em questão
E-ISSN 1808-5245

The publications of Brazilian authors: access, distribution and publishers

Rosangela Schwarz Rodrigues

Dra.; Programa de Pós-graduação em Ciência da Informação da Universidade Federal de Santa Catarina, Florianópolis SC, Brasil; E-mail rosangela.rodrigues@ufsc.br

Patricia da Silva Neubert

Doutoranda; Programa de Pós-graduação em Ciência da Informação da Universidade Federal de Santa Catarina, Florianópolis SC, Brasil; E-mail patyneubert@hotmail.com

Breno Kricheldorf Araújo

Graduando; Curso de Biblioteconomia da Universidade Federal de Santa Catarina, Florianópolis SC, Brasil; E-mail brenok.araujo@gmail.com

Abstract: Science requires its own communication system; advances are made by consulting previously published results in journals, making access to publishing selections crucial. The goal of this report is to describe the publishers and the main journals where the scientific results of Brazilian researchers are published. The objectives are (1) to identify types of publisher and the access to these journals, (2) to examine the research area, origin, and the impact factor of these journals; and (3) to determine the distribution of types of publisher. The method is mainly by use of descriptive statistics with data collected from Clarivate Analytics using articles published in 2016. We found a total of 43.633 articles by Brazilian-based authors published in 2.313 journals, of which 54% published less than ten articles. Of the 20 journals that published the most articles, 13 were Brazilian, and most of these were open access journals, published by universities or associations, which charged authors either zero, or low (under USD 300,00) article-processing fees. The main research area was life sciences & biomedicine, which accounted for more than half of all articles and journals. The impact factor of more than 50% of these journals was between 1.0 and 3.0, and less than 13% of the journals had impact factors of over 4.0. Commercial companies are responsible for 65% of the journals and 50% of the articles published. The diversity of publishers indicates the relevance of alternative publishing institutions.

Keywords: Scientific publications. Open Access. Developing countries.

1 Introduction

Science requires its own communication system; advances come from consulting results as previously published in journals. To make a useful contribution to the

scientific community, a paper needs to be available to other scientists in a continual process of access and citation (MERTON, 1973; ZIMAN, 1979, 1981).

Publication in a highly prestigious journal is the most accepted way of demonstrating the originality of a study and confirming that its results were robust enough to overcome the scepticism of the scientific community (WHITLEY, 2007; XIA, 2014). Without access to peer-reviewed results, researchers risk duplicating studies, using outdated and/or inappropriate methods, and compromising the core concepts of their study (ABADAL, 2012; SMITH *et al.*, 2017).

Since the progress of science depends on prior research, access to reliable literature is crucial. The journal review process filters the damage that false premises or results could have on the work of other researchers. The concern with providing quality publications is central to the scientific communication system and the selection and review process is the responsibility of journal editors and peer reviewers (LÓPEZ-COZAR; SALINAS; LÓPEZ, 2007).

The system connects research results with shared focus and issues, acting as an arena for conflicts over reputation and interpretations (WHITLEY, 1984). Articles in journals become the main form of establishing social control and competency standards within the scientific community, functioning as a locus in negotiations regarding intellectual goals and priorities.

Scientific journals serve multiple functions (GUÉDON, 2001):

a) as tools for allocating prestige;

b) as keys to ownership of citable elements (results, figures, paragraphs);

c) as instruments for evaluating the individual performance of scientists.

With such functions, well-recognized journals at the core of the community represent the highest standards (BEASLEY, 2016; BJÖRK *et al*., 2009; BOYLE, 2007; GUÉDON, 2010).Technological advances have led to questions regarding the value that commercial editors add to the scientific publication system. Three large-scale corporations (Elsevier, Springer-Kluwer, and Wiley-Blackwell) publish 42% of all articles and control the majority of the most highly prestigious articles in circulation. Another 2000 publishers are responsible for the remaining journals, of which none exceed more than 3% of the total (CARVALHO NETO;

WILLINKSKY; ALPERIN, 2016; MCCABE, 2001; MCGUIGAN; RUSSEL, 2008; MILLER; HARRIS, 2004; XIA, 2011) despite the rising criticism regarding access costs and commercial oligopoly (HARO, 2017; LARIVIÈRE; HAUSTEIN; MONGEON, 2015; NOORDEN, 2013).

The barriers to consolidating new journals, the prevalence of highly prestigious journals, and the power that publisher have over indexing and ranking help to maintain the system's status quo. While well-established journals increase core relevance, newer one's struggle to break into and achieve recognition, a phenomenon known as the Matthew effect (GUÉDON, 2010). This is particularly harmful to developing countries since it weakens national publications, which remain invisible in the field of international literature, and becomes lost to science (GIBBS, 1995) while their best studies are published abroad, thereby preserving centrality of the system (GUÉDON, 2010).

In Latin America, a non-commercial open-access (OA) model, the platinum route (MIGUEL; CHINCHILLA-RODRIGUEZ; MOYA-ANEGÓN, 2011; PACKER, 2011), has been successful due to the government sponsored higher-education system. The most internationally prestigious Brazilian journals are financed by public funds (ALPERIN, 2015; CARVALHO NETO; WILLINSKY; ALPERIN, 2015; MUELLER, 2011; PACKER, 2011; RODRIGUES; ABADAL, 2014). This is different to the commercial model prevalent in central countries, where publishers privatize research that has been developed with public funds, control access fees and define the number of journals in each research area according to commercial concerns (LARIVIÈRE; HAUSTEIN; MONGEON, 2015a; McGUIGAN; RUSSEL, 2008), leading to what Larivière, Haustein, and Mongeon (2015b) call "oligopoly".

Rodrigues and Abadal (2014) indicate that Brazil leads the number of academic journals in Latin America, pointing out that more than 90% of the Brazilian journals indexed in Web of Science (WoS) and SCOPUS are Open Access without Article Processing Charges to authors (APC). This proportion is far higher than in other regions, according to both Miguel, Chinchilla-Rodriguez, and to Moya-Anegón (2011). For peripheral countries, participation in the international publishing system is complicated due to database restrictions on new

journals (ALPERIN, 2015 GUÉDON, 2001; LETA, 2012; LETA; COSTA; MENA-CHALCO, 2017; PACKER; MENEGUINI, 2014).

Packer (2011) described the growth of Brazilian journals in WoS (from 19 in 2005, to 71 in 2009, and then up to 2012, whereby this number had grown to 164), highlighting the remarkable decentralization of journals per publisher (approximately 1.2) and the relevance of the mega-publisher SciELO and universities and associations as publishing institutions. The use of the platinum OA model (open to readers without charges to authors) in Latin America, especially in Brazil, has been well documented (MUELLER, 2011; OLIVEIRA; RODRIGUES; MATIAS, 2017; PACKER, 2011; SANTILLAN-ALDANA; MUELLER, 2016; RODRIGUES; ABADAL, 2014; RODRIGUES; PASSOS; NEUBERT, 2018; RODRIGUES; QUARTIERO; NEUBERT, 2015). The high concentration of platinum journals is a result of collaborative efforts among the scientific community, universities, scientific associations and governmental agencies.

The main questions of this study are what are the characteristics of the journals and those publishers where Brazilian authors publish their articles? To answer this question, this study describes the publishers and the principal journals where scientific papers are published by Brazilian researchers. The objectives are:

a) to identify the type of publisher and access to those journals which have published articles by at least one author with a Brazilian institutional affiliation;
b) to examine the research area, origin, and impact factor of these journals;
c) to determine types of publisher distribution.

2 Methods

Using Clarivate Analytics' WoS database (CLARIVATE ANALITYCS, 2018), we performed the following search "Country/Region CU=(Brasil OR Brazil)"to identify publications with at least one Brazilian-based author and then to filter for: (1) 2016 as the publication date; and (2) articles only, which resulted in 52.343

items. Based on this list, we identified the number of articles per journal, and only journals with five or more articles were included, which produced 2.313 journals of which 43.663 articles remained after duplication was removed. The exclusive use of the Clarivate list is a limitation but represents the elite of journals in all knowledge areas.

A search for each journal's profile in Journal Citation Reports® (JCR) found data on 2.001 journals. We assumed that the remaining 312 journals did not yet have a JCR profile as they are new on the base. Data on journals without a JCR profile was obtained from Ulrich's web and each journal's website between October 2017 and January 2018. The presence of OA symbols and/or any explicit declaration determined the access type; so-called hybrid journals were classified as subscription. The value of the APC follows Directory of Open Access Journals (DOAJ) information. It's impossible to identify precisely if each author pays for the APCs and the cost of the APCs itself, so these results are approximated.

To classify the types of publishers we considered any association or society as an **association** while considering teaching institutions as **university**. Any institution focused mainly on research is a **research institute**. Journals that fit none of these categories but had a clear commercial focus are **commercial**. Journals were grouped by **publishers**' owners and companies within the same group classified as a **single entity**. Journals which did not fit into any of these categories, were classified as **other**.

We used the WoS research area classifications, categorizing the journals into five broad areas: arts & humanities, life sciences & biomedicine, physical sciences, social sciences, and technology. To classify the 312 journals without a profile in the WoS, we used data from the Ulrichs web Global Serials Directory and the website of each individual journal.

3 Results and discussion

The distribution of the 43.663 articles published in WoS-indexed journals in 2016 with at least one Brazilian-based author show 2.313 journals, with an average of 18.88 and a median of ten (10) articles per journal. Table 1 shows 77.5% of the

journals published between five (5) and 20 articles, summing 16.220 articles (37.2% of the total). The majority of the articles (62.8%) published in only 22% of the journals. Approximately half of the journals (53.8%) published between five (5) and ten (10) articles (19.2% of the total). The journals with the highest concentration of articles, despite representing only 2% of the total number, published a similar number of articles (19.8%), of which 512 titles (22%) were OA and 1.801 (78%) subscription. The article's distribution shows that 18.520 (42%) were published in OA and 25.133 (58%) published in subscription journals.

Table 1 - Distribution of articles' access by Brazilian-based authors among WoS-indexed journals in 2016

Articles	Journals						Articles					
	OA		Subs		Total		OA		Subs		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
5 to 10	153	6.6	1091	47.1	1244	53.7	1029	2.3	7349	16.8	8378	19.2
11 to 20	98	4.2	445	19.2	543	23.4	1456	3.3	6386	14.6	7842	17.9
21 to 30	93	4.0	123	5.3	216	9.3	2327	5.3	3027	6.9	5354	12.3
31 to 40	30	1.3	50	2.1	80	3.4	1056	2.4	1768	4.1	2824	6.5
41 to 50	44	1.9	27	1.1	71	3.1	2013	4.6	1239	2.8	3252	7.4
51 to 60	23	0.9	22	0.9	45	1.9	1281	2.9	1214	2.8	2495	5.7
61 to 70	15	0.6	19	0.8	34	1.5	974	2.2	1228	2.8	2202	5.0
71 to 80	12	0.5	7	0.3	19	0.8	899	2.1	526	1.2	1405	3.2
81 to 100	7	0.3	7	0.3	14	0.6	623	1.4	600	1.4	1223	2.8
Over 100	37	1.6	10	0.4	47	2.0	6862	15.7	1796	4.1	8658	19.8
Total	512	22.1	1801	77.8	2313	100	18520	42.4	25133	57.56	43633	100

Source: Research data.
Note: OA = open access. Subs = subscription

Table 2 presents those 20 (0.8%) journals with the most articles by Brazilian-based authors. Together, they published 5.385 articles (12.5% of the total) and more than half (13) of these, published in Brazil's titles, mostly in the field of agricultural and life sciences, which are areas of national and scientific expertise (UNESCO, 2015). The remaining journals are from the U.S.A. (3), the U.K. (2), the headquarters of large editorial groups (LARIVIÈRE; HAUSTEIN; MONGEO, 2015b), and New Zealand (2). Among the top journals, most are published by universities (6), and 16 are OA.

Caballero Rivero, Macedo Dos Santos e Trzesniak (2017) identified the characteristics of Brazilian publication areas by pointing to Agrarian and Health

Sciences, which passed from a predominantly national orientation in the production of articles, to a balance in national and international production.

Five (25%) of the 20 journals are OA platinum, all Brazilian. The processing charges range from USD 109,00 (State University of Feira de Santana and Federal University of Uberlândia) per article to USD 1,760,00 (Scientific Reports from Nature).

Of the USD 2,916,839,00 spent on publication fees in these 20 journals, USD 1,277,595,00 went to *PLOS One* alone to publish 801 articles, less than 2% of the 43.633 articles published by Brazilians in WoS-indexed journals in 2016.

The fees of Brazilian journals are far lower than those of other publishers. Appel and Albagli (2019) indicate about the value of fees: "[…] internationalization through translations and publications in different languages have increased the APC prices charged to authors." (APPEL; ALBAGLI, 2019, p. 11), and so therefore, it is possible to identify that APCs cover these specialized services.

Publishing costs are coming under increasing scrutiny due to the changes demanded by authors, governments, universities, and financing agencies (BEASLEY, 2016; MCCABE, 2001; NOORDEN, 2013; PINFIELD; SALTER; BATH, 2016).

The Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) from the Ministério de Ciência e Tecnologia spent approximately USD 688.000 in 2016 to support 154 Brazilian OA journals through federal grants (CNPQ, 2016). More resources came from a combination of local government funds, research institutions, associations, and universities, most of these heavily financed by federal and state governments

The Ministry of Education spent US$ 85 million in 2016 (R$ 357.463.927,00 at the time) on "big deals" and subscription packages from various international publishers according to Budget Report (CAPES, 2018). CAPES´ Portal de Periódicos pays subscriptions to publishers, which allows Brazilian universities and research institutions to access the contents. The libraries of each institution may also have additional subscriptions.

The fact that a significant percentage of articles are published by high

quality Brazilian journals with international standards shows the growth in the options to authors. The majority of the journals in Open Access indicate an alternative publishing model, where a journal is a source of prestige for the publisher, not just a profit.

Table 2 - Estimated partial value of Brazilian Article Processing Charges in indexed journals ranked according to number of articles

Journal	Ctr	Publisher	N	APC (USD)	
				Unit	Total
PLOS One	US	Public Library of Science	801	1595	1,277,595
Zootaxa	NZ	Magnolia Press	433	Subs	-
Semina: Ciências Agrárias	BR	Federal University of Feira de Santana	383	108	41,716
Ciencia Rural	BR	Federal University of Santa Maria	334	294	98,219
IEEE Latin America Transactions	US	Inst Electrical and Electronics Engineers	307	Subs	-
Ciencia Saúde Coletiva	BR	ABRASCO	297	Free	Free
Scientific Reports	UK	Nature Publishing Group	281	1760	494,560
Physical Review D	US	Amer Physical Society	278	1585	440,630
Genetics and Molecular Research	BR	FUNPEC	230	408	93,938
Arquivo Brasileiro de Medicina Veterinária e Zootecnia	BR	Federal Univerity of Minas Gerais	223	424	94,723
Pesquisa Agropecuária Brasileira	BR	EMBRAPA	212	Free	Free
Pesquisa Veterinária Brasileira	BR	EMBRAPA	200	480	96,000
Holos	BR	Federal University of Rio Grande do Norte	194	Free	Free
Phytotaxa	NZ	Magnolia Press	185	Subs	-
Revista Brasileira de Engenharia Agrícola e Ambiental	BR	Federal University of Amapá	176	141	24,919
RSC Advances	UK	Royal Soc Chemistry	175	967	169,377
Anais da Academia Brasileira de Ciências	BR	Brazilian Science Academy	172	Free	Free
Cadernos de Saúde Publica	BR	Oswaldo Cruz Foundation	171	Free	Free

Journal of the Brazilian Chemical Society	BR	Química Brazilian Society	171	394	67,514
Bioscience Journal	BR	Federal University of Uberlândia	162	108	17,645
Total			5.210		2,916,839

Source: Research data.

Fees in other currencies were converted to USD using the Google tool, October 17, 2018. The cost of publishing in journals with per page fee calculated at ten pages, and where multiple fee options were available, the lowest was used.

Rodrigues and Abadal (2014) report that, according to the number of nationally published journals, medicine and agriculture are the two most significant research areas in Brazil, both classified as life sciences & biomedicine here. UNESCO (2015) reports that the most relevant areas of publication by Brazilian authors are medical sciences, biological sciences, and agriculture, and three of these five are classified as life sciences & biomedicine.

As shown in Table 3, the most common publishers are commercial companies (65.0%), followed by universities (15.5%), associations (14.4%), and research institutes (2.7%). The volume of articles for each type was 50.7%, 22.9%, 20.1%, and 3.6%, respectively. The journals are published in the U.S.A. (34.3%), the U.K. (22.1%), Brazil (13.5%), the Netherlands (12.5%) and Germany (4.5%).

Although Brazil had the third-highest number of journals, it had the highest number of articles, which indicates a significant presence of indexed Brazilian journals in the most prestigious database. The article distribution shows 56.78% published in journals originating in the U.S.A, the U.K, the Netherlands, and Germany, where the big commercial publishing groups have their headquarters.

Among Brazilian journals, universities and associations (28.8%) publish the highest volume of articles, as shown in Table 4. Rodrigues and Abadal (2014) register that universities and associations publish 87% of Brazilian journals, which corroborates these results.

The distribution of journal impact factors according to publisher type, show that most of the journals' (60.2) Impact Factor (IF) range between 0.001

and 3.000. A relevant number of journals (13.5%) did not have an IF: 82 in the arts & humanities, and 133 in the social sciences, 98.8%, and 70.4% of the total number of journals in each area. This distribution corroborates the hypothesis that these fields involve several journals with regional and/or specialized content and and/or are new in the base (PURNELL; QUEVEDO-BLASCO, 2013; ROMANOS DETIRATEL, 2003).

The journals' IF ranged between 0.062 and 72.406. A total of 309 journals (13.4%) had impact factors over 4.0, publishing 5.527 (12%) articles by Brazilian-based authors. Only 31 journals had impact factors over 10.0, the highest being the Massachusetts Medical Society's *New England Journal of Medicine* (72.406), which published 16 articles. The journals with IF over 10.0 were in life sciences & biomedicine (21), technology (4), and physical sciences (3).

The IF of the majority of journals produced by commercial publishers ranged between 1.0 and 4.0; for journals published by associations and universities, the most frequent IF ranges were 0.001 to 3.000 and 0 to 1.000, respectively. The distribution is equilibrated for journals published by research institutes.

Table 3 - Impact factor, according to publisher type, of WoS-indexed journals with articles by Brazilian-based authors in 2016

IMPACT FACTOR	Commercial		Associations		Universities		Research Institutes		Other		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
n/a	56	2.4	29	1.3	205	8.9	12	0.5	10	0.4	312	13.5
0.001-1.000	140	6.1	68	3.0	73	3.5	20	0.9	9	0.4	310	13.4
1.001-2.000	457	19.8	70	3.0	30	1.3	14	0.6	8	0.4	579	25.0
2.001-3.000	418	18.1	52	2.3	20	0.9	10	0.4	4	0.2	504	21.8
3.001-4.000	237	10.3	43	1.9	6	0.3	4	0.2	9	0.4	299	12.9
4.001-5.000	107	4.6	28	1.2	5	0.2	2	0.1	7	0.3	149	6.4
5.001-6.000	36	1.6	11	0.5	6	0.3	2	0.1	1	0.1	56	2.4
6.001-7.000	25	1.1	10	0.4	2	0.2	-	0.00	3	0.1	40	1.7
7.001-8.000	6	0.3	6	0.3	1	0.1	1	0.1	1	0.1	15	0.6
8.001-9.000	4	0.2	2	0.1	1	0.1	1	0.1	1	0.1	9	0.4
9.001-10.000	5	0.2	4	0.2	-	0.00	-	0.00	-	0.00	9	0.4
> 10.000	15	0.6	12	0.5	3	0.1	-	0.00	1	0.1	31	1.3
TOTAL	1506	65.1	335	14.5	352	15.22	66	2.85	54	2.33	2313	100

Source: Research data.

Table 4 - Origin and publisher type of WoS-indexed journals with articles by Brazilian-based authors

Country	Commercial Publishers		Associations		Universities		Research Institutes		Other		TOTAL			
	Article	Journal	Article	Journal	Article	Journal	Article	Journal	Article	Journal	Article	%	Journal	%
Brazil	566	7	3864	66	8501	214	1380	20	189	5	14500	33.2	312	13.5
USA	7336	569	3222	178	425	39	5	1	187	8	11175	25.6	795	34.4
UK	5792	384	904	54	486	41	465	26	92	5	7739	17.7	510	22.1
Netherlands	4579	283	5	1	5	1	29	4			4618	10.6	289	12.5
Germany	1186	99	8	1	16	1			49	4	1259	2.9	105	4.5
Switzerland	852	55	12	2					274	15	1138	2.6	72	3.1
New Zealand	646	5									646	1.5	5	0.2
Spain	59	5	182	6	121	13	5	1	58	4	425	1.0	29	1.3
France	133	10	153	2	15	2	15	2	62	1	378	0.9	17	0.7
Ireland	319	21									319	0.7	21	0.9
Chile			33	3	129	10	9	1	6	1	177	0.4	15	0.7
Singapore	140	12									140	0.3	12	0.5
Austria	107	9	7	1	5	1					119	0.3	11	0.5
Colombia			10	1	86	10	5	1			101	0.2	12	0.5
Italy	59	5	15	2					16	1	90	0.2	8	0.4
Bulgaria	70	4									70	0.2	4	0.2
Australia	54	5	5	1	5	1	5	1			69	0.2	8	0.4
UAE	67	9									67	0.2	9	0.4
India	60	7					6	1			66	0.2	8	0.4
Canada	6	1							52	6	58	0.1	7	0.3
Japan	27	4	21	2	9	1					57	0.1	7	0.3
Other*	94	10	114	12	170	25	18	3	24	4	452	1.0	57	2.4
Total	22152	1504	8852	332	9983	359	1967	64	1009	54	43663	100	2313	100
%	50.7	65.0	19.6	14.4	22.9	15.5	4.5	2.8	2.3	2.3	100		100	

Source: Research data.

Note: *Other includes: Poland, Argentina, Mexico, Costa Rica, Venezuela, Greece, Belgium, Turkey, Croatia, Romania, Serbia, Czech Republic, China, Portugal, South Korea, Slovakia, Norway, Peru, Ecuador, Hungary, Iran, Pakistan, Taiwan, and Ukraine

Life sciences & biomedicine, physical sciences, and technology were the main research areas of commercially published journals with articles by Brazilian-based authors in 2016, while social sciences and arts & humanities were the main areas of those published by universities, as presented in Table 5.

Table 5 - Distribution of research areas according to publisher type in WoS-indexed journals with articles by Brazilian-based authors in 2016

Publisher type		Life Science & Biomedicine		Physical Sciences		Technology		Social Sciences		Arts & Humanities	
		Art	Jour	Art	Jour	Art	Jour	Art	Jour	Art	Jour
Commercial		14043	1022	5344	342	5508	313	581	47	20	3
Associations		4593	175	2937	104	1676	93	96	9	114	6
University		5406	148	517	32	744	31	2860	123	1653	72
Research Institute		1087	37	467	23	172	9	69	3	-	-
Other		714	39	118	6	81	4	139	7	42	2
Total	N	25,843	1421	9383	507	8181	450	3745	189	1829	83
	%	59.2	61.4	21.5	21.9	18.7	19.5	8.6	8.2	4.2	3.6

Source: Research data.
Note: Art = articles, Jour = Journal

The commercial publishers with the most journals are Elsevier, Springer, Wiley and Taylor & Francis, groups with a strong presence in WoS. Elsevier had the highest number of journals among these publishers, with 25.9% of journals and 22.4% of articles (Table 6).

IEEE had the highest number of journals for an association, with 35, while the seven journals published by the American Physical Society had the highest number of articles (793). The university with the highest number of journals was Oxford (47), while the highest number of articles (621) appeared in the four journals published by the Universidade Federal de Santa Maria.

Among research institutes, the Institute of Physics Publishing had the highest number of journals (26) and articles (465), while EMBRAPA (The Brazilian Agricultural Research Corporation) was in second place with 412 articles in two journals.

These results could promote discussion regarding the migration of research within the scientific publishing systems, in which **peripheral** countries

send their best research to big commercial publishers and, in return, are required to pay high fees to access them. Governments are the primary source of research funds and should ultimately be responsible for the distribution of results. Brazil's government supports high-quality international journals published mainly by local universities and scientific associations. This alternative system is resulting in an increase in both quality and visibility of the journals and the articles.

Table 6 - Frequency of publisher type among WoS-indexed journals with articles by Brazilian-based authors

		Journals		Articles	
		n	**%**	**n**	**%**
Commercial Publisher	Elsevier	601	26.0	9804	22.5
	Springer	295	12,75	3800	8,70
	Wiley	233	10.1	2515	5.8
	Taylor & Francis	102	4.4	1024	2.4
	Public Library Science (PLOs)	4	0.2	931	2.1
	Magnolia Press	2	0.1	618	1.4
	Lippincott Williams & Wilkins	40	1.7	402	0.9
	Hindawi Limited	21	0.9	276	0.6
	Multidisciplinary Digital Publishing Institute (MDPI)	15	0.7	247	0.6
	Others commercial publishers (67)	184	8.0	2385	5.5
	Partial Commercial Publishers	**1509**	**65.2**	**22305**	**51.1**
Association	Amer Physical Soc	7	0.3	793	1.82
	IEEE	35	1.5	630	1.44
	Royal Soc Chemistry	21	0.9	546	1.25
	Amer Chemical Soc	26	1.1	455	1.04
	Other associations (184)	247	10.7	6294	14.5
	Partial Associations	**336**	**14.5**	**8726**	**20**
Universities	Univ São Paulo	17	0.7	808	1.8
	Oxford Univ Press	47	2	568	1.3
	Univ Fed Santa Maria	4	0.2	553	1.3
	Univ Estadual Londrina	1	0.1	383	0.9
	Univ Fed Ceara	5	0.2	340	0.8
	Cambridge Univ Press	22	0.8	262	0.6
	Other universities (152)	256	11	6574	15.1
	Partial Universities	**352**	**15.2**	**9488**	**21.7**
Research Institutes	IOP Publishing Ltd	26	1.1	465	1.1
	Oswaldo Cruz Foundation	3	0.1	308	0.7
	Other institutes (27)	37	1.6	1204	2.8
	Partial Research Institutes	**66**	**2.8**	**1977**	**4.5**

Others	Frontiers Media Sa	14	0.6	267	0.6
	Canadian Science Publishing	6	0.3	52	0.1
	Other institutes (30)	31	1.3	548	1.3
	Partial Other	**51**	**2.2**	**867**	**2**
	Total	**2314**	**100**	**43363**	**100**

Source: Research data.

4 Conclusions

An essential part of any research project is to publish the results in a recognized journal. The articles published indicate the scientific activity of a country and its institutions, thereby identifying its authors and the state of the art for each area. Publication in indexed journals plays an important part in the evaluation of researchers, programs and institutions, as well as reflecting the ethos of each area. The publishers who own the journals play a crucial role in the scientific behaviour of each area.

The distribution shows that around 75% of journals are responsible for less than 40% of articles, and almost half of the articles are published in Open Access journals. This high percentage of open articles is a result of the publication of Brazilian titles; most of which open without APC and financed by universities, research institutions, government, and the new Mega Journals from the U.S. and the U.K., mainly PLOS One in the U.S. and Scientific Reports in the U.K. The low APCs or lack of taxes from Brazilian titles contrast with the prices charged by commercial publishers, around US$ 1.500,00 for each article. The relevance of the mega-journals introduces a new player into the publishing system, with new rules and costs. The impact of this new journal model deserves further studies, especially with the permanence of high-cost subscription journals in the same system.

The Impact Factor of the majority of journals is between 0.1 and 3, with commercial titles showing the highest, and university titles showing the lowest. The differences among the areas reflect the predominant type of publisher, with Life Sciences and Biomedicine accounting for around 60% of journals and articles, with more than half of these published by commercial companies. Physical Sciences and Technology are also dominated by commercial publishers

and represent around 20% of journals and articles. Social Sciences and Arts and Humanities show the dominance of universities as publishers and collectively represents around 13% of journals and titles. This distribution is equivalent to the global scenario, showing an alignment with other countries' publication patterns.

Commercial publishers are responsible for more than half of all articles and journals. Elsevier with almost a quarter of the journals and articles in this study, Springer with 12% of journals and 9% of articles, followed by Wiley with 10% of journals and 6% of articles. Journals from open access companies follow, highlighting *Public Library Science* and *PLOS One* as the titles with the highest number of articles. The associations and universities play an equivalent role, with around 15% of journals and 20% of articles. It is important to note that the Open Access platinum is a characteristic of Brazil and Latin America, as the majority of universities and associations in other countries charge higher amounts for subscription or APCs.

Studies of a country's publication scene rarely mention the costs behind them, focusing mainly on rankings and impact factors. This article is an attempt to expand the discussion regarding the availability and the costs to a country of accessing its own articles.

References

ABADAL, E. **Acceso Abierto a la Ciencia.** Barcelona: Editorial UOC, 2012.

ALPERIN, J. **The public impact of Latin America's approach to open access.** 2015. Thesis (Doctorate in Philosophy) - School of Education, Stanford University, Palo Alto, 2015.

APPEL, A. L.; ALBAGLI, S. The adoption of Article Processing Charges as a business model by Brazilian Open Access journals. **Transinformação,** Campinas, v. 31, p. 1-14, 2019.

BEASLEY, G. Article processing charges: a new route to open access? **Information Services & Use,** Amsterdam, v. 36, n. 3-4, p. 163-170, 2016.

BJÖRK, B. C. *et al*. Open Access to the scientific Journal Literature: situation 2009. **PLOS One,** San Francisco, v. 6, n. 5, p. 1-9, 2010.
BOYLE, J. Mertonianism Unbound? imagining free, decentralized access to most cultural and scientific material. *In*: HESS, C.; OSTROM, E. (ed.).

Understanding Knowledge as a Commons: from theory to practice. Cambridge: MIT Press, 2007. p. 123-144.

CABALLERO RIVERO, A.; MACEDO DOS SANTOS, R. N.; TRZESNIAK, P. Caracterización de las prácticas de publicación de las grandes áreas de conocimiento en Brasil. **Revista cubana de información en ciências de la salud,** La Habana, v. 28, n. 4, p. 1-19, 2017.

CNPQ. **Chamada MCTIC/CNPq Nº 25/2016:** edital para a editoração e publicação de periódicos científicos brasileiros de alta especialização em todas as áreas de conhecimento. Brasília: CNPq, 2016.

CAPES. **Dotação orçamentária e execução orçamentária do período de 2004-2020.** Brasília, 2018.

CARVALHO NETO, S.; WILLINSKY, J.; ALPERIN, J. P. Measuring, rating, supporting and strengthening open access scholarly publishing in Brazil. **Education Policy Analysis Archives,** [*s. l.*], v. 24, n. 54, p. 1-25, 2016.

CLARIVATE ANALITYCS. **Web of Science.** [*S. l.*]: Clarivate Analitycs, 2018.

GIBBS, W. Lost science in the third world. **Scientific American,** [*s. l.*], v. 2, n. 273, p. 92-99, 1995.

GUÉDON, J. C. Acesso Aberto e divisão entre ciência predominante e ciência periférica. *In*: FERREIRA, S. M.; TARGINO, M. das G. **Acessibilidade e visibilidade de revistas científicas eletrônicas.** São Paulo: São Paulo, 2010. cap. 1.
GUÉDON, J. C. **Oldenburg's Long Shadow:** librarians, research scientists, publishers, and the control of scientific publishing. Washington: Association of Research Libraries, 2001.

HARO, F. A. O impacto de (não) ter impacto: para uma sociologia crítica das publicações científicas. **Revista Crítica das Ciências Sociais,** Coimbra, v. 113, p. 83-106, 2017.

LARIVIÈRE, V.; HAUSTEIN, S.; MONGEON, P. Big publishers, bigger profits: how the scholarly community lost the control of its journals. **Media Tropes e-Journal,** Otawa, v. 5, n. 2, p. 102-110, 2015a.

LARIVIÈRE, V.; HAUSTEIN, S.; MONGEON, P. The oligopoly of academic publishers in the Digital Era. **Plos One,** San Francisco, v. 10, n. 6, p. 1-15, 2015b.

LETA, J.; COSTA, E. H. dos S.; MENA-CHALCO, J. Artigos em Periódicos de Acesso Aberto: um estudo com Pesquisadores Bolsistas de Produtividade do CNPq. **Revista Eletrônica de Comunicação, Informação & Inovação em Saúde,** Rio de Janeiro, v. 11, p. 1-6, 2017.

LETA, J. Brazilian growth in the mainstream science: the role of human resources and national journals. **Journal of Scientometric Research,** New Delhi, v. 1, n. 1, p. 44-52, 2012.

LÓPEZ-COZAR, E. D.; SALINAS, D. T.; LÓPEZ, A. R. El fraude en la ciencia: reflexiones a partir del caso Hwang. **El profesional de la información,** Madrid, v. 2, n. 16, p. 143-150, 2007.

MCCABE, Mark. The impact of publisher mergers on journal prices. **The Serials Librarian,** Philadelphia, v. 40, n. 1-2, p. 157-166, 2001.

MCGUIGAN, G. S.; RUSSEL, R. D. The business of academic publishing: a strategic analysis of the academic journal publishing industry and its impact on the future of scholarly publishing. **Electronic Journal of Academic and Special Librarianship,** Athabasca, v. 9, n. 3, 2008.

MERTON, R. K. **The Sociology of Science:** theoretical and empirical investigations. Chicago: University of Chicago Press, 1973.

MIGUEL, S.; CHINCHILLA-RODRIGUEZ, Z.; MOYA-ANEGÓN, F. de. Open Access and Scopus: a new approach to scientific visibility from the standpoint of access. **The Journal of the Association for Information Science and Technology,** Maryland, v. 62, n. 6, p. 1130-1145, 2011.

MILLER, C. T.; HARRIS, J. Scholarly journal publications: conflicting agendas for scholars, publishers, and institutions. **Journal of Scholarly Publishing,** Toronto, v. 35, n. 2, p. 73-91, 2004.
MUELLER, S. P. M. Produção e financiamento de periódicos científicos de acesso aberto: um estudo na base SciELO. *In*: FUNARO, V. de O. *et al*. (ed.). **Revistas científicas:** dos processos tradicionais às perspectivas alternativas de comunicação. São Paulo: Ateliê Editorial, 2011. cap. 9.

NOORDEN, R. V. The true cost of science publishing: cheap open-access journals raise questions about the value publishers add for their money. **Nature,** London, v. 495, n. 28, p. 426-429, 2013.

OLIVEIRA, A. B.; RODRIGUES, R. S.; MATIAS, M. Periódicos científicos das Ciências Agrárias: análise dos títulos brasileiros indexados na Web of Science e Scopus. **Perspectivas em Ciência da Informação,** Belo Horizonte, v. 22, n. 2, p. 3-28, 2017.

PACKER, A. Os periódicos brasileiros e a comunicação da pesquisa nacional. **USP,** São Paulo, n. 89, p. 26-61, 2011.

PACKER, A.; MENEGUINI, R. O SciELO aos 15 anos: raison d'être, avanços e desafios para o futuro. *In*: PACKER, A. (ed.). **SciELO - 15 Anos de Acesso**

Aberto: um estudo analítico sobre Acesso Aberto e Comunicação Científica. Paris: UNESCO, 2014. cap. 1.

PINFIELD, S.; SALTER, J.; BATH, P. The total cost of publication in a hybrid open access environment: institutional approaches to funding journal article - processing charges in combination with subscriptions. **Journal of the Association for Information Science and Technology,** [*s. l.*], v. 16, n. 7, p. 1751-1766, 2016.

PURNELL, P.; QUEVEDO-BLASCO, R. Benefits to the Spanish research community of regional content expansion in Web of Science. **International Journal of Clinical and Health Psychology,** Amsterdan, v. 3, n. 2, p. 147-154, 2013.

RODRIGUES, R. S.; ABADAL, E. Scientific journals in Brazil and Spain: alternative publisher models. **Journal of the American Society for Information Science and Technology,** Maryland, v. 65, n. 10, p. 2145-2151, 2014.

RODRIGUES, R. S.; PASSOS, M.; NEUBERT, P. da S. Periódicos científicos: títulos brasileiros indexados em bases internacionais. **Informação & Sociedade,** João Pessoa, v. 28, p. 207-218, 2018.

RODRIGUES, R. S.; QUARTIERO, E.; NEUBERT, P. da S. Periódicos científicos brasileiros indexados na Web of Science e Scopus: estrutura editorial e elementos básicos. **Informação & Sociedade,** João Pessoa, v. 25, p. 117-138, 2015.

ROMANOS DETIRATEL, S. Acceso a la produccion argentina en humanidades y ciencias sociales: representatividad en bases de datos internacionales multidisciplinarias. **Investigacion Bibliotecologica,** Cidade do Mexico, v. 17, n. 35, p. 45-62, 2003.

SANTILLAN-ALDANA, J.; MUELLER, S. P. M. Serviços de editoração desenvolvidos por bibliotecas universitárias. **Perspectivas em Ciência da Informação,** Belo Horizonte, v. 21, n. 2, p. 84-99, 2016.

SMITH, E. *et al*. Knowledge sharing in global health research: the impact, uptake and cost of open access to scholarly literature. **Health Research Policy and Systems,** Baltimore, v. 15, n. 73, p. 1-10, 2017.

UNESCO. **UNESCO Science Report:** towards 2030. Nova York: UNESCO Publishing, 2015.

WHITLEY, R. Changing Governance of the Public Sciences: the consequences of establishing research evaluation systems for knowledge production in different countries and scientific fields. *In*: WHITLEY, R.; GLASER, J. (ed.).

The changing governance of the sciences: the advent of research evaluation systems. Dordrecht: Springer, 2007. p. 3-27.

WHITLEY, R. **The Intelectual and Social Organization of the Sciences.** Oxford: Oxford Press, 1984.

XIA, J. Constructin the structure underlying open access practices. **Journal of Information Science,** London, v. 37, n. 3, p. 322-331, 2011.

XIA, J. Imbalanced journal publishing market. **Learned Publishing,** Watford, v. 27, n. 3, p. 236-238, 2014.

ZIMAN, J. **A força do conhecimento.** São Paulo: EDUSP, 1981.

ZIMAN, J. **Conhecimento público.** São Paulo: EDUSP, 1979.

Publicações de autores brasileiros: acesso, publishers e dispersão

Resumo: A ciência requer seu próprio sistema de comunicação; os avanços vêm dos resultados de consultoria publicados anteriormente em periódicos, tornando as escolhas de publicação cruciais para permitir o acesso. O objetivo é descrever as principais revistas e editoras onde os pesquisadores brasileiros publicam seus resultados científicos. Os objetivos são: (1) identificar o tipo de editor e acesso a periódicos que têm artigos publicados; (2) examinar a área de pesquisa, a origem e o fator de impacto dessas revistas; e (3) determinar a distribuição dos tipos de editores. O método é principalmente estatística descritiva, com dados coletados dos artigos utilizados no Clarivate Analytics publicados em 2016. Foram encontrados 43.633 artigos de autores brasileiros publicados em 2.313 revistas, 54% publicaram menos de dez artigos. Dos 20 periódicos que publicaram mais artigos, 13 eram brasileiros, e a maioria deles são de acesso aberto, publicados por universidades ou associações, que cobraram dos autores nenhuma ou baixa (menos de US $ 300,00) taxas de processamento de artigos. A principal área de pesquisa foi ciências da vida e biomedicina, responsável por mais da metade dos artigos e revistas. O fator de impacto de mais de 50% desses periódicos estava entre 1,0 e 3,0 e menos de 13% dos periódicos tiveram fatores de impacto acima de 4,0. As empresas comerciais são responsáveis por 65% das revistas e 50% dos artigos publicados. A diversidade de editores indica a relevância de instituições de publicação alternativas.

Palavras-chave: Publicações científicas. Acesso Aberto. Países em desenvolvimento.

Recebido: 17/10/2019
Aceito: 02/04/2020

How to cite:

RODRIGUES, Rosangela Schwarz; NEUBERT, Patricia da Silva; ARAÚJO, Breno Kricheldorf. The publications of Brazilian authors: access, distribution and publishers. **Em Questão,** Porto Alegre, v. 26, n. 2, p. 13-31, maio/ago. 2020. DOI: https://doi.org/10.19132/1808-5245262.13-31.

CC BY