

Scientific output in library and information science: A comparative study of the journals *Anales de Documentación* and *BiD textos universitaris en biblioteconomia i documentació*

Journal of Librarianship and
Information Science
2019, Vol. 51(2) 440–457
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DOI: 10.1177/0961000617729199
journals.sagepub.com/home/lis



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Abstract

In recent years, academic journals have evolved to become a vehicle for scientific communication that is acknowledged by the official organizations that certify their quality. This enables assessments to be performed, determining how a discipline has evolved through the analysis of bibliometric indicators and the keywords used to index the articles. In the field of library and information science, it is particularly interesting to study the articles published in the journals specializing in this area but few studies have performed an in-depth analysis of the discipline. In order to gain a detailed view of the evolution of library and information science, we have carried out a bibliometric and thematic study of the journals *Anales de Documentación (AD)* and *BiD textos universitaris en biblioteconomia i documentació (BiD)* between 2000 and 2013. The analysis focuses on the number of articles and authors, the evolution of the sections and the contents. In addition, a thematic study determines the level of similarity between the two journals' contents, the subject areas they belong to and whether there is any subject continuity during the period analysed. The results confirm that in *BiD*, practitioner-focused subject matter is double that of the academic content, unlike *AD*, which shows a preference for academic content. The thematic study confirms that there is little similarity between the content of the two publications; that the subjects where there is overlap are basically concerned with information units, information technologies, auxiliary sciences and techniques, and library science; and that there is little continuity in the subjects covered during the period analysed.

Keywords

Bibliometric analysis, documentation, keywords, library science, scientific journals, scientific output, thematic analysis, thesaurus

Introduction

Within the field of library and information science (LIS), it is particularly interesting to study the articles published in this field's academic journals from different viewpoints

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and applying different methodological approaches. In general terms, these studies focus on individual journals and it is rare to find comparative studies performed between different journals with the aim of determining their evolution or transformation. In addition, the analysis of an extensive publication period can help us gain a clear picture of the trends in LIS research. The analysis of information sources other than the leading journals in the field is also of value, with the aim of shedding light on scientific output other than that published in the Anglo-Saxon countries (Bernhard, 1993).

The study reported here aims to fulfil these requirements by performing a comparative study of two journals in this academic field that have similar features as regards standing, size and scientific output, in order to obtain a detailed view of the focus of thematic interest in LIS. Specifically, the scientific output of the journals *Anales de Documentación* (hereinafter *AD*) and *BiD: textos universitaris en biblioteconomia i documentació* (hereinafter *BiD*) has been compared over the period 2000–2013. These two publications were chosen because they are in the same discipline, have a strong track record in publishing academic articles and use the same thesauri to index their articles, which enables us to make valid comparisons of their contents.

The primary goal of our study is to determine the evolution of this two academic journals and its correlation with the transformation that the discipline has undergone at local and international levels and, at the same time, whether the evolution of *AD* and *BiD* shows areas of divergence or convergence in any of the descriptors and keywords analysed. This primary goal is based on two hypotheses. In the first hypothesis, while acknowledging that *BiD* and *AD* both have an editor-in-chief and an editorial board that direct the published contents with their editorial policy, we argue that the prominence of certain trends, vogues and keynote subjects in the articles is a consequence of the evolution of the discipline itself. The second hypothesis leads us to presuppose that two generalist academic journals that specialize in the same area of knowledge could show similar behaviour with respect to the type of content they publish.

In order to address this goal and the baseline hypotheses, this article undertakes a bibliometric study of the journals, detailing the articles' sections, the authors, scientific productivity and the institution they belong to, among other data. It also offers a thematic analysis of the journals *BiD* and *AD*, taking into consideration the keywords that have been used to index both the contents of both publications and compares the descriptors and subject areas that are common to both. In accordance with the goal and the baseline hypotheses, the rest of this article is organized as follows: In the second section, the article reviews the extant literature, focusing on the various studies that have been published about academic journals, the research methods used, their productivity or features. The third

section describes the working methodology applied to carry out the research. The fourth section presents the results obtained from the bibliometric study and the thematic analysis of the publications studied. The fifth section is the discussion. Finally, the sixth section outlines the conclusions and future work.

Review of the literature

In the last four decades, a number of studies have been published that have focused on analysing scientific output in the field of LIS. Bernhard (1993) provides a very good summary of the study groups and methods. This author reviews the research articles and classifies them into five types of study: analysis of the content of the leading journals, analysis of the content of specific journals, review of doctoral theses, analysis of secondary journals and analysis of other sources. He also identifies 13 research methods that are used in this field of knowledge which correspond to bibliometrics, case studies, comparative studies, content analyses, Delphi method, ethnographic method, evaluation study, experimental research, historic research, information system design, operations research, survey and theory development.

Arquero and Rio (2002), EPI (2000), González Alcaide et al. (2008) and Ollé and Porras (2008) have all performed exploratory analyses of the contents published in a single journal, which offers an overview of the journal's evolution together with information about its output. There are also a number of studies that go beyond the limits of the discipline (Castro and Jiménez, 2004; López Calafí et al., 1998) or analyse how a publication has evolved over a given period (Arquero and Rio, 2002; Revista Española de Documentación Científica, 2012).

From another viewpoint, there are researchers such as Järvelin and Vakkari (1993) or Chu (2015) who focus on analysing the publications' content and the research methods used, where a leading author is detected in the content analysis, the surveys, and the theoretical approaches. Furthermore, a journal's evolution over a period of time is analysed or a comparison is made between time periods during recent decades (Tuomaala et al., 2014) or journals from different countries are compared (Rochester and Vakkari, 2003).

There are approaches based on the productivity and features of journals that are included in the Web of Science or Scopus databases (Abrizah et al., 2013; Davarpanah and Aslekia, 2008), and also behavioural analyses taking into account the keywords or, specifically, the words written in the titles of articles (Milojević et al., 2011). There are also authors, such as Melero and Abad (2011), who focus on open-access journals, studying in depth their business models and features.

Most authors prefer a combination of some of the above approaches (Aharony, 2010; EPI, 2000; Greifeneder,

2014), that is, the use of mixed or multiple methods. In the case of *El profesional de la información* (EPI, 2000), a detailed overview is provided of the sections with the goal of guiding authors on the subject areas published. Arquero and Rio (2002) perform a general analysis of the evolution of the journal *Documentación de las Ciencias de la Información*, focusing on output, the level of scientific collaboration and the subject areas of the papers published. It should be highlighted that these authors include gender mainstreaming and output by autonomous region in the analysis variables, as distinctive elements.

Within the segment of communication journals, Fernández-Quijada (2012) performs a bibliometric count and a very extensive and detailed thematic analysis, based on UNESCO's thesaurus, with the goal of ascertaining the main research subjects in communication from the body of the study and measuring the evolution of the subjects covered within the field of communication in Catalan over the last 20 years. Although its approach has certain similarities with our research, such as, for example, the use of the same thesaurus and the performance of a bibliometric study, it differs in the type of comparison, both as regards the number of journals to be compared and the time period chosen.

Finally, if we focus on literature that has already been published in the journals we analyse, we see that *AD* has already published a general analysis of the journal's scientific output (González Alcaide et al., 2008). Furthermore, in the issue commemorating the 10th anniversary of the journal *BiD: textos universitaris de biblioteconomia i documentació* (*BiD*), an article was published that analysed the publication's output (Ollé and Serrano, 2008).

Methodology

In our approach to the goal of this research and its baseline hypotheses, we performed a diachronic study of the contents published in the journals *BiD* and *AD*, encompassing the period between 2000 and 2013. The reason for studying this period is that both publications appeared at the end of the 20th century (1998), at a time of considerable expansion of scientific publications in all fields. By the year 2000, the journals had been publishing for two years and were now sufficiently known by potential authors. We chose 2013 as the cut-off year for the study because the articles published in *AD* are indexed until that date.

Initially, the journal *AD* was published once a year and the journal *BiD* was published twice a year. At present, both journals are published twice a year. Both journals are of acknowledged quality; they have been awarded the FECYT (Spanish Foundation for Science and Technology) quality seal as recognition of their editorial and scientific quality and both are indexed by Scopus. Both *AD* and *BID* have recently started to be indexed by the Emerging Sources Citation Index as well. Likewise, both journals have been published in electronic format from the

beginning, although *AD* was also published in print during the first few years. Both journals are published by academic publishers; in the case of *BiD*, by the Universitat de Barcelona (UB) (starting in 2013, it has been co-published with the Universitat Oberta de Catalunya (Open University of Catalonia)), while *AD* is published by the University of Murcia. In both cases, there have been commemorative 10th anniversary publications that have provided certain average indicators for comparison. Both journals contain sections with articles, experiences, analyses, reviews or reports, and have a similar body of published articles, which avoids any significant bias in the comparison of scientific output. In addition, they also share the fact that most of their content is not in English, both have a Spanish version and, in the case of *BiD*, it also publishes articles in Catalan. Finally, both publications are open access, as they receive internal funding from the budget allocated to their respective universities.

Bibliometric study of the journals

The bibliometric study we performed analyses the data for both journals over the period 2000–2013 in order to determine whether each publication's intrinsic features show any similarity and whether they have a decisive influence on the evolution of the discipline itself. We therefore compiled data referring to type of section, number of authors per article and per issue published, each author's productivity and the institution he or she belongs to by means of SQL queries in the Temaria database, which is where the articles are stored. This selection of data has enabled us to make a distinction between academic vs. practitioner publications and the average number of authors per article. We used the authors' professional affiliation and the articles' subject matter to determine which group the authors are assigned to. In the case of *BiD*, it is easy to differentiate the articles in the sections 'Resources', 'Experiences' and 'Tribune'; in *AD*, on the other hand, the contents are classified by articles, translations and reviews. The compilation of texts analysed consists primarily of articles and experiences, as these are the sections that are double-blind peer-reviewed and receive the most contributions of new knowledge. Thus, a total of 305 articles from the journal *BiD* and 234 from the journal *AD* have been analysed.

Thematic analysis of the journals

The articles published in the journals *BiD* and *AD* are indexed systematically in the Temaria portal of Spanish scientific journals which specializes in Information and Documentation. For indexing the articles related with the LIS area, a controlled language is used, specifically the *Tesaurus de Biblioteconomia y Documentación* (Thesaurus of Library and Information Science) (Mochón and Sorli 2002). For indexing contents corresponding to other

Table 1. Subject areas in the Temaria portal.

10	Archival science
20	Library science
30	Auxiliary sciences and techniques
40	Metric information studies
50	Information sources
60	Languages and linguistic
70	Museology
80	Documentary processes
90	Information professionals and users
100	Information society
110	Information and communication technologies
120	Information units

branches of knowledge, the generalist UNESCO Thesaurus is used. The use of thesauri enables the articles' contents to be represented unequivocally and facilitates consultation and retrieval of this content (Slype, 1991). The concepts that are not available in either thesaurus are added as uncontrolled keywords, which means that the term in question can be retrieved even though it is not included in the thesauri.

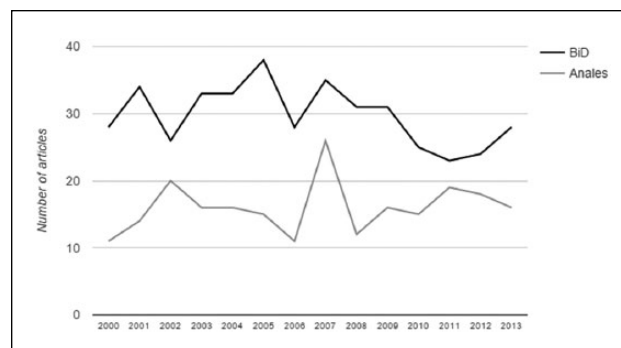
In order to ascertain in detail the subject focus of the two academic publications and how they have evolved in recent years, we analysed the descriptors and keywords used to index the published articles between 2000 and 2013, and the frequency with which they appear during this period. In order to carry out the thematic analysis of the content, we automatically extracted from the Temaria database, using SQL queries, all the data corresponding to the articles published in both scientific journals during the period 2000–2013. This data includes the list of articles, the year of publication, the subject area to which they belong, and the descriptors and keywords associated with them and assigned during the article indexing process. In total, 364 articles from the journal *BiD* and 234 from the journal *AD* were analysed.

We also compared the volume of articles classified in each of the subject areas in the Temaria portal. Specifically, the articles are classified in 12 subject areas, as represented in Table 1.

The analysis of the keywords used to index the contents of both publications and the comparison of the subject areas in which the articles analysed was completed with the analysis of the keywords that are common to both journals, with their evolution over time. This enables us to ascertain the level of content similarity in the articles published between 2000 and 2013.

Results

In this section, we describe the results obtained in the bibliometric study and thematic analysis of the articles published in *BiD* and *AD*. First of all, we present the

**Figure 1.** Evolution of the output of *BiD* and *AD de Documentación* (2000–2013).

results of the comparative and descriptive study. This is followed by the results related to the analysis of the descriptors and keywords used to index the content of the journals.

Evolution of the scientific output of *BiD* and *AD*

The results of the comparison of the scientific output of *BiD* and *AD* give fairly balanced data for *BiD*, with a total of 305 articles during the 13 years analysed and an average of 23 articles per year. Figure 1 shows an upward trend with two dips, in 2006 and 2011–2012.

In the case of *AD*, there are two years that are notably more productive than the mean, namely, 2002 and 2007. The annual average is 17 articles, which is below the results for *BiD* (Figure 2). The total is 234 articles.

In overall terms, during the comparison period, *BiD* published a higher number of articles than *AD*, with the two journals accounting for 58% and 42%, respectively, with the latter journal publishing on average 6 articles fewer per year.

Comparison of articles by section type

We also compared the evolution of article output by type of article (Figures 2 and 3). In the case of *BiD*, there was a design change in 2003 which did not entail any change in contents. However, there was a change in 2008 with the disappearance of two sections that had been part of the publication's structure since the beginning. In 2010, another section was removed, which marks the beginning of the current stage.

As regards evolution of the sections, Articles and Experiences are very prominent in *BiD*, and the trend is for an increase in these sections, while the Resources section experienced a considerable contraction in 2012 and 2013. The Tribune section, given its features, remains stable. The introduction of the monograph has led to this change of weight in the sections and also the fact that the articles considered scientific have been reviewed by an external

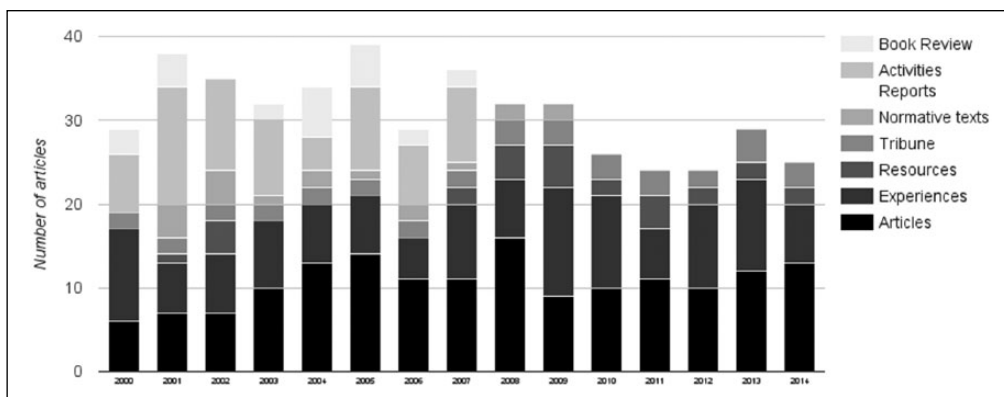


Figure 2. Evolution of the output of *BiD* (2000–2014) by type of article.

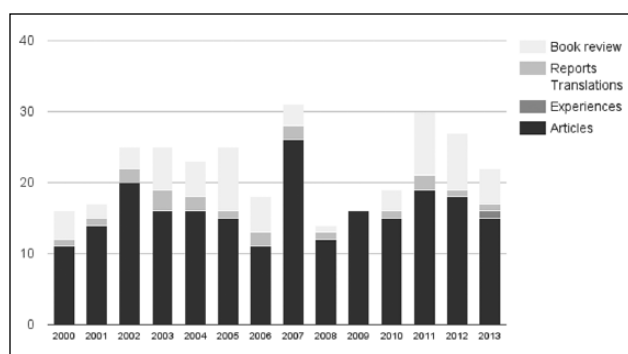


Figure 3. Evolution of the output of *AD* (2000–2013) by type of article.

reviewer and, therefore, are taken into account for the researcher’s career.

In the case of *AD*, the major part of the publication is given over to articles, followed at some distance by reviews. Experiences and translations only have a residual presence. If we look at the sections as a whole during the period analysed, we find that they have followed a downward trend in recent years, so that the number of texts published in 2013 is almost the same as in 2010.

Historically, *AD* has maintained its three section typologies, with the addition of Experiences in 2013. Significant differences are seen in the number of articles, particularly in 2007, when output was almost triple that of 2000, 2006 and 2008.

Comparison of research articles with an academic or practitioner focus

The next step was to compare the article typology, as described in the methodology. When analysing this indicator, we found that the journals followed very different approaches. *BiD* has a significant proportion of articles targeting practitioners, although academic articles are also following an upward trend. In the case of *AD*, the percentage of

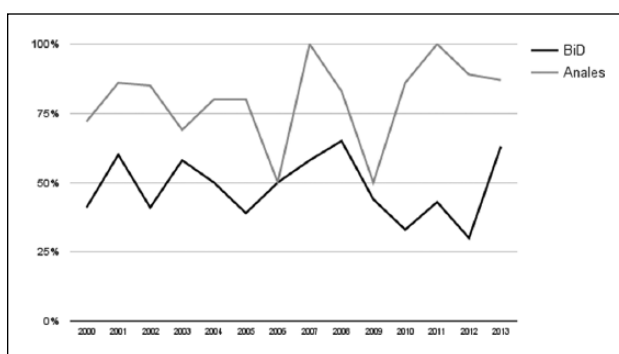


Figure 4. Evolution of the percentage of academic articles vs. practitioner-focused articles in *BiD* and *AD* (2000–2013).

practitioner-focused articles are predominantly testimonial and academic articles, with output peaking in 2007 followed by a gradual decline after 2011 (see Figure 4).

Comparison of the number of authors per article

The average number of authors per article is similar in both journals, 1.7 in *BiD*, and 1.6 in *AD* (the median is 1 in both). See Figure 5. These values are quite a long way from the 2.8 authors per article (median of 3) for all articles with Spanish presence in the LIS area published in journals indexed in WoS (Arduany, 2011). A certain lack of consolidation is also seen in this growth, as shown by the downward trend of recent years.

We also analysed the authors who have published most, obtaining the ranking shown in Table 2. In the case of *BiD*, almost all the authors are professors at the UB’s Faculty of Library and Information Science. It should be pointed out that, initially, the journal had a much stronger practitioner focus and catered particularly for a Catalan readership. In the case of *AD*, we do not have detailed knowledge of its internal functioning, but it is interesting to note the productivity and the division of the ranking

between UNAM (Autonomous University of Mexico) and University of Murcia.

Analysis of results in terms of descriptors and keywords

In this section, we performed a comparative study of the keywords that have been used to index the articles published in the academic journals *BiD* and *AD* during the period 2000–2013 in order to determine which subject areas feature in both publications and to establish correlations during this time period. Accordingly, first of all, we identified the descriptors and keywords associated with the academic articles published and also the number of articles published each year. Specifically, during the period analysed, we identified a total of 345 descriptors/keywords in the journal *BiD* and a total of 311 in *AD*. Table 3 gives the relative percentage of descriptors and keywords in both publications, together with the number of articles published each year. A greater number of published articles is observed in *BiD* and also a higher percentage of descriptors and keywords linked to the articles.

We also calculated the relative mention rate of the descriptors and keywords compared with the number of articles published each year in order to determine

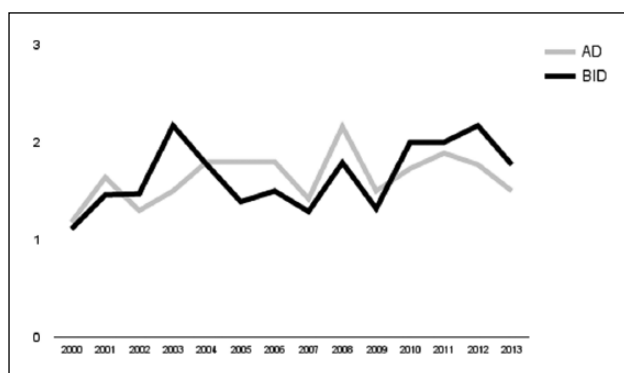


Figure 5. Evolution of the average number of authors per article in *BiD* and *AD* (2000–2013).

Table 2. Authors who publish most assiduously in *BiD* and *AD*.

Authors with highest output (<i>AD</i>)		Authors with highest output (<i>BiD</i>)	
Licea de Arenas, Judith (UNAM)	10	Estivill Rius, Assumpció (UB)	24
Arenas Vargas, Miguel (UNAM)	8	Abadal, Ernest (UB)	11
Valles Valenzuela, Javier (UNAM)	6	Rodríguez Parada, Concepción (UB)	11
Fuentes Romero, Juan José (University of A Coruña)	4	Alonso Arévalo, Julio (University of Salamanca)	10
Moreiro González, José Antonio (Carlos III University)	4	Andreu i Dauff, Jordi (UB)	9
García Cuadrado, Amparo (University of Murcia)	3	Centelles Velilla, Miquel (UB)	9
López Carreño, Rosana (University of Murcia)	3	Jornet i Benito, Núria (UB)	9
Paños Álvarez, Antonio (University of Murcia)	3	Pons, Amadeu (UB)	9
Pinto Molina, María (University of Granada)	3	Ribera, Mireia (UB)	9
Rodríguez Muñoz, José Vicente (University of Murcia)	3	Sulé, Andreu (UB)	9

the subject areas featured in the two publications and their relevance with respect to the thematic evolution of articles. By way of example, Table 4 shows the descriptors used to index the articles in *BiD* and *AD* in the year 2000 for the subject area of library science and their mention rate in percentages. It is seen that only two of the 11 descriptors used to index the subject area of library science match the 22 articles published in *BiD* and the 12 articles published in *AD* in the year 2000.

Out of a total of 345 descriptors used to index the articles in *BiD* during the period 2000–2013, we analysed those that have a minimum mention rate of 10% in one of these years, as below this threshold their mention rate falls significantly and contributes very little to our study. Thus, in the journal *BiD* we analysed a total of 28 (8.12%) descriptors and keywords (Figure 6) whose presence is fairly continuous during the entire period.

The results show that, out of the 28 descriptors and keywords identified in the period 2000–2013, only seven are used consistently to index articles during this entire period (*public libraries, Internet, guidelines, information resources, university libraries, scientific research, history*). The remaining descriptors and keywords are either used only during the period 2000–2004 (*online databases, library science, professional deontology, professional ethics, web pages, bibliographical databases, professional skills, national libraries, indexing*), or are used in alternate periods (*librarians, information search and retrieval, library management, study programmes, specialized bibliographies, documentation, documentalists, scientific journals, e-journals, library services, library networks, university tuition*).

As we observed that not all the descriptors and keywords are consistently present between 2000 and 2013, we also analysed those used between 2005 and 2013 (Figure 7), giving a total of 24 (6.96%). Of these 24 descriptors and keywords, only five appear during the entire period (*open archives, libraries, websites, access to information, publishing industry*), eight only index contents between 2005 and 2009 (*work depositing, dissemination of information, information services, universities, electronic archives, scientific communication,*

Table 3. Percentage of keywords (*BiD* and *AD* 2000–2013).

	<i>BiD</i>		<i>AD</i>	
	% (n=345)	No. articles	% (n=311)	No. articles
2000	15.94	22	14.15	12
2001	20.58	23	16.72	16
2002	20	24	14.47	20
2003	17.97	21	17.04	19
2004	22.32	28	17.04	17
2005	20.87	28	11.58	16
2006	16.23	21	12.86	13
2007	21.74	31	25.40	28
2008	20.29	32	9.65	13
2009	22.03	33	13.83	16
2010	15.65	24	12.54	16
2011	21.16	24	15.11	19
2012	17.39	24	8.36	19
2013	17.10	29	7.40	10

Table 4. Descriptors corresponding to library science (*BiD* and *AD*, 2000).

Subject area	Descriptors in <i>BiD</i>	%	Descriptors in <i>AD</i>	%
Library science	Library management	13.64	Library science	16.67
	Collection management	9.09	Library reference services	16.67
	Library cooperation	9.09	Reference collections	8.33
	Library reference services	9.09	Degree of satisfaction	8.33
	Fostering reading	4.55		
	Library science	4.55		
	Acquisitions policy	4.55		
	Library networks	4.55		
	Library automation	4.55		

cataloguing, marketing) and eleven index contents during the period 2010–2013 (*architecture, municipal libraries, digitalization, buildings, search tools, e-books, portals, documentary heritage, bibliographical heritage, collection development, user surveys*).

In the journal *AD*, we analysed a total of 27 (8.68%) descriptors and keywords that index contents during the period 2000–2013 (Figure 8). Unlike the journal *BiD*, we were not able to identify any that are used consistently to index the journal's contents between 2000 and 2013. However, it was noted that eight of the 27 keywords are used consistently to index articles during the period 2000–2009 (*information and communication technologies, information management, user surveys, public libraries, university libraries, Internet, scientific research, information resources*) and four descriptors and keywords are used to index contents during the periods 2000–2004 and 2010–2013 (*documentation, digital libraries, university tuition, old books*), indicating a partial return to the subjects that were considered to be of interest during the journal's first years of publication. The remaining descriptors and

keywords are only used to index contents corresponding to the first period (2000–2004).

Likewise, we analysed the descriptors and keywords used to index the journal's contents from 2005 until 2013 (Figure 9), giving a total of 31 (9.97%). The results obtained show a greater use of descriptors and keywords to index articles in *AD* versus *BiD* and, consequently, a greater subject diversity during this period. As Figure 9 shows, only three of the 31 keywords are used during the period 2005–2013 (*bibliographical output, information literacy, terminology*). Of the remaining keywords, six are used during the period 2005–2009 (*scientific journals, public administration, digital divide, cooperation, questionnaires, bibliometric analysis*) and twenty-two during the period 2010–2013 (*written press, electronic images, keyword lists, professional profile, television channels, ontologies, image processing, access to information, book-binding, scientific productivity, students, archival legislation, economic resources management, library planning, bibliography, marketing, scientific cooperation, scientific networks, visibility, e-books, manuals, maps*).

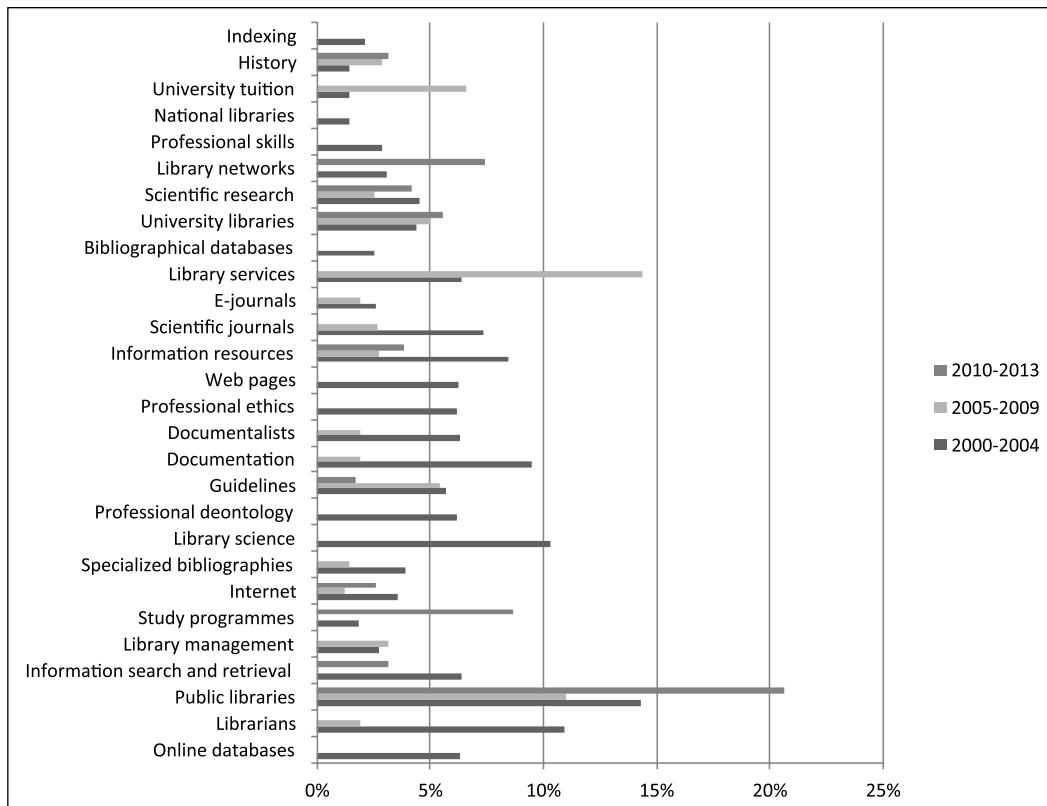


Figure 6. Keywords in the journal *BiD* (2000–2013).

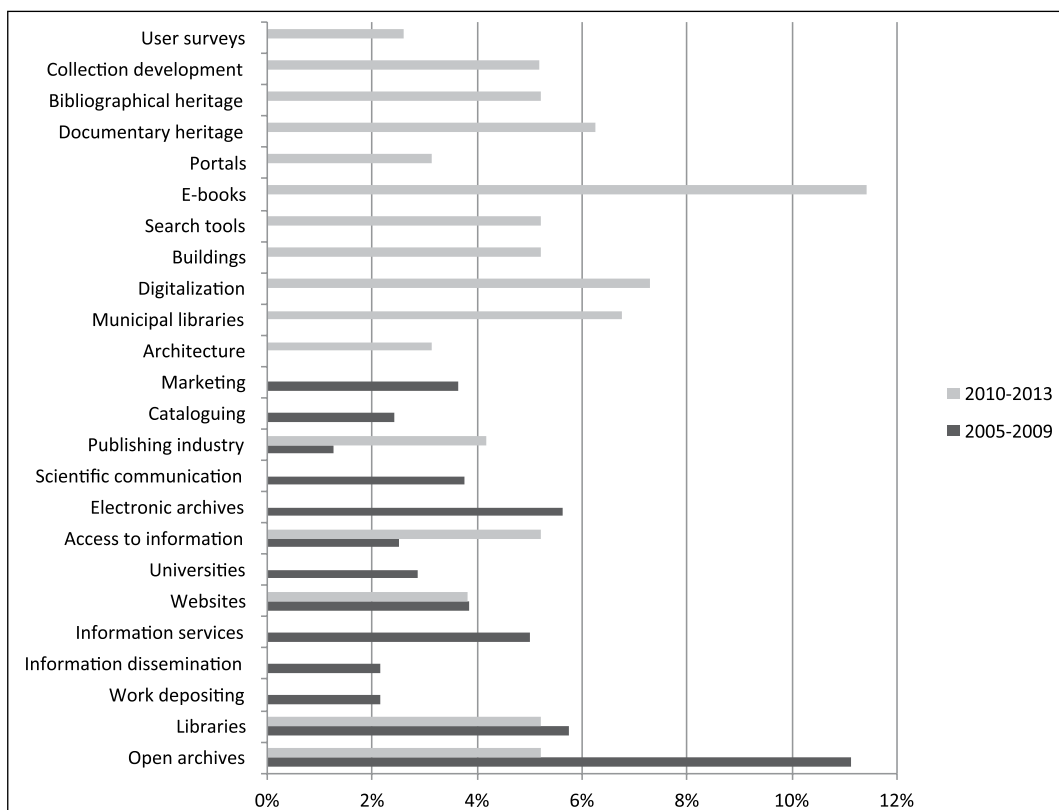


Figure 7. Keywords in the journal *BiD* (2005–2013).

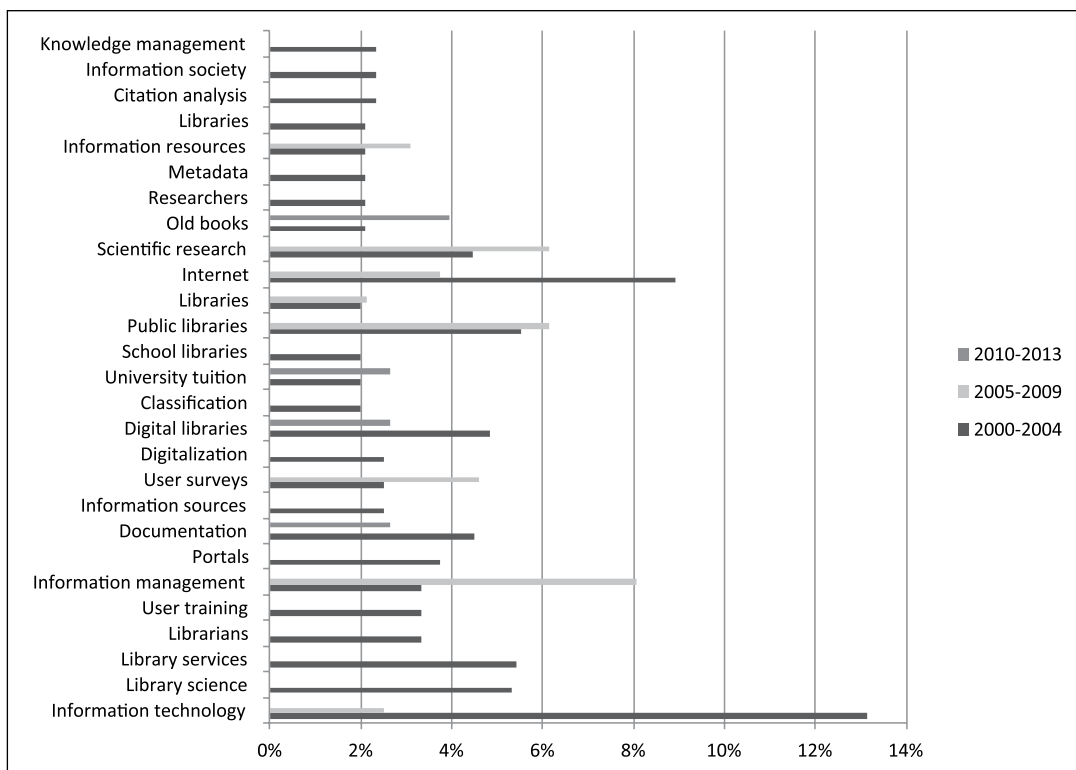


Figure 8. Keywords in the journal AD (2000–2013).

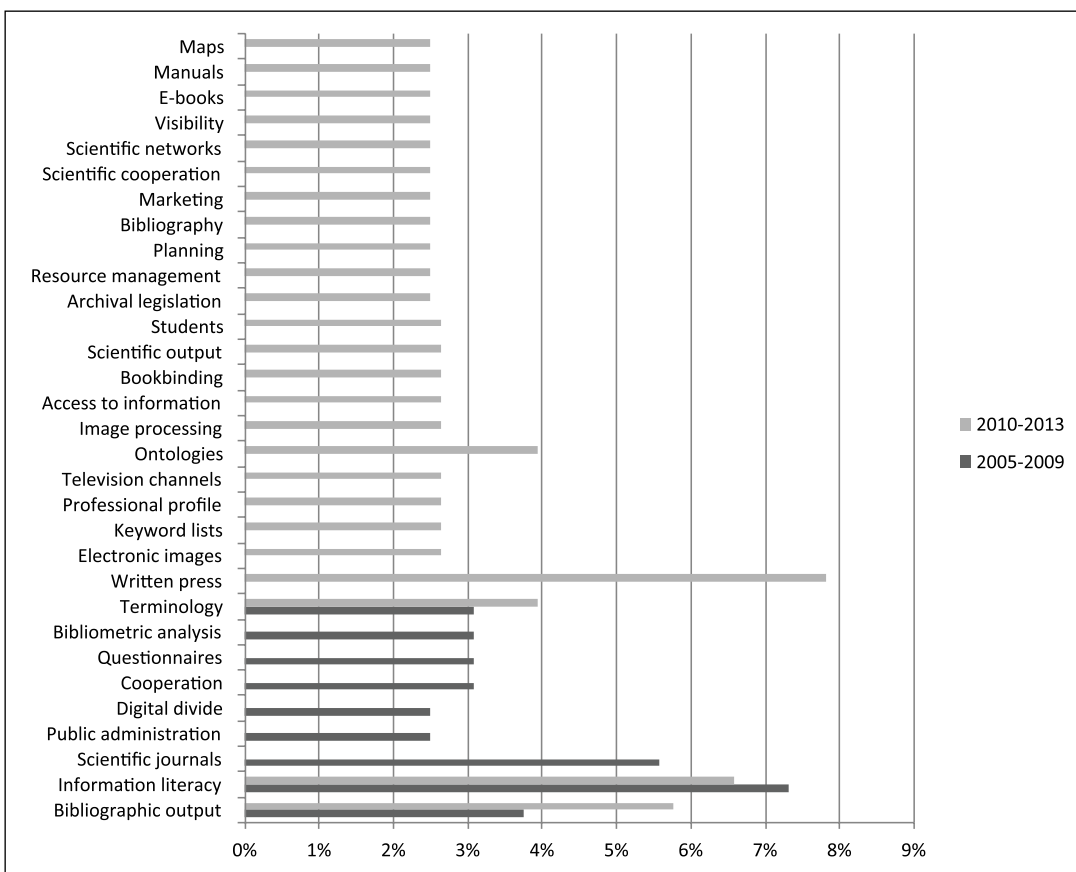


Figure 9. Keywords in the journal AD (2005–2013).

Table 5. Distribution of articles by subject areas (*BiD* and *AD* 2000).

Subject area	<i>BiD</i> (%)	<i>AD</i> (%)
Archival science	9.09	16.67
Library science	40.91	41.67
Auxiliary sciences and techniques	4.55	50
Metric information studies	4.55	–
Information sources	13.64	8.33
Languages and linguistics	–	8.33
Documentary processing	18.18	8.33
Information professionals and users	27.27	50
Information society	13.64	–
Information and communication technologies	27.27	41.67
Information units	54.55	41.67

Analysis of results by subject areas

With the goal of enabling a comparison of the subject areas of the journals *BiD* and *AD* over the period 2000–2013, we analysed the number of articles indexed in each area. We calculated the frequency of articles in the different subject areas in order to determine in which areas the two publications' articles are concentrated. By way of example, Table 5 gives the distribution of articles by subject areas for the year 2000. It can be seen that articles have been published in all of the subject areas, that the number of published articles varies depending on the subject, and that a balanced representation in number of articles is only found in a few subject areas, such as library science or information units, which are subjects that are relevant for both publications.

Complementing the table, Figure 10 shows the distribution of contents by subject areas. It is seen that the number of published articles in the subject area of archival science fell from 9.09% (*BiD*) and 16.67% (*AD*) in 2000 to 3.45% (*BiD*) and 10% (*AD*) in 2013. In both publications, the number of articles indexed in this category has been decreasing since the year 2000, except for 2011 (16.67%) and 2012 (29.17%) in *BiD*.

In the subject area of library science, a increase in the number of published articles in this field is observed in *BiD*, from 41.91% (*BiD*) in 2000 to 62.07% (*BiD*) in 2013. The opposite is the case with the journal *AD*, as the percentage of articles corresponding to this section experienced a steady decline from 41.67% in 2000 to 10% in 2013.

In the case of auxiliary sciences and techniques, there has been an increase in the articles indexed in *BiD* corresponding to this field and a steady decrease in articles in *AD*, from 4.55% (*BiD*) and 50% (*AD*) in 2000 to 20.69% (*BiD*) and 20% (*AD*) in 2013.

With respect to metric information studies, very few articles classified in this area are identified in *BiD*, which

decrease from 8.33% (*BiD*) in 2000 to 3.45% (*BiD*) in 2013, with the exception of 2008, when they accounted for 34.38% of the articles. In the case of *AD*, a steady increase in the number of articles is observed. While no articles are classified in this section in 2000, they account for 10% in 2013, peaking at 25% in 2005.

The subject area information sources has grown steadily in number of articles in both publications, from 13.64% (*BiD*) and 8.33% (*AD*) in 2000 to 34.48% (*BiD*) and 30% (*AD*) in 2013.

In the case of languages and linguistics, the number of articles has grown very modestly during the period analysed, from no articles at all in 2000 to 3.45% in 2013. In *AD*, in general terms, a larger number of articles indexed in this area is observed, increasing from 8.33% in 2000 to 15% in 2002 and 2008, peaking at 31.58% in 2011, although it has no articles indexed in this section in 2013.

In the area of museology, a very small number of articles is observed in *BiD*, with articles indexed in this category in only five of the 14 years analysed, including 2013 with 3.45% of the articles. In *AD*, the number is even smaller, with 12.5% of the articles in 2012 as sole record.

With respect to the subject area of documentary processing, a constant presence of articles indexed in *BiD* is observed, increasing from 18.18% in 2000 to 24.14% in 2013. However, the articles in *AD* have progressively lost presence in this area, from 8.33% in 2000 to no articles indexed in 2013.

For information professionals and users, the results range from 27.27% (*BiD*) and 50% (*AD*) in 2000 to 24.14% (*BiD*) and 10% (*AD*) in 2013, with a constant presence of articles in this domain in both publications.

In the case of the information society, a progressive decline in the number of articles indexed is observed in *BiD*, from 13.64% in 2000 to 6.90% in 2013. In general, the percentage of articles indexed in this category stays at a low level. In the case of *AD*, a steady growth of articles in this category is observed, from no article indexed in 2000 to 20% in 2013, peaking at 43.75% in 2010.

As regards information and communication technologies, the results range from 27.27% (*BiD*) and 41.67% (*AD*) in 2000 to 41.38% (*BiD*) and 50% (*AD*) in 2013, and indicate that a significant number of articles continue to be indexed in this subject area.

Lastly, for information units, the results indicate a consistent number of articles indexed in this area in *BiD*, increasing slightly from 54.55% in 2000 to 58.62% in 2013. A similar presence is observed with the articles indexed in *AD*, although here the percentage fell from 41.67% in 2000 to 30% in 2013. There were no articles indexed in this category in 2011 in either publication.

In general terms, we observe that the subject areas in which most of the articles have been published in both journals correspond to library science, auxiliary sciences and techniques, information sources, information professionals

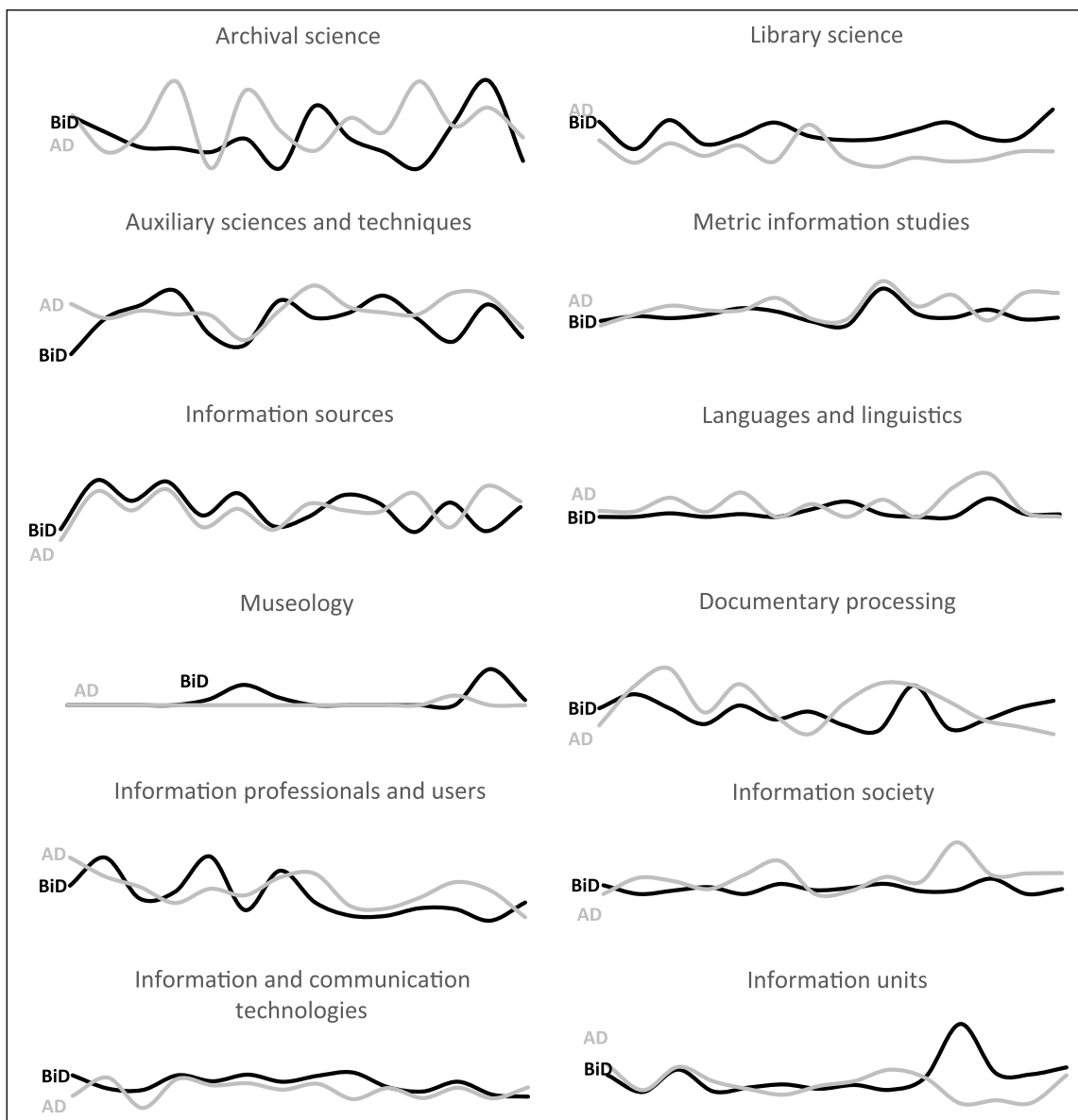


Figure 10. Distribution of articles by subject areas (*BiD* and *AD* 2000–2013).

and users, information and communication technologies and information units. In order to identify specifically the subjects featured in each of the subject areas in *BiD* and *AD*, the following section analyses in detail the use of keywords associated with each article.

Comparison of descriptors and subject areas in both publications

After studying the descriptors and keywords used to index the articles in each of the journals individually, we analysed those that are used in both publications in order to determine the level of subject similarity in the journals' contents and whether the topics of interest in both publications follow a similar course. Accordingly, we identified

the number of descriptors, the number of articles in each journal, and we calculated the percentage match between the two publications (Table 6).

The data analysed show that the percentage match in descriptors and keywords used to index the articles in *BiD* and *AD* is low, which indicates that there is little subject overlap in the topics featured in the two publications. The periods when most subject overlap is observed (between 10% and 15%) correspond to 2001–2003 and 2007–2009. The percentage match is lower in the other years. As Table 6 shows, the level of match remains low even in the years when both journals published a similar number of articles (2003 and 2007).

If we analyse the descriptors and keywords appearing in both publications during the period 2000–2013, in most

Table 6. Percentage of matching keywords (*BiD* and *AD* 2000–2013).

	<i>BiD</i>		<i>AD</i>		Matching keywords
	No. keywords	No. articles	No. keywords	No. articles	%
2000	55	22	44	12	9.09
2001	71	23	52	16	13.82
2002	69	24	46	20	11.40
2003	62	21	53	19	11.30
2004	77	28	53	17	9.23
2005	72	28	36	16	7.41
2006	56	21	40	13	6.25
2007	75	31	79	28	12.99
2008	70	32	30	13	11.00
2009	76	33	43	16	14.29
2010	54	24	39	16	8.60
2011	73	24	47	19	8.33
2012	60	24	28	19	9.30
2013	59	29	23	10	4.88

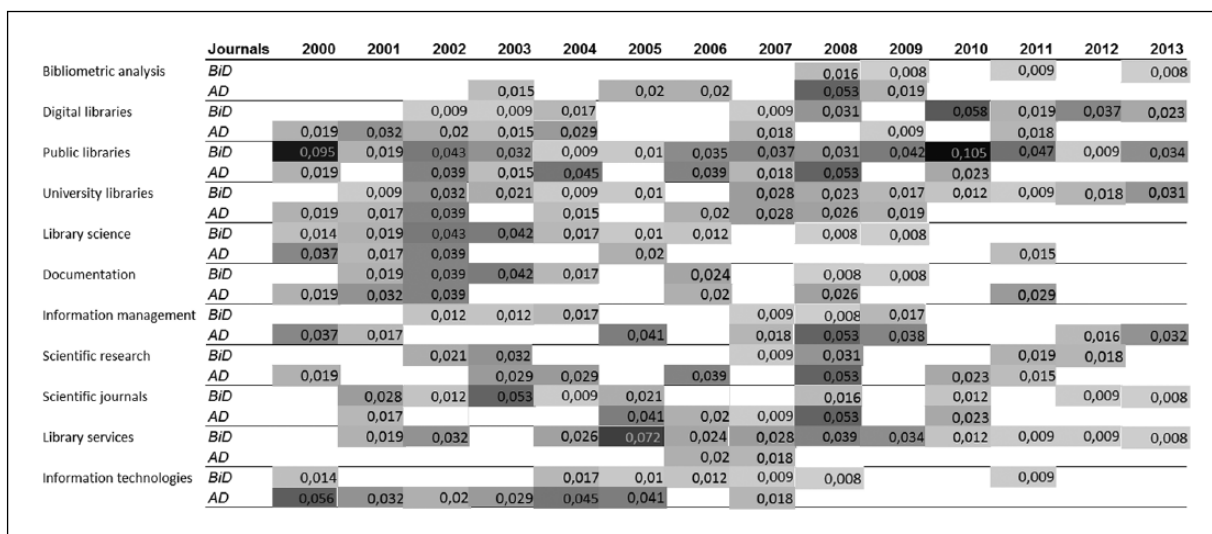


Figure 11. Matching keywords in *BiD* and *AD* (2000–2013).

cases we see that this happens only once, which also confirms a very low level of similarity between contents. Accordingly, in performing this analysis, we only considered the descriptors and keywords that match in both publications on at least three occasions during a two-year period (Figure 11), in order to identify the core subjects highlighted in both journals. Thus, we found that 11 (13.2%) keywords used to index articles in both *BiD* and *AD*, out of a total of 83 matching descriptors and keywords. Likewise, the contents that featured concurrently in both publications address particular aspects related to libraries (*digital libraries, university libraries, public libraries*) and also library-related services (*library services, bibliometric analysis*), research (*scientific research, scientific journals*), documentation (*information management, documentation, library science*) and technology (*information technologies*).

In order to complete the comparative study of the subjects that featured in both publications, we identified the subject areas to which the matching descriptors and keywords belong. Thus, we found that the subject areas of information and communication technologies and information units have a larger number of matching descriptors and keywords and, therefore, have a larger number of articles on similar subjects within these two areas (Table 7).

In the subject areas of auxiliary sciences and techniques, information professionals and users and documentary processing, we found a second block of matching descriptors in both journals (Table 8).

The subject areas of information sources, metric information studies, archival science, information society and languages and linguistics also share descriptors and keywords, although to a lesser degree.

Table 7. Subject areas and matching descriptors (*BiD* and *AD*).

Subject areas	Descriptors	Years
Information and communication technologies	Accessibility	2009
	Search engines	2008
	Online information search and retrieval	2003, 2007, 2011
	Information management	2004, 2007, 2008, 2009
	Knowledge management	2004, 2007
	Interfaces	2001, 2009
	Internet	2000, 2005, 2012
	Metadata	2003
	Ontologies	2011
	Portals	2011
	Thematic portals	2007
	Web pages	2004, 2006, 2009
	Information resources	2003, 2004, 2006, 2009, 2012
	Documentary management systems	2009
	Websites	2005, 2010, 2013
	Open-source software	2009
	Information and communication technologies	2000, 2004, 2005, 2007, 2011
Information units	Archives	2001, 2003
	Open archives	2007
	Electronic archives	2007
	Libraries	2002, 2005, 2012
	Prison libraries	2001
	Digital libraries	2002, 2003, 2004, 2007, 2011
	Parliamentary libraries	2002
	Public libraries	2000, 2002, 2003, 2004, 2006, 2007, 2008, 2010, 2012
	University libraries	2001, 2002, 2004, 2007, 2008, 2009
	Documentation centres	2013
Information services	2010	

In short, we observe that the two journals' focus of subject interest is mainly on the discipline's core subjects, related to LIS (public libraries, university libraries, digital libraries, library services, libraries, information management, bibliometric analysis, electronic resources, information resources, online information search and retrieval). Articles on information and communication technologies, Internet, web pages and websites also have a significant presence. Lastly, there are common topics related with scientific research, scientific journals and university tuition.

International trends of the discipline

In order to determine whether, on an international level, the LIS discipline addresses similar subjects to those identified in Spain through the analysis of the journals *BiD* and *AD*, we analysed the presence of the descriptor 'public libraries' in international publications belonging to the discipline indexed in Web of Science and Scopus during the period 2000–2013. This descriptor was chosen because it has a continuous presence in the contents of both publications during the period analysed.

Accordingly, we hypothesize that if there is a significant presence worldwide of contents related to public libraries during the period 2000–2013, it means that the

discipline has evolved in Spain in correlation with the international trend.

The results of this analysis show that the presence of contents related to public libraries in the discipline's journals indexed in Web of Science and Scopus has increased steadily since the year 2000. Specifically, the number of published articles in Web of Science has increased from 254 in the year 2000 to 555 in 2013. In the case of Scopus, 28 articles were published in the year 2000 and 137 in 2013. In both cases, there has been a progressive thematic evolution, with significant growth in recent years. Figure 12 compares the evolution of public library-related contents in Spain (top graph) with the international trend (bottom graph), showing a thematic correlation between the discipline within Spain and internationally, indeed, particularly in the case of *BiD*.

Discussion

The Spanish journals specializing in documentation science are irregular in their continuity and frequency of publication, as the studies performed by Delgado López-Cózar (2001) and Villagrà Rubio and Sorli Rojo (2003) have shown, with a lack of compliance in quality indicators, degree of openness and membership of the editorial

Table 8. Subject areas and matching descriptors (*BiD* and *AD*).

Subject areas	Descriptors	Years
Documentary processing	Information search	2007
	Cataloguing	2009
	Automated cataloguing	2001, 2004
	Shared cataloguing	2001
	Bibliographical description	2009
	Information dissemination	2001, 2005
	Selective information dissemination	2001
	Indexing	2002
Information professionals and users	Library document selection	2001
	Information literacy	2007, 2010
	Students	2001, 2004
	Librarians	2000, 2002
	Professional skills	2007
	Documentalists	2001
	University tuition	2004, 2007, 2011
	User surveys	2000, 2001
	Study programmes	2006
	Use of information	2001
Auxiliary sciences and techniques	Users	2000, 2004
	Access to information	2007, 2011
	Copyright	2007
	Guidelines	2007, 2009
	Documentation	2008
	Documentary standards	2001, 2002, 2006, 2009
	History	2009, 2012
	History of the book	2007
	Quality indicators	2002, 2003
	Scientific research	2002, 2003, 2008, 2011
	Standardization	2003, 2009

committees and editorial boards. In spite of this, the journals *AD* and *BiD* have published continuously since they first appeared, showing a high level of regularity, with improvements in the indicators in both cases that enabled them to qualify for the FECYT seal (evaluation of the editorial and scientific quality of Spanish scientific journals) and be included in the Scopus and Emerging Science Citation Index of Science databases.

We found a fair number of similarities and points of convergence in the bibliometric study and the structure of the journals. The average number of articles published per year in the study of *AD* performed by González Alcaide et al. (2008) was 14 to 15.3 papers, now it is 17, and the proportion of single authorship has gone from 71% to 68.62% of the papers. The mean number of authors per paper or the signatures/paper ratio for *AD* (1.15) is similar to that found by Jiménez Contreras and Moya Anegón (1997), which was 1.3. As regards collaborative papers, papers written by two authors predominate. And with respect to the evolution of journal sections, we found that articles and reviews have considerable prominence in both publications, as they are indexed journals whose contents are reviewed by external reviewers. This enables them to be taken into account in the research or practitioner career of the author or authors writing the papers. In this respect,

the publications have evolved to be less practitioner focused and have gained weight as academic vehicles.

In the case of *BiD*, we do not have an equivalent prior study. Although Ollé and Porras (2008) analysed the first 20 issues of the journal, considering the size of the different sections, the subject matter, the languages used in the texts and a large number of circulation-related parameters, comparing how long visitors stayed in the journal and where they came from, among other aspects, there was no study similar to that performed in the case of *AD*.

Accordingly, this study has enabled us to identify the subjects that are featured most frequently in the two journals analysed, *BiD* and *AD*. To identify the subjects that are covered in both publications and also the subject areas they belong to, we have established a correlation between subject areas, descriptors belonging to these subject areas and the year in which this subject overlap took place.

As a result, we have seen that there is a greater subject overlap between the two journals in the subject area of information units, as a result of the highly prevalent use of three descriptors: 'public libraries', which appears in 2000, 2002, 2003, 2004, 2006, 2007, 2008, 2012 and 2013; 'university libraries', which appears in 2001, 2002, 2004, 2007, 2008 and 2009; and 'digital libraries', which appears in 2002, 2003, 2004, 2007 and 2011.

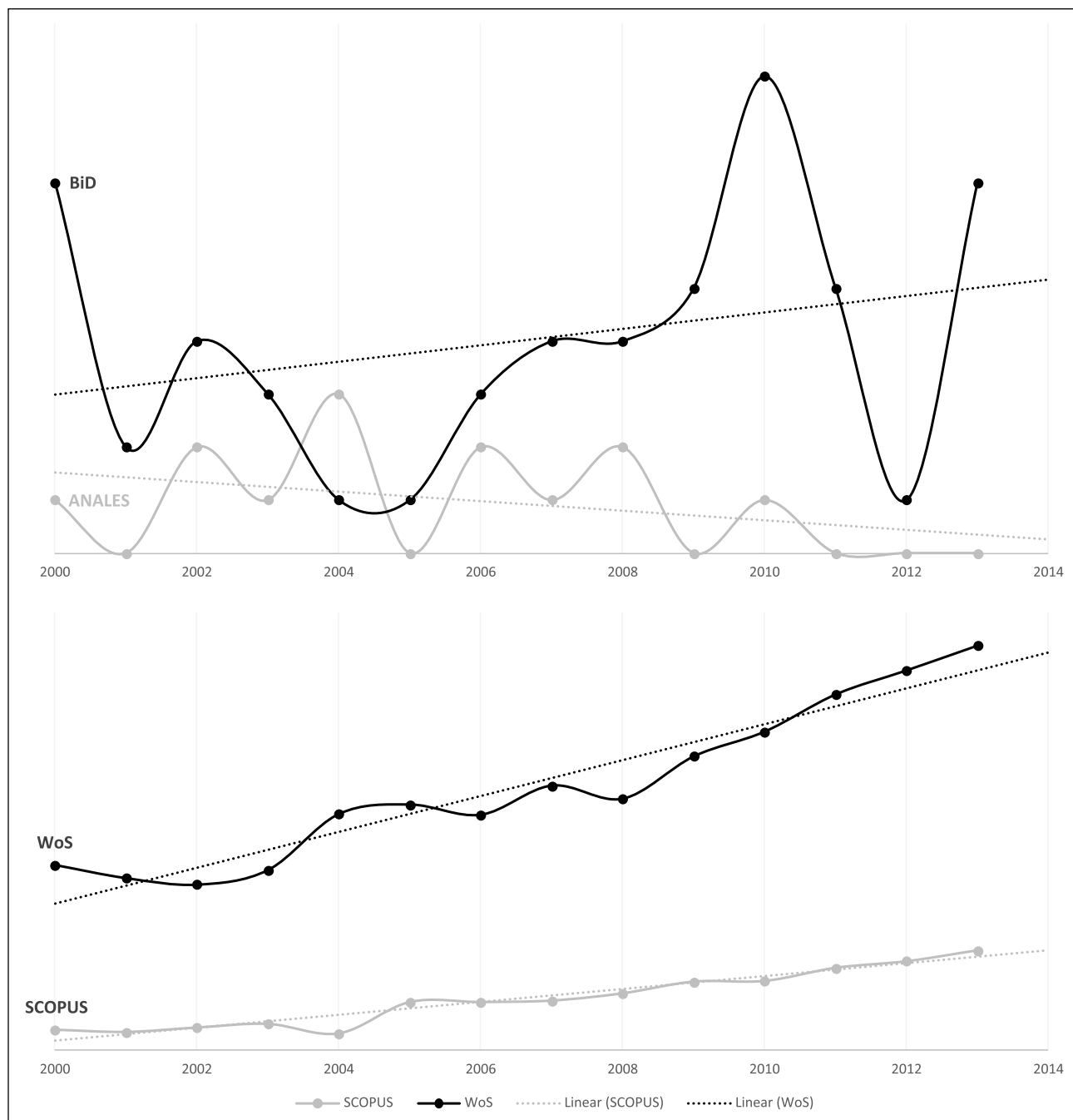


Figure 12. Evolution of public library-related contents in BiD and AD with the international trend (WoS and SCOPUS).

In the subject area of information and communication technologies, we have also identified three overlapping subjects, focused on the descriptors 'information resources' (2003, 2004, 2006, 2009 and 2012); 'information and communication technologies' (2000, 2004, 2005, 2007 and 2011); and 'information management' (2004, 2007, 2008 and 2009). This confirms González Alcaide et al.'s study (2008), which indicates a growing interest in subjects related with the information and communication technologies and the Internet.

In addition, although with a lower subject presence in the 14 years analysed, we have identified a shared subject in library science, with the descriptor 'library science' (2000, 2001, 2002, 2005); and also in auxiliary sciences and techniques, with the descriptor 'documentation' (2001, 2002, 2006, 2008), and in information sources, with the descriptor 'scientific journals' (2001, 2005, 2008, 2010).

This correlation has enabled us to answer one of the questions raised at the start of this study, namely, whether the evolution of *AD* and *BiD* shows points of divergence or

convergence in any of the descriptors or keywords analysed. In this respect, we can say that there is a small number of overlapping subjects that are featured in both publications, and those that are overlapping are concerned basically with issues related to the field of library and information science.

Turning to the question of which main subjects have featured in the journals *BiD* and *AD* during the period analysed, we can confirm that there is no subject continuity in either journal during the period 2000–2013, with the exception of public libraries. This subject maintains a stable presence during the entire period in both publications, except for the period from 2010 to 2013 in *AD*. With respect to the journal *BiD*, the most commonly featured subjects focus on LIS, information resources, scientific journals, library services, open archives, study programmes, library networks or e-books. For its part, *AD* addresses subjects concerned with information and communication technologies, Internet, information management, information literacy or written press, and, to a lesser degree, library science, library reference services, scientific research, scientific journals, bibliographic output or information literacy. Answering the main goal pursued by our research, we find that the thematic evolution of the two journals clearly shows the transformation that the discipline has undergone internationally and locally.

In addition, the thematic analysis of the journals *BiD* and *AD* has enabled us to see whether having a call for papers has any real influence on a publication's contents. In this respect, only the journal *BiD* has a call for papers to guide the subjects presented in each issue's monograph. The journal *AD*, on the other hand, is not structured in monographs and, in each issue, original articles, translations and reviews are published on any of the sectors and specializations of information, documentation and communication, so there are no calls for papers. This intrinsic difference between the two journals could be an indicator of the influence of *BiD*'s editorial board in choosing the subjects that are included. Thus, if we compare the calls for papers in 2011 (*e-books* and *information retrieval*) and 2013 (*collections* and *information quality*) with the descriptors and keywords used to index the articles during the period 2000–2013, we observe the following:

1. The subject *e-books* in the journal *BiD* is featured in 2010, 2011 and 2013, and in the journal *AD*, in 2010 and 2013, using the descriptor 'e-books'. This descriptor corresponds to the subject area of information sources.
2. The subject *information retrieval* in the journal *BiD* is featured in 2000 with the descriptor 'information search and retrieval'; in 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2010 and 2011 with the descriptor 'online information search and retrieval'; in 2001, 2002, 2006 and 2011 with the

descriptor 'information retrieval'; and in 2004 with the descriptor 'information retrieval systems'. In the journal *AD*, it is featured in 2003, 2007, 2009 and 2011 with the descriptor 'online information search and retrieval', and in 2004 and 2008 with the descriptor 'information retrieval'. These descriptors correspond to the subject areas of documentary processing and information and communication technologies.

3. The subject *collections* in the journal *BiD* is featured in 2000, 2003, 2008, 2010, 2011 and 2013 with the descriptor 'collection management'; in 2001, 2006, 2011 and 2013 with the descriptor 'collections'; in 2005, 2006 and 2012 with the descriptor 'local collections'; in 2013 with the descriptor 'collection development'; in 2010 and 2013 with the descriptor 'collection evaluation'; in 2002 and 2008 with the descriptor 'documentary collections'; in 2008 and 2013 with the descriptor 'special collections'; and in 2013 with the descriptor 'museum collections'. In the journal *AD*, it is featured in 2012 with the descriptor 'collections'; in 2002 and 2004 with the descriptor 'collection evaluation'; in 2011 with the descriptor 'documentary collections'; and in 2000 with the descriptor 'reference collections'. These descriptors correspond to the subject areas of archival science, museology and library science.
4. The subject *information quality* in the journal *BiD* is featured in 2009 and 2013 with the descriptor 'information quality'; in 2001, 2002, 2003 and 2013 with the descriptor 'quality indicators'; in 2007 and 2013 with the descriptor 'service quality'; and in 2007 with the descriptor 'quality management'. In the journal *AD*, it is featured in 2002, 2003 and 2004 with the descriptor 'quality indicators', and in 2011 with the descriptor 'quality management'. These descriptors correspond to the subject area of auxiliary sciences and techniques.

Thus, the thematic distribution of the descriptors during the period 2000–2013 shows that the subjects proposed by *BiD*'s editorial board have, on the one hand, a low impact on the journal's content, as we see that they are subjects that are featured consistently throughout the period and, on the other hand, a fairly similar thematic distribution to the journal *AD*, in spite of them being journals with a low level of similarity in their content. The lack of similarity in contents could be attributed to the fact that the two publications have different geographical contexts, which could influence the publication of subjects by the authors. Another constraint is the indexing of the journal in databases, which also influences the selection of articles for publication or the submission of articles by the authors, depending on a particular journal's greater or lesser impact

on the dissemination of research. Thus, answering the hypotheses proposed in this research, we find that the subjects proposed by the editorial board of the journal *BiD* are aligned with trends currently considered to hold most interest in the field of information and documentation.

To complete the thematic analysis of the two academic journals, we investigated whether the subjects that are particularly prominent in the two publications are also featured in publications having an international scope. Thus, we chose the descriptor 'public libraries', which has a large presence in *BiD* and *AD*, to verify what presence it has in international journals indexed in Web of Science and Scopus during the period 2000–2013. The results obtained show a thematic correlation in the evolution of the discipline's contents within Spain and internationally.

Limitations of the research

The limitations of our research are related to the free access to the journals' contents. Furthermore, content indexing is conditioned by the use of thesauri and the choice of keywords.

Conclusions

The comparative study between the journals *AD* and *BiD* suggests that in spite of sharing a fair number of similarities, such as their preferred geographical reach and being published by a university, each journal has a distinctive thematic approach and caters to a different researcher segment.

The results show that the scientific output of *BiD* and *AD* has evolved in parallel with their sections. In *BiD*, Articles and Experiences are very prominent; in the case of *AD*, most of the publication consists of Articles, followed by some distance by Reviews. Upon comparing academic and practitioner-focused research articles, it is concluded that the practitioner-related content in *BiD* is double the academic content; in *AD*, on the other hand, there is a clear preference for academic content. The comparison of the number of authors per article gives very similar values, with 1.5 authors in *AD* and 2 authors in *BiD*.

As regards the comparison of results by descriptors and subject areas, we see that the two publications have very few shared subjects. The shared subjects focus on aspects related with the classic areas of LIS, such as libraries, information resources, information management and also information technologies.

As regards the methodology used, we consider that this is a future avenue for research to compare a larger number of journals, not too large but large enough to gain an adequate view of the journals individually and of the discipline in general. This type of study is useful in disciplines that are still in the process of consolidating or to

verify the existence and emergence of subdisciplines. The fact that both *BiD* and *AD* are indexed in Temaria facilitates an ordered treatment of the keywords and the subjects. Even so, we consider that this approach can also be applied to journals that do not share the same documentary language.

As a final proposal for future research, choosing journals with a longer publishing track record could enable the identification of watershed moments in the use of certain concepts and keywords. The richness of the language and vision of information and documentation science as a scientific discipline may enable these studies to be broadened to correlations of journals with different indexing languages.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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