



Open Access Library and Information Science journals: an analysis of the adopted business models

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This study investigates the business models practiced by open access scientific journals in the area of Library and Information Science, indexed in the Directory of Open Access Journals (DOAJ). We did an exploratory study of the theme, combining quantitative and qualitative approaches, and applying the documentary method. The data were collected in the DOAJ, retrieving the journals of Library and Information Science that are indexed in the filter "Bibliography. Library science. Information resources", followed by a visit to each journal's website to identify descriptive characteristics. Content analysis was used to evaluate and categorize the data collected. As a result, it was verified that most of the journals retrieved in the filter do not charge Article Processing Charges (APCs), and that of those that do, a considerable portion use the 'Publishing Rates' business model with discount policies and/or fee exemptions. It is concluded that this

theme has different perspectives when considering the financial sustainability of a journal, with advantages and disadvantages, mainly regarding the authors of articles to be submitted in journals that use APCs.

Keywords: *Business models - scientific journals, Directory of Open Access Journals (DOAJ), Processing Charges, Article Processing Charges (APCs), Library and Information Science - Journals.*

Periódicos de acesso aberto da Biblioteconomia e Ciência da Informação: uma análise dos modelos de negócios adotados

Este estudo objetiva investigar os modelos de negócios praticados por periódicos científicos de acesso aberto das áreas de Ciência da Informação e Biblioteconomia, indexados no Directory of Open Access Journals (DOAJ). Utilizou-se a abordagem quanti-qualitativa, um estudo de cunho exploratório, com o emprego do método documental. Os dados foram coletados no DOAJ, recuperando as revistas da Biblioteconomia e Ciência da Informação que estão indexadas no filtro "Bibliography. Library science. Information resources", seguida de visita ao site de cada uma delas, a fim de identificar características descritivas. Fez-se uso da análise de conteúdo para analisar os dados coletados a partir do estabelecimento de categorias. Como resultados, foi verificado que a maioria dos periódicos recuperados no filtro não cobram Taxa de Processamento de Artigos (APCs), dos que cobram, considerável parcela utiliza o modelo de negócio 'Taxas de Publicação' com políticas de descontos e/ou isenções de taxas, além disso os modelos de negócios ainda são pouco praticados por revistas das áreas de Biblioteconomia e Ciência da Informação. Conclui-se que esta temática possui diferentes perspectivas a serem consideradas acerca da sustentabilidade financeira de uma revista, com

vantagens e desvantagens, principalmente no que concerne aos autores de artigos a serem submetidos em periódicos que utilizam APCs.

Palavras-chave: Modelos de negócios - periódicos científicos, Directory of Open Access Journals (DOAJ), Taxas de processamento, Article Processing Charges (APCs), Ciência da Informação e Biblioteconomia - Revistas.

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1 Introduction

Publicizing scientific achievements is essential for the progress of the academic community and to all areas of knowledge, as well as being a requirement for research fundings. This kind of scientific advertisement can occur through various media, such as scientific journals, used by researchers to submit scientific articles, which follow an editorial flow with peer review and further developments, to then be published or not.

This publication in scientific journals involves several issues related to editorial policies, one of them being the decision of the journal to adhere or not to open access. The high costs of subscriptions have favored a significant change in the ways of publishing, where it has become necessary to think of a way in which there are no charges to the reader.

Popularized by the Budapest Open Access Initiative (BOAI), in 2002, open access publications (OA) are those that have their content fully available in an online environment, in which the reader can access, download, and quote the text without having to pay a subscription fee. This is an important practice for the democratization of information: facilitating the access to the results of scientific research and allowing scientific knowledge to be acquired by all.

Open access publishing contributes to scientific advancement. However, this type of journal needs means to maintain its financial sustainability, since, in order to be able to publish articles and research results, besides making them freely available for reading and downloading, it requires a series of procedures related to the publication processes that involve costs for scientific journals. In this context, the need for financial sustainability of open access journals has driven the emergence of business models.

Business models for open access journals aim to ensure the financial sustainability of the journal; taking this goal in consideration, they

propose having publication fees to authors, one of the main ones being the Article Processing Charges (APCs). Although business models are important for the management of a journal, the high fees that may be charged may hinder the publication of articles from researchers who have no funding for their research or from countries with limited resources for scientific research.

From this perspective, this research aimed to investigate the business models practiced by open access journals in the area of Library and Information Science indexed in the Directory of Open Access Journals (DOAJ).

2 Business models

With the crisis of the journals, new means of publication have emerged, influenced mainly by information and communication technologies, which allowed publication by digital means and later favored the advent and advancement of open access scientific journals. The golden mean, which makes it possible to share articles in open access, is now seen as one of the main options for publication, since it brings benefits to authors, enabling them to have their work cited a greater number of times; and it also favors the readers, who can enjoy the content made available in open access for free, respecting the authors' rights.

Although open access offers significant advantages for both parties involved in the scientific dissemination process, the management of the journal and the procedures related to publication involve costs. Mueller (2009) cites that the acceptance of open access by scientific journals in Brazil has decreased the costs related to production and dissemination. However, even with the decrease in costs and the hosting in a digital environment, the publication process still includes expenses, imposing, for editors, the challenge of ensuring the generation of income for the journal and the regular update of scientific productions. For Pereira and Furnival (2020, p. 91):

[...] there is a need to recognize the existence of the usual technical procedures to any publication processes, such as editing, proofreading (copyediting and proofreading), layout, graphic art, possible translation, marketing, administrative costs, among others, resulting in costs that need to be considered in journal planning.

Thus, it is necessary to seek ways to ensure the financial sustainability of electronic journals, and it is relevant to reflect on the theme, as formulated by Gumiero and Costa (2012, p. 102): "how is it possible to maintain an open access scientific journal, since the costs of its publication are not charged to readers?". In this context, the need to think

about different business models for electronic journals of open access arises, in addition to discussing the characteristics and other relevant aspects of the theme.

2.1 Business Models in Open Access Journals

Business models for open access journals can be understood as means to ensure the financial sustainability of a journal (PEREIRA, FURNIVAL, 2020). Based on the literature, one can list several types of models that can be applied. The Open Access Directory (OAD, 2021) provides a list with sixteen business models for open access, which are described in Chart 1. Pereira and Furnival (2020, p. 91), in relation to the fees that are charged, mention that "the APCs (processing charges for the article as a whole, charged to the author); page processing charges; and, finally, no charges to the author, being known as "Diamond Open Access". The authors also mention the business model based on subsidies, as presented below.

Chart 1 – Business models

Business models	Descriptions
Advertising	It consists of using advertisements on the journal's website or on the articles pages to generate income to help the sustainability of the journals.
Auction	The model is for editors to bid on articles for publication.
Crowdfunding	Potential projects are placed online, allowing the wider community to choose to fund them with financial donations.
E-commerce (electronic commerce)	An open access journal may offer branded products for sale, either in-house or through a vendor.
Endowment	The model is for an open access publication to build an endowment of third-party contributions to assist with its production costs.
Fundraising	Solicit donations from individuals or institutions periodically or continuously.
Open Access (OA) hybrid journals	Publish some articles in open access and others not.
Institutional grants	Grants from institutions, in whole or in part, directly or indirectly.
Membership fees	The model is for a membership organization, such as a learned society, to use membership fees to support an open access journal in whole or in part.

Priced editions	The model is for a journal to provide open access for one issue and sell access to another.
Publishing fees (APCs)	Charging a fee upon acceptance of an article for publication. The idea is that the fee covers the production costs.
Submission fees	Charging a fee for evaluating a submitted article, regardless of whether or not the article is later accepted.
Temporary open access	Offering free online access to a work for a restricted period, after which the work becomes paid access.
Third Party Licensing	Open access publishers that control significant bodies of content may be able to generate additional revenue by licensing content to third-party information aggregators and distributors.
Value added services	Offer additional services and resources on top of OA content, available for an opt-in subscription by the reader.
Voluntary work	Use unpaid volunteers for some of the work in producing the journal.

Source: Open Access Directory (OAD, 2021).

The table above shows the variety of business models that can be applied to open access e-journals. Among them are the Hybrid Journals, Institutional Grants, and Publishing Fees, which are used by a significant portion of the journals that adopt business models. Some of the models described in the table rely on the financial contribution of third parties to maintain the sustainability of the journal, such as Endowment, Fundraising, and Crowdfunding. With the analysis of the table, it can be observed that varied ways of income are thought for the journals in order to maintain open access to scientific literature. The business model that will be chosen will be defined based on the characteristics of each journal.

The "paid subscriber" model continues to be used by commercial publishers. In this model the readers, to have access to the journal's scientific publications, must purchase the journal by means of a subscription. Usually for authors, no publication fees are charged (GUANAES, GUIMARÃES, 2012, p. 64). Regarding this model in which the reader is charged, Costa (2006, p. 47) points out that "the issue of subscription pricing has been one of the main, if not the main motivation for the open access movement. With the open access movement and the increasing preference of authors to publish the results of their research in these journals, readers now have free access to the research that is published in the golden gateway, without the need for subscriptions.

In contrast to the "subscriber pays" model is a second one that stands out as one of the most applied business models: Article Processing Charges (APCs), also known as, "author pays. According to Pereira and Furnival (2020), it is common that in this model the author is financed by

funding agencies or by the institution to which he or she belongs. About this model, Príncipe and Barradas (2013, p. 28) comment that:

[...] the submission, processing and/or publication fees, charged by journals to authors, are used to complement the financial resources of journals for the processes of editing and publishing - costs of revision and translation of texts, production of texts in differentiated files, platform rental, payment of publisher, publication of print editions and sending of hard copies to libraries, when still existing, authors and other services.

In the "author pays" model, authors or their funding agencies pay to publish their research in a scientific journal, where the manuscript goes through the phases related to publication, and if approved, is made available by the journal free of charge on the internet. Generally, according to Guanaes and Guimarães (2012), authors pay a submission fee before the publication fee, which is intended for the costs of processing the article, which include the processes required for publication. In addition, many journals also request fees for extra additions to the publication, such as color illustrations and extra pages. For Appel and Albagli (2019, p. 2), the APC model:

[...] was perceived as a new business model by commercial publishers due to the expansion of the OA movement and as a means of economic sustainability by originally free golden-vein journals. On the other hand, the adoption of APC is also seen as a new barrier to open access publishing, especially by authors, fields of study, and countries with fewer financial resources, reproducing, expanding, and favoring elite scientific researchers and regional disparities; it has also been considered a contributing factor to the proliferation of "predatory" journals.

In this perspective, the application of publication fees can harm researchers who do not have funding agencies financing their research or those who have reduced resources. For Costa (2006), this model does not take into consideration the differences between countries with different realities. A possible consolidation of the model leads to the reflection that more economically developed countries will have no problems in getting funding from institutions and funding agencies, because they have money earmarked for this purpose. However, countries with fewer resources would have even more difficulties in publishing, since they would face a double problem: low funding for research and for the publication of the results. Another relevant business model for open access journals is based on subsidies, which according to Pereira and Furnival (2020, p. 93) can

be: from "private foundations and corporations, scientific or institutional associations, whereby an institution (university, laboratory, library, museum, hospital, government agency, scientific association) subsidizes the journal [...] by providing financial support, infrastructure, equipment and staff.

One of the main actors of this business model are government subsidies (PEREIRA, FURNIVAL, 2020). In general, researchers are funded by the institutions in which they work or funding agencies, and this is one of the main means of financing the publication of research results.

Another business model highlighted is that of hybrid journals. In this model, journals offer both open access and closed access for articles. When the author chooses to publish in open access, there is usually the application of publication or funding fees. In this scenario, the journal immediately makes the open access article available on its website for readers. Authors who do not choose to publish in open access by the hybrid journal do not pay publication fees, but may still pay extra fees. In this type of publication, open access is not made available immediately, but can be provided in open access later (OAD, 2021). Regarding the controversies of the hybrid model, Pereira and Furnival (2020, p. 93) point out that:

[...] it has raised worrying situations for institutions, especially in Europe, where universities have created funds specially earmarked for the payment of APCs of their authors, implying that, in some cases, the institution's library is paying the subscription to the same journal that the institution's fund financed the APCs of one of its authors. This distortion in double charging to the same publisher/journal is known as double dipping.

The literature discussing the application of open access business models is still considered small. Research regarding the adoption of the APC business model is scarce in Latin American and Caribbean journals, as Appel and Albagli (2019) note. Regarding national research on the topic, the results are even smaller. A study conducted by Pereira and Furnival (2020, p. 92) during the years 2017 and 2018 in the bases of Brapci, Scielo and Portal de Periódicos da Capes reached the following result:

[...] with the combined use of the terms Open Access, Business Model and Financial Sustainability ("Open Access", "Business Model" and "Financial Sustainability"), by Title, Keywords and Abstract, also using multiple searches with variations of the main expression, containing variations of degree, spelling and language, did not result in any retrieved articles.

This result demonstrates the need for research addressing the subject in more depth, reflecting on the aspects and problems of the models, since it is essential that open access electronic journals have the means to guarantee their financial sustainability and thus be able to continue providing free research to readers. On the other hand, the perspective of authors, funding agencies, and regional differences should also be considered for the consolidation of a viable business model for all parties involved in the scientific communication process.

3 Methodological procedures

This research, as to the form of approach, adopted the quantitative and qualitative aspects, and, as to the objectives, it can be considered an exploratory research. As for the procedures and methods of data collection, it is configured as a documentary research, seeing that "[...] are considered documents not only the writings used to clarify a certain thing, but any object that can contribute to the investigation of a fact or phenomenon" (GIL, 2008, p. 147). For data collection, the Directory of Open Access Journals (DOAJ) was used to survey open access journals indexed in the directory that use business models. DOAJ is a directory that hosts open access electronic journals and also enables searches for scientific articles, and their content is available for free access. It was launched in 2003, in Sweden, counting with 300 journals, and currently has more than 17 thousand peer-reviewed indexed journals encompassing several areas of knowledge.

The data collection for this research was performed from October 18 to 31, 2021. To perform the search, on the DOAJ homepage, under the "Search" option, the search for "Journals" was selected. Then, the filter "Subjects" was used, and within it, the subject category 'Bibliography' was chosen. Library science' and 'Information resources' to delimit the search for journals indexed in the Library and Information Science areas. Because the directory has fixed terms already existing in the subject filter, this category of terms was selected, which addresses not only the areas analyzed by the search, but also other subjects related to bibliography and information resources. For this reason, each journal retrieved through this filter was analyzed individually, to identify among them those that are part of the Library and Information Science areas. In this period, among the more than 17,000 journals present in the directory, 175 were retrieved by the subject filter. Of the 175 journals refined by the subject filter, not all the sample was used during the analysis and discussion of the results, resulting in 171 journals analyzed, since some journals, even though indexed in the filter, are not journals about Library and Information Science areas, object of study of this research.

After retrieving the journals in the selected filter, each journal was individually analyzed in the search result page in order to obtain the general data of the journal made available by the directory, such as the International Standard Serial Number (ISSN), publisher, country, languages of the accepted manuscripts, Uniform Resource Locator (URL) of each journal's website, and if there are Article Processing Charges (APCs).

After that, the website of each journal was visited to identify if the journal charged publication fees and what business model it applies, searching the sections "About", "Policies" and "Submissions" followed by the analysis of the Qualis, Impact Factor and Journal Citation Indicator (JCI) of each one. The retrieved data were analyzed to map the journals that charge APC and their characteristics in order to identify the business models used by them.

Content analysis technique was used to correlate the profile of the journals that charge APCs and the characteristics regarding their performance. This technique, according to Bardin (2016, p. 44), is "a set of communication analysis techniques that uses systematic and objective procedures to describe the content of the messages." In addition to the content analysis technique, the information from the journals about the entire sample collected was analyzed quantitatively in relation to the descriptive aspects concerning the journals.

For this, the following analysis categories were established: 1) Business model profile of the journal; and 2) Journal performance. The first deals with the analysis of the business model practiced by the journal, acceptance or not of discounts and/or exemptions, and the amount charged in the submission/publication process. The second category encompasses the following characteristics: waiting time between submission and publication, whether it is indexed by databases, and the journal quality measurement indexes.

4 Data analysis and discussion of the results

From the collection carried out, among the 175 journals retrieved, four were disregarded for analysis because, despite being indexed under the filter used in the search, they were not considered as being journals that contemplate the areas of Librarianship and/or Information Science. Therefore, after these journals were disregarded from the body of the analysis, the total data sample was composed of 171 journals, eight of them made use of business models to cover costs in the publication process. The characteristics of the overall sample of open access journals analyzed are presented in Chart 2:

Chart 2 - Descriptive characteristics of the analyzed journals

Country of open access journals retrieved from DOAJ	The United States has the largest number of journals, with 29 journals, which is equivalent to 16.95% of the total;
Language	English is the most chosen language for publishing manuscripts (128 journals);
Article Processing Charges (APCs)	163 journals do not charge any kind of fees and 8 journals charge APCs (4.67% of the total sample).

Source: Survey data, 2021.

Based on the data, it is observed that the United States is the country that has the largest number of open access journals indexed in DOAJ, with 29 journals, equivalent to 16.95% of the total. Brazil comes in second, with 25 journals, representing 14.61%; and Spain comes in third, with 12 journals, corresponding to 7.01% of the sample analyzed. English is the language chosen by the largest number of journals to publish their manuscripts, with a total of 128. In second place is Spanish, with 40, followed by Portuguese, chosen by 34 of them. Comparing the results on country and language presented in the table it is possible to see the relationship between the percentage of journals that come from the United States and the English language being the most chosen for publishing.

An interesting characteristic observed is that even the journals that have as their official language those with the lowest number of journals, besides accepting manuscripts in the language of their country, also use English, which is present and accepted in most of them. This result points to the importance of the English language in scientific communication, which can be explained by the fact that it makes communication easier among researchers. Besides that, by adopting English as the language of dissemination of his scientific research, the author attracts more visibility for his work (FORATTINI, 1997).

From the total sample of journals indexed in DOAJ, we identified among them those that use business models, with the collection of Article Processing Charges (APCs), to investigate the profiles of these journals and the models practiced by them. To this end, the characteristics of the collected sample were analyzed in a quanti-qualitative way. According to table 2, it can be observed that 163 journals do not charge any kind of APC, which is equivalent to 95.32% of the total indexed in DOAJ, much higher than the number of journals that practice business models, which corresponds to only 4.67% of the sample.

These data demonstrate that most open access journals indexed in the directory and that publish contributions in the area of Library and

Information Science do not charge any type of fee to authors in the process from submission to publication. In Brazil, this can be explained, according to the study of Príncipe and Barradas (2013), by the fact that the areas that most charge fees to authors are the Agricultural Sciences, Health Sciences and Biological Sciences, since their publications generally use more graphic data and their research is written in English, and these particularities may require extra costs.

Chart 3 presents the survey of journals that encompass the Library and Information Science areas inserted in the DOAJ, which use business models and their respective means of financial sustainability:

Chart 3 - Recovered journals that use business models

Journals	Business Models
Berkala Ilmu Perpustakaan dan Informasi	Publication charges (APCs)
Electronic Journal of Knowledge Management	Publication charges (APCs)
Nongye tushu qingbao xuebao	Publication charges (APCs)
Pakistan Journal of Information Management & Libraries	Publication charges (APCs)
Publications	Publication charges (APCs)
Scholarly Assessment Reports	Publishing fees (APCs) and institutional grants
South African Journal of Libraries and Information Science	Publication fees (APCs)
Вісник Харківської державної академії культури	Publication fees (APCs)

Source: Survey data, 2021.

The mapping of these journals that use Article Processing Charges (APCs) allows the analysis of their profiles, in addition to the individual characteristics of each one according to the established categories. Thus, the qualitative analysis of the data, relative to this sample, was performed. The next indicator analyzed is the country of origin of the journals that use business models, presented in Table 1:

Table 1 - Countries of origin of the journals present in DOAJ, that use business models and the respective quantities

Country	Number of journals
United Kingdom	2
South Africa	1
China	1

Indonesia	1
Pakistan	1
Switzerland	1
Ukraine	1
Total	8

Source: Survey data, 2021.

According to the data, the largest number of journals indexed in DOAJ that charge some type of cost related to the publication processes has as its country of origin the United Kingdom, with two journals. Followed by South Africa, China, Indonesia, Pakistan, Switzerland and Ukraine, with one journal each. It is observed that, differently from the data about the countries of origin of all open access journals indexed in DOAJ from the areas of Information Science and Librarianship, table 1 shows that the journals that charge APCs come from countries that have a smaller amount of journals indexed in the directory, representing a low number of open access journals from the areas cited that use business models. Furthermore, it is observed that in Brazil this cutout of the total sample analyzed does not have any journal indexed in DOAJ that charges article processing fees, they are all international journals. This fact may be shown through the study done by Príncipe (2020), which set forth the still discrete participation of Brazilian journals present in the DOAJ, in charging fees to authors in the scientific publication process. Regarding the manuscripts language accepted by these journals, they are indicated in Table 2:

Table 2 - Publication languages of the journals that use business models

Languages	Number of journals
English	7
Indonesian	1
Ukrainian	1
Chinese	1

Source: Survey data, 2021.

According to the second table, seven journals accept publications in English, and one journal accepts publications in Indonesian, Ukrainian, and Chinese. It is perceived, with the analysis of these data, the prevalence of the English language in journals that charge APCs, which depicts the standardization of acceptance in this language, even by journals from countries with multilingualism. Reinforcing, once again, the

relevance of English for communication among researchers around the world.

Continuing with the analysis from the quantitative perspective, the types of business models used by the journals can be visualized in Table 3:

Table 3 - Types of business models used by the journals

Business models	Number of journals
Publication fees (APCs)	8
Institutional Grants	1

Source: Survey data, 2021.

According to the third table, all eight journals in the sample that use business models opt for charging Article Processing Charges (APCs), and one, in addition to using APCs, also has the option of institutional grants. These data show that, although there are several business models for open access scientific journals, as seen in the Open Access Directory (OAD), one of the most used models is the article processing fees, which, after an article is accepted for publication, cover all the costs arising from the publication process stages (OAD, 2022).

Regarding the fees charged by journals, some of them have policies that allow discounts and/or fee exemptions, as shown in Table 4:

Table 4 - APC discounts or exemptions

Accept discounts and/or exemptions from APCs	Yes	No
Total	6	2

Source: Survey data, 2021.

Through the fourth table, it is observed that, of the eight journals indexed in DOAJ and that practice business models, six offer policies that accept discounts and/or fee waivers, and only two do not. These data mean that most journals in the sample analyzed that charge APC fees have policies aimed at publishing manuscripts from researchers who, for various reasons, cannot afford the fees charged by the journals for publication.

Next, the qualitative analysis of the data regarding the sample of journals that use business models is divided into the two categories: journal business model profile and journal performance. The first one deals with the identification of the business model practiced by the journals, acceptance or not of discounts and/or exemptions, and cost charged in the submission/publication processes. In the characteristic business model practiced by the journal, all journals indexed in DOAJ and

that charge fees to authors use the business model of Article Processing Charges (APCs), also called publication fees, which consists in charging a fee to authors to cover the costs arising from the editing and publication process.

There is also the case of Scholarly Assessment Reports, which practices two business models: APCs and institutional grants. The journal charges APCs to defray publication-related costs for typical unsolicited research articles, and the journal, along with the publisher Levy Library Press, defrays the costs of commissioned articles (SCHOLARLY ASSESSMENT REPORTS, 2022).

Despite that, in the sample cutout analyzed, only one journal uses the institutional subsidy business model, according to Pereira and Furnival (2020), this is one of the major business models among scientific journals, along with publication fees (APCs) and the hybrid model. The subsidies can come from different institutions, whether public or private, which finance the costs of journals by providing some kind of support for their financial sustainability.

Regarding the acceptance or not of discounts/waivers of fees, it was found that six of the eight journals have policies of discount and/or waiver of fees to authors. Waiver policies are an alternative commonly granted by scientific publishers to authors who need financial support for publication to enable those who come from developing countries and lower income economies to publish with discounts or full exemption of article processing fees. Each journal has its own specifics for determining the means by which such waivers should be requested (usually during the author's article submission period) as well as offering other possibilities for fee payments.

The journal *Berkala Ilmu Perpustakaan dan Informasi* states on its website that authors who cannot afford the costs of the publication process can request a waiver of all fees (BERKALA ILMU PERPUSTAKAAN DAN INFORMASI, 2022).

The journal *Publications*, published by the publishing house MDPI, offers discounts and fee waivers for authors. In addition, the publisher responsible for the journal has discounts for authors from institutions that are part of its Institutional Open Access Program (IOAP), as well as members of societies affiliated with them. (MDPI, 2022).

The *Electronic Journal of Knowledge Management* also has a fee waiver policy for some authors and universities. So does the journal *Nongye tushu qingbao xuebao* (Journal of Library and Information Science in Agriculture), which informs that discounts or exemptions can be obtained from the editorial department of the journal.

Scholarly Assessment Reports also has policies for fee discounts or exemptions, which should be requested with the journal editor prior to

manuscript submission (SCHOLARLY ASSESSMENT REPORTS, 2022). Finally, the journal Вісник Харківської державної академії культури (Bulletin of the Kharkiv State Academy of Culture), according to data present in the DOAJ, has fee waiver policies, but more details about them could not be found on the journal's website.

These journals that have policies of discounts and/or exemptions from publication fees have in common a concern for researchers who publish contributions in areas of knowledge that have lower levels of funding and/or come from countries or institutions with scarce funding conditions to publish scientific research, since APCs, as Appel and Albagli (2019) point out, can be a barrier to open access scientific publishing, favoring a scenario that privileges the publication of researchers inserted in more favorable conditions and possibly reinforcing regional inequalities.

The next characteristic, cost charged in the submission/publication process, refers to the amounts charged by the journal in the various procedures: from manuscript submission, through editing, editing, peer review, to publication.

The journal Berkala Ilmu Perpustakaan dan Informasi charges, upon accepting the article for publication, an article publication fee of IDR500,000 (Indonesian Rupiah), which is equivalent to about R\$189.91 (all exchange rate values entered in this research were verified on January 26, 2022).

The journal Publications, published by MDPI, charges APCs of 1400 CHF (Swiss Francs), equivalent to R\$8,309.18, subject to the addition of local VAT or taxes (PUBLICATIONS, 2022). The Electronic Journal of Knowledge Management charges a publication fee of GBP300 (sterling) + 20% VAT, which is equivalent to R\$2,206.24.

Nongye tushu qingbao xuebao (Journal of Library and Information Science in Agriculture) reports charging 150RMB (Renminbi) per thousand words and 5000RMB per full article (JOURNAL OF LIBRARY AND INFORMATION SCIENCE IN AGRICULTURE, 2022).

Pakistan Journal of Information Management & Libraries requests an initial fee of \$20 or PKRs2000 (Pakistani Rupee) for processing the article that moves on to the review stage. After the article is accepted for publication, authors must pay a further fee of US\$80 or PKRs8000 to meet formatting and editing costs (PAKISTAN JOURNAL OF INFORMATION MANAGEMENT & LIBRARIES, 2022).

Scholarly Assessment Reports charges an article processing fee of \$750. The journal Вісник Харківської державної академії культури (Bulletin of the Kharkiv State Academy of Culture), on the other hand, according to data present in the DOAJ, has the journal 500 UAH (Ukrainian Hryvnia) as its highest charge. Finally, the South African

Journal of Libraries and Information Science charges APCs of R2,000.00 (ZAR - South African Rand) per article.

The analysis of the data inferred that there is no standardization in the fees charged by the scientific journals analyzed, as it depends on different factors, such as the type of article, whether it includes extra formatting and editing fees, number of words, among other variables. In addition, high fees charged for manuscript publications may distance authors from countries with lower economic value, since the costs of publishing become unfeasible in some cases.

The second category, journal performance, refers to information regarding the distinguishing characteristics of journals that may influence their performance. This category encompasses the waiting time between submission and publication, whether it is indexed by databases, and indices measuring journal quality. The characteristic of waiting time between submission and publication aims to observe the publication process pace for journals that charge APCs. Based on the analysis, it was observed that this waiting period is relative and changes according to the journal analyzed.

The journals *Berkala Ilmu Perpustakaan dan Informasi*, *Journal of Library and Information Science in Agriculture*, *Pakistan Journal of Information Management & Libraries*, *South African Journal of Libraries and Information Science*, *Bulletin of Kharkiv State Academy of Culture*, according to DOAJ information, have an average publication time of 12, 18, 16, 6 and 15 weeks, respectively.

The *Electronic Journal of Knowledge Management* is a continuous publication, for this reason; after all, the steps concerning the publication process, authors receive page proofs within two weeks. Once accepted, the article is published within two weeks. (ELECTRONIC JOURNAL OF KNOWLEDGE MANAGEMENT, 2022).

The *Publications* journal, according to data from the second semester of 2021, has the waiting time of about 28 days from submission to the first decision. Then, the acceptance for publication happens in an average time of four days (PUBLICATIONS, 2022).

Scholarly Assessment Reports takes around 95 days for the entire publication process. Therefore, based on the information analyzed, it is observed that there is no pattern in the average time between submission and publication; it can vary from days to weeks, depending on the journal.

The characteristic 'indices measuring the quality of the journal' comprises the analysis of the metric presence that indicate the average number of citations in scientific articles, such as the Impact Factor and Journal Citation Indicator (JCI) and the classification of journals (Qualis).

Of the journals analyzed, none presented an Impact Factor, a citation accounting metric. *Publications*, on the other hand, has the

Journal Citation Indicator (JCI), a new citation metric effective in 2021, which encompasses all journals indexed on the Web of Science, and does not replace the Impact Factor. Publications has a JCI value of 0.79. Regarding Qualis, the same journal is classified as B5.

Only one of the eight journals in the sample has the quality measurement indicators that were established in the analysis. Based on this data, it can be inferred that the journal prestige-qualifying indexes do not influence the value of the APCs charged by them. This result may be indicative of the still low visibility of journals that do not belong to areas that publish a significant volume of articles in a short period of time, which does not necessarily mean having less academic prestige. According to Strehl (2005), different areas do not have the same level of obsolescence, and the time in which an information is considered relevant depends on the publication constancy of an area. More it publishes, possibly higher will be the citation rates. For this reason, there is a need to also take into consideration other qualitative metrics to measure a journal in addition to citation indicators, a very controversial and complex issue that is not the object of study in this research.

The next characteristic analyzed is the 'indexing of the journals in databases'. This particularity is important to enable a wide dissemination of the journal, besides representing an easier retrieval of the information presented in them. Based on this, the journals were analyzed to identify how they present themselves in relation to this characteristic. All eight journals that charge APCs and that are indexed in DOAJ, are also in several national and international databases, including Scopus, Elsevier, Web of Science, ProQuest and others. For those who submit an article to these journals, this characteristic can be particularly relevant, since having your research indexed in important databases can mean an increase in citations of the research, with wide and rapid dissemination.

Given the above, the use of business models for the financial sustainability of open access electronic scientific journals still has low prevalence in journals that encompass the areas of Librarianship and Information Science. The predominance of journals without charges to authors - 163 of the total 171 inserted in the filter analyzed - prevails mainly in the international environment among those that practice business models, added to the fact that charging APCs involves variables that depend on the context of the authors and journals.

5 Final considerations

Open access is an alternative of publishing that makes possible to share scientific contributions more broadly, free of charge to readers, and enabling the reach for the knowledge to the entire scientific community. However, open access electronic journals see the need to seek ways to

ensure their financial sustainability, since the processes for scientific publication involve costs arising from several steps until the article is ready for publication. Thus, business models for open access electronic scientific journals emerge as an alternative to cover the costs of the journal, ensuring access free of any kind of charge to readers.

It is inferred that the analyzed journals that practice business models use Article Processing Charges (APCs), also called publication fees. One of the journals, in addition to APCs, also receives institutional subsidies. It was found that there is still a low expressiveness in relation to the use of business models by open access journals in the Library and Information Science areas.

The theme of business models for open access electronic scientific journals has several aspects to be reflected, when thought as a means to ensure the financial sustainability of a journal. Despite contributing positively to the journals, it may hinder the authors willing to publish, depending on the economic contexts of researcher and institution. Thus, this research sought to contribute to the advancement of the discussion on the theme, to broaden the view about the use of business models in open access journals, focusing on the areas of Librarianship and Information Science, thus, visualizing how the theme is presented within the areas mentioned.

Based on the results achieved, future studies may be developed aiming to seek meanings for the subjective characteristics about the theme, analyzing the impacts that the practice of business models for open access electronic journals has regarding the production and access to scientific knowledge, and how the charging of APCs may influence the submission and publication of scientific articles by researchers and areas with lower levels of research funding, given the different context perspectives visualized in this research.

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