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Seven Decades of Studies in Conservation: A Bibliometric Analysis from 1952 to 2021

Studies in Conservation'ın Yedi Dekatı: 1952'den 2021'e Bibliyometrik Bir Analiz

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ABSTRACT

Studies in Conservation is a peer-reviewed international journal publishing original research and review articles on the conservation of artistic and historic works. This study presents from an inclusive bibliometric analysis of the documents published in this journal. Data related to 2883 documents was gathered from Scopus database. This study consisted of statistical analysis of the documents published in *Studies in Conservation* which were indexed in Scopus in seven decades of the journal, within a period between 1952 and 2021. The analysis covered publications written by 187 authors from 75 countries. With regards to the publication numbers in *Studies in Conservation* between the mentioned years, the United Kingdom produced 23.07 % of the world's publications of *Studies in Conservation*, which was the country with the highest number of publications with 665 documents and followed by United States, Italy, Germany and France. The countries that contributed the most are located in Europe. The British Museum in the UK was the most contributive institution in *Studies in Conservation* between 1952 and 2021 with 96 documents. It was recommended that Journal of *Studies in Conservation* should be supported in the underdeveloped and developing countries. It was aimed in this study to encourage scholars publish further studies in the journal.

Keywords: *Studies in Conservation, bibliometrics, conservation, journal analysis.*

ÖZET

Studies in Conservation, sanatsal ve tarihi eserlerin korunmasına ilişkin özgün araştırma ve inceleme makaleleri yayınlayan, hakemli ve uluslararası bir dergidir. Çalışma, bu dergide yayınlanan belgelerin kapsamlı bir bibliyometrik analizini sunmaktadır. Scopus veri tabanından 2883 belgeyle ilgili veriler toplanmıştır. Bu çalışma, Scopus'ta indekslenen *Studies in Conservation* dergisinde 1952-2021 yılları arasındaki yedi dekatlık bir sürede yayınlanan belgelerin istatistiksel analizinden oluşmuştur. Analiz, 75 ülkeden 187 yazar tarafından yazılan yayınları kapsamıştır. *Studies in Conservation*'ın belirtilen yıllar arasındaki yayın sayılarına bakıldığında, 665 belge ile en fazla yayına sahip Birleşik Krallık dünya yayınlarının %23,07'sini üretmiştir ve onu Amerika Birleşik Devletleri, İtalya, Almanya ve Fransa izlemektedir. En çok katkı sağlayan ülkeler Avrupa'da bulunmaktadır. Birleşik Krallık'taki British Museum, 96 belge ile 1952-2021 yılları arasında *Studies in Conservation*'a en çok katkı sağlayan kurumdur. *Studies in Conservation* dergisinin az gelişmiş ve gelişmekte olan ülkelerde desteklenmesi önerilmiştir. Bu çalışmanın, araştırmacıları dergide daha fazla çalışma yayınlamaya teşvik etmesi amaçlanmıştır.

Anahtar Kelimeler: *Studies in Conservation, bibliyometri, koruma, dergi analizi.*

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1. INTRODUCTION

Conservation, which helps to reveal the true identities of movable and immovable cultural properties and artefacts, is the act of keeping their existence alive with all its elements. With the right implementations of protectionism, existing problems are eliminated and necessary precautions are taken against the threatening dangers. Conservation is an interdisciplinary field because of the wide range of materials used, preventive conservation issues, treatment problems, questions and philosophical or ethical issues. While arriving at the answer of the question of "why do we conserve/restore?", we use the correct ideas and instruments in order to deliver the property to reach the future in a sustainable manner (Musso, 2014, p. 88). To follow the developments and trends in the field of conservation, publishing is crucial in determination of the methodology and conservation materials.

Bibliometrics is the statistical analysis of the data of the documents published in a specific working area (Van Eck and Waltman, 2010). Data analysis is one of the indispensable studies in the academic field. There are numerous journal evaluation studies published in order to shed light on the publication trends and structure of the scientific journals in recent years. Lately, Kumar et al. (2022) executed a bibliometric analysis of the 8 years of the *Journal of Behavioral and Experimental Finance*. Publication trends, research topics and methodologies, authorship and citations were analysed in the journal. Moreover, Donthu et al. (2022) prepared bibliometric analysis of the *Journal of Services Marketing*. These articles are about journals from various fields. Although bibliometric studies have been popularized of late years, there is no bibliometric analysis of the journals on conservation or for *Studies in Conservation*. As one of the major journals on conservation, *Studies in Conservation* was studied in the study to gain an understanding of the scientific contributions to conservation.

This study aims to introduce the data from an inclusive bibliometric analysis of the articles published in the journal of *Studies in Conservation*, according to countries, authors and institutions, analysis of citations, keywords and bibliometric network, and analysis of the dates of the publication.

1.1. About the Journal of *Studies in Conservation*

Studies in Conservation is a peer-reviewed international journal, published by the International Institute for Conservation of Historic and Artistic Works (IIC). The aims of the IIC when founded in 1950 were "to improve the state of knowledge and standards of practice and to provide a common meeting ground and publishing body for all who are interested in and professionally skilled in the conservation of museum objects".[1]

The journal has the goal of helping all of the conservation professionals of different specialties, to keep up

[1] International Institute for Conservation of Historic and Artistic Works (IIC). (2022). History. Retrieved from https://www.iiconservation.org/about/history

with new trends and developments in the field (Chandra and Townsend, 2017, p. 1). High-quality original articles regarding the conservation of artistic and historic works are on the subjects of:

"-Examination methods for works of art,

-New research in the analysis of artistic materials,

-Mechanisms of deterioration,

-Advances in conservation practice,

-Novel methods of treatment,

-Conservation issues in display and storage,

-Preventive conservation,

-Issues of collection care, conservation history and ethics,

-The history of materials and technological processes etc."[2]

The recognition of the intangible cultural heritage and authenticity as ratified by the Nara Conference are also of interest by the journal (Scott, 2022). The target audience of the journal are the conservation and heritage science professions. The ISSNs for the article are 0039-3830 (Print) and 2047-0584 (Online). It is not a born-digital research journal of recent origin, when it did not meet that online ISSN for its first few decades. The number of the issues published in *Studies in Conservation* is currently 8 per year. There are 66 volumes; 341 issues and supplements in the journal between 1952 and 2021. The publisher of the journal is Taylor and Francis. Editor-in-chief of the journal is Dr.Chandra L.Reedy from University of Delaware (USA); and director of publications is Dr.Joyce H.Townsend from Tate London (UK).[3]

1.2. Objectives of the Study

The study mentions the following objectives below:

1. To present year-wise distribution of the documents of *Studies in Conservation* between 1952-2021;
2. To determine the various languages used in the publications;
3. To inspect the document types of the contributions; and investigate the conference papers in-depth;
4. To expose the top countries and publication density of the world countries;
5. To identify the ranked list of authors, institutions and funders;

[2] International Institute for Conservation of Historic and Artistic Works (IIC). (2022). Studies in Conservation. Retrieved from https://www.iiconservation.org/publications/sic
[3] Taylor & Francis Online. (2022). Studies in Conservation. Retrieved from https://www.tandfonline.com/loi/ysic20

6. To reveal the collaboration among the authors;
7. To study the citations and keywords of the documents;
8. To visualise the bibliometric network of the most used author keywords and co-authorship;
9. To prepare the analysis of the 10-year intervals of the journal according to authors and citations.

2. MATERIAL AND METHOD

2.1. Research Design

This study was prepared as descriptive scanning model for the sake of describing and explaining the condition in detail (Walcott, 1994). The purpose of this preference was to examine the validity of the studies in Scopus in terms of bibliometric indicators.

2.2. Collection of Data

The study consists of bibliometric analysis of the documents published in the Journal of *Studies in Conservation* which are indexed in WoS and Scopus until the end of 2021. WoS and Scopus are the most widespread databases on various scientific fields, which are used for literature researching (Aghaei Chadegani et al., 2013, p. 18). 'Studies in conservation' was used as the keyword for the 'source title' search of WoS and Scopus. The search brought out 1571 and 2883 documents from WoS and Scopus, respectively. WoS database was ignored because of less coverage in the journal from 1994 to 2021; and the data collected from Scopus database was preferred for the research.

2.3. Data Analysis

All documents in the Journal of *Studies in Conservation* published between 1952 and 2021 were analyzed in Scopus, which is known as the largest searchable source of literature, which is expanded and updated invariably (Aghaei Chadegani et al., 2013, p. 18). The study identifies the countries, institutions and authors with regard to this topic using bibliometric analysis. It accomplishes descriptive analysis, bibliographic mapping and network visualization. Since the first article of *Studies in Conservation* was published in 1952, it is chosen as the starting year of this study. The analysis comprehends 2883 publications written by 187 authors from 75 countries, where 'arts and humanities' were identified by Scopus as the main fields related to the research.

Different applications are used in the data analysis. VOSviewer was utilized in the article as the freeware tool used for creating bibliometric networks and visualisation.[4] GunnMap was made use of generating a global productivity map in the section of "Outputs According to Countries".[5] The United Nations (UN)

[4] Vosviewer. (2022). Visualizing scientific landscapes [WWW Document]. Retrieved from http://www.vosviewer.com/
[5] GunnMap 2. (2022). [www Document]. Retrieved from http://lert. co.nz/map/

system was applied in order to make a country classification.[6]

2.4. Limitations and Constraint

The current study has some limitations and constraints. Few articles were not available in the Scopus database while analyzing. The original website of the journal was also fertilized in the data of the document numbers, so that minor mismatches did not affect the outcomes.

3. FINDINGS

3.1. Analysis on the General Feature of the Journal

The search embodied 2883 publications in in the Journal of *Studies in Conservation* in the Scopus database between 1952 and 2021. 212 documents were all open access, 97 were hybrid gold, 48 were bronze and 104 were green that are available at repository. According to the number of publications, the peak year was 2016 with 139 documents. There were 6 issues and 3 supplements in Volume 61 in 2016.[7] There was no year without document production (Figure.1). Between the years 1995 and 2011, record numbers were few in number and varied from 16 to 32. English was the main language of the documents followed by Chinese and French (Figure.2). This data combined language of the paper and additional language of abstracts. In 2014, only Chinese was used as well as English for the abstracts.

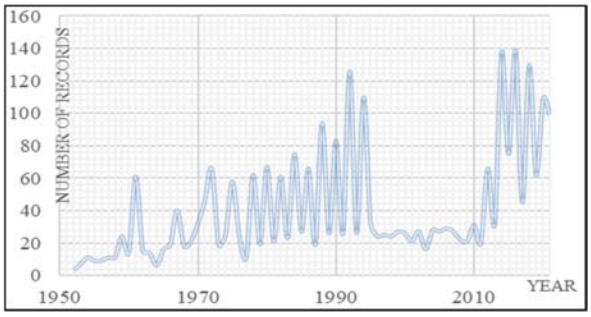

Figure 1. Number of the documents published in *Studies in Conservation* by year (Scopus).[8]

[6] United Nations. (2021). Country Classification. In: World Economic Situation and Prospects as of mid-2021. New York. p.3 Retrieved from https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/WESP2021_UPDATE.pdf
[7] Taylor & Francis Online. (2022). Studies in Conservation. Retrieved from https://www.tandfonline.com/loi/ysic20
[8] All figures and tables are prepared by the author.

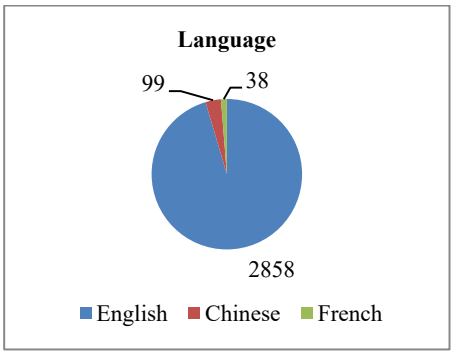

Figure 2. Number of Languages Used in Publications (Scopus).

The most studied research area was detected as arts and humanities. The most common document types were articles, articles based on conferences (conference papers) and editorials (Table.1). Of the documents published in *Studies in Conservation* between 1952 and 2021 in the Scopus database, 2683 were full-text articles with abstracts, 54 conference papers, 46 editorials, 46 reviews and 23 notes (93.06%, 1.87%, 1.60%, 1.60% and 0.80 % respectively; Figure.3).

The supplements published in between 2000 and 2009 included one issue of *Reviews in Conservation* for each year.[9] Despite all these papers in *Reviews in Conservation* were *review papers*, they were not addressed in Scopus. From 2010, some papers were published as *review papers* currently called *critical perspectives* in the journal. For this reason, the exact number of the reviews was more than stated in Scopus.

Table 1. Document types published in *Studies in Conservation* between 1952 and 2021(Scopus).

Document Type	Record Count	% of the 2883 Articles
Article	2683	93.06
Conference Paper	54	1.87
Editorial	46	1.60
Review	46	1.60
Note	23	0.80

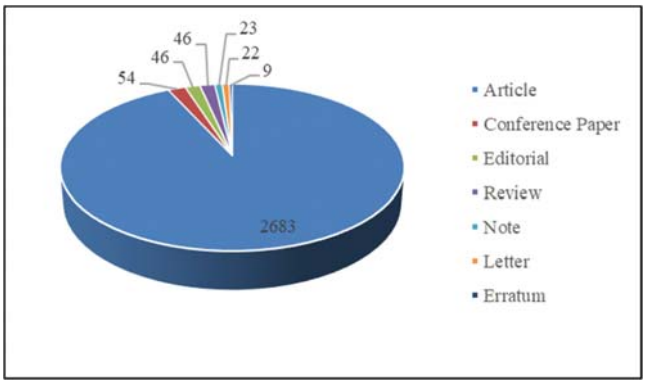

Figure 3. Distribution of document types in *Studies in Conservation* published between 1952 and 2021(Scopus).

[9] Taylor & Francis Online. (2022). Studies in Conservation. Retrieved from https://www.tandfonline.com/loi/ysic20

Conferences were a major publication for the IIC and have been included as supplementary papers in the journal. Conference papers were totaled to 54 in Scopus, when in reality they number approximately 1,000. The difference between the study and the reality was because the Scopus database did not involve the supplements of the journal. IIC Biennial Congresses, the LACONA Conference and other conference papers were detected in supplements for 1961, 1964, 1967, 1970, 1972, 1975, 1978 and all even years thereafter, up to and including 2020 by manually checking (Table.2).

Table 2. Conference papers published in *Studies in Conservation* between 2000 and 2020 as Supplements.[10]

Conference Paper	Year	Volume	Issue
IIC 2020 Edinburgh Congress Preprints	2020	65	Supp1
European Lacquer in Context (ELinC). Postprints from the ELinC2018 Conference	2019	64	Supp1
ICC 2018 Turin Conference preprints	2018	63	Supp1
The Indoor Environment (Incorporating Postprints from the Environment Session of the IIC Hong Kong Congress 2014)	2016	61	Supp1
LA Congress Preprints Modern Art	2016	61	Supp2
Issue S1: Proceedings of the LACONA 10 Conference, Sharjah 2014, August 2015	2015	60	Supp1
2014 IIC Congress-An Unbroken History: Conserving East Asian Works of Art and Heritage	2014	59	Supp1
24th Biennial IIC Congress: The Decorative Conservation and the Applied Arts	2012	57	Supp1
Conservation and the Eastern Mediterranean: Contributions to the Istanbul Congress, September 2010	2010	55	Supp2
Contributions to the London Congress, 15-19 September 2008: Conservation and Access	2008	53	Supp1
The Object in Context: Crossing Conservation Boundaries. Contributions to the Munich Congress, 28 August-1 September 2006	2006	51	Supp2
Modern Art, New Museums: Contributions to the Bilbao Congress 13-17 September 2004	2004	49	Supp2
Works of Art on Paper Books, Documents and Photographs. Techniques and Conservation. Summaries of the Posters at the Baltimore Congress, 2-6 September 2002	2002	47	Supp2
Contributions to the Baltimore Congress, 2-6 September 2002. Works of Art on Paper Books, Documents and Photographs: Techniques and Conservation	2002	47	Supp3
Contributions to the Melbourne Congress, 10-14 October 2000. Tradition and Innovation: Advances in Conservation	2000	45	Supp1
Tradition and Innovation: Advances in Conservation. Summaries of the Posters at the Melbourne Congress, 10-14 October 2000	2000	45	Supp2

3.2. Outputs According to Countries, Authors and Institutions

Regarding the publishing numbers of *Studies in Conservation*, United Kingdom produced 23.07 % of the world's publishing of *Studies in Conservation*, which is the first country with the highest number of publishing with 665 documents and followed by United States, Italy, Germany and France (n=541, 196, 124 and 121, respectively; Table.3). China, which is among the developing countries according to the UN classification, has 94 documents (32.60 %). The countries that contribute the most are located in Europe (Figure.4).

[10] Taylor & Francis Online. (2022). Studies in Conservation. Retrieved from https://www.tandfonline.com/loi/ysic20

In 2021, United Kingdom produced 18 documents of the world's publications (total=99) of *Studies in Conservation*, which was the first country with the highest number of publications and followed by Italy, United States, China and Germany (n= 15, 11, 9 and 8). This data showed the country of the first author and the corresponding authors.

Table 3. Top ten countries in *Studies in Conservation* by total number of publications between 1952 and 2021(Scopus).

Countries/Regions	Record Count	% of the 2883 Articles
United Kingdom	665	23.07
United States	541	18.77
Italy	196	6.80
Germany	124	4.30
France	121	4.20
Canada	118	4.10
Netherlands	111	3.85
Spain	111	3.85
China	94	3.26
Australia	80	2.77

Figure 4. Publication density of the world countries in *Studies in Conservation* between 1952 and 2021 (GunnMap).

Scott, D.A. is the most prolific author with 30 documents (1.04 %) followed by Berger, G.A., Gettens, R.J. and Organ R.M. (0.62, 0.55 and 0.45 %, respectively; Table.4) (editorials are out of scope). The most contributed topics of Scott, D.A. between 2016 and 2020 are methodology, pigment identification and polychrome. Scott had got 1219 citations by 963 documents (May 2022). Coremans, P., Gettens, R.J. and Thissen, J. were the earliest authors in Scopus database that published a document entitled as "La technique des primitifs flamands" in *Studies in Conservation* (First publication year: 1952) (Coremans, Gettens and Thissen, 1952). There was a clear trend from single-author papers in the 1950s to multi-author papers.

The British Museum in the UK was the contributive institution in *Studies in Conservation* since 1953 with 96 documents followed by The Getty (USA), Canada Conservation Institute (Canada), University College London (UK) and Smithsonian Institute (USA) (n=81, 71, 57 and 50, respectively; Table.5). The production

numbers of these institutions included the organizations that each author belongs to, where articles, conference papers, reviews except editorials were published. The funding source most commonly cited in *Studies in Conservation* between 1952 and 2021 is European Commission with 19 documents since 1990 followed by Arts and Humanities Research Council (since 2012), Horizon 2020 Framework Programme (Since 1990), Andrew W. Mellon Foundation (since 1979) and Samuel H. Kress Foundation (since 1971) (n=18, 15, 14 and 10, respectively; Table.6). 3 of the 10 most frequently acknowledged funders were from United Kingdom; 3 of 10 are from United States; 2 of 10 are multinational; one was from China and one is from Italy. Hence there was no automatic bibliographic search for funders was not possible in the first decades of the publications, no funder statements would have been made in the journal.

Table 4. The 15 most prolific authors of *Studies in Conservation* between 1952 and 2021, (editorials are out of scope) (Scopus).

Author	Scopus Author ID	Institution, Country	h-index	Year of First Publication	Record Count	% of the 2883 Articles
Scott, D.A.	56408736200	University of California, United States	20	1993	30	1.04
Berger, G.A.	7202349223	Berger Art Conservation Inc, United States	8	1993	18	0.62
Gettens, R.J.	16050059400	Smithsonian Institution, United States	12	1975	16	0.55
Organ, R.M.	6508107559	Smithsonian Institution, United States	4	1987	13	0.45
Daniels, V.	7005648132	The British Museum, United Kingdom	14	1993	12	0.42
Gilberg, M.	6602262424	Los Angeles County Museum of Art, United States	8	1992	12	0.42
Schilling, M.R.	7201756124	The Getty, United States	18	1989	12	0.42
Burnstock, A.	19336811100	The Courtauld Institute of Art, United Kingdom	15	1993	11	0.38
Lazzarini, L.	7005472087	Università IUAV di Venezia, Italy	18	1993	11	0.38
Strlič, M.	7004705339	University College London, United Kingdom	34	1997	11	0.38
Thickett, D.	57203053351	English Heritage, United Kingdom	12	1994	11	0.38
White, R.	55481641700	National Gallery, United Kingdom	9	1993	11	0.38
Khandekar, N.	6602238478	Harvard University, United States	9	1990	10	0.35
Koob, S.P.	6507007336	Corning Museum of Glass, United States	6	1994	10	0.35
Padfield, T.	6507934217	Conservation Physics, Denmark	5	1993	10	0.35

Table 5. The 10 most productive institutions in *Studies in Conservation* between 1952 and 2021(Scopus).

Institutions	Country	Record Count	% of the 2883 Articles
The British Museum	England	96	3.33
The Getty	USA	81	2.81
Canadian Conservation Institute	Canada	71	2.46
University College London	England	57	1.98
Smithsonian Institution	USA	50	1.73
Victoria and Albert Museum	England	50	1.73
National Gallery	England	48	1.66
The Courtauld Institute of Art	England	41	1.42
Consiglio Nazionale delle Ricerche	Italy	36	1.25
Metropolitan Museum of Art	USA	31	1.08

Table 6. The 10 most frequently acknowledged funders in *Studies in Conservation* between 1952 and 2021(Scopus).

Institutions	Country	Record Count	% of the 2883 Articles
European Commission	Multi-national	19	0.66
Arts and Humanities Research Council	UK	18	0.62
Horizon 2020 Framework Programme	Multi-national	15	0.52
Andrew W. Mellon Foundation	USA	14	0.49
Samuel H. Kress Foundation	USA	10	0.35
National Science Foundation	USA	9	0.31
UK Research and Innovation	UK	9	0.31
Engineering and Physical Sciences Research Council	UK	8	0.28
National Natural Science Foundation of China	China	8	0.28
Consiglio Nazionale delle Ricerche	Italy	7	0.24

3.3. Analysis of Citations, Journal Metrics, Keywords and Bibliometric Network

The total number citations were 23280. The most cited document was an original article titled "Identification of Cellulosic Fibres by FTIR Spectroscopy: Thread and Single Fibre Analysis by Attenuated Total Reflectance" published in 2004 by Garside, P. and Wyeth, P. (Table.7). It was cited 303 times. The study comprised the development of the ATR FTIR technique used in order to characterize of cellulosic fibres (Garside and Wyeth, 2004).

Table 7. The most cited articles in *Studies in Conservation* between 1952 and 2021 (Scopus).

Article	Author(s)	Year	Total Citation
Identification of Cellulosic Fibres by FTIR Spectroscopy: Thread and Single Fibre Analysis by Attenuated Total Reflectance	Garside, P., Wyeth, P.	2004	303
High performance liquid chromatography of anthraquinones: Analysis of plant and insect extracts and dyed textiles	Wouters, J.	1985	207
Analysis of aged paint binders by FTIR spectroscopy	Meilunas, R.J., Bentsen, J.G., Steinberg, A.	1990	204
The characterization of metal soaps	Robinet, L., Corbeil, M.-C.	2003	158

Natural resins of art and archaeology their sources, chemistry, and identification	Mills, J.S., White, R.	1977	154
Lime mortars for the conservation of historic buildings	Elert, K., Rodriguez-Navarro, C., Pardo, E.S., Hansen, E., Cazalla, O.	2002	145
The coccid insect dyes: Hplc and computerized diode-array analysis of dyed yarns	Wouters, J., Verhecken, A.	1989	139
FTIR studies of the effects of pigments on the aging of oil	Van der Weerd, J., Van Loon, A., Boon, J.J.	2005	133
Fluorescence of paint and varnish layers (Part I)	De La Rie, E.R.	1982	124
A new method for consolidating wall paintings based on dispersions of lime in alcohol	Giorgi, R., Dei, L., Baglioni, P.	2000	117

The topics of the most cited documents of the journal, whose main area was Arts and Humanities, were on the specific studies about materials and methodology of conservation. Likewise, the most cited article in the journal in 2021 was entitled "Raman Spectroscopic Investigation of Iron-Tannin Precipitates in Waterlogged Archaeological Oak" written by Henrik-Klemens, Å., Bengtsson, F., Björdal, C.G., which was cited 5 times. The study was about the deterioration of the redox catalytic activity of iron on archaeological wood and concentrates on a 17th century shipwreck as a case study (Henrik-Klemens et al., 2021).

The most used keywords in *Studies in Conservation* were "conservation", "energy conservation", "scanning electron microscopy", "preventive conservation" and "historic preservation" (Table.8). Bibliometric network analysis of the most used author keywords exposed a pattern in which "conservation", "preventive conservation", "Scanning Electron Microscopy with Energy Dispersive X-Ray Analysis (SEM-EDX)" keywords are centered (Figure.5). When analyzing the co-authorship among countries, there was a trend of international collaborations, and the most collaborative countries are identified as United Kingdom, United States and Italy (Figure.6).

According to the journal metrics, the total number of times, the articles of this journal were viewed in the Taylor & Francis Online in a year was nearly 136,000. The impact factor that is the average number of citations of the published articles in the journal in a two-year period was detected as 0.739 (2020).[11]

[11] Taylor & Francis Online. (2022). Journal Metrics. Studies in Conservation. Retrieved from https://www.tandfonline.com/action/journalInformation?show=journalMetrics&journalCode=ysic20

Table 8. The 20 most used keywords in *Studies in Conservation* between 1952 and 2021 (Vosviewer).

Keywords (Total link strength)					
1	Conservation	130	**11**	FTIR	22
2	Preventive Conservation	79	**12**	Documentation	21
3	SEM-EDX	40	**13**	Storage	21
4	Preservation	37	**14**	Cleaning	20
5	Relative Humidity	32	**15**	Wall Paintings	20
6	Cultural Heritage	25	**16**	Contemporary Art	19
7	Environment	25	**17**	Heritage	19
8	Restoration	25	**18**	Monitoring	19
9	Decision-making	24	**19**	Degradation	18
10	XRF	23	**20**	Treatment	18

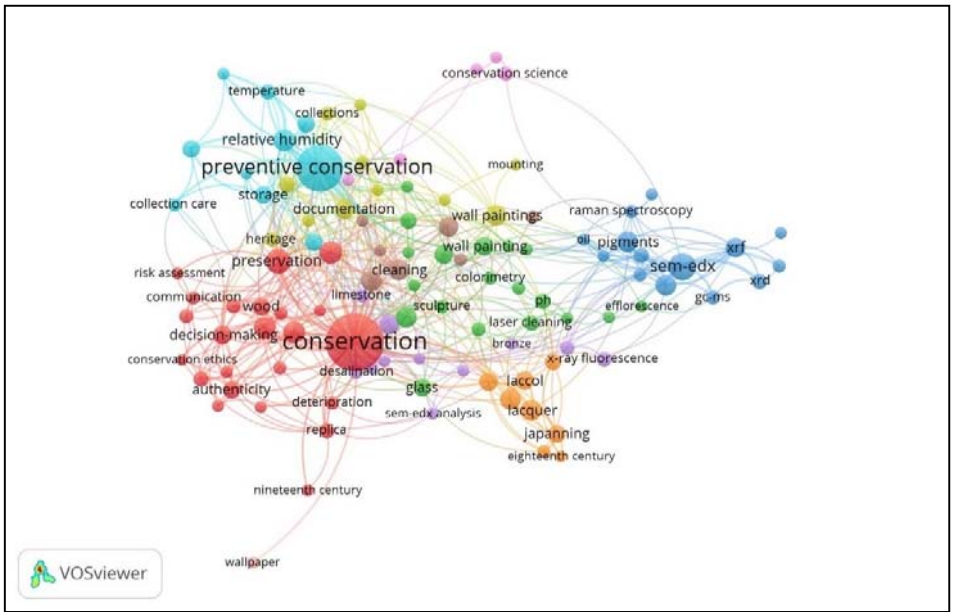

Figure.5 Bibliometric network of the most used author keywords in *Studies in Conservation* (VOSviewer).

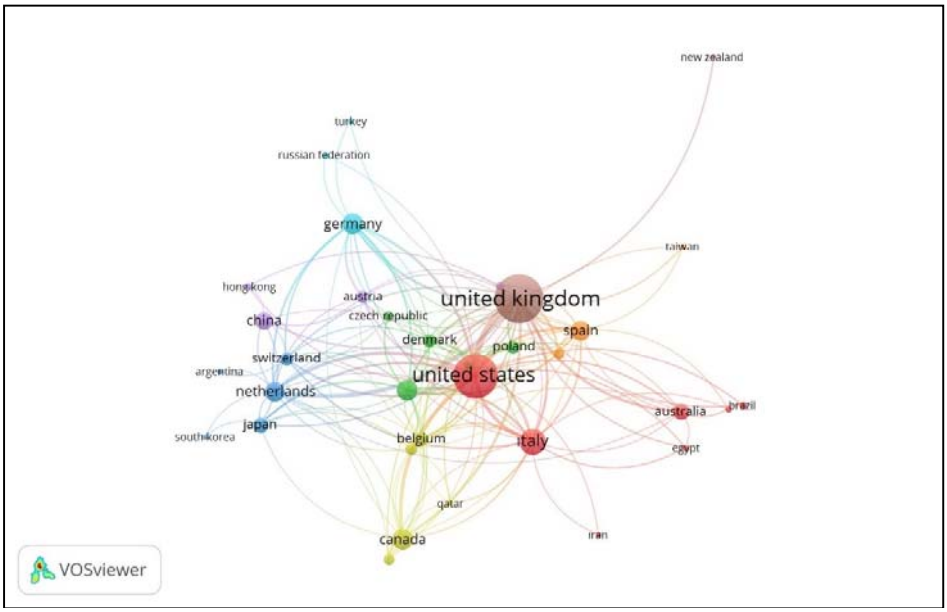

Figure.6 Bibliometric network of the co-authorship among countries in *Studies in Conservation* (VOSviewer).

3.4. Analysis of Publications in *Studies in Conservation* in 10-year period

The entire documents were separated into ten-year intervals in order to investigate the documents in-depth. The most productive ten-year interval was the last interval with 895 documents. Scott, D.A. got the denotation of the most productive author in the ten-year intervals twice (1992-2001 and 2002-2011). United Kingdom was the most productive country of the seven ten-year intervals with 4 intervals. The British Museum was the most productive institution with four times repetition in different ten-year intervals (Table.9).

Table.9 Bibliometric features of ten-year intervals in *Studies in Conservation*, according to Scopus*

Period	Total Number of Documents	The Most Productive		
		Country	Author	Institution
1952-1961	160	United Kingdom (n=96, 60%)	Gettens, R.J. (n=9, 5.63%)	The British Museum (n=11, 6.88%)
1962-1971	267	United Kingdom (n=82, 30.71%)	Jedrzejewska, H. (n=5, 1.87%)	The British Museum (n=18, 6.74%)
1972-1981	367	United Kingdom (n=73, 19.89%)	Filippakis, S.E. (n=6, 1.63%)	The British Museum (n=15, 4.09%)
1982-1991	493	United States (n=70, 14.20%)	Lazzarini, L. (n=8, 1.62%)	Canadian Conservation Institute (n=12, 2.43%)
1992-2001	440	United States (n=106, 24.09%)	Scott, D.A. (n=8, 1.82%)	Canadian Conservation Institute (n=24, 5.45%)
2002-2011	241	United States (n=56, 23.24%)	Scott, D.A (n=7, 2.90%)	The British Museum (n=12, 4.98%)
2012-2021	855	United Kingdom (n=183, 21.40%)	Strlič, M. (n=11, 1.29%)	The Getty (n=41, 4.80%)

*Editorials are out of scope

The *h*-index, which is a calculated metric value to measure productivity and citation impact in a certain area was detected as 14 in documents between 1952 and 1961 in *Studies in Conservation*. The *h*-index in regard to the documents between 1962 and 1971 was 27. The *h*-index was found out as 25 between the years of 1972 and 1981. It was determined as 34 in the ten-year interval between 1982 and 1991; 37 in between 1992 and 2001; and 30 in between 2002 and 2011. In the last ten-year interval, *h*-index was detected as 21 (Table.10).

Table 10. The most cited articles in *Studies in Conservation* per ten-year period between 1952 and 2021(Scopus).

Article	Author(s)	Year	Total Citation	*h* - index
1952-1961			**650**	**14**
Cross-sections and chemical analysis of paint samples	Plesters, J.	1956	115	
Detection and identification of waxes, including punic wax, by infra-red spectrography	Kühn, H.	1960	35	
Old mortars in poland: A new method of investigation	Jedrzejewska, H.	1960	33	
Calcium sulphate minerals in the grounds of italian paintings	Gettens, R.J., Mrose, M.E.	1954	27	
A new look at colour rendering, level of illumination, and protection from ultraviolet radiation in museum lighting	Thomson, G.	1961	21	
1962-1971			**2017**	**27**
The gas chromatographic examination of paint media. part I. fatty acid composition and identification of dried oil films	Mills, J.S.	1966	115	
Reflectography of paintings using an infrared vidicon television system	Van Asperen De Boer, J.R.J.	1969	90	
The light-fastness of the natural dyes	Padfield, T., Landi, S.	1966	88	
Étude et identification du 'bleu maya'	Kleber, R., Masschelein-Kleiner, L., Thissen, J.	1967	83	
Verdigris and copper resinate	Kühn, H., Verdigris, A.	1970	67	
1972-1981			**2635**	**25**
Natural resins of art and archaeology their sources, chemistry, and identification	Mills, J.S., White, R.	1977	154	
The identity of compounds containing chloride ions in marine iron corrosion products: A critical review	Gilberg, M.R., Seeley, N.J.	1981	72	
Vermilion and cinnabar	Gettens, R.J., Feller, R.L., Chase, W.T.	1972	72	
Washing methods for chloride removal from marine iron artifacts	North, N.A., Pearson, C.	1978	64	
Ageing and deterioration of proteinaceous media	Karpowicz, A.	1981	62	
1982-1991			**5622**	**34**
High performance liquid chromatography of anthraquinones: Analysis of plant and insect extracts and dyed textiles	Wouters, J.	1985	207	
Analysis of aged paint binders by ftir spectroscopy	Meilunas, R.J., Bentsen, J.G., Steinberg, A.	1990	204	
The coccid insect dyes: Hplc and computerized diode-array analysis of dyed yarns	Wouters, J., Verhecken, A.	1989	139	
Fluorescence of paint and varnish layers (Part I)	De La Rie, E.R.	1982	124	

Photochemical and thermal degradation of films of dammar resin	De La Rie, E.R.	1988	96	
1992-2001			**5454**	**37**
A new method for consolidating wall paintings based on dispersions of lime in alcohol	Giorgi, R., Dei, L., Baglioni, P.	2000	117	
Adhesive testing at the Canadian Conservation Institute - An evaluation of selected poly (vinyl acetate) and acrylic adhesives	Down, J.L., MacDonald, M.A., Tétreault, J., Williams, S.	1996	102	
An improved dye and lake pigment analysis method for high-performance liquid chromatography and diode-array detector	Halpine, S.M.	1996	101	
Non-destructive spectroscopic detection of Cobalt (II) in paintings and glass	Bacci, M., Picollo, M.	1996	91	
Microbial taphonomy of archaeological bone	Child, A.M.	1995	91	
2002-2011			**3854**	**30**
Identification of Cellulosic Fibres by FTIR Spectroscopy: Thread and Single Fibre Analysis by Attenuated Total Reflectance	Garside, P., Wyeth, P.	2004	303	
The characterization of metal soaps	Robinet, L., Corbeil, M.-C.	2003	158	
Lime mortars for the conservation of historic buildings	Elert, K., Rodriguez-Navarro, C., Pardo, E.S., Hansen, E., Cazalla, O.	2002	145	
FTIR studies of the effects of pigments on the aging of oil	van der Weerd, J., van Loon, A., Boon, J.J.	2005	133	
Analytical imaging studies of cross-sections of paintings affected by lead soap aggregate formation	Keune, K., Boon, J.J.	2007	76	
2012-2021			**3048**	**21**
Use of imaging spectroscopy, fiber optic reflectance spectroscopy, and X-ray fluorescence to map and identify pigments in illuminated manuscripts	Delaney, J.K., Ricciardi, P., Glinsman, L.D., (...), Palmer, M., De La Rie, E.R.	2014	103	
Lead soaps in paintings: Friends or foes?	Cotte, M., Checroun, E., De Nolf, W., (...), Janssens, K., Susini, J.	2017	41	
Beyond the basics: A systematic approach for comprehensive analysis of organic materials in Asian lacquers	Schilling, M.R., Heginbotham, A., van Keulen, H., Szelewski, M.	2016	41	
Environmental conditions for the safeguarding of collections: A background to the current debate on the control of relative humidity and temperature	Atkinson, J.K.	2014	41	
A review of ancient Egyptian pigments and cosmetics	Scott, D.A.	2016	40	

4. DISCUSSION AND CONCLUSION

Document analysis is a method of detailed analyzing the sources of written documents about the target topic without in-depth observations (Yıldırım and Şimşek, 2018). Bibliometrics is an analysis which is used for providing quantitative and qualitative analysis of a definite academic field (Van Eck and Waltman, 2010),

in arts and humanities in terms of this article. This type of analysis is a method that is used to summarize the studies in the literature by measuring the certain indicators (Thelwall, 2008). It is about the analysis of data such as author, subject, cited author and cited sources of the scientific studies, countries, research areas and keywords showing the general structure of a particular field of study in light of the statistical data obtained from the analysis (Zan, 2012, p. 15; Deng, Tian and Zhang, 2009).

Bibliometrics has become progressively popular in the last decades in the academic literature, and a total of 10456 bibliometric studies have been published according to the Scopus database as of the end of 2021, when 'bibliometric*' was used as keyword while title searching. There are many analysis studies on diverse scientific journals in order to clarify the structure and publication trends of the journals in recent years. Recently, Kumar et al. (2022) prepared a bibliometric analysis of the 8 years of the *Journal of Behavioral and Experimental Finance*. Publication trends over time, citations, authorship and research topics and methodologies employed in the journal were analyzed in the article. Similarly, Donthu et al. (2022) conducted bibliometric analysis of the *Journal of Services Marketing*. The other article examples include journals from a variety of fields.

Besides these, there is no bibliometric document of the journals on conservation. *Studies in Conservation,* being one of the major journals on conservation, was studied to gain an understanding of the scientific contributions to conservation. The bibliometric data were extracted from the Scopus database, and the leading countries, institutions, authors, research trends and highly cited documents were highlighted.

In order to reveal the true identities of artefacts and movable / immovable cultural properties, to keep their existence alive with all its elements, conservation implementations are executed. By this way, existing problems are eliminated and necessary precautions are taken against the deterioration factors. *Studies in Conservation* is a well-known journal, which publishes articles regarding the conservation of artistic and historic works, whose main area is Arts and Humanities, and category is conservation. Pursuant to the Scopus database, the journal has a CiteScore of 1.3, which means that citations received in 2020 were 1.3 times the number of articles published in the 2017–2020 period, with a source-normalised impact per paper (SNIP) of 0.988, implying its articles have received an average of 0.988 citations from journals in its field. Scopus ranks the journal 12 among 85 in the conservation category. Also, it has an *h*-index of 39, implying that at least 39 articles have received at least 39 citations excluding self-citations (SCImago).

According to SCImago, similar journals are *Journal of the American Institute for Conservation* (GBR) with 70% similarity, *Heritage Science* (USA) with 55% similarity and *Journal of Cultural Heritage* (FRA) with 47% similarity. These journals are similarly deal with the broad field of conservation and preservation of historic and cultural works. *Journal of the American Institute for Conservation*'s publications comprise the category of museology besides conservation. *Heritage Science*'s subject areas are chemistry, computer science, materials science and social sciences in addition to arts and humanities. Economics, econometrics

and finance are the subject areas of *Journal of Cultural Heritage* other than these areas.[12]

Bibliometrics and content analysis of the journal obtained numerous intriguing findings. First, as a 70-year old journal, the number of publications and citations has grown conspicuously since the journal's inception. Obvious trends showed that the number of papers published per year has increased since 1952; especially there were big breaks in the years of 1994, 2014, 2016, 2018 and 2020. The last ten-year interval became the most productive period with 855 documents including 748 articles, 48 conference papers. While the total citations of the first ten-year interval was 650, the citations of the last 4 ten-year intervals overcounted by 3000 (n=5622, 5454 3854 and 3048, respectively; Table.10).

Second, although there are contributions from all over the world, United Kingdom was acknowledged as the most productive country in the years of 50s, 60s, 70s and in the interval of 2012-2021. United States took the lead in 80s, 90s and the ten-year interval between 2002-2011. The British Museum, which was founded in 1753 and is the first national public museum in the world, was the most productive institution in *Studies in Conservation* besides its museum duties such as gallery displays, temporary exhibitions and various events. [13] Various authors had contributed to the journal, but the authors from The British Museum, The Getty Institute, Canadian Conservation Institute, University College London and Smithsonian Institute led the list.

Third, most of the documents had been empirical and based on the specific studies about conservation materials, methodology of conservation, specific topics and problems on conservation. The articles represented the variety of types of problems to be addressed in the conservation of cultural heritage (Chandra and Townsend, 2017, 1). The most cited document of all intervals was "Identification of Cellulosic Fibres by FTIR Spectroscopy: Thread and Single Fibre Analysis by Attenuated Total Reflectance" entitled article having 303 citations about the development of the ATR FTIR technique used in order to characterize of cellulosic fibres (Garside and Wyeth, 2004). Besides, the most cited article of the last ten-year interval was "Use of Imaging Spectroscopy, Fiber Optic Reflectance Spectroscopy, and X-Ray Fluorescence To Map and Identify Pigments in Illuminated Manuscripts" with 103 citations. The goal of the paper was to present a paradigm using multispectral visible and near-infrared imaging spectroscopy in order to create spectral maps identifying and mapping pigments in illuminated manuscripts (Delaney et al., 2014) (Table.10).

Fourth, the most used keyword in the journal were "conservation", followed by "energy conservation", "scanning electron microscopy", "preventive conservation" and "historic preservation". Bibliometric

[12] Scimago Journal and Country Rank (2022). Retrieved from https://www.scimagojr.com/journalsearch.php?q=23620&tip=sid&clean=0

[13] British Museum. (2022). The British Museum Story. Retrieved from https://www.britishmuseum.org/about-us/british-museum-story

network analysis of the most used author keywords displayed a pattern in which “conservation”, “preventive conservation”, “Scanning Electron Microscopy with Energy Dispersive X-Ray Analysis” keywords were centered.

Fifth, co-authorship analysis revealed that the single-author trend has been decreased over the periods, which showed the increasing culture of the collaboration. An increasing trend of international collaborations was also detected.

It was found in the study that all top ten countries and all ten most productive institutions by total number of publications of *Studies in Conservation* between 1952 and 2021 were from the countries among the developed category of UN classification. Since *Studies in Conservation* is the premier international journal in the field of historic and artistic works, the studies on these topics should be supported in the underdeveloped and developing countries to be published in this journal. This study may encourage more diverse scholars to publish further studies in the journal.

CONFLICT OF INTEREST

There is no conflict of interest.

REFERENCES

Aghaei Chadegani, A., Salehi, H., Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ale Ebrahim, N. (2013). A comparison between two main academic literature collections: Web of Science and Scopus databases. *Asian Social Science, 9*(5), 18–26. https://doi.org/10.5539/ass.v9n5p18

British Museum. (2022). *The British Museum story*. Retrieved from https://www.britishmuseum.org/about-us/british-museum-story

Chandra, L.R. and Townsend, J. H. (2017). Editorial. Studies in *Conservation, 62*(1), 1. Retrieved from https://doi.org/10.1080/00393630.2017.1264209

Coremans, P., Gettens, R.J. and Thissen, J. (1952). La Technique des Primitifs Flamands. *Studies in Conservation, 1*(1), 1-29. https://doi.org/10.1179/sic.1952.002

Delaney, J.K., Ricciardi, P., Glinsman, L.D., (...), Palmer, M., De La Rie, E.R. (2014). Use of imaging spectroscopy, fiber optic reflectance spectroscopy, and X-ray fluorescence to map and identify pigments in illuminated manuscripts. *Studies in Conservation, 59*(2), 91-101. https://doi.org/10.1179/2047058412y.0000000078

Deng, S., Tian, Y., and Zhang, H. (2009). Using the bibliometric analysis to evaluate global scientific production of data mining papers. *Presented in 1st International Workshop on Database Technology and Applications*, 233-238. IEEE Computer Society. https://doi.org/10.1109/dbta.2009.157

Donthu, N, Kumar, S., Chatura, R., Debidutta, P. and Anders, G. (2022). Mapping of the Journal of Services Marketing themes: a retrospective overview using bibliometric analysis. *Journal of Services Marketing, 36*(3), 340-363. Retrieved from https://doi.org/10.1108/JSM-04-2020-0122

Garside, P. and Wyeth, P. (2004). Identification of cellulosic fibres by ftir spectroscopy: Thread and single fibre analysis by attenuated total reflectance. *Studies in Conservation*, *48*(4), 269-275. https://doi.org/10.1179/sic.2003.48.4.269

Giorgi, R., Dei, L., Baglioni, P. (2000). A new method for consolidating wall paintings based on dispersions of lime in alcohol. *Studies in Conservation*, *45*(3), 154-161. https://doi.org/10.1179/sic.2000.45.3.154

GunnMap 2. (2022). Retrieved from http://lert.co.nz/map/

Henrik-Klemens, Å., Bengtsson, F., Björdal, C.G. (2021). Raman Spectroscopic Investigation of Iron-Tannin Precipitates in Waterlogged Archaeological Oak. *Studies in Conservation* (Article in Press). https://doi.org/10.1080/00393630.2020.1864895

International Institute for Conservation of Historic and Artistic Works (IIC). (2022). *History*. Retrieved from https://www.iiconservation.org/about/history

International Institute for Conservation of Historic and Artistic Works (IIC). (2022). *Studies in Conservation.* Retrieved from https://www.iiconservation.org/publications/sic

Kumar, S., Sandeep, R., Kirti, G. and Nisha, G. (2022). Journal of Behavioral and Experimental Finance: A bibliometric overview. *Journal of Behavioral and Experimental Finance,* 34, 1-19. https://doi.org/10.1016/j.jbef.2022.100652

Mills, J. S. (1966). The gas chromatographic examination of paint media. Part I. Fatty acid composition

and identification of dried oil films. *Studies in Conservation*, *11*(2), 92-107. https://doi.org/10.1179/sic.1966.011

Mills J. S. and White R. (1977). Natural resins of art and archaeology their sources, chemistry, and identification". *Studies in Conservation*, *22*(1), 12-31. https://doi.org/10.1179/sic.1977.003

Musso, S. (2015). Inheriting' our cultural heritage: Changes of paradigm of conservation. *Iconarp International Journal of Architecture and Planning, 2*(2), 84-103. Retrieved from https://dergipark.org.tr/tr/pub/iconarp/issue/7899/103988

Plesters, J. (1956). Cross-sections and chemical analysis of paint samples. *Studies in Conservation, 2*(3), 110-157. https://doi.org/10.1179/sic.1956.015

Scimago Journal and Country Rank (2022). Retrieved from https://www.scimagojr.com/journalsearch.php?q=23620&tip=sid&clean=0

Scott, D. A. (2022). Editorial. *Studies in Conservation*, *67*(1-2), 1-4. https://doi.org/10.1080/00393630.2021.1960555

Taylor & Francis Online. (2022). Journal metrics. *Studies in conservation*. Retrieved from https://www.tandfonline.com/action/journalInformation?show=journalMetrics&journalCode=ysic20

Taylor & Francis Online. (2022). *Studies in Conservation.* Retrieved from https://www.tandfonline.com/loi/ysic20

Thelwall, M. (2008). Bibliometrics to webometrics. *Journal of Information Science. 34*(4), 605–621. https://doi.org/10.1177/0165551507087238

United Nations. (2021). Country classification. *World Economic Situation and Prospects as of mid-2021.* New York. p. 3. Retrieved from https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/WESP2021_UPDATE.pdf

Van Eck, N.J. and Waltman, L. (2010). Software survey: Vosviewer, a computer program for bibliometric mapping. *Scientometrics. 84*(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

Vosviewer. (2022). *Visualizing scientific landscapes*. Retrieved from http://www.vosviewer.com/

Walcott, H. F. (1994). *transforming qualitative data: Description, analysis and interpretation*. London: SAGE Publications.

Wouters, J. (1985). "High performance liquid chromatography of anthraquinones: Analysis of plant and insect extracts and dyed textiles". *Studies in Conservation 30*(3), pp. 119-128. https://doi.org/10.1179/sic.1985.30.3.119

Yıldırım, A. and Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri* (11th ed.). Ankara: Seçkin Publishing.

Yun, Y. and Scott, D.A. (2020). "Characteristic features of metal artifacts excavated in western Yunnan in the Bronze Age". *Archaeological and Anthropological Sciences, 12*(6), 127.

Zan, B.U. (2012). Türkiye'de bilim dallarında karşılaştırmalı bibliyometrik analiz çalışması. (Published Doctorate Dissertation). Ankara University Social Sciences Institute, Ankara.