

Scientometric analysis of publications on library in the Portuguese journal *Páginas a&b: arquivos e bibliotecas* between 2016 and 2020

Maria Fernandes¹, Marina Aleixo², and Gislane Costa³

¹ NOVA University, Lisboa, Portugal

² NOVA University, Lisboa, Portugal

³ NOVA University, Lisboa, Portugal

Abstract

This scientometrics study aims to contribute to the library field through the analysis of references used in the papers published in the *Páginas a&b: arquivos e bibliotecas* journal between 2016 and 2020. To this end, all papers on this topic were collected, as well as their bibliographic references. Scientometric procedures were adopted in the data analysis, which focused mainly on identifying the most cited authors, the currentness of the references, the language, and their typologies. It was found that the researchers cited mostly Brazilian authors, prioritizing the paper and book typologies published from the 21st century onwards, and as for the language, the preference was for the Portuguese language. With this study, it is expected to draw a profile of renowned authors in the area, to guide future researchers and readers on the dynamics of knowledge construction, as well as knowing the informational behavior of researchers.

Keywords

Scientometric analysis, Library, *Páginas a&b: arquivos e bibliotecas*, Portugal

1. Introduction

The growing academic offer from the 1980s in the field of Information Science, with the creation firstly of postgraduate courses and later of masters and doctorates degrees, made the area grow in Portugal and created research opportunities. Consequently, the scientific production published on national territory has also intensified, namely with the presentation of master's dissertations and doctoral theses [1].

In the following decade, in 1997, the journal *Páginas a&b: arquivos e bibliotecas* was founded, hereinafter called *Páginas a&b*. Founded within the University of Porto, it is currently edited by Transdisciplinary "Culture, Space and Memory" Research Centre (Centro de Investigação Transdisciplinar "Cultura, Espaço e Memória" - CITCEM) by the same university. Initially, it was published every six months, in 2014, it went to digital format, and between 2016 and 2020 it published 3 volumes annually, one of which is entitled Special, which discusses a specific topic in the area. This journal accepts 4 languages of publication, namely: Portuguese, English, Spanish, and French.

It is open access, peer-reviewed journal, focused on the archive and library field. After analyzing the thematic trends of the Portuguese journal *Páginas a&b*, it was found that the most discussed topic between 2016 and 2020 was the library area with the following sub-themes: university library, school

¹EMAIL: mariafernandes-25@hotmail.com (A. 1); marina.raleixo@gmail.com (A. 2); gislainecosta_91@hotmail.com (A. 3)
ORCID: 0000-0003-1654-4291 (A. 1); 0000-0002-7250-3374 (A. 2); 0000-0003-4876-650X (A. 3)

library, public library, and information professional. Other themes related to the library were also addressed, such as the support given to research, informational mediation, and the use of social media.

This is a reflection of what has been offered in the academy. In 2019, Borges, Freitas, and Oliveira [2] published an article on the state of the art of Information Science in Portugal, one of the topics addressed being the thematic trend of doctoral theses. The authors concluded that the themes of the theses include three main themes: "Use and sociology of information"; "Libraries as physical collections", and "Information sources, supports, and channels" [3].

Therefore, the area of libraries is in the top 3 of the most discussed topics, showing the importance that it has in the academic curriculum of universities. Also, according to Borges, Freitas, and Oliveira "[...] the three (27%) themes [...] are also frequent in all five programs of universities that offer/offered doctorate courses in the country [...]" [4].

This academic issue is joined by the professional issue, with more than 300 libraries in Portugal, including municipal public libraries, not to mention schools, universities, specialized libraries, so on, and now also digital [5].

This study intends to present a scientometric analysis of publications on the area of libraries collected from Journal *Páginas a&b* between 2016 and 2020. Thus, the focus of the analysis will be based on the following main points: most cited authors, addressed themes, and collaborative networks; year, language, and type of publication.

With this study, to draw a profile of renowned authors in the field of libraries is expected, to guide future authors and readers regarding the dynamics of knowledge construction. As well as understanding the informational behavior of researchers.

2. Methodology

Scientometrics is widely used to measure the impact of scientific production, but also to study how knowledge is constructed by the scientific community [6]. Scientometrics can also be considered a study of the scientist's informational behavior, the process of communication, and its purpose is to understand and evaluate the production, circulation, and consumption of the research and its performance [7] [8]. It means that this science provides a way to link 'people, ideas, journals, and institutions to constitute an empirical field or network that can be analyzed quantitatively' [9].

With mixed methods [10], this study seeks to know how researchers build new knowledge on this topic and intend to answer the following questions: Who are the key authors? Are the citations current? What are the document types most used by researchers to carry out their research? And finally, what is the language of the references?

In order to answer these questions, a first bibliometric study was carried out and presented at the 12th Luso-Brazilian Conference on Open Science (ConfOA 2021) and, subsequently, the article was published in the journal *Páginas a&b* (in press article). From this analysis, it was concluded that the most discussed research topic in the *Páginas a&b* journal, between the years 2016-2020, was "Library", which appeared in 29 articles. Bibliographic references were extracted from these articles, which were organized and treated in an Excel sheet with the following fields: the complete reference, name of the author(s), year of publication, typology, theme(s), language, and co-authorship.

With regard to the analysis, the following options were adopted:

- author(s): for scientometric analysis, it was selected only the authors cited five or more times;
- year of publication: references were grouped by decades (e.g., an article published in 1989 entered in 1981-1990 group);
- typology: classified and grouped into categories (e.g., the article typology includes journal papers, pre-print, working paper, opening note, etc., iconographic includes photography, slides, folder, leaflet, booklet, script, etc.);
- theme(s): the keywords of the titles were used to classify the references within a theme (e.g., the library topic includes typology, such as university library, public library, school library, and others.);
- co-authorship: presents the total number of authors of the bibliographic reference.

For the scientometric analysis, the following exclusions were also performed:

- references from countries and cities as authors (e.g., Brazil, Portugal, and Lisbon), due to the documents referred to national/state legislation and official documents;
- references from the Bibliothèque Sainte-Geneviève as it is a case study of the library itself, whose references are based on its documents.

Following, the results and discussion obtained in this research will be presented.

3. Results and discussion

Of the 29 articles, which had the library as their theme, 733 bibliographic references were collected. The year in which there were more publications on the topic was 2017 with 8 articles (5 empirical studies and 3 theoretical studies), followed by 2020 with 7 articles (5 empirical studies and 2 theoretical studies) and, consequently, were the years with the most bibliographical references (242 and 166 references, respectively). In the total of 5 years of collection, 23 empirical studies were counted, which means, case studies that took place in certain environments and contexts [11], such as case studies dedicated to libraries in Brazil and Portugal stand out. Despite the journal being published in Portugal, there were more articles published about libraries in Brazil (11 articles) than in Portugal (9 articles). It should also be noted that of the 29 articles, all written in Portuguese, except for 1 that was written in Spanish.

Table 1
Articles collected

Year of publication	Qty of articles	Qty of references	Language
2016	4	131	6 Spanish/ 1 French/ 25 English/ 99 Portuguese
2017	8	242	30 Spanish / 1 French / 52 English / 159 Portuguese
2018	4	91	4 Spanish / 7 English / 80 Portuguese
2019	6	103	1 Spanish / 23 French /18 English /61 Portuguese
2020	7	166	15 Spanish / 7 English / 144 Portuguese

Regarding bibliographic references, an average of 25 references per article was cited, totaling 733 bibliographical references, which were grouped by typology. Thus, the widely used typologies, with more than 200 references each, were scientific articles (32%) and books (29%), and with less than 100 references each, followed by proceedings (10%) and book chapters (8%). Also noteworthy is the use of typologies such as censuses, legislation, research instruments, etc., as primary sources of information.

The language of references is mostly Portuguese (74%), followed by English (15%), Spanish (8%), and French (3%). It is worthy to mention that many references are translations into Portuguese, despite the original language being mostly English. This reveals that researchers choose to read literature produced in Portuguese and translate it into this same language, instead of opting for the original material. In the single article written in Spanish, it is noted that there was a 50-50 in the bibliographic references for Spanish and English.

Regarding the years of publication of bibliographic references, 565 were published between 2001 and 2020. The remaining 169 were mostly published in the 1990s. It appears that the authors chose to cite current bibliographic references, following the most recent writings on the subject they studied.

However, 11 references published before the 20th century were cited. The oldest reference refers to the charter of the province of Santa Maria da Arrábida of the Order of Friars Minor, from the year 1698, used in the paper about the bookshop of the Convent of Nossa Senhora da Serra da Arrábida, a historical study. Also, it is remarkable the use of an 1898 article on the citation patterns of doctoral students from the Department of Geology of the University of Helsinki, Finland, as a reference for an article on the citation pattern of master's degree students. It was not possible to understand the use of this reference due to the very specific context and age of its publication.

From the data, it was possible to summarize the authors who had 5 or more references cited in the articles under analysis, their research themes, the way they publish, either single or in co-authorship, and the frequency with which they were referenced. Table 2 shows the top 14 of the most cited authors.

It is interesting to note that of the most cited authors, 8 are Brazilian, 3 Portuguese, 1 North-American, 1 Spanish, and 1 an international institution. Next, we will discuss the most cited authors, namely: IFLA (International Federation of Library Associations and Institutions), Oswaldo Francisco de Almeida Júnior, and Antonio Carlos Gil.

Table 2
Most cited authors

Author	Qty of articles	Qty of references	Themes	Single author	Co-authorship
Almeida Júnior, O. F.	3	8	information competence; information mediation	5	3
Amante, Maria João	2	6	university library; repository; interoperability	3	3
Campello, Bernadete Santos	3	6	school library; informational competence; information literacy	5	1
Castells, Manuel	3	5	network society	1	-
Cunha, Murilo Bastos da	5	5	librarianship; archival science; education; management; organizational behavior	2	3
Gil, Antonio Carlos	4	7	scientific research methodology	1	-
IFLA	10	16	school library; public library; referral service	-	16
Kuhlthau, Carol	3	5	school library; informational behavior	5	-
Milanesi, Luís	4	6	library	6	-
Miranda, Ana Cláudia Carvalho de	1	6	collection management and development; university library; legal collection; quality management	4	2
Santos Neto, J. A.	2	5	mediation of information; information science; librarian	2	3
Silva, Armando Malheiro da	2	6	document; information; communication; mediation of information; information science	5	1
Vergueiro, Waldomiro	3	5	collection development; public library; electronic information; material selection	1	-
Weitzel, Simone da Rocha	3	5	university library; collection development; knowledge organization; electronic document; information selection	1	-

IFLA's most cited documents are co-authorship with UNESCO and are publications about library and library services. IFLA is an independent, non-governmental, not-for-profit organization, founded in 1927 in Scotland [12]. It can be considered the leading body representing the interests of the information professionals. They have published a wide range of manifestos that discourse about several library topics such as public libraries, school libraries, digital libraries among others. Those manifestos define concepts and are considered as the basis for the constitution of libraries and services to be provided for them. It is interesting to note that IFLA not only has documents in the referenced languages but its manifestos are often translated into multiple languages. Thus, it is possible to notice that of the

29 analyzed articles, 10 of them used 16 IFLA's references translated into Portuguese and Spanish. Of these articles that cite IFLA, 8 of them are empirical studies that discuss case studies in libraries that deal with various aspects such as reference services, school libraries aspects, library education, relevant legislation, planning and management practices, among other topics that need direction, on which IFLA already has manifestos that direct about its applications. And 2 of them are theoretical studies, which discuss the social role of the librarian and the reading mediation, and for that, they base their analyzes on the public library and the school using IFLA manifestos.

The second most cited author was Oswaldo Francisco de Almeida Júnior. His works about information competence and information mediation were cited in 3 articles and were cited 8 times. Almeida Júnior is a professor of Information Science in three different Brazilian Universities. He has experience in the field of Information Science, with an emphasis on Information and Society, working mainly on the following topics: Information and Society, Information Mediation, Reference and Information Service, Public Libraries, and Librarianship [13]. As demonstrated from the analyzed references, the author publishes primarily in Portuguese and as a single author. But some references are co-authored, and those were mostly published with authors such Camila Araújo dos Santos [14], Regina Celia Baptista Belluzzo [15], and João Arlindo dos Santos Neto [16] that are also Universities professors in Brazil and develop studies in the field of Information Science as well.

And the third most cited author was Antônio Carlos Gil. The referred author is a professor in a Brazilian University, and his research field is linked to the public management field and scientific research methods mainly in the Social Science field [17]. Accordingly, with a simple search in Google Scholar, it is possible to notice that this author was cited 126597 times [18]. His works about science methodology were referred to in 4 articles, 7 times.

Therefore, it is possible to conclude that the reference author about libraries would be IFLA. So, for conceptualization or understanding of the context and services they provide, IFLA's documents would be the main reference to be consulted. However, when the topic in discussion is about information mediation, the authors of the articles under analysis preferred to use Professor Almeida Júnior, either because he writes mostly in Portuguese, and in co-authorship with renowned authors, but also because he is a researcher with high know-how in his field of study.

Nevertheless, one of the references that are worth analyzing is Ana Cláudia Carvalho de Miranda. This particular author was the only one with a high number of citations (6 times) in only one article. When under a more specific analysis, we noted that all those references were self-citations. Although self-citation was not a forbidden practice, it is not recommended, as mentioned by Almeida and Cardoso [19], since citation metrics become an instrument to measure the impact factor of the scientific paper and also of the scientist itself. If you, as a scientist, have more citations, your paper is probably more relevant, so self-citation would mislead the researchers to consult your article.

4. Conclusion

With a scientometric analysis, it was possible to understand the informational behavior of researchers who published on the theme library in the Portuguese journal *Páginas a&b*, between the years 2016-2020.

From the results obtained and answering the research questions, it is noteworthy, in terms of published articles, that the authors prefer empirical studies, and even though the journal is Portuguese, most are case studies in Brazil. It is also noted the predilection of the authors to publish and references in Portuguese and translated into it. Still, regarding the citations, it is observed that 77% of the references were published after the year 2000, denoting the preference for the most recent citations. However, references prior to the 20th century were used, and most of them did not have a plausible justification for their use. As for the most used typology, it is interesting to note that 39% of the references are papers, with 29% used books and 10% of the references are proceedings.

Regarding the analysis of bibliographic references, it was concluded that the most cited authors are of Brazilian nationality and that the most cited author is, in fact, the international institution on libraries (IFLA), which publishes in co-authorship with UNESCO. This institution is considered a worldwide reference, whose manifestos influence the consolidation and conceptualization of the library and its practices. Furthermore, it is worthy of mention that one of the most cited authors is about scientific

methodology, denoting that the authors of the Social Science appreciate the application of the scientific method on their research. Finally, the use of self-citation is highlighted, which is an academic practice that should be avoided.

It is worth mentioning that this study presents data limited to the library theme of *Páginas a&b* magazine between 2016 and 2020. However, it is part of a more comprehensive work in progress that aims to study research practices in the field of Information Science in Brazil and Portugal. Some of these results have already been presented at the CONFOA congress and published in the *Páginas a&b* journal.

As future studies, it would be interesting to carry out a scientometric and longitudinal study on the theme of the library in Portugal, extending this study to more Portuguese scientific journals and research results in the area such as master's dissertations and doctoral theses. Another suggestion would be a comparative study between research practices with other European Union countries and with other contexts.

In a nutshell, it is expected that this study will help to understand the informational behavior and the information sources used by researchers who publish about the library in Portugal, as well as to draw a profile of renowned authors in the field of libraries, in order to guide future authors and readers as to the dynamics of knowledge construction. Furthermore, we believed that this study can help the library community to understand behaviors, map the practices and develop more assertive and directed services to its users.

5. References

- [1] M. M. Vargues; T. Costa. Breve diagnóstico em Ciências da Informação e Documentação em Portugal: teses e dissertações entre 2003 e 2017, in Proceedings of the 13th National Congress BAD, Portugal, 2018, pp. 1-11.
- [2] M. M. Borges; M. C. V. de Freitas; S. R. de Oliveira, A Ciência da Informação em Portugal nas primeiras décadas do século XXI: uma abordagem preliminar para uma cartografia iberoamericana, *Bibliotecas. Anales de Investigación* 15:2 (2019), 260-292.
- [3] M. M. Borges; M. C. V. de Freitas; S. R. de Oliveira, A Ciência da Informação em Portugal nas primeiras décadas do século XXI: uma abordagem preliminar para uma cartografia iberoamericana, *Bibliotecas. Anales de Investigación* 15:2 (2019), 276.
- [4] M. M. Borges; M. C. V. de Freitas; S. R. de Oliveira, A Ciência da Informação em Portugal nas primeiras décadas do século XXI: uma abordagem preliminar para uma cartografia iberoamericana, *Bibliotecas. Anales de Investigación* 15:2 (2019), 279.
- [5] BAD, Grupo de trabalho de bibliotecas públicas. Mais de 300 em Portugal, [s.d.]. URL: <https://bad.pt/somosbibliotecas/mais-de-300-em-portugal/>.
- [6] F. S. Rosas; C. C. de Almeida; D. D. Silva, Indicadores de citação, in: M. C. C. Grácio; D. Marínez-Ávila; E. F. T de Oliveira; F. S. Rosas (Ed.), *Tópicos da bibliometria para bibliotecas universitárias*, Marília, Oficina Universitária; São Paulo, Cultura Acadêmica, 2020, pp. 93-132.
- [7] J. Mingers, L. Leydesdorff, A review of theory and practice in scientometrics. *European Journal of Operational Research* (2015), pp. 1-18, <http://dx.doi.org/10.1016/j.ejor.2015.04.002>.
- [8] R. N. M. dos Santos, N. Y. Kobashi, *BIBLIOMETRIA, CIENTOMETRIA, INFOMETRIA: CONCEITOS E APLICAÇÕES*, Tendências da Pesquisa Brasileira em Ciência da Informação 2:1 (2009), 155-172.
- [9] J. Mingers, L. Leydesdorff, A review of theory and practice in scientometrics. *European Journal of Operational Research* (2015), p. 1, <http://dx.doi.org/10.1016/j.ejor.2015.04.002>.
- [10] R. H. Sampieri, C. F. Collado, M. P. B. Lucio, *Metodologia de pesquisa*, 5th ed, Penso, Porto Alegre, 2013.
- [11] J. Vilelas, *Investigação - O processo de construção do conhecimento*, Edições Sílabo Lda., Lisbon, 2009.
- [12] IFLA, Official website, [s.d.]. URL: <https://www.ifla.org/>.
- [13] Conselho Nacional de Desenvolvimento Científico e Tecnológico, Oswaldo Francisco de Almeida Júnior, 2021. URL: <http://lattes.cnpq.br/1049186978910803>.

- [14] Conselho Nacional de Desenvolvimento Científico e Tecnológico, Camila Araújo dos Santos, 2021. URL: <http://lattes.cnpq.br/3912018199767595>.
- [15] Conselho Nacional de Desenvolvimento Científico e Tecnológico, Regina Celia Baptista Belluzzo, 2021. URL: <http://lattes.cnpq.br/0812422122265124>.
- [16] Conselho Nacional de Desenvolvimento Científico e Tecnológico, João Arlindo dos Santos Neto, 2021. URL: <http://lattes.cnpq.br/9296179246118904>.
- [17] Conselho Nacional de Desenvolvimento Científico e Tecnológico, Antônio Carlos Gil, 2021. URL: <http://lattes.cnpq.br/7344947550918228>.
- [18] Google Scholar, Antônio Carlos Gil, 2021. URL: https://scholar.google.com/scholar?hl=pt-PT&as_sdt=0%2C5&q=Ant%C3%B4nio+Carlos+Gil&btnG=.
- [19] P. de Almeida; S. Cardoso, A Ciência Aberta o contributo da Ciência da Informação: proceedings of the 8th Iberian Congress EDICIC, M. M. Borges, E. S. Casado (Ed.), Portugal, 2017, pp. 389-400.