	42	27,71	22	2013,33
France	94	4	23,50	17	2006,75
Iran	80	3	26,67	0	2019,67
England	55	2	27,50	6	2008,00
Austria	53	2	26,50	0	2010,00
İrlanda	36	1	36,00	6	2002,00
Philippines	34	1	34,00	0	2006,00
United States of America	34	1	34,00	0	2006,00
People's Republic of China	33	1	33,00	6	1988,00
Belgium	32	2	16,00	10	2013,50

It is seen that Turkey is the most effective country with 42 documents and 1164 citations on the subject of the study. Turkey is followed by France (4 documents and 94 citations) and Iran (3 documents and 80 citations).

F. Most Effective Institutions Analysis

Citation / organisations analysis was conducted to determine the most cited institutions with the documents published in the literature on the research topic. In the analysis, the nodes take different sizes in proportion to the citation size. In order to determine the most effective institutions of the study, mapping was carried out over the size of the number of citations and shown in Figure 13.

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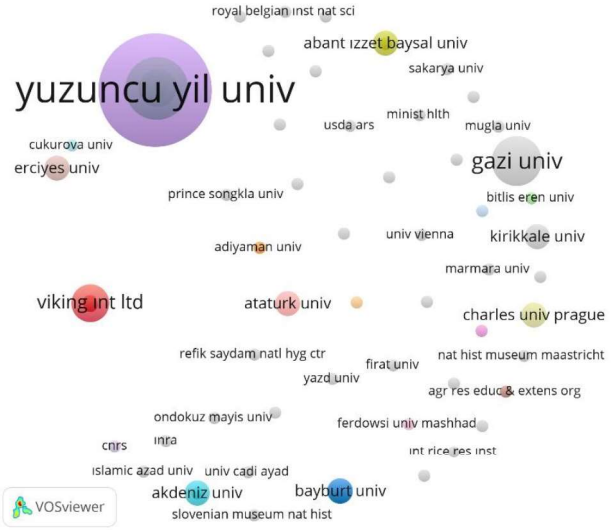

Figure 13. Network visualization of the most active institutions by number of citations

In order to determine the most effective institutions and the relationships between them, the number of institutions was reduced to 3 (items) with the condition of publishing 50 citations and 3 documents and visualised as a single cluster and presented in Figure 14.

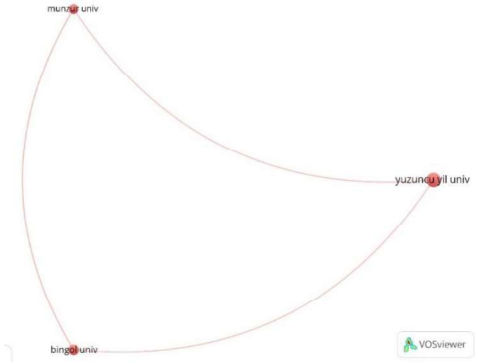

Figure 14. Most active institution network visualization (by number of citations)

It was determined that Yüzüncü Yıl University (354 citations and 9 documents), Bingöl University (258 citations and 4 documents) and Munzur University (241 citations and 5 documents) were in the cluster.

The 10 most effective institutions according to the number of citations among the studies on the subject are shown in Table 6.

Table 6. The most effective institutions according to the number of citations

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Name of Institution	Citation Count	Number of Documents	Average Citation Number	Total Link Strength
Yüzüncü Yıl University	354	9	39,33	26
Bingöl University	258	5	51,60	28
Gazi University	258	4	64,50	0
Munzur University	241	5	48,20	28
Kırıkkale University	200	2	100,00	0
Sakarya University	140	1	140,00	0
Hacettepe University	53	2	26,50	3
Turkish Petroleum Corporation	53	1	53,00	7
Univ. Lille	53	1	53,00	7
Univ. Paris	53	1	53,00	7

Yüzüncü Yıl University is the most active institution with 9 documents and 354 citations, followed by Bingöl University (5 documents and 258 citations) and Gazi University (4 documents and 258 citations).

IV. CONCLUSION

This study presents a comprehensive bibliometric analysis of academic publications indexed with the keyword 'Hakkari' in the Web of Science database. The findings of the study reveal that the scientific literature in this field is concentrated around certain themes and how it has developed over the years. As a result of the search, a total of 217 documents were found. Although 191 of these documents are articles, there are also different types of publications such as papers, review articles, book reviews, meeting summaries, letters and record reviews. When the years of publication of the articles were analysed, it was seen that the oldest study was conducted by Dauphin in 1976. The continuity of publications in this field has been ensured and new studies on this subject continue to be published today.

Keyword Analysis: Keyword analysis was conducted to better understand the conceptual structure of the research topic. Within the scope of the study, it was determined that 93 different keywords were used in 191 articles. Keywords such as 'ethnobotany', 'Turkey', 'Hakkari' and 'medicinal plants' were frequently repeated and these concepts stood out as the central topics of the study area. In particular, the keyword 'Turkey' was identified as the most active concept with 15 co-occurrences and 16 total link strengths.

Most Effective Authors Analysis: In the analysis evaluating the effectiveness of the authors, a total of 149 authors were identified in 191 articles. According to the results of the network analysis of the most cited authors, 10 authors were identified and these authors were classified in three different clusters. Monod O. was the most effective author with 55 citations, while Balkas O. and Lethiers F. were also among the most effective authors. Sözen Adnan stands out as the author with the highest number of citations in this field with 246 citations. These results show that the authors who carry out effective studies on Hakkari and ethnobotany make important contributions to the scientific literature.

Most Effective Sources Analysis: In this study, the most cited academic sources on

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Hakkari were also analysed. According to the data obtained from 44 different sources, 'Renewable Energy' journal was determined as the most effective source with 154 citations. It is followed by 'Journal of Ethnopharmacology' (108 citations) and 'Applied Energy' (106 citations). These results show that the studies on Hakkari are concentrated especially in the fields of energy and ethnobotany. In particular, the journal 'Renewable Energy' reveals that research on renewable energy sources such as solar energy potential has a wide resonance in the literature.

Analysis of the Most Active Articles: Among the most influential articles of the research, the study titled 'Forecasting based on neural network approach of solar potential in Turkey' by Sözen et al. (2005) ranks first with 140 citations. The article by Kaval et al. (2014) on the ethnobotanical utilisation of plants in the Geçitli region of Hakkari ranks second with 108 citations. These findings show that studies on both energy potential and medicinal uses of local plants have attracted a high degree of interest and influence in the literature.

Most Efficient Countries Analysis: In this study, the most active countries in publications with the keyword Hakkari were also analysed. Turkey stood out as the most active country with 42 documents and 1164 citations. Turkey is followed by France (4 documents, 94 citations) and Iran (3 documents, 80 citations). This result shows that Turkey is at the centre of academic studies on the region and has made great contributions to research on Hakkari. In addition, countries such as France and Iran also have an important place in scientific studies on Hakkari.

Most Effective Institutions Analysis: According to the results of the research, the most cited institutions were also analysed. Yüzüncü Yıl University was identified as the most effective institution with 9 documents and 354 citations. It is followed by Bingöl University (258 citations, 5 documents) and Munzur University (241 citations, 5 documents). These results show that universities in Turkey play a leading role in research, especially in Hakkari region. It is understood that Yüzüncü Yıl University is at the centre of the studies in the region with a large volume of academic production. In this study, a comprehensive analysis of academic studies on Hakkari region and its surroundings has been carried out. In the light of the findings, some suggestions for future research are presented: Approaches from Different Disciplines: In this study, botanical, ethnobotanical, and energy studies were predominant. However, the cultural, sociological and archaeological aspects of Hakkari region are also very rich. It would be useful for future studies to focus more on these areas and enrich them with interdisciplinary research.

Documentation of Local Knowledge and Cultural Heritage: Ethnobotanical research is based on the traditional knowledge and experiences of local people. This information is transmitted orally from generation to generation and carries the risk of being lost over time. Therefore, it is of great importance to document and preserve local knowledge and cultural heritage in and around Hakkari in a more systematic way. Future research can contribute to the preservation of this heritage by ensuring greater participation of local people.

Increasing Research on the Renewable Energy Potential of the Region: Research on renewable energy sources provides important findings for the utilisation of Hakkari's natural resources such as solar energy. Expanding research in this field and evaluating the energy potential in the region in a sustainable manner can contribute to both local development and environmentally friendly energy production.

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Development of International Cooperation: As seen in the study, countries other than Turkey such as France and Iran also contribute to research on Hakkari. These collaborations should be further increased and more international projects should be carried out on Hakkari's unique geographical and biological richness. In this way, academic research on the region can attract more attention on a global scale and reach a wider scientific audience.

Enhancing the Research Capacity of Local Universities: Universities in the region, such as Yüzüncü Yıl University, Bingöl University and Munzur University, are at the centre of research on Hakkari. Increasing the research capacity of these universities will enable local and regional research to move forward. Increasing research funds, improving scientific equipment and laboratory infrastructure will support academics' work in this field.

More Comprehensive Use of Databases: This study is based on Web of Science data. However, more comprehensive research can be conducted by using different databases. Analyses with other academic databases such as Scopus and Google Scholar can provide a broader perspective and make new contributions to the literature.

In conclusion, academic studies on Hakkari region are open to be enriched with different disciplines and strengthened with international collaborations. These studies will provide a better understanding of the cultural, ecological and economic richness of the region and will have a wider resonance in the scientific world.

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