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A Retrospective Study: Bibliometric Analysis of the Museum Architecture Literature Between 1980 and 2020

Retrospektif bir Çalışma: 1980-2020 Yılları Arasında Müze Mimarisi Literatürünün Bibliyometrik Analizi

Fatma Sezin DOĞRUER *

ABSTRACT

Museums are buildings or complexes that exhibit, protect and investigate the artifacts in the service of community by their sociocultural, aesthetic, economic and educational functions. This bibliometric analysis on museum architecture comprehends 135 publications written by 200 authors from 28 countries, where architecture, art, humanities multidisciplinary, education, educational research and social sciences interdisciplinary are the main fields of the research in the Web of Science database. A bibliometric analysis tool called VOSviewer was used while analyzing the data gathered by webometrics. USA produced 13.33 % of the world's publications on 'museum architecture', which is the first country with the highest number of publications with 18 documents. The most used keywords in the literature are 'museum', 'architecture' and 'art'. This study was the first bibliometric analysis that ensures statistical and holistic information on museum architecture literature, which was applied on indexes in Web of Science Core Collection between 1980 and 2020. It is aimed to encourage scholars to carry out further studies on museum architecture.

Keywords: *Museum Architecture, Museology, Museum Design, Bibliometrics.*

ÖZET

Müzeler, sosyokültürel, estetik, ekonomik ve eğitsel işlevleriyle toplumun hizmetinde olan, eserleri sergileyen, koruyan ve araştıran yapı veya komplekslerdir. Müze mimarisi hakkındaki bu bibliyometrik analiz, mimarlık, sanat, beşeri bilimler multidisipliner, eğitim, eğitim araştırmaları ve sosyal bilimler disiplinlerinin Web of Science veri tabanındaki araştırmanın ana alanları olduğu 28 ülkeden 200 yazar tarafından yazılmış 135 yayını kapsamaktadır. Webometri kullanılarak elde edilen verilerin analizi yapılırken VOSviewer adlı bibliyometrik analiz aracı kullanılmıştır. ABD, 18 belge ile en fazla yayına sahip ülke olarak 'müze mimarisi' konusunda dünya yayınlarının yüzde 13.33'ünü üretmiştir. Literatürde en çok kullanılan anahtar kelimeler 'müze', 'mimari' ve 'sanat'tır. Bu çalışma, 1980-2020 yılları arasında Web of Science Core Collection'daki indekslerde uygulanan, müze mimarisi literatürü hakkında istatistiksel ve bütüncül bilgi sağlayan ilk bibliyometrik analizdir. Bilim insanlarını müze mimarisi konusunda daha ileri çalışmalar yapmaya teşvik etmesi amaçlanmaktadır.

Anahtar Sözcükler: *Müze Mimarisi, Müzecilik, Müze Tasarımı, Bibliyometri.*

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INTRODUCTION

Museums buildings or complexes have sociocultural, aesthetic, economic and educational functions in order to exhibit, protect and investigate the artifacts in the service of community. There are two types of museum buildings regarding the purpose of being built. These are museum buildings that are established by converting existing buildings with different functions into museums and the museum buildings that are designed as museums.

Bibliometrics ensures statistical and holistic information of scientific literature in a particular working area. However bibliometric studies have been popular in the recent times, no bibliometric reports have been published in museum architecture. Museum studies literature contains only one limited bibliometric analysis written on the literature between 1995 and 2014 about museum studies in general (Kuo & Yang, 2015). In order to completely utilize from museum architecture studies, data analysis is one of the necessary studies in the field. This study aims to offer data of a comprehensive bibliometric analysis of the museum architecture.

MATERIAL AND METHOD

The study involves bibliometric analysis of the articles on museum architecture which are indexed in Web of Science Core Collection, within a period between 1980 and 2020. After the webometric scanning process, a total of 135 publications were reached in museum architecture literature. The analysis comprehends 135 publications written by 200 authors from 28 countries, where architecture, art, humanities multidisciplinary, education educational research and social sciences interdisciplinary are identified as the main fields related to the research. This study comprises the countries, institutions and authors related to this topic using a bibliometric analysis tool called VOSviewer.

The data of this article have been obtained from the database of Web of Science Core Collection (WoS) under Science Citation Index-Expanded (SCI-Expanded), Social Sciences Citation Index (SSCI), Art and Humanities Index (A&HCI), Emerging Sources Citation Index (ESCI), Conference Proceedings (CPCI-S, CPCI-SSH) and Book Citation Index (BKCI-S, BKCI-SSH); and tables and figures were prepared according to the gathered data. Museum* architecture*, was used as the pivotal keyword to search the WoS Database. The star symbol (*) characterizes the letters like “s”. These keywords were searched in the title section. “Building”, “design”, “project”, or “museology” are added to the search in all fields to confine the results. The keywords “web design” or e-museum or “virtual museum” or “system architecture” are excluded. The search includes only WoS database which is a reliable and comprehensive data service using multiple databases on many different academic disciplines. All documents on museum architecture published between 1980 and 2020 were analyzed. Since the first article on museum architecture was published in the index in 1980, it is chosen as the starting year. The article was entitled as “Gunma Prefectural Museum of Fine Arts, Takasaki, Japan, 1971-74” written in Journal of Design Quarterly by A. Isozaki in 1980. The article comprised the architectural characteristics of the Gunma Prefectural Museum of Fine Arts (Isozaki, 1980).

GunnMap was used to form a global productivity map (GunnMap 2, 2021). VOSviewer is the freeware tool that was used for creating bibliometric networks in this article (VOSviewer, 2021). The United Nations (UN) system for country classification was applied (UN, 2021).

RESULTS

The search comprises 135 articles in the literature of museum architecture in the database of Web of Science Core Collection between 1980 and 2020 (Web of Science, 2021). 21 documents were open access. Years of 1981, 1987, 1989, 1990, 1992, 1994 and 2010 do not have publications. According to the number of publications, the peak year was 2015 with 15 articles (Fig.1). English is the main language of the museum architecture literature with 120 articles followed by Spanish, French, Chinese and Czech (n=7, 3, 1 and 1, respectively; Table.1).

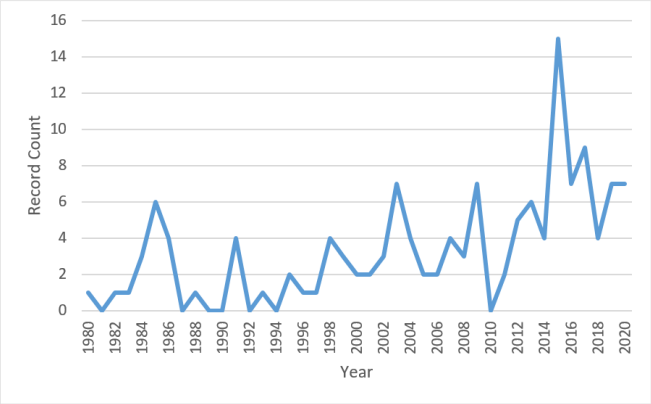

Figure 1. Number of Museum Architecture Publications by Year.

Table 1. Languages Used on Museum Architecture.

Language	Record Count	% of the 135 Articles
English	120	88.89
Spanish	7	5.19
French	3	2.22
Chinese	1	0.74
Czech	1	0.74
German	1	0.74
Italian	1	0.74
Polish	1	0.74

The most studied research areas are detected as architecture, art, humanities multidisciplinary, education educational research and social sciences interdisciplinary (48.89, 18.52, 8.15, 7.41 and 4.44 %, respectively; Table.2). The most common document types were articles, proceedings papers, editorial materials, book reviews and news items (Table.3). Of the museum architecture documents published between 1980 and 2020 in the WoS database, 73 (54.07 %) were articles, 28 proceedings papers (20.74 %), and 12 editorial materials (8.89 %) (Fig.2).

In 2020, the most common document types were articles, book reviews and proceedings papers (n=3, 2 and 2; respectively) on mostly architecture, construction building technology and art research areas.

Table 2. The Most Studied Research Areas on Museum Architecture between 1980 and 2020.

Research Area	Record Count	% of the 135 Articles
Architecture	66	48.89
Art	25	18.52
Humanities Multidisciplinary	11	8.15
Education Educational Research	10	7.41
Social Sciences Interdisciplinary	6	4.44
Construction Building Technology	5	3.70
History	4	2.96
Urban Studies	4	2.96
Computer Science Theory Methods	3	2.22
Engineering Civil	3	2.22
Engineering Industrial	3	2.22
Anthropology	2	1.48
Archaeology	2	1.48
Computer Science Information Systems	2	1.48
Computer Science Interdisciplinary Applications	2	1.48
Computer Science Software Engineering	2	1.48
Information Science Library Science	2	1.48
Management	2	1.48
Material Science Multidisciplinary	2	1.48
Operations Research Management Science	2	1.48

Table 3. Document Types Published in Museum Architecture Literature between 1980 and 2020.

Document Type	Record Count	% of the 135 Articles
Article	73	54.07
Proceedings Papers	28	20.74
Editorial Materials	12	8.89
Book Reviews	10	7.41
News Items	7	5.19
Book Chapters	4	2.96
Notes	3	2.22
Art Exhibit Reviews	1	0.74
Early Access	1	0.74
Meeting Abstracts	1	0.74
Review Articles	1	0.74

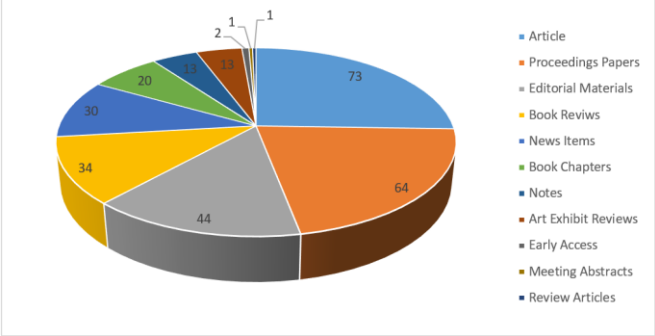

Figure 2. Distribution of Document Types on Museum Architecture Published between 1980 and 2020.

1. Outputs According to Countries, Authors, Journals and Institutions

Regarding the publication numbers about 'museum architecture' gathered from the Web of Science (2021), USA produced 13.33 % of the world's publications on 'museum architecture', which is the first country with the highest number of publications with 18 documents (Table.4) and followed by China, England, Italy and Spain (n=11, 8, 5 and 5, respectively; Fig.3). China, which is among the developing countries according to the UN classification, is the second country of all with 11 documents (8.15 %) followed by Turkey, Chile, Iran and Mexico (n=4, 3, 3 and 2, respectively) among the developing countries. The countries that contribute the most are located in the continents of America and Europe (Fig.4).

In 2020, USA produced 2 documents of the world's publications (Total=7) on 'museum architecture', which is the first country with the highest number of publications and followed by Canada and England (n= 1 and 1; respectively).

Table 4. Top Ten Countries on Museum Architecture between 1980 and 2020.

Country/Region	Record Count	% of the 135 Articles
USA	18	13.33
China	11	8.15
England	8	5.93
Italy	5	3.70
Spain	5	3.70
Canada	4	2.96
Turkey	4	2.96
Chile	3	2.22
Iran	3	2.22
Germany	2	1.48

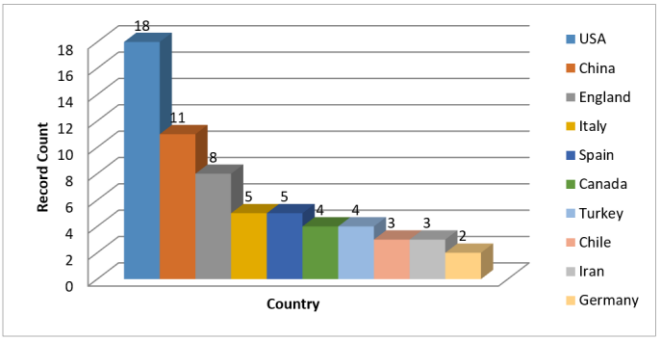

Figure 3. Top Ten Countries on Museum Architecture between 1980 and 2020.

Figure 4. Publication Density of the World Countries in the Field of Museum Architecture between 1980 and 2020 (GunnMap).

7 of 135 publications are anonymous authors. H. Klotz is the most prolific author of the museum architecture literature between 1980 and 2020 with 4 documents (2.96 %) followed by B. Bergdoll, A.O. Dean and L.P. Gallo (n=3, 2 and 2, respectively; Table.5). G. Lee and H.H. Tan are the most prolific editors of the selected period with 2 articles (1.48 %, Table.6). ACM, IEEE and IOP Publishing are the group of authors who published on the museum architecture literature between 1980 and 2020 with 1 document each (0.74%; Table.7).

The publications with the most contributions to the museum architecture literature were Architectural Design, Architectural Record, Architecture, A U Architecture and Urbanism and Artnews (n=12, 5, 5, 3 and 3, respectively; Table.8). Architectural Design is one of the earliest publications, which published the most documents in the museum architecture literature. On the other hand, Design Quarterly is the publication that published the earliest document in the museum architecture literature in Web of Science database in 1980, whereas the total number of documents in the source is average (n=3, 2.22 %). The number of published papers in the top ten publications is about one-third of 135 records (31,85 %; Figure.5). The other publications are distributed among 111 publications, including mostly one or two documents each. The results show that the distribution of the published documents related to museum architecture. The book series with the most contributions to the museum architecture between 1980 and 2020 were Procedia Social and Behavioral Sciences, Advanced in Education Research, International Archives of the Photogrammetry Remote Sensing and Spatial Information Sciences, Applied Mechanics and Materials, Communications in Computer and Information Science and Ecaade Proceedings (n=3, 2, 2, 1 and 1, respectively; Table.9).

Table 5. The 20 Most Prolific Authors of the Museum Architecture Literature between 1980 and 2020.

Author	Record Count	% of the 135 Articles
Anonymous	7	5.19
Klotz H	4	2.96
Bergdoll B	3	2.22
Dean AO	2	1.48
Gallo L	2	1.48
Lindsay G	2	1.48
Mihaila M	2	1.48
Ungers OM	2	1.48
Adams E	1	0.74
Akbulut DE	1	0.74
Akbulut MT	1	0.74
Aletto S	1	0.74
Alraouf AA	1	0.74
Alread J	1	0.74
Ayon A	1	0.74
Azarbouyehdinali G	1	0.74
Baladron C	1	0.74
Banica C	1	0.74
Bao H	1	0.74
Batakoja M	1	0.74

Table 6. The 20 Most Prolific Authors of the Museum Architecture Literature between 1980 and 2020.

Editor	Record Count	% of the 135 Articles
Lee G	2	1.48
Tan HH	2	1.48
Alevriadou A	1	0.74
Almulla MI	1	0.74
Arsel Z	1	0.74
Bean J	1	0.74
Bearman D	1	0.74
Bonora V	1	0.74
Bougdah H	1	0.74
Catalani A	1	0.74
Chen R	1	0.74
Chova CW	1	0.74
Chung CW	1	0.74
Ciulei T	1	0.74
Coisson E	1	0.74
Cordeiro J	1	0.74
Drusa M	1	0.74
Erskineloftus P	1	0.74
Fai S	1	0.74
Filipe J	1	0.74

Table 7. The Group Authors of the Museum Architecture Literature between 1980 and 2020.

Group Author	Record Count	% of the 135 Articles
ACM	1	0.74
IEEE	1	0.74
IOP Publishing	1	0.74

Table 8. The Publications with the Most Contributions to the Museum Architecture Literature between 1980 and 2020.

Sources	Record Count	% of the 135 Articles
Architectural Design	12	8.89
Architectural Record	5	3.70
Architecture	5	3.70
A U Architecture and Urbanism	3	2.22
Artnews	3	2.22
Design Quarterly	3	2.22
Journal of the Society of Architectural Historians	3	2.22
Lotus International	3	2.22
Museum News	3	2.22
Procedia Social and Behavioral Sciences	3	2.22
Advances in Education Research	2	1.48
Domus	2	1.48
International Archives of the Photogrammetry Remote Sensing and Spatial Information Sciences	2	1.48
Journal of Design History	2	1.48
Landscape Architecture	2	1.48
Lord Elgin and Ancient Greek Architecture the Elgin Drawings at the British Museum	2	1.48
Museum International	2	1.48
Prostor	2	1.48
Space	2	1.48
Journal of History Culture and Art Research	2	1.48

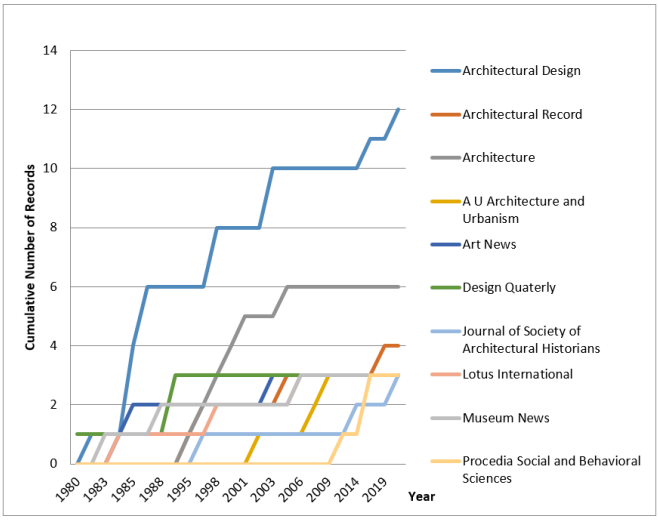

Figure 5. The Cumulative Number of Records for the Sources with the Most Contributions to the Museum Architecture between 1980 and 2020.

Table 9. The Book Series with the Most Contributions to the Museum Architecture Literature between 1980 and 2020.

Book Series	Record Count	% of the 135 Articles
Procedia Social and Behavioral Sciences	3	2.22
Advanced in Education Research	2	1.48
International Archives of the Photogrammetry Remote Sensing and Spatial Information Sciences	2	1.48
Applied Mechanics and Materials	1	0.74
Communications in Computer and Information Science	1	0.74
Ecaade Proceedings	1	0.74
Edulearn Proceedings	1	0.74
IOP Conference Series Materials Science and Engineering	1	0.74
Lecture Notes in Computer Science	1	0.74
Lecture Notes in Operations Research	1	0.74
Procedia Engineering	1	0.74
Proceedings of the International Conference on E learning	1	0.74
Routledge Interpretive Marketing Research	1	0.74
Routledge Research in Museum Studies	1	0.74

The conferences in the field of museum architecture were "11th International Conference on E Learning ICEL", "1st International Conference on Cities Identity through Architecture Arts", "1st International Conference on Geomatics and Restoration Conservation of Cultural Heritage in the Digital Era", "26th International Symposium of ICOMOS ISPRS International Scientific Committee on Heritage Documentation Cipa on Digital Workflows for Heritage Conservation" and "2nd International Conference on Civil Engineering Architecture and Building Materials CEABM 2012" with 1 document each (0.74 %; Table.10). Columbia University (USA) and University of Cambridge (England) were the most productive organizations in the museum architecture literature between 1980 and 2020 with 3 documents each (2.22 %) followed by Ion Mincu University of Architecture Urbanism (Romania), Islamic Azad University (Iran) and Universitat Politecnica De Valencia (Spain) (n=2 each, respectively; Table.11).

Table 10. The Conferences in which the Number of the Presented Documents on Museum Architecture was the most, between 1980 and 2020.

Meeting title	Record Count	% of the 135 Articles
11th International Conference on E Learning ICEL	1	0.74
1st International Conference on Cities Identity through Architecture Arts	1	0.74
1st International Conference on Geomatics and Restoration Conservation of Cultural Heritage in the Digital Era	1	0.74
26th International Symposium of ICOMOS ISPRS International Scientific Committee on Heritage Documentation Cipa on Digital Workflows for Heritage Conservation	1	0.74
2nd International Conference on Civil Engineering Architecture and Building Materials Ceabm 2012	1	0.74
2nd International Conference on Human Dot Society at Internet	1	0.74
38th Conference on Education and Research in Computer Aided Architectural Design in Europe ECAADE	1	0.74
3rd Gulf Research Meeting Workshop	1	0.74
3rd International Conference on Education And Education Management EEM	1	0.74
3rd International Conference on Social Sciences and Society ICSSS	1	0.74

Table 11. The Most Productive Enhanced Organizations in the Museum Architecture Literature between 1980 and 2020.

Organization-Enhanced	Country	Record Count	% of the 135 Articles
Columbia University	USA	3	2.22
University of Cambridge	England	3	2.22
Ion Mincu University of Architecture Urbanism	Romania	2	1.48
Islamic Azad University	Iran	2	1.48
Universitat Politecnica De Valencia	Spain	2	1.48
University of California Berkeley	USA	2	1.48
University of California System	USA	2	1.48
University of Liverpool	England	2	1.48
ACAD Univ Alberto Hurtado	Chile	1	0.74
Ain Shams University	Egypt	1	0.74

2. Analyses of Citations, Keywords and Bibliometric Network

The calculated metric value in order to measure productivity and citation impact in museum architecture literature (h-index) is detected as 4. The total number citations are 67 (66 without self-citations) and the average number of citations is 0.5 per item, as of the date of 12.08.2021.

The most cited document was an article entitled "Strategies against Architecture: Interactive Media and Transformative Technology at the Cooper Hewitt, Smithsonian Design Museum" published in 2015 by S. Chan and A. Cope (Table.12; Fig.6). It was cited 7 times. The study was about Smithsonian Design Museum reopened in 2014 as a transformed museum from a renovated historical building. It aimed to investigate the process, the decisions in process and results of each stage. The study offered an integrated approach to explore the complexity of the urban context environmentally (Chan and Cope, 2015).

Table 12. The Most Cited Articles Published in the Museum Architecture Literature between 1980 and 2020.

Article	Author(s)	Year	Total Citation	Average Citations per Year
Strategies against Architecture: Interactive Media and Transformative Technology at the Cooper Hewitt, Smithsonian Design Museum	Chan, S and Cope, A	2015	7	1
Museum Development in the Gulf: Narrative and Architecture	Wakefield, Sarina	2015	5	0.71
Architecture As An Apparatus Of Urban Regeneration: 20 Years Of The Bilbao Guggenheim Museum	Lange-Valdes, Carlos	2018	4	1
Modernist Architecture, Conflict, Heritage And Resilience: The Case Of The Historical Museum Of Bosnia And Herzegovina	Harrington, Selma; Dimitrijevi, Branka; Salama, Ashraf M.	2017	4	0.8
A Lovely Building for Difficult Knowledge: The Architecture of the Canadian Museum for Human Rights	Wodtke, Larissa	2015	4	0.57
Idealizing a Chinese Style: Rethinking Early Writings on Chinese Architecture and the Design of the National Central Museum in Nanjing	Lai, Delin	2014	4	0.5
The Desert Rose as a New Symbol for the Nation: Materiality, Heritage and the Architecture of the New National Museum of Qatar	Bounia, Alexandra	2018	3	1
Museum architecture as spatial storytelling of historical time: Manifesting a primary example of Jewish space in Yad Vashem Holocaust History Museum	Lu, Fangqing	2017	3	0.6
Museum architectures for embodied experience	Tzortzi, Kali	2017	3	0.6
Shaping, collecting and displaying medicine and architecture A comparison of the Hunterian and Soane museums	Adams, Ellen	2013	3	0.33

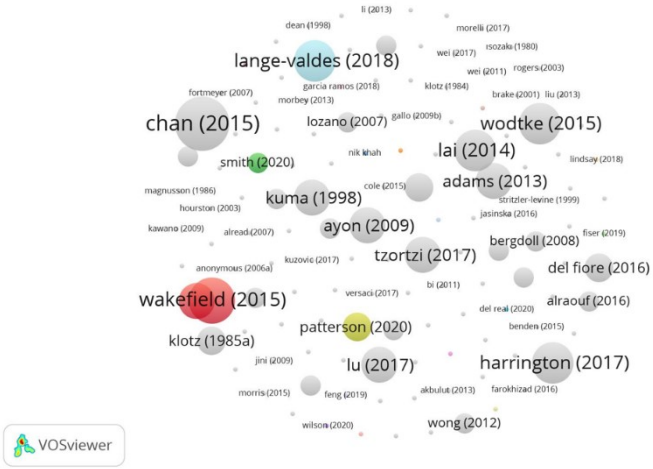

Figure 6. Bibliometric Network of the Citations of the Documents in the Museum Architecture Literature (VOSViewer).

The most used keywords in the museum architecture literature are 'museum', 'architecture' and 'art' (Table.13; Fig.7). When analyzing the co-authorship among countries, the most collaborative countries are identified as, England, Spain, USA, Chile and China (Total link strength=4, 2, 2, and 1 respectively; Fig.8). Bibliometric network of the citations among countries in the museum architecture literature showed similar results in the pattern (Fig.9).

Table 13. The Co-occurrence of the Author Keywords with Minimum Two Occurences in the Museum Architecture Literature between 1980 and 2020.

	Keywords	Total Link Strength
1	Museum	12
2	Architecture	10
3	Art	4
4	Design	4
5	Education	4
6	Museology	4
7	Creativity	2
8	Public Space	2
9	Urbanity	2
10	Interior Architecture	2
11	Digital Museum	0
12	Museum Architecture	0
13	Pda	0

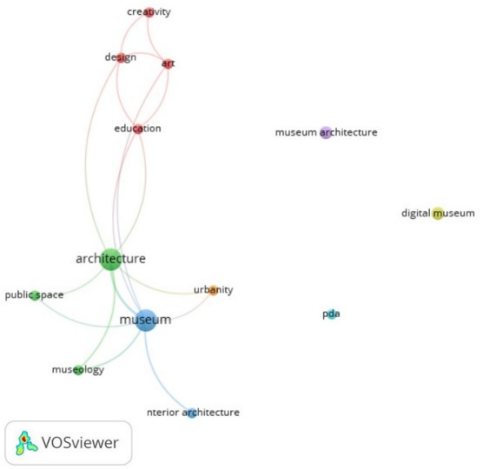

Figure 7. Bibliometric Network of the Co-occurrence of the Author Keywords in the Museum Architecture Literature (VOSViewer)

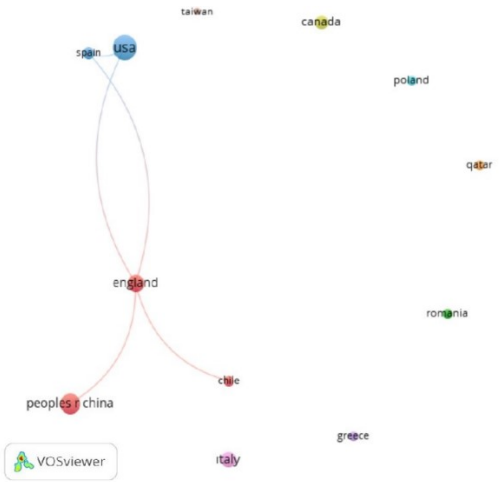

Figure 8. Bibliometric Network of the Co-authorship among Countries in the Museum Architecture Literature (VOSViewer).

Figure 9. Bibliometric Network of the Citations Among Countries in the Museum Architecture Literature (VOSViewer).

DISCUSSION

Museum is an organization that exhibits, protects and investigates the artifacts in the service of community. While designing museums, the sociocultural, economic and educational purposes of the museum are the impact factors. The principles of the museum design are based on the environmental conditions, functional factors and preventive conservation criteria.

There are two types of museum buildings regarding the purpose of being built. These are museum buildings that are established by converting existing buildings into museums and the museum buildings that are designed as museums.

Firstly, new museum designs are either constructed with modern materials and systems or traditional materials in order to comply with the historical texture. Some of the museum buildings are designed like a monument or sculpture. Solomon R. Guggenheim Museum in U.S.A., designed by Frank Lloyd Wright and built in 1943-1959 (Atagök, 2010, 11) and Baksı Museum (Bayburt, Turkey), Şanlıurfa Archaeological Museum and Haleplibahçe Mosaic Museum (Şanlıurfa, Turkey) could be given as samples.

Museum buildings are composed of open and/or closed permanent and temporary exhibition areas and storage areas, administration units, laboratory, social interaction areas and service units. Different design approaches have been applied in museum architecture. Le Corbusier brought forward the design of museum growing eternally. The idea of museum in a spiral scheme was implemented by Le Corbusier in National Western Arts Museum in Tokyo and Solomon R. Guggenheim Museum in U.S.A. (Aslanoğlu, 2014, 64, 65). Movable panels and partition walls have been used in such spaces. In this way, it is possible to prevent lack of space and congestion in case of collection expanding. In a similar manner, bearing elements of Center Georges Pompidou, opened in 1977 in Paris, are designed outside in order to have extensive exhibition areas (Aslanoğlu, 2014, 66).

Exhibition areas in museums mostly consist of different sections divided according to periods or regions; or are located in a holistic space. Artifacts in the exhibition areas are varied as self-standing artifacts, artifacts standing on a base or shelf, artifacts in showcases, artifacts fixed on the wall or on the floor; and hanged (Podany, 2001, 4). The arrangement of the collection and the spatial divisions in the museum have changed over time. While collections were placed randomly and without grouping in the exhibition areas, planning was done in which visitors could easily follow the collection in time (Aslanoğlu, 2014, 60). Well-planned storage spaces with a good management are thought to be a measure against the deterioration of the collection. Unless the museum artifacts are stored under appropriate conditions, the active protection activities would have less impact on the artifacts (Rujiter, 2010/2016, 4).

While determining the location of the storage spaces, issues like disasters such as storms, earthquakes and floods, location of the building, near environment, accessibility between the exhibition, storage and laboratory spaces and the expert rooms should be assessed; and it is important not to locate the storage spaces in the attic or basement (Rujiter, 2010/2016, 12).

The concept of window use in the museums has been changed in time. In the previous periods, there were examples of widely glass use in museums in order to obtain luminous exhibition areas. To exemplify, Chrystal Palace was built in 1851 in London with metal construction and glass panels; transformed into a museum later. Window use has been converted to use of skylight initially (Hermitage Museum), then the use of window is restricted in exhibition areas in terms of preventive conservation and artificial lighting is adopted in museums instead of day light as it is understood that day light gives harm to the artifacts (Aslanoğlu, 2014, 69, 95).

Secondly, museum buildings are established by converting buildings with different purposes into museums later. Historical buildings or contemporary buildings are used in the transformation.

In museums converted from historical buildings, it is ensured that cultural assets such as palace, inn, bedesten, church and traditional house are kept alive as a museum. The basic principle is to interpret and present the monumental cultural property as an element of exhibition and thus to raise awareness of the values of cultural property (Özkan Yazgan, 2011, 31). According to Savaş (Özesen, 2016, 52), the opening of the converted museums to public, which generally belong to state or church, allows these buildings to be recognized by the society. Samples of civil architecture are usually used as city museums that mostly exhibits the ethnographical artifacts belonging to the city (Birsin, 2015, 50).

Anatolian Civilizations Museum (Ankara), Topkapı Palace Museum (İstanbul), İstanbul Turkish and Islamic Arts Museum, Bursa Turkish and Islamic Arts Museum, Lycia Civilizations Museum (Antalya), Burdur Natural History Museum, Kars Caucasian Front Military History Museum and Silifke Atatürk Mansion and Ethnography Museum (Mersin) could be given as the Turkish examples of the converted museums from historical buildings. In this category, Louvre Museum (Paris, France) and Contemporary Art Museum converted from Palazzo Grassi and Punta della Dogana (Italy) are the well-known European examples.

Besides these, some of the historical buildings are used as monumental museums, and the historical building itself is solely exhibited. St.Nicholas Monumental Museum (Demre, Antalya) and Taksiyarhis Monumental Museum (Balıkesir) could be given as examples from Turkey. Zeugma Mosaic Museum (Gaziantep) converted from a cultural center, Zonguldak Mining Museum converted from the education building of the Turkish Hard Coal Enterprise Institution, and İstanbul Modern Arts Museum converted from a warehouse building of Maritime

Enterprise (Çelik, 2010, 29) are the samples of museums converted from contemporary buildings in Turkey. İstanbul Archaeological Museums, which are designed as a museum between the years of 1846-1923 (Sade, 2005, 36), and Ankara Ethnography Museum, which is designed as a museum between the years of 1925-1928 (Sade, 2005, 45), are the first buildings in Turkey which are designed as museum.

Besides these, document analysis is a method for analyzing the sources of drafted documents in detail without interviews and observations (Yıldırım and Şimşek, 2018). Bibliometrics is an analysis which is used for providing quantitative and qualitative analysis of a definite topic in the academic field (Van Eck and Waltman, 2010). This analysis is a way of sum up the studies in the literature by quantifying the certain indicators (Thelwall, 2008). The analysis of data about author, subject, cited author and cited sources of the scientific studies, countries, research areas and keywords display the general structure of a special field in light of the statistical data (Zan, 2012).

Bibliometrics has developed in the last decades in the academic literature, and There is a total of 19136 bibliometric studies published in the time period of this study (in December 2021) according to the WoS databases, when 'bibliometric analysis', 'bibliometrics' or 'bibliometric study' were used as search keywords. Nevertheless, museum architecture literature does not contain bibliometric analysis.

CONCLUSION

In conclusion, it is detected in the study that the world's publication on 'museum architecture' were 135 documents including mainly articles, proceedings papers, editorial materials, book reviews and news items; and 88.89 % of which were written in English between 1980 and 2020 in the Web of Science Core Collection (Web of Science, 2021).

It is shown in the study that more than half of the top ten countries by total number of publications on 'museum architecture' between 1980 and 2020 were from the countries in *developed category* (USA, England, Italy, Spain, Canada and Germany; respectively n=18, 8, 5, 5, 4 and 2), four countries were in the *developing category* (China, Turkey, Chile and Iran; respectively n=11, 4, 3 and 3) of UN classification.

Museum architecture is a specific field of the architecture dealing with the designs of the museum buildings or complexes, and should be supported in the underdeveloped and developing countries besides developed countries.

As far as it is investigated, there was no bibliometric study published on museum architecture, only one limited bibliometric analysis written on the literature between 1995 and 2014 about museum studies in general (Kuo & Yang, 2015).

In order to utilize from the studies on museum architecture, data analysis is one of the necessary studies in the field. This study offering data of a comprehensive bibliometric analysis of the museum architecture is the first

bibliometric analysis on museum architecture literature and may encourage scholars to carry out further studies on museum architecture.

CONFLICT OF INTEREST

There is no conflict of interest.

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