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# ARCHITECTURE RESEARCH TRENDS BETWEEN 2016-2020 IN THE SCOPUS DATABASE, AND THEIR RELATIONSHIP WITH THE CREATION OF RESEARCH GROUPS

## TENDENCIAS DE INVESTIGACIÓN EN ARQUITECTURA ENTRE 2016- 2020 EN LA BASE DE DATOS SCOPUS Y SU RELACIÓN CON LA CREACIÓN DE GRUPOS DE INVESTIGACIÓN

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### RESUMEN

El interés por dinamizar la investigación dentro de las universidades ha puesto en evidencia la necesidad de creación de grupos de investigación. En este sentido, el objetivo del estudio que aquí se expone es relacionar los datos obtenidos de la bibliometría con el perfil e interés de los investigadores de la Escuela de Arquitectura para identificar nichos de investigación que orienten la labor de dichos grupos de investigación. El trabajo, en concreto, se realizó a través de una revisión sistemática y un uso de herramientas bibliométricas de la producción científica publicada los últimos cinco años dentro del dominio de arquitectura en la base de datos SCOPUS. La investigación se llevó a cabo bajo cinco pasos que direccionan el proceso: búsqueda, evaluación, síntesis, análisis y monitoreo. Con el proceso de búsqueda se obtuvieron 1465 documentos científicos, analizados a través de la aplicación web *Bibliometrix* bajo indicadores que permitieron obtener los resultados para relacionarlos con los intereses y perfiles docentes. El análisis identificó que la sustentabilidad, el diseño y la eficiencia energética son temas de interés y constituyen focos de investigación para motivar el trabajo y la conformación de los grupos de investigación.

### Palabras clave

sustentabilidad, arquitectura, bibliometría, tendencia de la investigación.

### ABSTRACT

The interest in making research more dynamic within universities has evidenced the need for the creation of research groups. In this sense, the purpose of this article is to establish a relationship between the data obtained from bibliometrics and the profile and interest of Architecture Faculty researchers, to identify research niches that guide their work. This research was carried out through a systematic review and use of scientific production bibliometric tools in the last five years within the architecture domain in the SCOPUS database.

The research made used five steps that guided the process: search; evaluation; synthesis; analysis; and monitoring.

Through the search process, 1,465 scientific documents were obtained, analyzed with the *Bibliometrix* web application using indicators that allowed obtaining the results, to connect them to both teaching interests and profiles. The analysis identified that sustainability, design, and energy efficiency are topics of interest and constitute trending topics to promote the work and the constitution of research groups.

### Keywords

Sustainability, architecture, bibliometrics, research trends

## INTRODUCTION

The Department of Research and Postgraduate Courses of the International University of Ecuador (UIDE) proposes the creation of research groups, initially formed by the academic staff of the institution. The goals of these groups are to organize research processes to improve researcher participation and to raise the academic indices related to scientific production.

Facing the need to create a research group in Architecture, it has initially been proposed to apply bibliometric techniques to find research foci that would serve to articulate the interests of the different academic profiles with a macro topic that directs the work of the team.

Regarding research groups, the current demands of the development of scientific knowledge, due to its complexity, have extended beyond specialized individual understanding, as such complementarities and synergies are required from the point of view of different researchers (Smith, Vacca, Krenz & McCarty, 2021).

In this sense, within the context of the UIDE School of Architecture, despite the main members of the future research group mostly having the same professional degree, their specialty differs, with the most common ones being linked to architecture, construction, and architectural projects, so it is necessary to establish an objective selection process of the main research topics, so that their participation, from their specialty fields, becomes a contribution. This would allow developing values and objectives for the research group based on innovation, internal cooperation, belonging, and the quality of academic production, as the bibliography reviewed reports (Agnete, Aina, Svein & Ingvild, 2016).

On the other hand, it is necessary to clarify that within the internal organization of the School of Architecture, there is already a research group that works with urban and territorial issues. Therefore, this research project focuses on topics related to architecture and building. Nevertheless, the members of the current research group were also considered for this study.

The promotion of research within universities has evidenced the need to create research groups and to outline lines of research that allow focusing work on relevant issues for society. Along this line, analyzing research trends within an area or aspect of knowledge is very important and has led to diverse systematic reviews of specialized literature

and bibliometric studies that, through indicators, allow evaluating science and scientific productivity (Gallardo, 2016), as well as guiding the scientific and academic community regarding the relevant issues that must be researched.

In this same way, the scientific media has been consolidated through open access and international journals. In this sense, while said production grows exponentially, web interfaces have been created, aiming at providing a set of tools for scientiometric and bibliometric quantitative research. The complexity of scientific production is particularly appreciated thanks to the existence of different communication channels. Not all articles are published in open access journals (Van Raan, 2014). However, this resource brings one closer to a reality that is being built.

In recent years, this type of study has awoken the interest of researchers who analyze the evolution and trends of the most developed topics (Bermeo-Giraldo, Acevedo, Palacios, Benjumea & Arango-Botero, 2020; Ramos-Sanz, 2019; Manterola, Astudillo, Arias & Claros, 2013; among others). However, and despite the fact that these reviews have been made, no study has been made that shows the relationship of the topics under question with the creation of research groups and the profile of researchers.

As Blakeman (2018) reports, bibliometrics offers a variety of quantitative techniques and measurements that are used to measure the number of publications of an author, of research groups, or of entire institutions. Alongside this, author networks and connections between institutions (Blakeman, 2018), are used as search tools to identify updated research. Although bibliometrics and literature reviews are techniques that offer summarized quantitative information from published articles, they may lack rigor and have errors produced by the bias of the researchers. Hence, it is necessary to determine methodological processes that guide research along more objective paths (Snyder, 2019).

In the specific case of architecture and building, bibliometric studies on general research trends are limited. Ramos-Sanz (2019), for example, states that, in the bibliometric analysis of five international journals of the last twenty years, the most common topics are: a) Visual transformation of 2d to 5d; b) The transformation of the architectural object in flows; and c) The transformation of the construction process into information. According to Wen, Ren, Lu, and Wu (2021), the topics covered work on BIM digital technologies, a tool that would be causing the most important changes in architecture and building.

## METHODOLOGY

The methodology used in this article looks to provide a descriptive view of what is being researched in the field of architecture in the last five years, using systematic revision techniques, bibliometric tools, and monitoring the research interest of academic staff of the School of Architecture (UIDE), which aid the identification of research trends and their perspectives. The steps for this are determined based on the types of common reviews that a work framework considers, which, at the same time, implies: 1) Search; 2) Evaluation; 3) Synthesis; 4) Analysis, associated with the "SALSA framework" methodology (Grant & Booth, 2009); and 5) The monitoring of bibliographic data with the academic interests and profiles.

All in all, the study is framed within the literature review and cartographic review typologies defined by Grant & Booth (2009), as they work with published documents that have been peer-reviewed, with search criteria that can graph information for its consolidation, analysis, and relationship, and also through its contributions regarding research on architecture issues and the creation of research groups. From this, the characteristics taken from the reviews that guide this work are summarized (Table 1).

The research is done using a bibliometric study of scientific production associated with the topic of architecture in the SCOPUS database, which indexes more than 41,000 scientific journals and that, thanks to its broad database and its impact factor, has earned prestige, becoming a science portal (Aguaded, 2020). To define the search equation, the SCOPUS ASJC (All Science Journal Classification) codes classification is used, which allows limiting the search within the category and classification of the thematic area of architecture (2216, *architecture*), filtering the results.

To refine the search, the following inclusion criteria are applied: last 5 years, Ibero-American countries -to consolidate all Spanish-speaking countries, but also Brazil and Portugal-, and types of related documents (Article-ar / Abstract Report-ab / Book-bk / Book Chapter-ch / Conference Paper-cp / Conference Review-cr / Review-re). As an exclusion criterion, the search is limited to thematic areas associated with urbanism and engineering, as such it is sought to define a group focused on architecture and building. In this way, 1,465 documents are obtained, which are exported in .bib and .csv format, including citations, bibliographic information, abstracts, and keywords, which allow having a clear vision of the study area (Table 2).

<b>Literature review</b>	Review of published material that allows examining the current information on an issue, using a structured search, where an evaluation of the quality of the work is not done. The summary is narrative and the analysis is chronological and thematic.
<b>Cartographic review</b>	Review which maps and categorizes the literature through searches defined in a specific period without a formal evaluation of the information quality. The summary is graphed or tabulated, and the analysis may be quantitative or qualitative, depending on the design of the search.

Table 1. Summary of the review typologies used in the research. Source: Preparation by the authors based on Grant & Booth (2009).

Search equation	Database	Years	Doc types	Countries	Doc. analyzed
Código ASJC2216, architecture	SCOPUS	2016 - 2020	Ar, ab, bk, ch, cp, cr, re	Iberoamericanos	1465

Table 2. Search strategies. Source: Preparation by the authors.

The *Bibliometrix* tool is used for the evaluation. This is an open-code software and facilitates scientific mapping (Duque & Cervantes, 2019; Aria & Cucurullo, 2017). This tool analyzes the information through production, visibility, impact, and collaboration indicators (Chuquin & Salazar, 2019). The information is shown through scientific cartography and data, which make it possible to perform a synthesis by studying data regarding annual scientific production, productivity by country, impact on journals, keywords, trends of topics, among other factors. The data are extracted as graphs and tables that allow classifying and connecting the information. In the next phase, a descriptive bibliometric analysis is done, examining the information in-depth to identify relevant topics that are being currently researched. Finally, this information is compared with the results obtained in the survey to professors of the School of Architecture (UIDE) to generate the results and the discussion that identify the relationships of the topics with the profile and interests of the researchers (Figure 1).

The *Bibliometrix* indicators (Gallardo, 2016) are classified into three types: the first focuses on scientific production indicators. The second groups impact and author visibility indicators. And the last

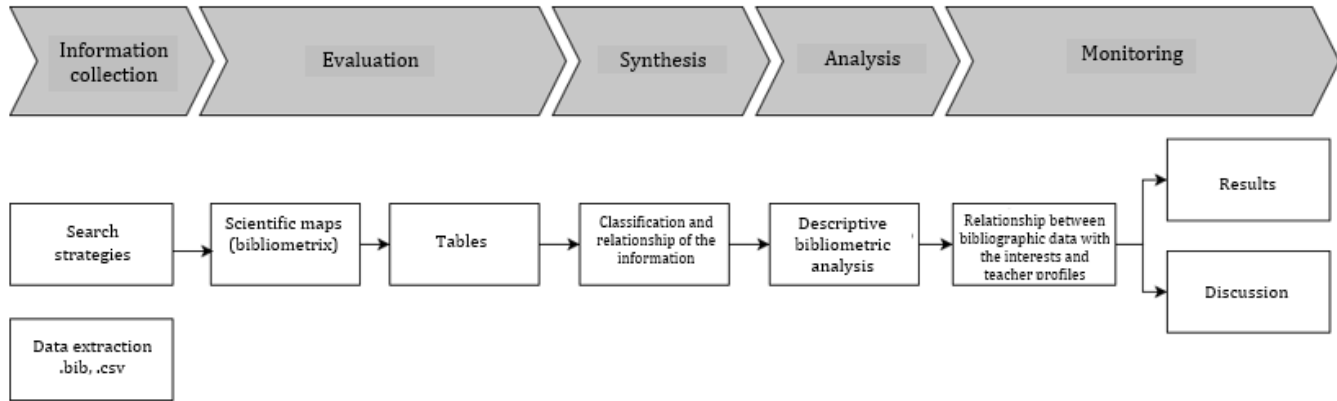


Figure 1. Methodology procedure. Source: Preparation by the authors based on Grant & Booth (2009).

TYPES OF INDICATORS IN BIBLIOMETRIX	INDICATOR	ANALYSIS STRATEGY	PURPOSE OF ANALYSIS	RESULTS
Productivity	H Index in journals	Describe Compare	<i>H Index</i> : description and comparison of articles in journals	Identifying the journals with the greatest scientific production on the topic researched.
Impact and Visibility	Lotka's Law	Describe Identify Relate	<i>Lotka's Law</i> : Identifying whether most authors publish the least number of works, while a few authors publish most of the relevant bibliography on a research topic, and form the most prolific group.	Identifying the authors, affiliations, countries, and relevant scientific production that helps to connect data.
	Relevance of affiliations		<i>Relevance of affiliations</i> : Identification of the institutions and universities where the author is from.	
	Author by country ratio		<i>Author by country ratio</i> : Identification of the countries where the most published authors come from.	
	Scientific production by country		<i>Scientific production by country</i> : Identification of the countries with the highest scientific production in the topics of analysis, based on the authors with the highest impact.	
	Most cited countries		<i>Most cited countries</i> : Identification of the countries with the highest scientific production in the topics of analysis, based on the authors with the highest impact.	

Collaboration	Most cited document by year	Identify Relate Compare Connect	<i>Most cited document by year:</i> Identifying the most cited documents that are related to the topic being studied.	Identifying and analyzing the most cited documents.
	Author's keywords		<i>Author's keywords:</i> Relates the most frequently used words.	Identifying, through keywords, the trending topics of publication on the issue.
	Conceptual structure		<i>Conceptual structure:</i> Identification of the connection among the selection terms.	Relating and analyzing the connection of the selected terms.
	Social structure		<i>Social structure:</i> Relation between authors, countries, and institutions.	Identifying the authors, countries, and institutions that are linked to the subject.

Table 3. Types of indicators in Bibliometrix. Source: Preparation by the Authors with data from the guide (Ciencia Unisalle, 2020).

contains collaboration indicators. The scientific productivity indicators record the growth and distribution of scientific production by years, the concentration of the topics in journals, and the geographic distribution of the production. The impact and visibility indicators reveal the influence the content has on the scientific community. Finally, the collaboration indicators can be read through structural maps, that connect several indicators in a single image.

In the framework of this study, the indicators capable of leading to the findings required to give grounds to the purpose of the research were selected (Table 3).

Finally, an analytical survey of closed questions was made to professors from the School of Architecture (UIDE, in Spanish), through which information was obtained on: 1) title of the third level; 2) title of the fourth level; and 3) research preferences according to the bibliometric data. This allowed connecting the professor's profile with the main topics of interest that could be handled by the research group.

## RESULTS AND DISCUSSION

The key characteristics of the research process were described above, by which the searches are limited and a focus is put on the revision within the domain of "Architecture", that allowed identifying relevant current topics that contribute towards focusing the work of the research groups on architecture and the establishment of specific lines of research.

Starting from this, a series of results were obtained,

Types of Documents	Result
Papers	998
Book chapters	64
Conference papers	327
Literature revisions	76

Table 4. Types of documents found. Source: Preparation by the authors using Bibliometrix.

which are presented below. Regarding the scientific production of the last 5 years, and considering the 1,465 documents exported from the search, circumscribed within the sphere of architecture, the documents published are those mentioned in Table 4.

Based on an overview of the indicators generated in *Bibliometrix*, and after choosing the indicators that address the subject of the research using qualitative criteria, the search equation was run in the software with the codes presented in the methodology section.

The H index in journals shows that, for this research, the three journals with the greatest relevance, which have the highest production of papers, are the Journal of Building Engineering, ARQ, and the International Journal of Architectural Heritage. From the 1,465 documents published, the first journal has 7.78%; the second, 6.69%; and the third, 6.01%, percentages which, when aggregated, constitute 20.68% of the total production. The ten journals with the highest productivity can be seen in Table 5.

Journals	Documents	Language of publication	Direct University Affiliation	Home Country
Journal of Building Engineering	114	English	No	International
Arq	101	Spanish	Yes	Chile
International Journal of Architectural Heritage	88	English	No	International
Aus	86	Spanish	Yes	Chile
Revista 180	83	Spanish	Yes	Chile
Revista Invi	72	Spanish	Yes	Chile
Structures	59	English	No	International
Advances In Science Technology and Innovation	54	English	No	International
Buildings	45	English	No	International
Architecture City and Environment	43	Spanish	Yes	Spain

Table 5. H Index. Source: Preparation by the authors using Bibliometrix.

Written documents	N° of Authors	Proportion of authors
1	2702	0,829
2	393	0,121
3	97	0,03
4	29	0,009
5	17	0,005
6	4	0,001
7	5	0,002
8	4	0,001
9	2	0,001
10	3	0,001
11	1	0
12	1	0
17	1	0
25	1	0
39	1	0

Table 6. Lotka's Law. Source: Preparation by the authors using Bibliometrix

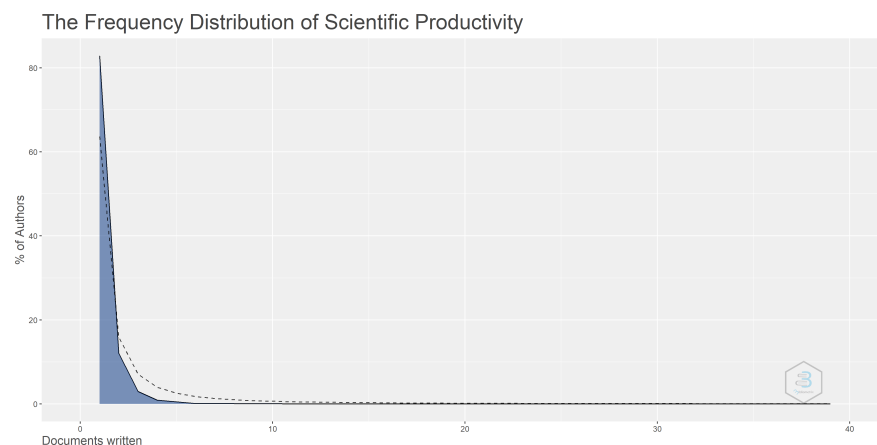
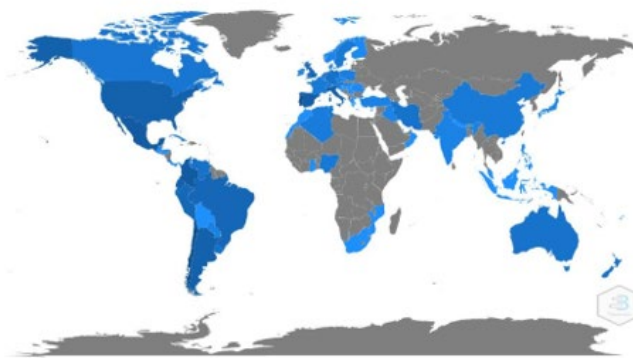


Figure 2. Lotka's Law. Source: Preparation by the authors using Bibliometrix

Affiliation	Documents	Country
Pontificia Universidad Católica de Chile	148	Chile
Universidad de Lisboa	120	Portugal
Universidad de Minho	90	Portugal
Universidad de Chile	84	Chile
Universidad de Porto	70	Portugal
Universidad de Coimbra	59	Portugal
Universidad de Aveiro	42	Portugal
Universidad del Bío-Bío	39	Chile

Table 7. Relevance of affiliations. Source: Preparation by the authors using Bibliometrix.

### Country Scientific Production



Countries	Documents
Portugal	861
Chile	712
Colombia	213
México	213
Spain	136
Italy	124
Usa	110
Argentina	106
Ecuador	105
Brazil	61
Perú	57

Figure 3. Scientific production indicator by countries. Source: Preparation by the authors using Bibliometrix

From the ten journals identified, it is seen that five often publish papers in Spanish: four universities of Chile, and one in Spain. Once the journals were identified, they become the main material to review trending scientific production.

According to Lotka's Law, during the period of this study, and considering the proportion of authors, it is seen that only 0.5% of the authors publish one article per year, while 82.9% publish approximately one paper in the 5 years studied (Figure 2). Thus, it is seen that the expected curve for the frequency distribution of scientific productivity is below Lotka's law.

As for the index of the relevance of affiliations, the impact of the Pontifical Catholic University of Chile appears first, with 5.11% of the total, followed by the University of Minho, with 3.10%, and in third place, the University of Chile, with 2.90%. The three institutions represent 11.11% of the affiliations corresponding to published papers. The following table shows the top 10 universities which, for the search equation, have the highest impact and visibility. (Table 7).

It is worth adding that other Colombian, Chilean, Portuguese, and Spanish universities appear in this list, like the Nova University Lisbon, the National University of Colombia, the Diego Portales University, the Polytechnical University of Madrid, among others. Likewise, from the total of 1,219 universities analyzed here, 870 register one published paper, that is to say, 71% of the publications.

The main communication platforms that authors use within the architecture area are in Chile and Portugal, which shows that the universities identified are a source of information, both in their publication structure and the topics of interest.

The analysis of the scientific production indicator (Figure 3) reveals the academic capacity of the countries. In particular, the country with the highest scientific production is Portugal, with a total of 861 published documents in the last 5 years, followed by Chile, Colombia, and Mexico. Meanwhile, the authors by country ratio indicator (Figure 4), expresses the MCP (Multiple Countries Publication) and SCP (Single Country Publication) ratios, which allows identifying that Portugal has a higher MCP: from the 296



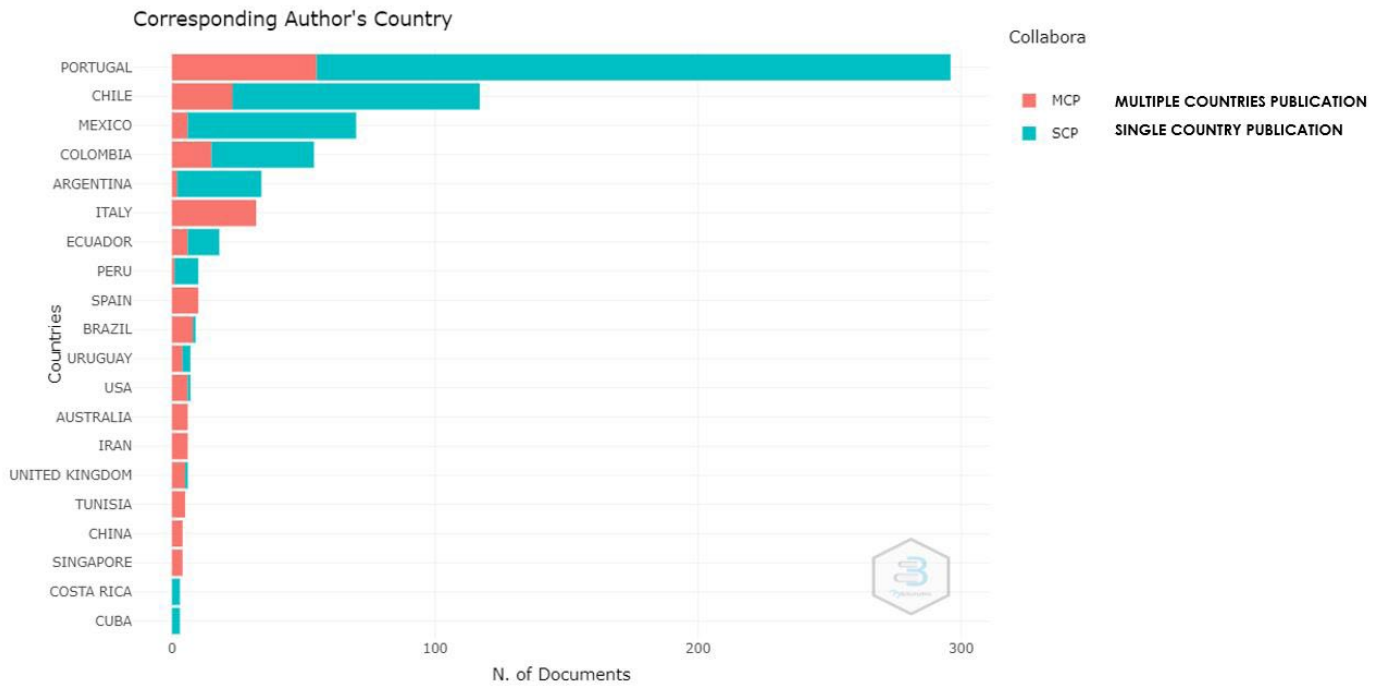


Figure 4. Indicator of the authors by country ratio. Source: Preparation by the authors using Bibliometrix.

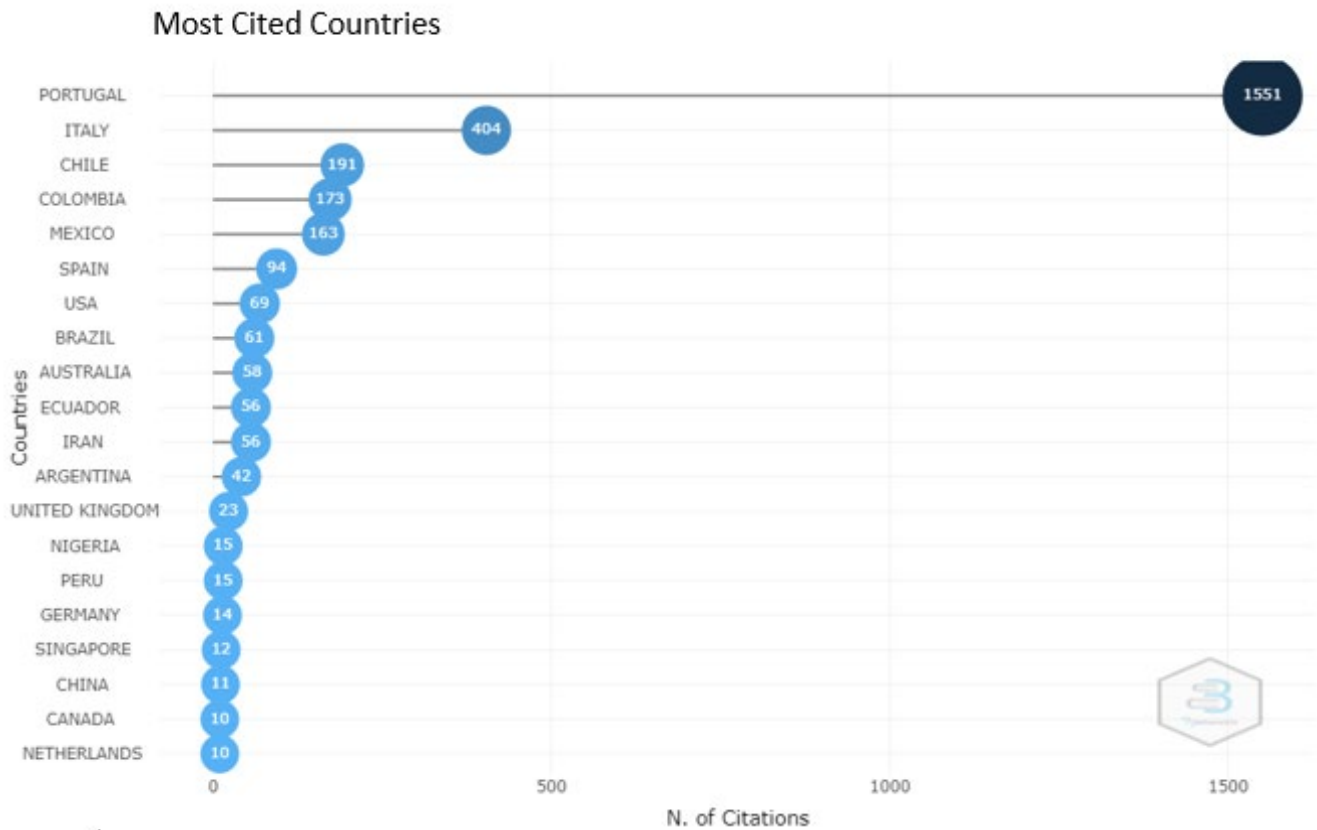


Figure 5. Most cited countries indicator. Source: Preparation by the authors using Bibliometrix

Average Article Citations per Year

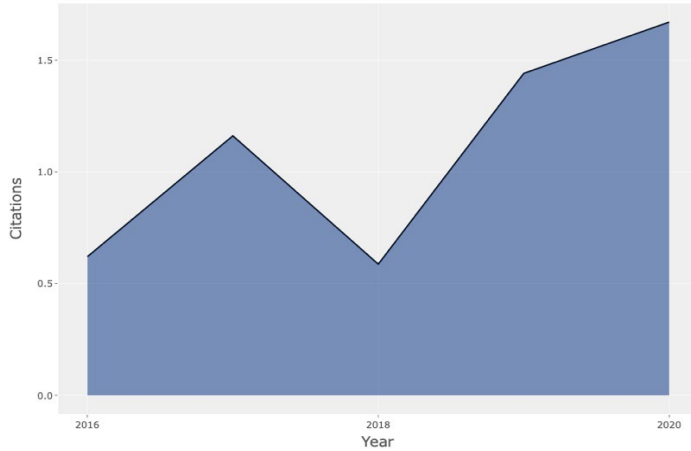


Figure 6. Average paper citations per year. Source: Preparation by the Authors using Bibliometrix.

published papers, 55 have at least one co-author from another country. Italy comes second, with 32 articles published, all of which have international collaboration.

With the most cited countries indicator (Figure 5), it is possible to distinguish that Portugal is at the cutting edge of scientific production and, therefore, is the country with the highest number of citations: in the last 5 years, it got 1,551 citations. But it is important that state that it is relevant to have international collaboration, as it is seen that Italy, Portugal, and Chile have the highest number of citations in their papers.

Considering the collaboration indicator, regarding the most cited document per year (Figure 6), a relationship with the code defined for the search associated with "architecture", and to the exclusion criteria, is noted: one or more documents published in 2020 have the highest average number of citations per year, which implies that the topic has a search incidence.

According to the conceptual structure where the identification of the connection between the filtered topics is made, and following the author keywords fields and the concurrence of these, the topics are grouped into main nodes, and subgroups are established that allow determining the research trends in architecture in the last 5 years.

Considering the data obtained through the thematic map in *Bibliometrix*, the trend of topics related to author keywords found, that are identified in the documents, can be grouped under three terms in said documents: design, construction, and sustainability (Table 8). This information is filtered and analyzed following the aforementioned search criteria, aiming at classifying it in main containers that allow identifying the profiles needed to address the trending topics.

Words	Group label	Relationship with researcher profiles
Test	Project	Construction
Laws	Project	Construction
Wood	Project	Construction
Heritage	Heritage	Construction
Retrofitting	Retrofitting	Construction
Mechanical properties	Retrofitting	Construction
Compression strength	Retrofitting	Construction
Self-compacting concrete	Retrofitting	Construction
Masonry	Masonry	Construction
Reinforced concrete	Masonry	Construction
Seismic evaluation	Masonry	Construction
Seismic vulnerability	Masonry	Construction
Cultural heritage	Masonry	Construction
Numerical modeling	Masonry	Construction
Pressure analysis	Masonry	Construction
Project	Project	Architectural design
Design	Project	Architectural design
Building	Project	Architectural design
Construction	Project	Architectural design
Concrete	Project	Architectural design
Coexistence	Project	Architectural design
Housing	Housing	Architectural design
Modern architecture	Housing	Architectural design
Urban design	Housing	Architectural design
Social housing	Social housing	Architectural design
Sustainability	Sustainability	Sustainability
History	Construction	Sustainability
Energy efficiency	Energy efficiency	Sustainability
Climate change	Energy efficiency	Sustainability
Thermal comfort	Social housing	Sustainability
Stability	Social housing	Sustainability

Table 8. Keywords ranking. Source: Preparation by the authors.

### Word Growth

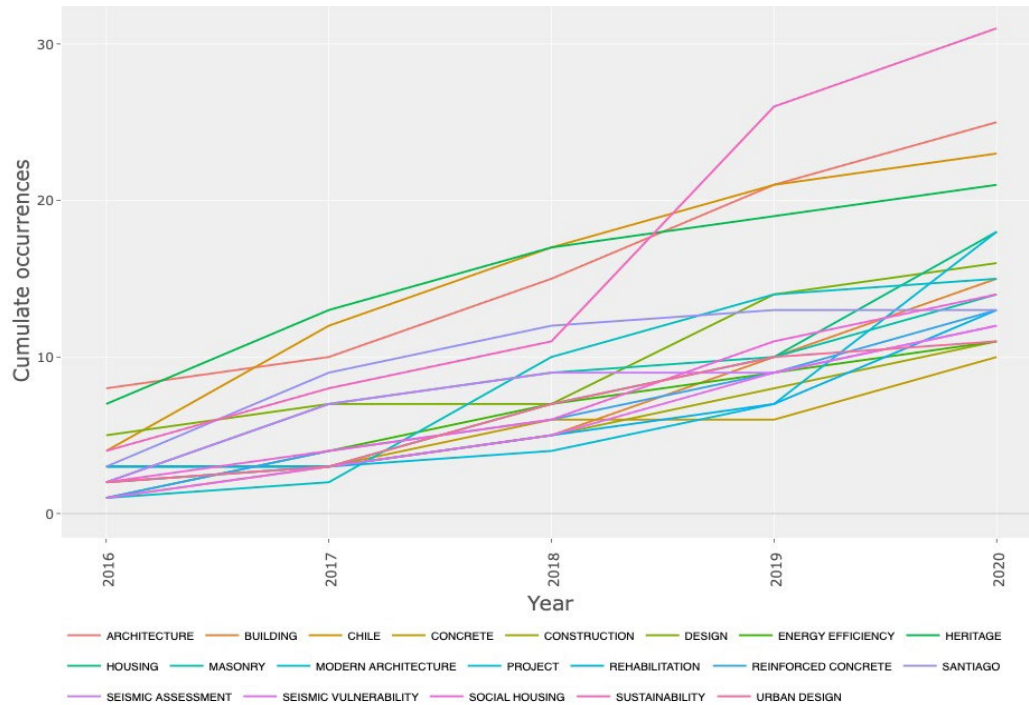


Figure 7. Work trend growth. Source: Preparation by the authors using Bibliometrix.

Thanks to the words dynamic map (Figure 7), it can be seen, through keywords, how the trending topics in architecture publication have been positioned over time. In this case, it is seen that sustainability is a recurring topic in the last 5 years, and reaches its highest peak in 2020, with a clear advantage over the remaining trending topics.

From another point of view, the centrality and density ranges report about the external and internal associations of the groups. In the centrality range, it is seen that sustainability, project, and housing groups tend to be binding and can be addressed in a multi-disciplinary way. On the other hand, the topics related to heritage, masonry, and energy efficiency have a higher frequency of internal associations.

Through the analysis of the social structure, the ties between authors, universities, and countries within architecture research are reviewed, which allows seeking alliances for collaboration in research and creating networks among research groups.

From the 31 universities identified that research topics related to architecture, the Pontifical Catholic University of Chile and the University of Minho have higher intermediation within the University Collaboration Network. Approximately 15 universities collaborate with the former, and 12 with the latter. However, a work connection between them is not seen. Smaller collaboration networks can also be seen in Figure 8, between the Xaverian Pontifical University, the University of Colombia, and the University of Los

Group	Centrality Range	Density Range
Project	12	7
Heritage	8	12
Retrofitting	10	8
Mexico	6	6
Masonry	9	10
Sustainability	13	3
Housing	11	2
Energy Efficiency	7	9
Social Housing	5	5

Table 9. Centrality and density ranges of the trending topics. Source: Preparation by the authors using Bibliometrix.

Andes, and a collaboration network between the University of Cuenca, the University of Azuay, and the Alberto Hurtado University, linked to the network of the Pontifical Catholic University of Chile (Figure 8).

Likewise, it is clear that, despite there being collaboration among authors within the research, this is minimal, as only eight authors networks are seen among all the analyzed documents. This reflects that, in recent years, to consolidate research within the architecture area,

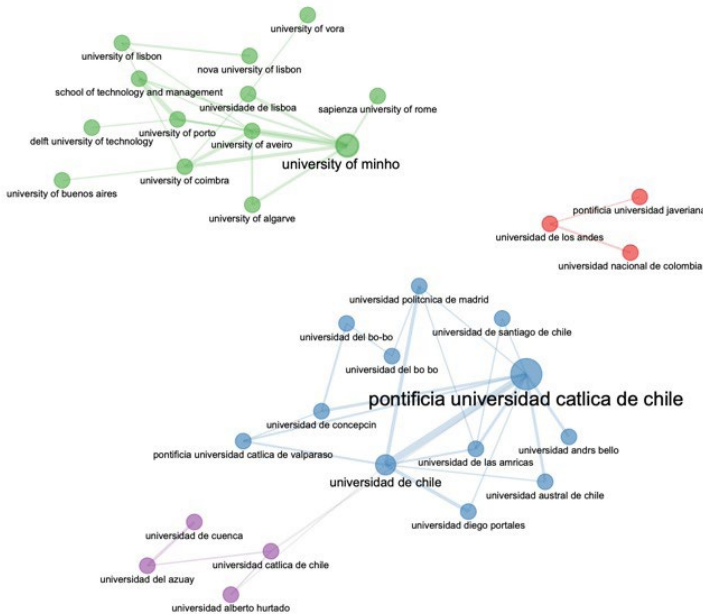


Figure 8. Collaboration network among universities. Source: Preparation by the authors using Bibliometrix.

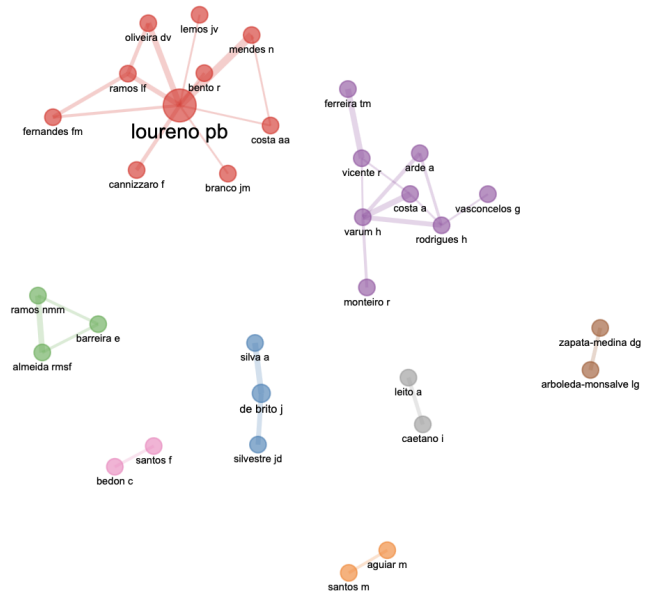


Figure 9. Author collaboration networks. Source: Preparation by the authors using Bibliometrix.

these are done in isolation, leaving aside the creation of networks and research and groups (Figure 9).

On the other hand, connecting specific fields among keywords, countries, and the affiliations of the authors, the trending topics researched during the last 5 years can be determined. Figure 10 shows that sustainability constitutes the most researched topic, which is addressed by different universities in different countries. This field is followed by design, materials, heritage, housing, energy efficiency, and comfort, among others. Thus, it is possible to identify, depending on the research topic, the possibility of generating alliances with other universities to create networks and research groups.

A survey was applied to 19 of the 22 professors of the School (UIDE, in Spanish), to connect the training profile (architecture and projects, constructions, urbanism, and others) with the topics found in bibliometrics. In the results obtained, it was seen that the preferences of the professor profile groups match (Figure 11) in architecture and architectural design. However, sustainability and energy efficiency constitute topics of cross-sectional interest in 3 of the 4 groups monitored.

Given the complementarity between research and teaching in universities, it is worth stating that the trend marked by "sustainability" is also visible in the curriculum for architect training. In fact, González and Trebilcock (2012), for example, mention that 76% of Architecture studies programs in Hispanic-America integrate said concept. In this sense, academic literature has developed the definition of "sustainable design"

as a creative process that seeks to reduce expenses in the natural resources used, such as land, air, and water contamination, and indoor comfort in buildings, the economic and financial savings of construction projects, as well as the reduction of the waste generated by construction (D'Amanzo, Mercado & Ganem-Karlen, 2020).

## CONCLUSIONS

In the formation of research groups, it is important to connect current research approaches with the profiles of the possible participants. From this perspective, bibliometrics, in general terms, allows seeing the universities with the greatest scientific production and the current topics of potential research. However, it is also necessary to connect these topics with the research interests of the academic staff. This helps to create internal and external collaboration networks to suggest macro topics with different sub-subjects, where the participants work for the same goal, but with different alternatives

The proposed monitoring demonstrates that, despite there being different specialty profiles, cross-sectional topics of interest can be determined. For this case, for example: sustainability, energy efficiency, and architectural design are recurrent preferences in the fields of teaching profiles.

The application of bibliometric techniques in the broad field of architecture is limited, so the search for research niches is difficult. However, bibliometrics is currently being

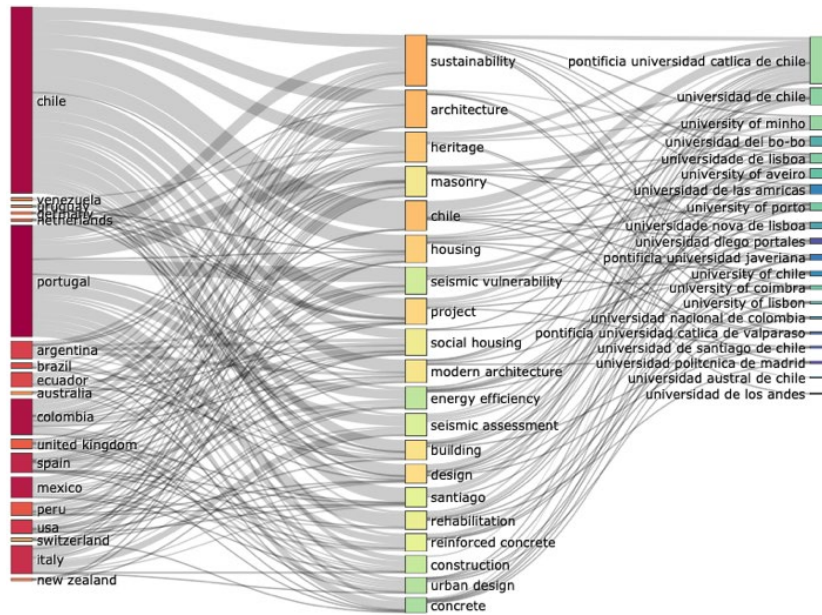


Figure 10. Relationship between topics, countries, and affiliations. Source: Preparation by the authors using Bibliometrix.

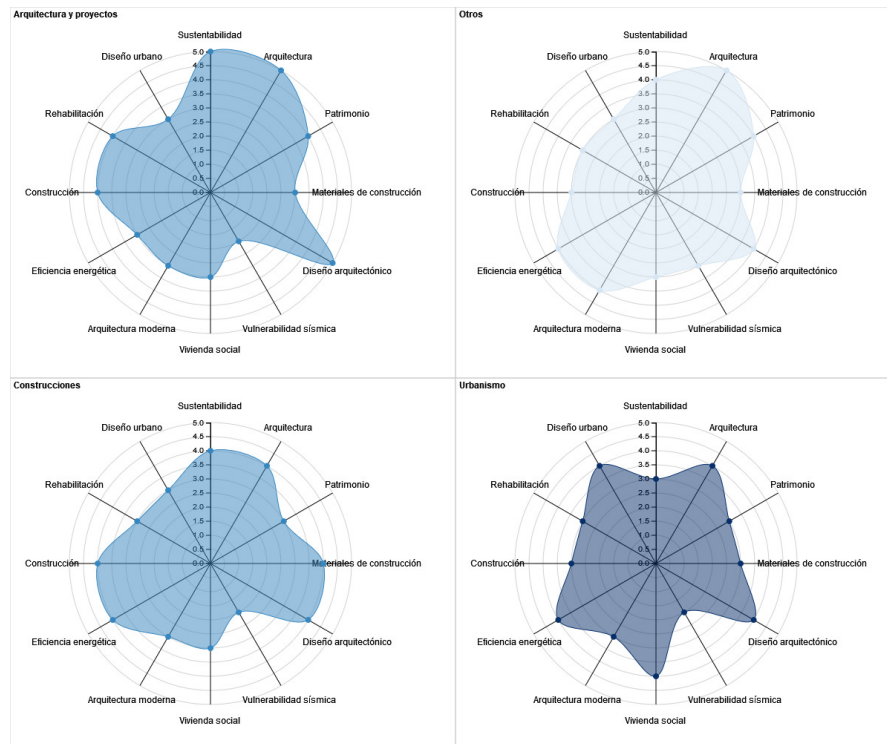


Figure 11. Relationship between research interest and professor profile groups. Source: Preparation by the authors.

widely used to see the evolution of the expansion of digital technologies, referring to BIM. In any case, it is key that other topics are studied to start research on emerging topics that contribute to innovative aspects for academia.

Bibliometric analysis requires an organized revision process, the classification of indices, and data within concrete fields of knowledge. In the case of "architecture", it is seen that the word is widely used in different fields, which is why the decision was made to use the ASJC (2216) code of Scopus, which allowed limiting search processes to topics directly

related to the field of Architecture as a discipline. Thus, 1,465 documents were selected: papers, book chapters, conference papers, and literature reviews.

According to the criteria established for the bibliometric search regarding H indices and relevance, it was stated that, in Ibero-America, Chile and Portugal are the countries with the highest scientific production in Architecture, and that Portugal has the highest scientific production in individual and in collaborative publications with multiple countries. It is relevant to also highlight that, in Chile,

different universities have their own journals with different indexations based on bibliographical data, which improves the scientific production indices and the development of collaboration networks.

The curve for the frequency distribution of scientific productivity taken from *Bibliometrix* shows that the production index in the last 5 years, for architecture, is below the curve, which shows that it is necessary to change the research approaches. One option would be networking and research groups.

Scientific mapping has managed to identify the dynamics of research in the area of architecture in the last 5 years. Starting from the analysis, it can be determined that research is linked to design, construction, and sustainability, which implies the need for different specializations that allow comprehensively addressing the studies.

Ultimately, it is seen that universities from different Ibero-American countries target their studies towards topics associated with the concept of sustainability, which shows that this can be the guiding line for different research projects, that would encourage the formation and the work of networks and research groups.

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