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## ESTUDIOS / RESEARCH STUDIES

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### Assignment of Subject Headings and Classification Codes to e-books in South American University Libraries

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**Abstract:** The integration of e-books into university libraries has allowed for interesting analysis and discussions in recent years about user preferences between printed and electronic books, the difficulties and challenges librarians face in their incorporation into libraries, among other aspects. However, with this work, the main objective is to analyze the changes that are occurring in South American university libraries regarding the processes of subject heading assignment and classification codes with the massive incorporation of e-books, as well as to understand librarians' perceptions of these changes. To achieve this, we developed and distributed a web-based questionnaire consisting of twenty-four questions to a total of 1,175 university libraries in Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, and Uruguay, from which we received 123 responses (10.5%). Among other findings, it is concluded that indexing and classification processes are losing relevance in librarians' activities, the quality of metadata provided by publishers does not seem to be a significant factor for librarians, and furthermore, the data obtained does not clearly indicate a paradigm shift in relation to indexing and classification processes.

**Keywords:** e-books, university libraries, subject headings, classification, South America, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay.

#### Asignación de encabezamientos de materias y códigos de clasificación a los e-books en bibliotecas universitarias de América del Sur

**Resumen:** La integración de libros electrónicos en las bibliotecas universitarias ha permitido interesantes análisis y discusiones en los últimos años sobre las preferencias de los usuarios entre los libros impresos y electrónicos, las dificultades y desafíos que enfrentan los bibliotecarios en su incorporación a las bibliotecas, entre otros aspectos. Sin embargo, con este trabajo, el objetivo principal es analizar los cambios que están ocurriendo en las bibliotecas universitarias de América del Sur en relación con los procesos de asignación de encabezamientos de materia y códigos de clasificación con la incorporación masiva de libros electrónicos, así como comprender las percepciones de los bibliotecarios sobre estos cambios. Para lograrlo, desarrollamos y distribuimos un cuestionario en línea que constaba de veinticuatro preguntas a un total de 1,175 bibliotecas universitarias en Argentina, Bolivia, Brasil, Chile, Colombia, Ecuador, Paraguay, Perú y Uruguay, de las cuales recibimos 123 respuestas (10.5%). Entre otros hallazgos, se concluye que los procesos de indexación y clasificación están perdiendo relevancia en las actividades de los bibliotecarios, la calidad de los metadatos proporcionados por las editoriales no parece ser un factor significativo para los bibliotecarios y, además, los datos obtenidos no indican claramente un cambio de paradigma en relación con los procesos de indexación y clasificación.

**Palabras clave:** e-books, bibliotecas universitarias, encabezamientos de materia, clasificación, América del Sur, Argentina, Bolivia, Brasil, Chile, Colombia, Ecuador, Paraguay, Perú, Uruguay. **1**

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## 1. INTRODUCTION

Librarians have been creating mechanisms to easily find and locate physical books through countless classifications over time, and in more recently, catalogs that acted as access points by author, title, and subject. However, in the early 2000s, electronic books (e-books) began an unprecedented incorporation into libraries that caused uncertainties, readjustments or even significant changes in the way libraries operate. E-books or electronic books are digital texts or digitally converted books whose portable document format depends on specialized hardware and software for display on electronic reading devices or computers through network access (Pandey, 2016). Currently, there is a diversity of formats, and the absence of a standard which, according to Kahn and Underwood (2013), leads to uncertainty for the development of e-book collections in libraries, on top of the fact that many are restrict and complicated to use and share. These e-book technological aspects distinguish them from their printed version in relation, mainly, to their physical characteristics that influence usage behaviors, treatment, access, organization and preservation techniques.

Thus, doubts were soon raised in the literature as to whether libraries were properly prepared for the work that really had to be carried out in the 21st century (Barnes, cited by Stachokas, 2019); manifestations such as that some traditional library approaches, services and processes have become increasingly irrelevant (Stachokas, 2014); that in various respects, digital collections have proven to be more complex than their analogue predecessors (Breeding, 2017); that new approaches emerged in relation to acquisition, cataloging, access or management (Stachokas, 2019); or that e-books are considered as disruptive technology (Herrington, 2013; Buschow, 2014; Wilson, 2014 and Frederick, 2016).

The application of this new technology is still causing great changes. Not only is the survival of the printed book questioned due to the e-book, but perhaps we are faced with a possible paradigm shift in the traditional way librarians work, as different ways have emerged to incorporate e-books into catalogues, changes in technical processes, new forms of user-product relationship or modifications in the maintenance and management of collections.

University libraries, during the COVID19 pandemic, closed and remained with remote access to their digital content. In this way, digital access resources and tools and, in particular, e-books have become more essential.

This investigation is intended to continue and expand studies published in Gil-Leiva et al. (2018). In that paper, we presented the results of the analysis of a web questionnaire sent to libraries in Portugal, Spain, United Kingdom, United States and Brazil in December 2017. Subsequently, that questionnaire was sent to other libraries in Sweden, Norway, Finland and Australia, which, together with the data from the first survey, were published by Gil-Leiva et al. (2020). Subsequently, in Fujita et al. (2021), we analyzed the data from Brazil in comparison with the remaining of the countries. We found some significant differences, which led us to consider that it would be interesting to extend the research to South America for a broader view.

The primary objective of this article is to analyze the impact of the widespread integration of e-books into university library systems in South America on the processes of subject heading and classification code assignment. Additionally, it aims to gain insights into the perceptions of librarians in this evolving context. The specific objectives are as follows: to identify the processes for assigning subject headings and classification codes, including the differences between print books and e-books; to identify metadata assignment practices for e-books carried out by publishers; to examine the role of discovery systems; to gauge the perception of librarians regarding the stability of their collections and the potential paradigm shift; to assess any frustration or stress among librarians resulting from the ongoing changes in the technical processes applied to e-books; and to explore aspects related to the automatic assignment of subject headings and classification codes.

Based on these objectives, we intend to answer a series of questions, among which we highlight the following: what is the current status of e-book integration in South American university libraries?; are South American librarians' perceptions distinct from those of their counterparts in other countries or continents?; specifically, do catalogers in South America employ similar processes for e-books as they do for physical books?; are librarians experiencing a paradigm shift, stress, or frustration due to the widespread adoption of e-books and the associated changes in processes and management?; what are the opinions of South American university librarians regarding the potential automation of subject and classification code assignment processes? These research questions guide our study, and we aim to provide answers to them with this research.

## 2. Literature review

The literature on electronic books and the library environment has been abundant in the last twenty-five years. Some addressed aspects include platforms for e-books, lending services and exchange networks, challenges for libraries with this format, acquisition models, e-books versus printed books, uses, challenges and changes in cataloging or the quality of bibliographical records provided by publishers/providers, among other aspects.

E-book cataloging workflow and records management have been addressed in studies by Costello (2017), Chen et al. (2016), Mune and Agee (2015) or Ravit and Dana (2015). E-book cataloging records in collections do not yet have a specific standardization, which is why libraries do not have policies developed to manage e-books and their discovery metadata within the context of other library collections (Zhao and Zhao, 2010, Kahn and Underwood, 2013). Furthermore, different and varied criteria are used for the selection of e-book packages (Albanese, 2007; Moore, 2011; European Bureau of Library Information and Documentation Associations [EBLIDA], 2012; Vasileiou et al. 2012; Roncevic, 2013; Yuan et al., 2018; Ciptayani and Dewi, 2018). However, the quality of records, especially metadata related to subject headings and classification codes, does not appear to be essential despite the observation that publishers provide very basic cataloging with numerous errors (Sanchez et al., 2006; Wu and Mitchell, 2010).

Probably some of these issues have motivated the drafting and approval in 2022 of the American standard NISO RP-29 E-Book Bibliographic Metadata Requirements in the Sale, Publication, Discovery, Delivery, and Preservation Supply Chain, with a section dedicated to 'Subjects' where, among other aspects, stakeholder needs for subjects are discussed; the differences between keywords and subjects are explained; and likewise recommendations are provided to include LCSHs (Library of Congress Subject Headings); BISAC subjects, that are maintained by the Book Industry Study Group (BISG), which have been the standard in the North American book industry in recent years; include Thema subjects, Thema subjects are maintained by EDItEUR and were designed as a scheme that could be used globally by the book industry; and finally, to include other subject schemas recognized by ONIX.

On the other hand, it has been noted that electronic book collections do not seem as stable as print book collections because libraries that purchase or subscribe to e-book packages often experience providers removing titles without prior notice (Roncevic, 2013; Frederick, 2015).

In a comparative study of e-book and printed book (p-book) cataloging, Kont (2021) observed that the processes have different number of steps, five steps for the e-book and nine for the p-book which includes, for example, document transfer to the cataloging division, technical preparation for storage on the shelf, call number assignment. In addition, the time needed for editing the e-book cataloging is increased due to the low quality of the MARC records provided by providers. On the other hand, aiming at the development of recommendations to improve e-book cataloging, Zhao and Zhao (2010) presented a case study of e-book cataloging practices carried out by a Canadian library to build an e-book database of MARC records. The main difficulties found were the variety of metadata packages with basic-level bibliographic records purchased or licensed from various providers that use different platforms and contribute to the lack of standardization with an impact on the quality of cataloging. From these difficulties, several questions arose for the creation of the e-book database that resulted in the elaboration of a cataloging policy with details of the import procedures and adequacy of the MARC bibliographic records to be adopted by the consortium libraries. Establishing e-book cataloging policies by libraries helps to alleviate representation and retrieval problems by increasing uniformity and consistency in bibliographic records, assists libraries in managing cataloging databases, and promotes the use of e-books by library users (Zhao and Zhao, 2010; Frederick, 2016).

The idea of reusing metadata to link physical and electronic resources is discussed by Allen et al. (2017). However, Derrot and Koskas (2016) question the definition of what could be an e-book record whose bibliographic description would be a printed monograph or an electronic document? The decision to treat e-books as books rather than electronic documents comes from the fact that current catalogers deal with printed books and, in this context, the idea of using links between records for the same book in different formats is the solution found by the French National Library which adopts Resource Description and Access (RDA) for record convergence.

Workflow management to carry out the technical processes of electronic resources is analyzed by Garofalo (2018) who reports the challenges of transforming workflows for electronic resources in academic libraries at North American universities. In this sense, Kont (2021) considers that the e-book cataloging process is still complex, that the growing number of electronic books is a constant challenge to effective access and questions whether libraries are worth the effort to carry out their cataloging

considering that users can more easily find them on the library's website or Google's discovery tool. On the other hand, according to Connaway and Lawrence (2003), e-books are demonstrably more economical for acquisition, cataloging, storage and preservation. For this reason, few libraries offer bibliographic records for electronic books, as shown by the results of Belanger's (2007) research on catalogs of thirty academic libraries in the United Kingdom. Therefore, different libraries have taken different decisions about the inclusion of electronic books in online catalogues. Zhang and Jin (2014) note that there are lists of e-book titles available on the library website as they are more familiar compared to searching the online catalog. In this sense, Frederick (2016) recommends libraries begin to create an e-book metadata management plan in response to the need to define and study practices, processes, procedures and applications for mass processing. Classification is an example of a process to be included in the e-book metadata for adjusting catalog records to display them in a "shelf list order" that, in practice, helps the user in selecting by subject while browsing e-books. In more specialized and interdisciplinary collections, Frederick (2016) recommends using subject headings for a higher level of search accuracy. Regarding the need for access to more specialized subjects when browsing e-book collections, Frederick (2016) highlights the need for content subject analysis, especially for e-books in the areas of arts and humanities where words from the title or keywords are ineffective at representing content. Regarding this, Park and Tosaka, 2010, and Yuan et al., 2018, pointed out that quality subject headings are essential elements for retrieval systems and discovery tools.

Another topic of study in academic libraries has been the analysis and application of measures and functions for cost calculation (Li and Terng, 2022), the cost of cataloging and metadata creation (Moulaison-Sandy, Cho, and Dykas, 2022), as well as verifying the cost of purchasing and cataloging processes for e-books in comparison to printed books (Kont, 2021).

On the other hand, to help manage and maintain e-book metadata, OCLC's WorldShare Collection Manager is an initiative for improving e-book collection metadata management conducted as a metadata collection management service that, "Together with the WorldCat® knowledge base, it automates WorldCat inventory maintenance and provides constantly updated MARC records, including URL changes." (<https://www.oclc.org/en/worldshare-collection-manager.html>). However, with the proposed linked data, libraries also began

to discuss the proposal of the Bibliographical Framework (BIBFRAME), a data model proposed by the Library of Congress ([loc.gov/marc/transition](http://loc.gov/marc/transition)), considered by Frederick (2016) as another disruptive change. Finally, in recent years, various projects have been initiated to develop automatic indexing systems in various national libraries that it would be advisable to follow to learn about results and the level of implementation (Suominen, 2019; Suominen et al., 2022; Asula et al., 2021).

In summary, the change in the book format, from printed to electronic, changed not only the use of the physical printed book for the digital one, but the entire workflow necessary to provide access, from selection processes, acquisition, descriptive and thematic technical treatment, to storage and preservation in the context of the web, which reinforces the need for innovation in informational tools and processes. The major issue libraries currently face, which may even persist into the future, is the restructuring of information units and professional work structures within libraries.

### 3. METHODOLOGY

After conducting a literature review based on a bibliographic survey in the *Web of Science* and *Scopus* databases, which was used in the Introduction, Literature Review, and Discussion sections, a questionnaire (Gil Leiva et al., 2020) was administered to collect firsthand information from university librarians in South America (Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Guyana, French Guiana, Suriname, and Venezuela, see Tabla I). To accomplish this, we prepared a web-based questionnaire on an internal platform at the University of Murcia, consisting of twenty-four open-ended and closed-ended questions. According to Table II (categories and questions), the questionnaire's content primarily focused on technical processes in e-books (assignment of subject headings and classification codes), discovery tools, collection stability, paradigm shift, librarian frustration or stress, and the automation of subject heading and classification code assignment, among other aspects (See the complete questionnaire in Annex 1).

The survey was prepared in both Spanish (targeting the majority of South American countries) and Portuguese for distribution to university libraries in Brazil. On the other hand, we considered that the most suitable recipients for the survey would be the directors of university libraries or those responsible for technical processes. Therefore, we focused on obtaining their email addresses. For each of the selected countries (Bolivia, Brazil, Chile, Colombia,

**Table I.** Number of university libraries responding to the questionnaire.

Countries	Number of contacted Higher Education Institution Libraries	Number of Respondent Higher Education Institution Libraries
Argentina	373	43
Bolivia	28	02
Brazil	188	21
Chile	215	19
Colombia	24	6
Ecuador	37	11
Guyana	9	0
French Guyana	1	0
Paraguay	42	3
Peru	161	11
Suriname	5	0
Uruguay	59	7
Venezuela	33	0
Total libraries	1.175	
Total questionnaires answered		123

Ecuador, Paraguay, Peru, Uruguay, Guyana, French Guiana, Suriname, and Venezuela), we conducted web searches for directories of university libraries, and once located, we visited each website to obtain the email address of the director, the librarian responsible for technical processes, or, in their absence, the email of a librarian in the cataloging department.

Once the surveys were available on the sending and receiving platform in both languages and with the located email addresses, nearly twelve hundred surveys were sent out in December 2021.

After several reminders and several weeks, we obtained a total of 123 completed questionnaires. These responses, originating from the countries listed in Table I, served as the foundation for the preparation of this article. It is worth noting that we did not receive any responses from the surveys sent to university libraries in Guyana, French Guiana, Suriname, and Venezuela.

The questions comprising the questionnaire were distributed among the analysis categories, ensuring thematic alignment. The division occurred as follows (Table II):

**Table II.** Relationship between the categories of analysis and the questions in the questionnaire applied to the University Libraries.

Categories	Object of analysis	Questions
Technical processes in e-books	Identify the processes for assigning subject headings and classification codes, including the differences between p-books and e-books	P3, P8, P9, P10, P12, P13, P15, P16, P17, P19, P20
Provider selection	Identify metadata assignment procedures performed by publishers	P11, P14
Discovery tools	Identify the use of library-related discovery systems	P5, P7
Collection stability, paradigm shift and frustration/stress among librarians or change of paradigm	Identify librarians' perception of collection stability, paradigm shift, and frustration or stress among librarians	P4, P6, P18, P21, P24
Automatic subject and classification code assignment	Identify aspects related to automatic subject and classification code assignment	P22, P23

Finally, it's worth mentioning that the categories already listed were utilized to organize and present the results in the next section.

#### 4. RESULTS

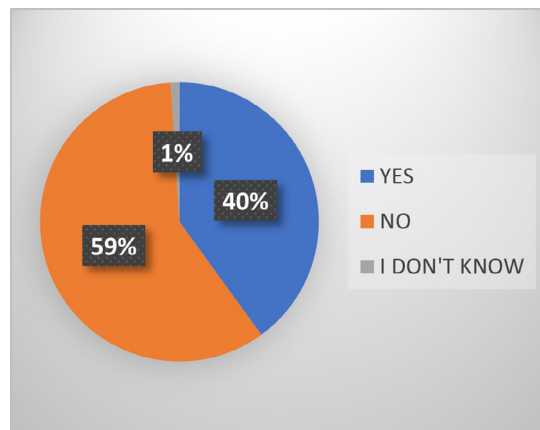
To identify the profile of the participating libraries, two initial questions were asked about the nature of the university and the approximate number of students. There was a total of 70 respondents from public universities and 53 from private universities. As seen in Figure 1, some universities have a large number of students, more than 30,000 students. with 5,000 or fewer. However, we noticed a balanced number of public and private universities, covering larger and smaller universities, in relation to the number of member students.

##### 4.1 Technical processes in e-books

Regarding standard procedures for assigning subject headings and classification codes, we found that 59% participating libraries claimed not to have one; and 40% claimed to have these standard procedures, and only 1% did not know. Not all libraries justified their answers, but two reported using the same methods of printed information resources, and one of them uses natural language when assigning subject headings. In the same sense, some libraries stated that part of their manuals make no distinction between the printed and digital resource treatment. Other libraries reported having procedures established in a

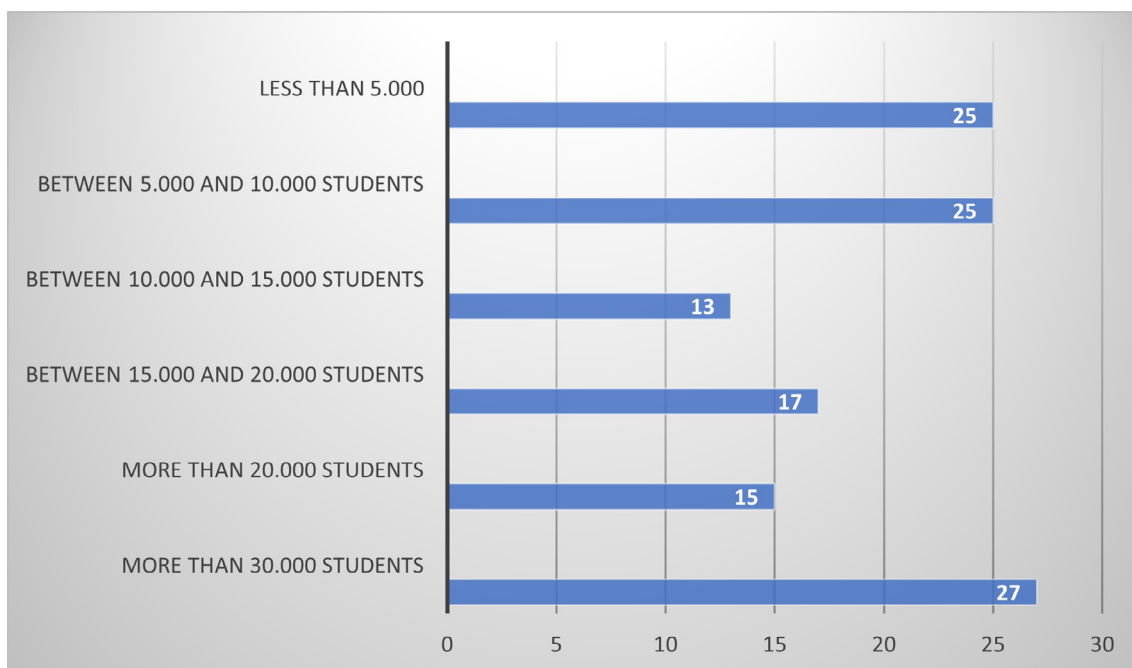
manual for cataloging e-books with subject heading assignment, but they do not classify them. It was also indicated that these procedures are decentralized, that is, subject heading assignment and classification are carried out according to each unit.

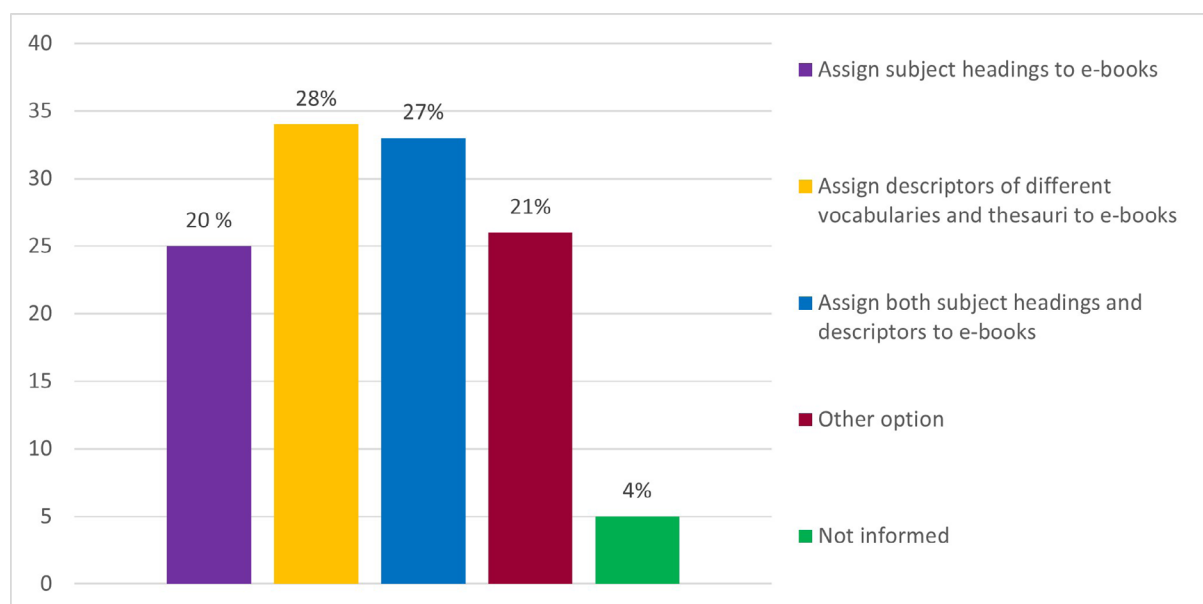
**Figure 2.** Procedure/normative that includes subject heading and classification code assignment to e-books.



On the other hand, libraries that assign descriptors of different controlled vocabularies to e-books correspond to 20% of respondents, with two of them stating that this procedure is the same for printed

**Figure 1.** Approximate number of students per university.



**Figure 3.** Use of subject headings or descriptors by libraries.

books. 27% assign both subject headings and descriptors to e-books; 4% of the libraries did not respond to this alternative, and 21% marked "other option". Of these, the following answers were given: eight libraries do not make this assignment, as their providers provide the descriptors; two of them mentioned the paid platform e-Libro; and another one reported that the books that need to be manually uploaded use the CDU, the UNESCO thesaurus, SAIJ and Psicología-UBA as a base. The other libraries reported that the e-books are not catalogued; they use only keywords (natural language); they estimate that subject heading assignment will only be when the resources permanently belong to the library; they lack of knowledge on the use of these assignments; and they plan to start performing this task soon.

Considering that some libraries do not assign subject headings or descriptors to e-books on paid platforms, we sought to identify whether this procedure is applied to purchased e-books. 38% answered "yes", 31% answered "no", because publishers already provide them", and 20% answered "no", because they do not buy e-books or because subject headings are not used in any material. 11% indicated the option that allows assignment for some specific cases: use only for works by the institutions' authors, those that need to be added manually, only for those purchased recently and those that are not in MARC format and need to be catalogued. The remaining libraries did not respond to this question. In contrast, the question about assigning subject headings or descriptors to subscribed e-books, as already noted, most libraries, corresponding to 46%

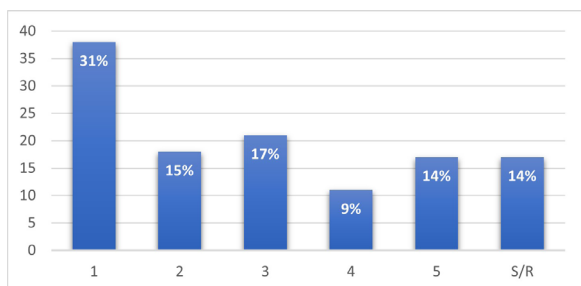
of participants, do not carry out this assignment because publishers already provide them; 28% answered "yes"; 4% of the libraries specified that they only do this when the descriptors are very generic; also when they are works by the institutions' authors and for cases where the printed version is in the collection, making a link to access the e-book. 22% indicated that they did not use subject headings or descriptors for subscribed e-books mainly because they do not actually belong to the library, as e-books are available while there is a subscription. And finally, 11 libraries did not respond to this question.

When questioned about considering that the subject headings/descriptor assignment to e-books is useful for users searching for information, the vast majority, 90%, state that they consider the assignment important and necessary, mainly in the search for "subjects", which is a widely used criterion by users. Librarians also related the perception of "consistency" that the assignment must have, so that informational resources can be represented in a specific way, with effective retrieval. The other 10% were split between: "no" (3%), because e-books are not catalogued; another library justified the negative response by saying that the more technical and exact language assigned by a librarian, the more difficult for the user who uses everyday terms; 4% marked "I don't know" and 3% did not answer.

Figure 4 presents librarians' considerations about the high number of purchased e-books and whether it can prevent proper subject heading/descriptor assignment. It is observed that 31% of libraries disagree that there is this impediment due to the

number of purchased e-books, and 14% responded that they agree with this sentence. Regarding subscribed e-books, 33% of libraries responded that the high number of subscribed e-books can cause an inappropriate subject heading/descriptor assignment, and 26% disagreed that there could be this difficulty with subscribed materials.

**Figure 4.** Impossibility of proper subject heading/descriptor assignment to purchased e-books (1 disagree; 5 agree).



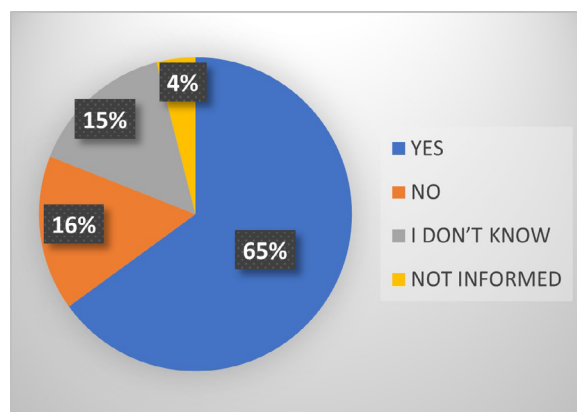
We also asked who should assign subject headings to e-books, whether publishers or librarians themselves, since e-books are in libraries. The obtained data are shown in Figure 5.

Regarding the question whether the quality of metadata related to subject headings/descriptors

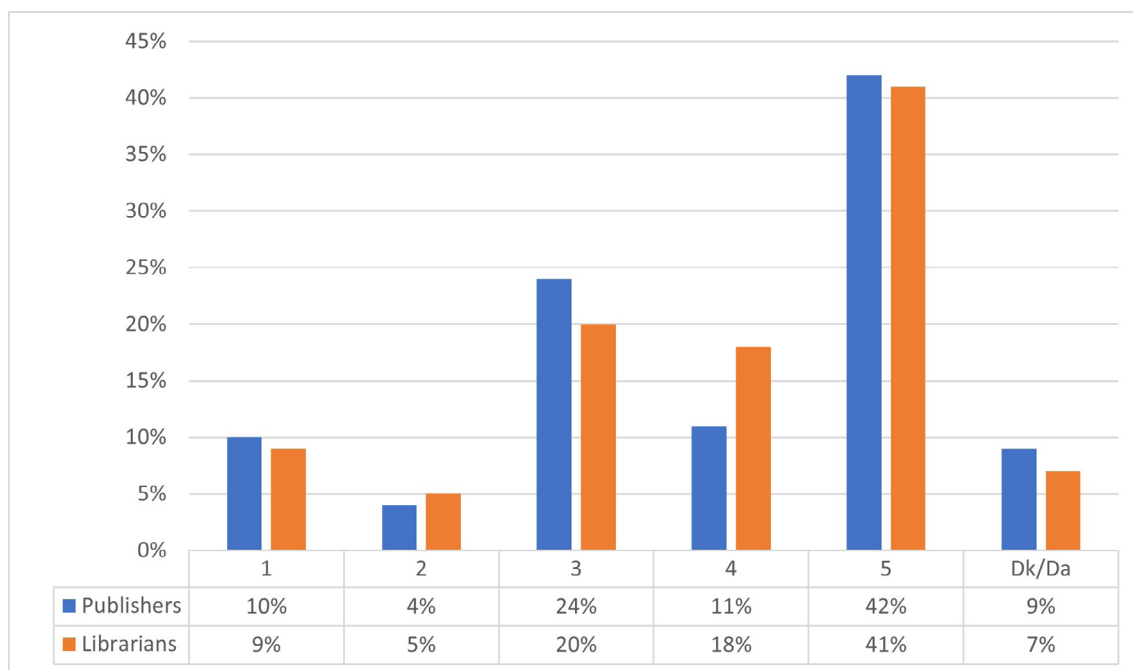
provided by publishers/providers should be taken into account when choosing e-book packages for purchase or subscription, 25% of librarians indicated that they agree with this statement, with 36% disagreeing that this should be a considerable factor, and 28% marking option 3, which we understand as doubtful, that is, they neither agree nor disagree.

Finally, we present data on questions that aim to understand whether the process performed for e-books and printed books is the same, and whether the assigned number of subject headings

**Figure 6.** Number of terms assigned to e-books and p-books.



**Figure 5.** Publishers / librarians should provide subject headings/descriptors.





is similar for both e-books and printed books. 80% of librarians said that the process is the same for both formats, 14% said "no", while 6% did not respond to this question. On the other hand, it was verified that 65% of the libraries consider that the number of descriptors does not differ in supports (Figure 6). Another highlight is the mention of an Indexing Policy, which establishes a standard for indexing exhaustivity, which must be respected to have a uniform treatment of documents.

Next, we will analyze the responses regarding the assignment of classification codes. In this regard, 59% of librarians responded that they do not assign classification codes because they consider them unnecessary, while 34% indicated that they assign them to e-books in the same manner as they do for printed books. When asked whether the same process is used to assign classification codes to both e-books and printed books, 43% answered 'yes,' 37% answered 'no,' and 20% did not provide a response.

On the other hand, 23% of respondents mentioned that the high volume of purchased e-books makes it impractical to assign adequate classification codes. However, 47% believe that this is not a hindrance. When it comes to subscribed e-books, there is a greater disparity in responses, with 36% stating that the large number of subscribed e-books does indeed hinder proper classification code assignment, while 37% disagree with this statement. Furthermore, 16% seem uncertain as they opted for the intermediate

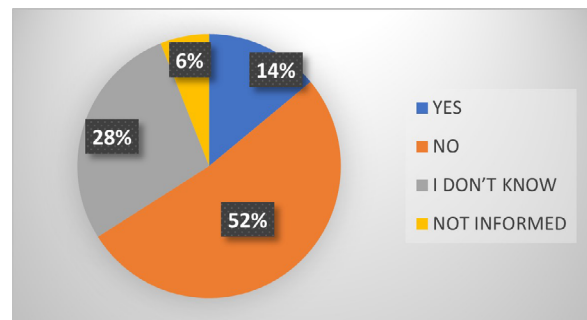
option 3, indicating that a consensus on this matter does not appear to be present.

We also asked who should assign classification codes to e-books, whether the publishers or the librarians, considering that the e-books are in the libraries. The obtained data are shown in Figure 7.

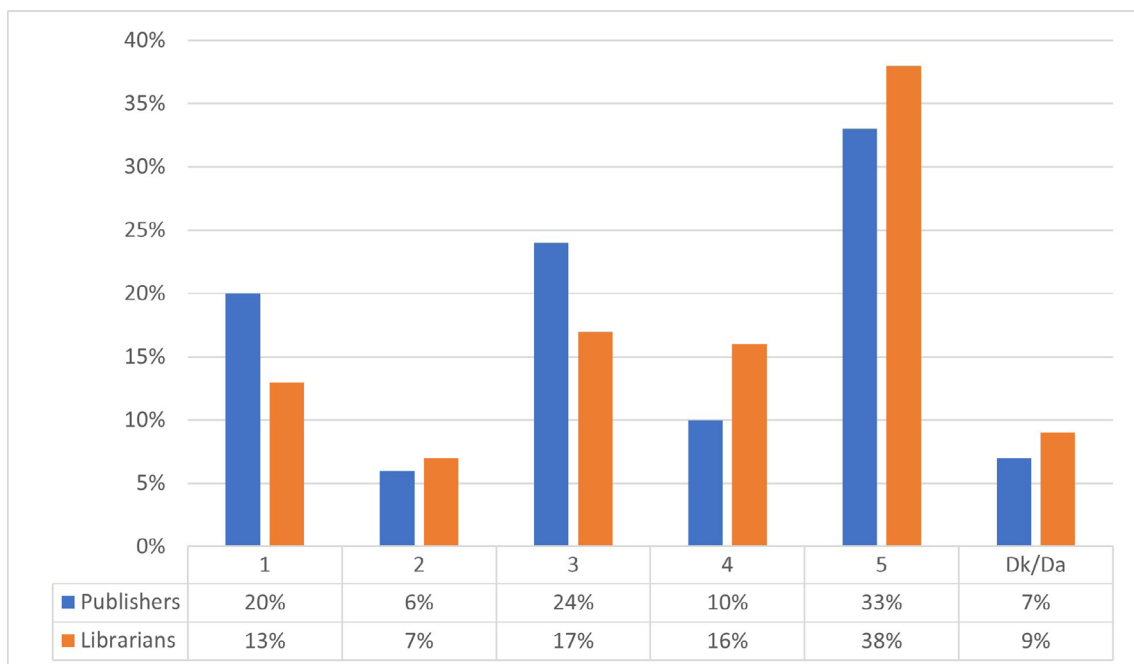
#### 4.2 Provider selection

For this category, participants were asked if there has been a situation when subject headings or classification codes were assigned to a set of e-books and, sometime later, the publisher/provider deleted or modified these records in overlapping processes. Most libraries, 59 participants, denied that this situation could have occurred, 31 did not know, and 16 marked "yes", as shown in Figure 8 in %.

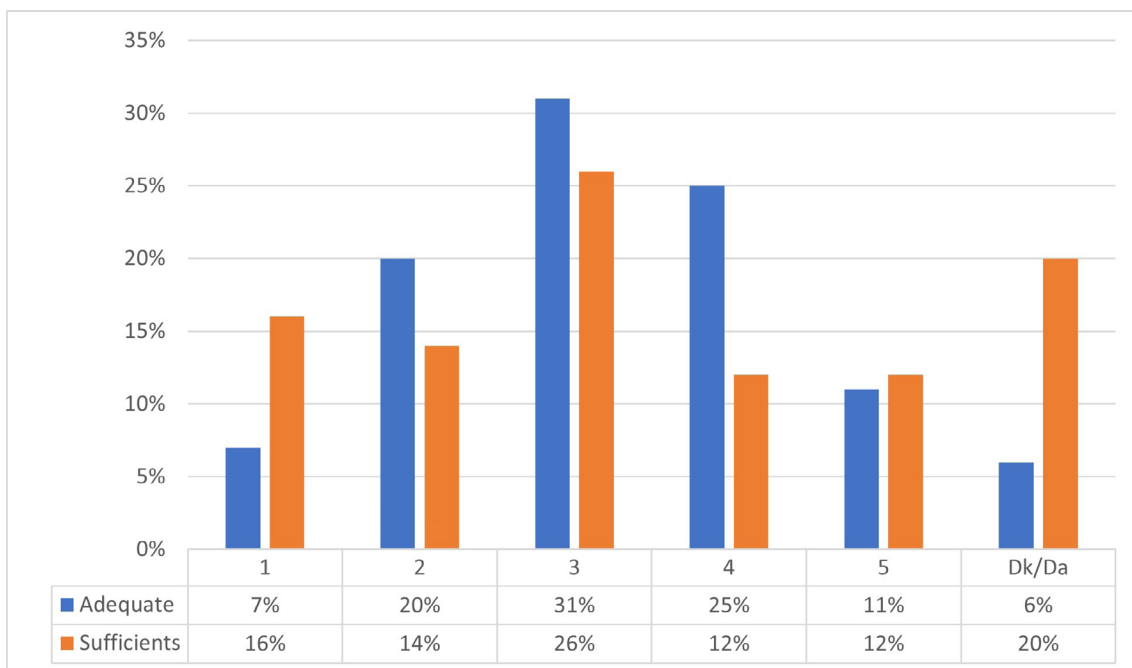
**Figure 8.** Posterior change of metadata by publishers/providers.



**Figure 7.** Classification code assignment (1 disagree; 5 agree).



**Figure 9.** Metadata provided by publishers/providers are adequate and sufficient (1 disagree; 5 agree).



Previously, it was observed that most libraries believe the quality of metadata provided by publishers and providers is important, but we also wanted to know whether they were adequate and sufficient, and it is not worth modifying them.

When asked if the metadata provided is adequate, there is no clear consensus, since 36% of the librarians consider that they are adequate, 27% indicated that they are not adequate, but 31% marked option 3, showing doubt in this question, to which should be added 6% of librarians who did not inform. Regarding the question of whether the metadata provided by publishers/providers is sufficient, practically the same thing happens, since 30% of the librarians indicated that they are not sufficient, 24% marked that they are sufficient, and it is not worth modify them, 26% expressed doubt, and a considerable 20% did not respond.

#### 4.3 Discovery tools

Discovery tools are single-interface metasearch engines that search across databases, electronic journals, e-books, repositories, etc. We found that 40% of the libraries have this tool, 48% do not, and 10 are under development. On the other hand, 62% believe that their institution's e-book search and discovery system is suitable for users, 23% answered no, and finally, 15% marked they did not know.

#### 4.4 Collection stability, paradigm shift and frustration/stress among librarians or change of paradigm

This category is particularly focused on understanding the librarians' experience and perception. The first question is whether e-books are part of the library's collection, similarly to printed books. Some libraries have previously responded that the subject heading assignment, the indexing process, and the number of terms should be the same as for printed books. That said, 79% agree that these e-books are part of the library's collection, as they are available to its users. 17% said they didn't, and finally, 2% said they didn't know. On the other hand, 47% of librarians said that e-book collections are unstable and make it difficult to keep the library catalog updated, 41% did not agree with this statement, and 11% responded that they did not know.

We also wanted to find out whether there were changes in the application of technical processes to e-books in relation to indexing and classification, and whether they were introduced in the library's procedure manuals. 46% answered "no". Although most libraries still do not include aspects of thematic treatment in their manuals, a significant number, 51 of the 123 participating libraries (41%), have formalized procedures regarding e-books in a manual. This makes the procedures known to all and can be aligned with a pre-established guideline. 6% did not know, and 7% did not inform.

The librarian is an active agent in information organization, so changes can positively add to the work environment, but they could also cause some frustration or stress. Asked whether these changes were causing frustration or stress, 45% answered that there is no such type of stress, and that e-books are positive consequences of current times. However, 30% said "yes", and an important 19% chose option 3, which we understand as having no clear opinion on the matter.

Finally, we wanted to find out whether these introduced changes (large volumes of items, variations in processes or management) have brought about a paradigm shift or a change in model. 44% think that we are facing a paradigm shift, 21% that it is not important, and 33% that they did not know, arguing mainly that the essence of the work is still the same, with a change in support only.

#### 4.5 Automation of subject and classification code assignments

Regarding these aspects of introducing automatic indexing and classification systems to e-books, most libraries (59%) agree that automatic indexing brings benefits to digital information resource treatment, as seen in Figure 10. Only 15 % of libraries do not agree with the use of automatic indexing. Participants reported a lack of knowledge about this resource, in addition to one of them stating that a machine does not match the librarian's quality of service. A significant 23% (option 3) did not have a clear opinion.

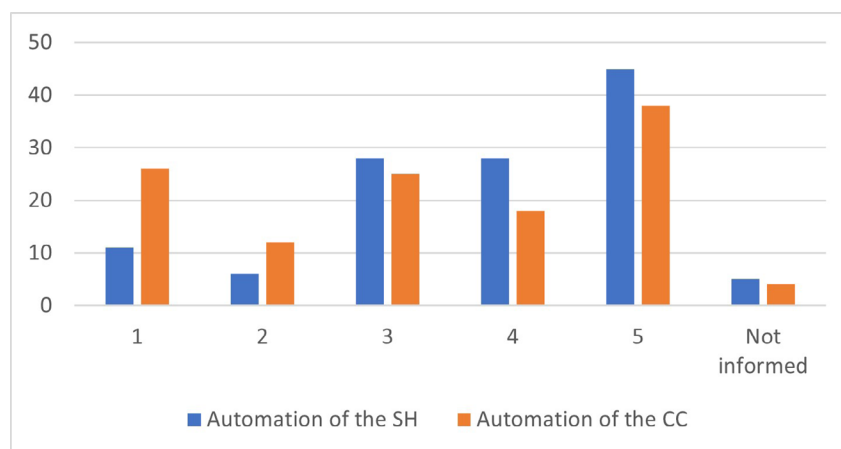
Finally, it was also asked whether introducing systems to automatically assign classification codes to e-books would be appropriate. A high percentage of libraries that agreed with the automatic assignment of codes was obtained, totaling 56%.

However, 38% marked that they did not agree, as they did not find automatic assignment necessary. The issue of generality of codes was also raised, and again it was pointed out that a machine will never do a better job than a librarian who knows their users and the ways they seek information. Importantly, 20% (25 answers) checked "I don't know".

#### 5. DISCUSSION

From the answers obtained by the questionnaire application, we have observed that librarians have been facing new situations with the exponential influx of digital informational resources. Success in information retrieval has always been an issue sought and improved by information professionals. Therefore, e-book information treatment has presented itself as a challenge for the librarians' daily practice. It was also observed that paid subscription platforms are agents of concern regarding how to act in providing information. Many libraries have a valid subscription as long as the platform is paid and, therefore, they do not carry out the technical processing with subject heading and classification code assignments. It was verified that most libraries consider subscribed materials as part of the collection, but these do not pass through the librarian's scrutiny. Therefore, these materials are at risk of failing to reach users due to the lack of organization, standardization and consistency in metadata assignment. As it is well known, printed books have traditionally been constituted stable collections in libraries, however, with the incorporation and management of e-book packages, this idea of stability is changing due to the fact that some e-books or e-book collections seem to enter and leave libraries for different reasons. In fact, 41% of the surveyed librarians consider that e-book collections are unstable and

**Figure 10.** Automation for subject heading and classification code assignment (1 disagree; 5 agree).



it is difficult to keep the catalog updated, while 48% disagree, and 11% answered that they do not know. In our 2017/2018 surveys, the data were 40%, 31.4% and 28%, respectively. This instability is perceived by librarians and has also been reported in previous studies (Roncevic, 2013; Frederick, 2015).

A frequent report was that there is no distinction between printed books (p-books) and digital books (e-books). However, procedures differing from those that undergo printed books are noted. When purchasing an e-book collection rather than a subscription, librarians reported leveraging metadata provided by publishers and providers. This procedure is not done in traditional information resources that go through a series of technical processes. So why doesn't this happen with e-books? The given justification is that the work is too extensive to reconcile with the physical environment and they pointed out the lack of personnel and training to manage all this digital information. On the other hand, according to Walton et al. (2022), the trend of using printed books versus electronic books and the potential impact on users the purchase of printed books driven by demand, led to a decrease in the purchase and general use of printed titles, emphasizing electronic titles.

Regarding subject heading/descriptor assignment, according to the data obtained for South America, only 38% of librarians assigned subject headings/descriptors to purchased e-books or 28% to subscribed e-books, mainly due to the fact that they are not purchasing e-books or because they are not permanently included in the catalogs. In any case, these data are very close to those obtained in our 2017/2018 surveys, since only 32.7% of librarians manifested assigning subject headings/descriptors to purchased or subscribed e-books, even for different reasons such as the instability of the collections, lack of time or because publishers already provide such information.

In the 2017/2018 survey, we dedicated two questions to determine who should provide subject headings/descriptors for e-books, whether it should be the publishers or the librarians. On that occasion, when asked if it should be the publishers, librarians were in favor with 61%, undecided with 19.2%, and against with 19.1%. Regarding the statement that librarians themselves should provide subject headings/descriptors, 50.3% were against it, 24.2% were undecided, and 25.2% were in favor. Therefore, in that initial survey, the opinion of librarians was clear. However, in this survey of librarians from South America, the data is contradictory. We also dedicated two questions to this issue. Regarding the

statement that publishers should provide subject headings/descriptors for e-books, 53% were in favor, 14% were against, 24% were undecided, and 9% did not respond. On the other hand, when asked if librarians should be responsible for assigning subject headings/descriptors for e-books, 59% were in favor, 14% were against, 20% were undecided, and 7% did not respond.

The same has occurred regarding the assignment of classification codes. We also dedicated two questions to determine who should carry out this process, whether it should be the publishers or the librarians. In the 2017/2018 survey, when asked if it should be the publishers, 56% of librarians were in favor, 20% were against, and 24% were undecided. Regarding the statement that librarians themselves should perform the classification code assignment, 58% were against it, 22% were in favor, and 20% were undecided. Therefore, the sentiment of librarians seems clear on this matter. In the survey of librarians from South America, we also dedicated two questions to ascertain their opinion. Regarding the statement that publishers should provide classification codes for e-books, 43% were in favor, 26% were against, 24% were undecided, and 7% did not respond. And when asked if librarians should be the ones to provide the classification codes, 53% also expressed their support, 20% were against, 17% were undecided, and 9% did not respond.

According to Kont (2021), activities related to the acquisition and cataloging of electronic books require significantly less staff time and money than printed books. On the other hand, various publications highlight the diverse criteria that libraries consider when selecting providers for e-book subscription or purchase packages, such as price, thematic areas, access models, metadata availability, platform interface, alignment with reading lists, licenses, and technical support (Albanese, 2007; Moore, 2011; European Bureau of Library Information and Documentation Associations [EBLIDA], 2012; Vasileiou et al. 2012; Roncevic, 2013; Yuan et al., 2018; Ciptayani and Dewi, 2018).

It is noteworthy that in these works, the quality of bibliographic records, in general, and subject headings, in particular, are not essential criteria guiding librarians' decision-making. However, numerous studies have highlighted both the existing gaps and the variety of errors in the bibliographic records that libraries encounter (Sanchez et al., 2006; Wu and Mitchell, 2010: 171; Zhao and Zhao, 2010; Martin and Mundle, 2011; Breedt and Walter, 2012: 5; Traill, 2013; Ravit and Dana, 2015; Wiersma and Tovstadi, 2017:

624; Mi and Pollock, 2019; Gates and Glazier, 2019). In this sense, it would be interesting to explore the relationship between the time and cost savings mentioned by Kont and the quality issues associated with electronic book records.

When we asked whether the quality of the subject headings/descriptors provided by the providers was taken into account when selecting the e-book packages, 36% indicated that it was not taken into account, 30% that it was taken into account, and 28% answered that they did not know. In our 2017/2018 surveys, 53.9% indicated that the quality of the headings was not taken into account. The data obtained for South America seem a little better but equally concerning. In this sense, Sanchez et al. (2006) already highlighted this when they wrote that "with the proliferation of e-book sources that use very basic cataloging or none at all, we will face larger issues of how, or if, we can continue to provide consistent, quality cataloging and authority control for these titles. If some entity does not provide cataloging for the universe of e-books, will other methods such as basic Internet search engines be sufficient to provide access?".

In relation to whether classification codes are useful for searches, from the data obtained for South America, librarians grant a more important role than the librarians who responded to the 2017/2018 surveys. In South America, 42% consider classification codes useful for information searches, compared to 29% in previous surveys; 43% do not consider them useful compared to 50%, and 11% librarians in South America answered that they did not know compared to 20% in previous surveys.

Regarding the presence of any level of frustration or stress among librarians due to the massive incorporation of e-books and the changes introduced in technical and management processes, 45% of the librarians from South America indicated that they were not, compared to 40% in the previous surveys; 37% said there is some frustration/stress compared to 26%; while 23% answered that they did not know compared to 33% of the other surveys. Therefore, the data obtained in this study continue to indicate approximately what was already verified in the first surveys.

It was verified that most librarians agree with automatic systems for indexing and classification. They believe that these resources contribute to the library service, but some libraries show some resistance to relying on the quality of the automatic service. Automation should be seen as a daily ally of library work. Especially in the current scenario,

we have to deal with the massive production of knowledge through digital resources. Therefore, it is necessary to train libraries to work with automatic services. In this sense, 59% of librarians in South America agree to automate the process for indexing, compared to 49% achieved in the first 2017/2028 surveys; 14% indicated that they did not agree, compared to 27% in previous surveys; while 28% indicated that they did not know, compared to 23% a few years ago. Therefore, it seems that there is more and more agreement that the automation of this process should reach libraries, however, we have no evidence of research carried out or in progress for the development or implementation of automatic indexing or classification systems in university libraries. However, we know of three recent initiatives focused on automatic indexing, coming from national libraries. These are the National Library of Germany with the EMa system, the National Library of Finland (Suominen, 2019; Suominen et al., 2022), and the National Library of Estonia (Asula et al., 2021). And finally, our initiative carried out in Brazil through a research project financed by public agencies (Fapesp-Fapespa) for the development of a prototype to automatic e-book indexing and classification in Portuguese, English and Spanish. The project was concluded at the end of 2022, and we have been working on the publications to publicize the developed prototype.

As for automatic classification, something similar occurs, since 56% of librarians in South America are in favor of it compared to 41% in previous surveys; 31% were against automation, compared to 34% previously obtained. Now and before, 20% and 23%, respectively, answered that they did not know, very similar data but also showing some indecision.

Park and Tosaka (2010) noted that metadata quality is "essential for resource discovery and sharing" and Yuan et al. (2018) highlighted the importance of metadata to promote the use of electronic resources. Thus, when we asked whether subject headings/descriptors to e-books is useful for users during the search process, 90% of librarians answered affirmatively, 3% answered "no", and 4% did not know. The data in our 2017/2018 surveys were 78%, 9% and 11%, respectively. Therefore, it is clear that the vast majority of librarians give subject headings a prominent role during the information search process in the electronic environment. However, when asked whether the library's e-book search and discovery system is suitable for users, 62% answered "yes", 23% "no" and 15% did not know; while the data from the 2017/2018 surveys were 48%, 21% and 30%,

respectively. In both surveys, there is considerable room for improvement in the research and discovery systems according to the librarians.

Finally, it should be noted that various authors have used the concept of disruptive technology in the last two decades to refer to what the irruption of e-books in libraries has meant (Dillon, 2002; Lewis, 2004; Lafferty and Edwards, 2004; Wilson, 2014; Gilbert, 2015; Frederick 2016, 2017; Patra, 2017). The closest question we raised in our survey on this subject referred to whether such significant changes were taking place in relation to the technical processes executed in the e-books (subject headings or classification code assignment) to relate to a paradigm shift or a model change. 44% of the librarians stated "yes", 21% said "no", and 33% that they did not know. In the 2017/2018 surveys the responses were 36%, 21% and 42% respectively. In all the surveys, relatively similar opinions have been obtained, so it is not possible to clearly claim a paradigm shift in this sense, but it cannot be denied either.

## 6. CONCLUSIONS

The discussions of the two results will reinforce several significant aspects about information representation in libraries, as well as their need and the use of metadata for information organization and retrieval. Based on the analysis of the two results obtained in this research, several conclusions can be drawn: librarians experience a certain instability in the collections after the incorporation of e-books; indexing and classification processes are losing an important role in the tasks carried out by librarians since less assignment has been performed to electronic books; the quality of the indexing and classification metadata provided by the publishers/providers does not seem to be an important element in choosing one publisher or another, although librarians in South America seem to take this element more into account than librarians in previous surveys. In any case, librarians should not refrain from consistently and vigorously demanding quality indexing metadata from publishers/providers because of their importance for user discovery and retrieval.

It was not clearly observed that the massive incorporation of e-books and the differences in processing and management of printed books is generating some stress or frustration among librarians, although the data obtained in this survey as in the previous surveys do not allow us to clearly rule out this situation; most librarians are in favor of automatic indexing and classification; and finally, no conclusive data have been obtained

to clearly state that we are facing a paradigm shift in relation to the assignment processes of indexing and classification, despite the fact that in this research, there has been an increase of almost ten percent in comparison with previous surveys stating that we are facing a paradigm shift.

Thus, based on some of the revealing data shown in this research and the possible connections that can be derived, we should consider whether it is convenient for library managers to leave almost full control over bibliographic records in the hands of publishers and providers. And finally, we believe that we cannot give up e-books with quality metadata because metadata is the key to their use. Therefore, as e-books are increasingly displacing printed books, we strongly advise librarians, grouped in lobbies, to demand higher quality metadata from publishers and providers, forcefully and continuously over time, and in particular, that the presence of metadata related to subject headings be an inalienable element in bibliographic records; and that this content representation metadata be a point of reference in decision-making by librarians when purchasing e-books.

It should be noted that the current library automation scenario represents changes in the way Librarians work because we will be in contact with new technologies, mainly in relation to information acquisition and treatment in digital format, such as e-books. From the discussion of the data, we have noticed that little experience and lack of training led to the fact that information representation in e-books collections have leveraged metadata provided by publishers and providers, or that the representation becomes weakened by not representing the users and the libraries' regional context.

The acquisition of collections in digital formats will be an increase reality of libraries, driven by the constant production of scientific publications in e-book format and the advantages they present, for example, less expenses in their production, speed, facilitated information dissemination, etc. On the other hand, the trend of publications in e-book format must be accompanied by reflections for information representation that makes e-books visible for library catalog users, providing their information use and dissemination. In this way, we consider that by expanding digital information production, it is also necessary to consider new forms of efficient representation that match this speed and help librarians in this task, as well as solutions based on the elaboration of indexing policies that foresee this new reality of libraries, as well as automatic indexing, which will be the subject of future studies by this research group.

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Los autores de este artículo declaran no tener conflictos de intereses financieros, profesionales o personales que pudieran haber influido de manera inapropiada en este trabajo.

## 9. AUTHORSHIP CONTRIBUTION STATEMENT

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## DECLARACIÓN DE CONTRIBUCIÓN A LA AUTORÍA

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Mariângela Spotti Lopes Fujita: conceptualización, investigación, análisis formal, curación de datos, redacción – borrador original, redacción – revisión y edición.

## 10. REFERENCES

- Albanese, A. R. (2007). Ebooks face triple threat. *Library Journal*, 132(12), 23-4.
- Allen, A. L., Kulczak, D. E., & Gilbertson, M. A. (2017). From digital repositories to the library catalogue: two workflows for transforming metadata. *Journal of Digital Media Management*, 6(1), 95-117.
- Asula, M., Makke, J., Freienthal, L., Kuulmets, H. A., & Sirel, R. (2021). Kratt: developing an automatic subject indexing tool for the National Library of Estonia. *Cataloging & Classification Quarterly*, 59(8), 775-793. DOI: <https://doi.org/10.1080/01639374.2021.1998283>.
- Belanger, J. (2007). Cataloguing e-books in UK Higher Education Libraries: report of a survey. *Program: electronic library and information systems*, 41(3), 203-216. DOI: <https://doi.org/10.1108/00330330710774093>.
- Buschow, C., Nolle, I., & Schneider, B. (2014). German book publishers' barriers to disruptive innovations: the case of e-book adoption. *Publishing Research Quarterly*, 30 (1), 63-76. <https://doi.org/10.1007/s12109-014-9342-y>.
- Breeding, M. (2017). The complicated story of e-books in libraries. *Computers in Libraries*, 37(5), 16-8.
- Breedt, A., & Walter, D. (2012). White paper: the link between Metadata and Sales. *Nielsen BookData*. Available at: [https://www.nielsenisbnstore.com/documents/3971\\_Nielsen\\_Metadata\\_white\\_paper\\_A4.pdf](https://www.nielsenisbnstore.com/documents/3971_Nielsen_Metadata_white_paper_A4.pdf).
- Ciptayani, P. I., & Dewi, K. C. (2018). Decision support system of e-book provider selection for library using Simple Additive Weighting. *Journal of Physics: Conference Series*, 953(012066). DOI: <https://doi.org/10.1088/1742-6596/953/1/012066>.
- Chen, M., Kim, M., & Montgomery, D. (2016). E-book record management at the University of Texas at Dallas. *Technical Services Quarterly*, 33(3), 251-267. DOI: <https://doi.org/10.1080/07317131.2016.1169781>.
- Connaway, L. S., & Lawrence, S. R. (2003). Comparing library resource allocations for the paper and the digital library: an exploratory study. *D-Lib Magazine*, 9(1). DOI: <http://doi.org/10.1045/december2003-connaway>.
- Costello, L. (2017). Comparison of e-book acquisitions strategies across disciplines Finds Differences in cost and usage. *Evidence Based Library and Information Practice*, 12(1), 109-111. DOI: <http://doi.org/10.18438/B8ZP70>.
- Derrot S., & Koskas M. (2016). My fair metadata: cataloging legal deposit e-books at the national library of France. *Cataloging and Classification Quarterly*, 54(8), 583-592. DOI: <https://doi.org/10.1080/01639374.2016.1240130>.
- Dillon, D. (2002). Fishing the Electronic River: disruptive technologies, the unlibrary, and the ecology of information. *Journal of Library Administration*, 36(2), 45-58. DOI: [https://doi.org/10.1300/J111v36n03\\_05](https://doi.org/10.1300/J111v36n03_05).
- European Bureau of Library Information and Documentation Associations. (2012). *Key principles on the acquisition of and access to e-books by libraries*. Available at: [http://www.eblida.org/Special%20Events/Key-principles-acquisition-eBooks-November2012/GB\\_English%20Version%20Key%20Principles.pdf](http://www.eblida.org/Special%20Events/Key-principles-acquisition-eBooks-November2012/GB_English%20Version%20Key%20Principles.pdf).

- Frederick, D. E. (2015). On e-books in academic libraries: An article based on a presentation at the Library 2014 Conference. *Library Hi Tech News*, 32(5), 12-15. DOI: <http://dx.doi.org/10.1108/LHTN-02-2015-0015>
- Frederick, D. E. (2016). *Managing e-book metadata in Academic Libraries: taming the tiger*. Chandos Publishing.
- Frederick, D. E. (2017). Disruption or revolution? The reinvention of cataloguing (Data Deluge Column). *Library Hi Tech News*, 34(7), 6-11. DOI: <http://doi.org/10.1108/LHTN-07-2017-0051>.
- Fujita, M. S. L., Gil-Leiva, I., & Redigolo, F. M. (2021). Inovação de processos técnicos em e-books em bibliotecas universitárias no Brasil: análise de percepção dos bibliotecários. *Revista ACB: Biblioteconomia em Santa Catarina*, 26(3), 1-18.
- Garofalo, D. A. (2018). Tips from the trenches. *Journal of Electronic Resources Librarianship*, 35(1), 47-49. DOI: <https://doi.org/10.1080/1941126X.2023.2165243>.
- Gates, L. E., & Glazier, R. (2019). Getting a Handle on Duplicate Ebooks. *Collection Management*, 44 (2-4), 361-378. DOI: <https://doi.org/10.1080/01462679.2019.1573709>.
- Gilbert, R. J. (2015). E-books: a tale of digital disruption. *Journal of Economic Perspectives*, 29(3), 165-184.
- Gil-Leiva, I., Fujita, M. S. L., Ortuño, P. M. D., & Reis, D. M. A. (2018). *Is the Massive Incorporation of E-Books into University Libraries Devaluing the Technical Processes Related to the Assigning of Subject Headings and Classification Codes?* [Conference presentation]. Fifteenth International ISKO, Porto, Portugal. DOI: <http://dx.doi.org/10.5771/9783956504211-314>.
- Gil-Leiva, I., Fujita, M. S. L., Ortuño, P., & Reis, D. M. (2020). The abandonment of the assignment of subject headings and classification codes in university libraries due to massive emergence of electronic books. *Knowledge Organization*, 47(8), 646-667. DOI: <http://dx.doi.org/10.5771/0943-7444-2020-8-646>.
- Herrington, V. J. (2013). The Academic Library: cowpath or path to the future? *Journal of Library Innovation*, 4(2), 54-68.
- Kahn, M., & Underwood, P. G. (2013). Issues related to the adoption of e-books in academic libraries: a literature review. *Sajis Journal Library & Information Science*, 79(2), 10-17. DOI: <http://doi.org/10.7553/79-2-141>
- Kont, K. R. (2021). If time and money matters: e-book program challenges in tallinn university of technology library. *Slavic and East European Information Resources*, 22(2), 170-196. DOI: <https://doi.org/10.1080/15228886.2021.1917065>.
- Lafferty, S., & Edwards, J. (2004). Disruptive technologies: what future Universities and their Libraries? *Library Management*, 25(6-7), 252-58. DOI: <https://doi.org/10.1108/01435120410699636>.
- Lewis, D. W. (2004). The innovator's dilemma: disruptive change and Academic Libraries. *Library Administration & Management*, 18(2), 68-74. DOI: <http://doi.org/10.7912/C2FP8D>.
- Liu, L.G., & Terng, C. (2022). Estimating Scale and Scope Economies of Academic Libraries: Using the Flexible Fixed Cost Quadratic Function. *Library Trends*, 70(3), 284-303. DOI: <https://doi.org/10.1353/lib.2022.0005>.
- Martin, K. E., & Mundle, K. (2011). Cataloging e-books and vendor records. *Library Resources & Technical Services*, 54(4), 227-237. DOI: <https://doi.org/10.5860/lrts.54n4.227>.
- Moore, M. (2011). Keeping Current with Electronic Resources and Libraries. *Journal of Electronic Resources in Medical Libraries*, 8(3), 263-271. DOI: <https://doi.org/10.1080/15424065.2011.602309>.
- Moulaison-Sandy, H., Cho, H., & Dykas, F. (2022). Approaches to conceptualizing the cost of academic library cataloging: Discourses on metadata creation cost, value, and worth. *Library Trends*, 70(3), 387-408. DOI: <https://doi.org/10.1353/lib.2022.0001>.
- Mi, X., & Pollock, B. M. (2019). "Ebooks for the Classroom+" at University of south Florida libraries: a case study of database management. *Journal of Web Librarianship*, 13(2), 95-111. DOI: <https://doi.org/10.1080/19322909.2018.1555779>.
- Mune, C., & Agee, A. (2015). *E-book showdown: evaluating academic e-book platforms from a user perspective*. [Conference presentation]. Association of College and Research Libraries (ACRL), Portland, OR, United States. Available at: [http://works.bepress.com/ann\\_agee/19/](http://works.bepress.com/ann_agee/19/).
- NISO RP-29-2022. (2022). *E-Book Bibliographic Metadata Requirements in the Sale, Publication, Discovery, Delivery, and Preservation Supply Chain*.
- Pandey, S. K. (2016). Impact of e-books in academic libraries. *International Journal of Research in Library Science*, 2(1), 151-154.
- Park, J., & Tosaka, Y. (2010). Metadata quality control in digital repositories and collections: criteria, semantics, and mechanisms. *Cataloging & Classification Quarterly*, 48(8), 696-715. DOI: <http://dx.doi.org/10.1080/01639374.2010.508711>.
- Patra, N. K. (2017). *Digital disruption and electronic resource management in libraries*. Chandos Publishing.
- Ravit H.D., & Dana, T. (2015). Assessing Metadata and Controlling Quality in Scholarly Ebooks. *Cataloging & Classification Quarterly*, 53, 801-24. DOI: <https://doi.org/10.1080/01639374.2015.1018397>
- Roncevic, M. (2013). E-Book platforms for libraries. *Library Technology Reports*, 49(3), 1-46.
- Sanchez, E., Fatout, L., Howser, A., & Vance, C. (2006). Cleanup of netlibrary cataloging records a methodical front-end process. *Technical Services Quarterly*, 23(4), 51-71. DOI: [https://doi.org/10.1300/J124v23n04\\_04](https://doi.org/10.1300/J124v23n04_04).
- Stachokas, G. (2014). In After the Book Information Services for the 21st Century. Chandos Publishing. DOI: <https://doi.org/10.1016/C2013-0-16962-0>.
- Stachokas, G. (2019). *The role of the electronic resources librarian*. Chandos.
- Suominen, O. (2019). Annif: DIY automated subject indexing using multiple algorithms. *Liber quarterly*, 29(1), 1-25. DOI: <https://doi.org/10.18352/lq.10285>
- Suominen, O., Inkinen, J., & Lehtinen, M. (2022). Annif and Finto AI: Developing and Implementing Automated Subject Indexing. *JLIS.It*, 13(1), 265-282.
- Traill, S. (2013). Quality issues in vendor-provided e-monograph records. *Library Resources & Technical*



- Services*, 57(4), 213-226. DOI: <http://doi.org/10.5860/lrts.57n4.213>.
- Vasileiou, M., Hartley, & R. J., Rowley, J. (2012). Choosing e-books: a perspective from academic libraries. *Online Information Review*, 36(1), 21-39. DOI: <https://doi.org/10.1108/14684521211206944>.
- Walton, R., Mauldwin, J., & Bunderson, J. (2022). Patron Drivers, Patron Impacts: Investigating Potential Patron Impacts of Moving to a Patron Driven Acquisition Model for Print Books. *Collection Management*, 47(4), 272-285. DOI: <https://doi.org/10.1080/01462679.2022.2030841>.
- Wiersma, G., & Tovstadi, E. (2017). Inconsistencies between academic e-book platforms: a comparison of metadata and search results. *Portal: Libraries and the Academy*, 17(3), 617-648. DOI: <https://doi.org/10.1353/pla.2017.0037>.
- Wilson, T. D. (2014). The e-book phenomenon: a disruptive technology. *Information Research*, 19(2), 1-19. DOI: <http://dx.doi.org/10.15291/libellarium.v6i1-2.180>.
- Wu, A., & Mitchell, A. E. (2010). Mass management of e-book catalog records: approaches, challenges, and solutions. *Library Resources & Technical Services*, 54(3), 164-174.
- Yuan, W., Ballegoie, M. V., & Robertson, J. L. (2018). Ebooks versus print books: format preferences in an academic library. *Collection Management*, 43(1), 28-48. DOI: <https://doi.org/10.1080/01462679.2017.1365264>.
- Zhang, L., & Jin, M. (2014). Cataloging e-books: dealing with vendors and various other problems. *The Serials Librarian*, 67(1), 76-80. DOI: <https://doi.org/10.1080/0361526X.2014.899295>.
- Zhao, S., & Zhao, W. (2010). Addressing the challenge: cataloguing electronic books in academic libraries. *Evidence Based Library and Information Practice*, 5(1), 93-103. DOI: <https://doi.org/10.18438/B84034>.

## **ANNEX 1 - QUESTIONNAIRE ON TECHNICAL PROCESSES PERFORMED ON E-BOOKS IN UNIVERSITY LIBRARIES IN SOUTH AMERICA**

1. Check the alternative that applies.

My university is a public university

My university is a private university

Comments:

2. My university has approximately.

Fewer than 5,000 students

Between 5,000 and 10,000 students

Between 10,000 and 15,000 students

Between 15,000 and 20,000 students

More than 20,000 students

More than 30,000 students

Comments:

3. Have you developed a procedure/normative for cataloging e-books that includes subject heading and classification code assignment?

Yes

No

I don't know

Comments:

4. With the current management of electronic books, are these e-books now part of your library similarly to printed books? Comments:

Yes

No

I don't know

Comments:

5. Does the library have a single discovery tool for print books, e-journals and e-books?  
books?

Yes

No

It is under development

Comments:

6. Comment on this statement. E-book collections are unstable and make it difficult to maintain an up-to-date library collection.

Yes

No

I don't know

Comments:

7. Do you think your library's e-book search and discovery system is adequate for users?

Yes

No

I don't know

8. Check the boxes that applies regarding the use of subject headings or descriptors in your library:

We assign subject headings to ebooks

We assign descriptors of different vocabularies and thesauri to e-books

We assign both subject headings and descriptors to ebooks

Other option

Comment what you think is appropriate, especially if you check 'Other option':

9. Does your library assign subject headings/descriptors to PURCHASED e-Books?

Yes

No, because publishers already provide them

No, for some other reason. Please comment why

For some, yes. Please briefly comment which.

10. Does your library assign subject headings/descriptors to SUBSCRIBED e-Books?

Yes

No, because publishers already provide them

No, for some other reason. Please comment why:

For some, yes. Please briefly comment which:

11. Has there been a situation of assigning subject headings or classification codes to a set of e-books and after a while the e-book publisher/provider deleted or modified these records in overlapping processes?

Yes

No

I don't know

Comment what you consider appropriate:

12. Do you assign more or less the same number of subject headings to e-books as to printed books?

Yes. Please briefly comment on the reason:

No. Please briefly comment why:

I don't know

Comments:

13. The process of assigning subject headings/descriptors is the same for electronic and printed books?

Comments:

Yes, the same as printed books

It's not the same. Briefly comment on the difference in the comments

Comments:

14. Check all that apply regarding metadata provided by publishers/providers (1 disagree; 5 agree):

Metadata provided in relation to e-book subject headings is adequate.

Metadata provided for subject headings is sufficient and not worth modifying.

15. Check all that apply. Write a comment under 'Comments' if you consider appropriate.

We assign classification codes to e-books in the same way we do to printed books

We DO NOT assign classification codes to e-books because they are not required

16. Do you use the same process to assign classification codes for e-books as for printed books? Comments:

Yes, the same as for printed books

It's not the same. Please briefly comment the difference under 'Comments':

17. Check all that apply regarding the following aspects (1 disagree; 5 agree):

1. The high number of PURCHASED e-books in the library makes it impossible to properly assign subject headings/descriptors.

2. The high number of SUBSCRIBED e-books in the library makes it impossible to properly assign subject headings/descriptors.

3. The high number of PURCHASED e-books in the library makes it impossible to properly assign classification codes

4. The high number of SUBSCRIBED e-books in the library makes it impossible to properly assign classification codes

5. E-book publishers/providers must provide subject headings/descriptors

6. E-book publishers/ providers must provide classification codes

7. Librarians must assign subject headings/descriptors to e-books

8. Librarians must assign classification codes to e-books

9. When choosing e-book packages for purchase or subscription, we consider the quality of metadata related to subject headings/descriptors provided by publishers/providers

18. If, in your library, there have been changes in the application of technical processes to e-books in relation to indexing and classification, have they been introduced in the library's manual of procedures?

Yes

No

I don't know

19. Do you find assigning subject headings/descriptors to e-books helpful for users when searching for information?

Comments:

Yes. Please briefly comment on the reason

No. Please briefly comment why

I don't know

Comments:

20. Do you consider assigning classification codes to e-books useful for users when searching for information? Comments:

Yes. Please briefly comment on the reason

No. Please briefly comment why

I don't know

Comments:

21. Check all that apply to the following statement (1 disagree; 5 agree):

In general, the changes brought about by the incorporation of e-books are causing some "frustration" or "stress" among technical process librarians.

22. Check all that apply to the following statement (1 disagree; 5 agree)

In this new and massive digital environment, it would be appropriate to introduce automatic indexing systems for e-books

23. Check all that apply to the following statement (1 disagree; 5 agree)

In this massive new digital environment, it would be appropriate to introduce systems to automatically assign classification codes to e-books.

24. Comment on this statement. I believe that significant changes are taking place regarding the indexing/classification assignment processes to e-books, which can make us think that we are facing a paradigm shift, shift in model.

I agree. Please briefly comment why

I do not agree. Please briefly comment why

I don't know.

Comments: