The Abandonment of the Assignment of Subject Headings and Classification Codes in University Libraries Due to the Massive Emergence of Electronic Books

Isidoro Gil-Leiva*, Mariângela Spotti Lopes Fujita**,
Pedro Díaz Ortuño*** and Daniela Majorie dos Reis****

Universidad de Murcia, Facultad de Comunicación y Documentación, 30100, Espinardo, España,
* <isgil@um.es>, *** <diazor>
Universidade Estadual Paulista Júlio de Mesquita Filho, Marília, SP, Brasil,
<mariangela.fujita@unesp.br>, ** <danielamajorie@yahoo.com.br>

Isidoro Gil-Leiva holds a PhD in library and information science, and is Full Professor in the Information Science Studies department at the University of Murcia, Spain. His main research interests are indexing, automatic indexing, controlled vocabularies and knowledge organization.

Mariângela Spotti Lopes Fujita is a researcher of the National Research Council for Science and Technology (CNPq) in Brazil to further studies on indexing and indexing languages. She holds a master's and PhD in communication sciences from São Paulo University, Brazil, and she graduated in library science. She is Professor and advisor in the postgraduate course in information science at Sao Paulo State University (UNESP).

Pedro Manuel Díaz Ortuño holds a diploma in computer science from the University of Murcia and a degree in documentation from the Computer Science Faculty of the Polytechnic University of Valencia and advanced studies diploma in library science and documentation from the University of Murcia. He is a college professor at the University of Murcia with previous teaching at the Faculty of Computer Science and currently at the Faculty of Communication and Documentation in subjects related to database systems, information management and retrieval and construction of digital information services. He is a member of the University of Murcia's Information Technology Research Group and has participated in several publications and research projects.

Daniela Majorie Akama dos Reis holds a PhD in information science, a masters degree in information science with a FAPESP scholarship, and a bachelor's degree in library science with a CNPq/PIBIC scholarship. All the degrees were taken at UNESP. She works professionally at an international school library and has experience in aspecialized law library.

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Abstract: The massive and unstoppable emergence of electronic books in libraries has altered their organization. This disruptive technology has led to structural changes. Currently, an e-book exists only if its metadata exists. The objective of this article is to analyse the impact that the massive incorporation of electronic books in university library systems is having in the processes of assignment of subject headings and classification codes. We carried out a survey of more than six hundred libraries, which means almost all the university libraries in Portugal, Spain, England, United States, Brazil, Sweden, Norway, Finland and Australia. From the results obtained, it is deduced that: 1) librarians expect e-books to be provided with descriptive metadata related to the subject headings and classification codes; 2) the bibliographic records provided by publishers/providers seem to be improvable; 3) the quality of the metadata provided by the providers does not seem to be taken into account when selecting publishers for the purchase; 4) the discovery tools

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are also clearly improvable; 5) it seems that there is no "frustration" or "stress" among librarians about the changes produced in relation to technical processes; and, 6) it does not seem that we are facing a paradigm shift motivated by these issues.

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1.0 Introduction.

Indexing (understood as a conceptual representation intended to satisfy information needs) implies an indissoluble union between the processes of indexing, retrieving and using information. This connection between indexing and retrieval has been occurring since the moment a conceptual representation was used for information storage purposes. Three events have been key in shaping this union. The first occurred in Mesopotamia with the use of clay tablets, but it was consolidated with the appearance of medieval monastic libraries and later, between the sixteenth and eighteenth centuries, with the incipient libraries that were first the product of humanist ideas and later of the scientific revolution, when more complex procedural and organizational techniques began to be applied.

A third phase took place at the end of the nineteenth century with the introduction of tools such as *A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library* by Melvil Dewey and the *Rules for a printed dictionary catalogue* by Charles Ammi Cutter, which formed the theoretical and practical foundations of subject assignment and classification in libraries by combining information storage and retrieval.

Librarians created mechanisms to easily locate books using both classifications and catalogues that acted as access points governed by author names, which facilitated knowledge of all the bibliographies of an author available in the library, the titles catalogue, which facilitated the location of a book or made it possible to discover unknown titles and, finally, the subject catalogue which ensured quick and efficient access to all the books in the library on a given subject. This was the discovery system for a long time in libraries. In fact, the traditional author and subject catalogues have conceptually survived until today since, from any bibliographic record that we are visualizing on a screen, with a simple click we can obtain a list of all the works of an author or a list with all the resources on a certain subject. Similarly, classifications following hierarchical principles have been beacons in the conceptual organization of works by fields of knowledge and their physical location on the shelves (*Dewey Decimal Classification*, *Library of Congress Classification*, Universal Decimal Classification, Colon classification or Bliss bibliographic classification).

In the early 2000s, e-books began to arrive in libraries intensively and unstoppably. A few decades earlier, Andries Van Dam, coined the term "electronic book" while working on the first hypertext system back in 1967, while Alan Kay, introduced the Dynabook, an e-book he imagined as an interactive portable personal computer with a flat-screen and wireless communications (Ardito 2000). Likewise, for Connaway and Wicht (2007, 1) there are several milestones and initiatives that are part of the history of e-books: the ideas of Michael Hart in 1971 that later became Project Gutenberg, the proposals of some publishers and vendors who in the late 1990s started hosting and selling e-books, the emergence of e-book providers such as E-Book Library (EBL) or MyiLibrary, which started offering flexible pricing and innovative access models, or the announcement in late 2004 by Google of its Google Print Library Project (later renamed Google Books Library Project) in cooperation with several libraries.

At present, it seems that some traditional library approaches, services and processes are becoming increasingly irrelevant (Stachokas 2014, 33). On the other hand, a growing number of librarians all over the world are beginning to recognize that libraries are not properly organized for the work that actually has to be done in the twenty-first century (Barnes, as cited in Stachokas 2009, 207). Parallel to this (Breeding 2017, 16), "in most every respect, digital and electronic collections have proven to be more complex than their analog predecessors."

Furthermore, Stachokas (2019, 41) notes, in referring to the transition from the traditional library to the hybrid library, that a different approach has been required in terms of acquisitions, cataloguing, access, management and evaluation. In this sense, it is worth highlighting here what Goedeken and Lawson (2015, 2016) wrote: "in the last centuries, libraries developed sophisticated bibliographic structures to accommodate the printed book and its acquisition, description and classification. In the period of two decades, however, this well-established arrangement has been shaken by the disruptive technology that e-books have implied."

It has already been pointed out that one of the elements that have contributed to the extension of e-books in libraries was the appearance of innovative acquisition/subscription systems, a factor that has led to massive incorporation of e-books into university libraries initially and later in libraries in general. This has meant that, in a short time, tens of thou-

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sands of e-books have been incorporated into library systems.

To illustrate this, we bring here an example that may be representative of what is happening or will happen soon in most of the world's libraries. This is statistical data from Rebiun (Spanish university libraries network). Some of the decreases that may be seen in some articles are likely due to the non-contribution of data by one or more libraries.

According to Table 1, while printed books (hereinafter referred to as p-books) increase in number by approximately 2%, e-books do so by 6-10% each year, although the number of librarians appears to remain completely stagnant in the period.

From this simple statistical data, it is intuited that perhaps librarians have been facing in an increase in work and overhead in the management of p-books and e-books. Martin and Mundle (2010, 227) state that "cataloging individual books may be impossible when large packages are purchased. Increasingly, libraries are relying on outside sources for their e-book catalog records, which may come from vendors or third-party record services and are frequently included in the price of a subscription." To this new dynamic that has been installed in libraries, we must add the shortage of catalogers. In 2012, Sapon-White (2012, 46), Head of Cataloguing and Metadata Services of Oregon State University, wrote that the university had 19,000 students and 1,800 faculty members and that libraries annually acquired some 15,000 monographs and about 5,000 government documents. However, libraries had only a paraprofessional dedicated to downloading cataloging records and a head of cataloging as the sole "professional cataloger in the unit, with time split between administering the unit and providing original and complex copy cataloging." Although this is a very concrete example, it does not seem that a "paraprofessional" and a cataloguer was the optimal team to carry out the great amount of work that can be intuited. Therefore, these new work dynamics that have brought the incorporation of e-books to the libraries and precarious library staff lead us to consider whether today, university libraries have the capacity to just check the metadata that accompanies e-books or whether librarians have the time to correct and improve the metadata of tens of thousands of electronic bibliographic records provided by vendors.

Perhaps, this work overload of librarians could be affecting two central and well-established processes in libraries that had been determining both the physical organization of books through classification and, the use of bibliographic resources by users through retrieval by means of subject headings. Until the emergence of e-books these essential technical processes had been carried out with a widespread rigor in libraries. With the gradual arrival of e-books but painfully with their massive incorporation into libraries and the overload of work that librarians seem to carry, a question arises: how the execution of these key processes has been or is being transferred to the e-books. Bearing this in mind, we consider that research is needed to know specifically how the technical processes of assignment of headings and classification codes to e-books are being carried out and to find out what librarians think about issues related to these aspects. We consider that this research is necessary not only because of the data and information it can provide but also because we are facing processes that directly affect the location and use of resources by users. These technical processes directly affect users, because if the e-books arrive at libraries with deficient, incomplete or erroneous indexing and classification metadata and librarians do not have the capacity to check (due to lack of time and staff)—and if we add to this the reception of possible deficiencies or errors in the title or author metadata—bibliographic records become invisible to discovery systems, and, therefore, what does not exist cannot be located first or used later. Thus, we consider it relevant to have a study on these issues in university libraries, because they were the first and the ones that, with most intensity, have been massively incorporating e-books.

This work is intended to continue and expand a study initiated in 2016 and published in Proceedings of the Fifteenth International ISKO Conference (Gil-Leiva et al 2018). In that work we presented the results of the analysis of a web questionnaire sent in December 2017 to libraries in Portugal, Spain, United Kingdom, United States and Brazil. In the work we present now, as we will explain below, the questionnaire has been sent to new university libraries in Sweden, Norway, Finland and Australia, so a larger set of data has been achieved and a broader presentation, contextualization, analysis and discussion of all the data has been ob-

	2013	2014	2015	2016	2017	2018
E-books	8,819,673	9,452,026 (+6,69%)	10,767,685 (+12,21%)	11,955,167 (+9,93%)	12,699,922 (+6,2%)	14,116,385 (+10%)
Printed monographs	27,865,360	26,994,464	28,319,147	28,869,028 (+1,90)	29,266,657 (+1,35)	29,369,554 (0,35)
Librarians	2400	2416	2391	2408	2416	2418
Courses given	445	452	718	644	498	597

Table 1. Statistical data of the Spanish university library network. Source: https://rebiun.um.es/rebiun/admin/ManageIndicatorsPage

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tained. Thus, the objective of this article is to analyze the impact that the massive incorporation of e-books into university library systems is having on the processes of assignment of subjects and classification codes in order to know the perceptions of librarians in this new situation.

2.0 Literature review

Over the past two decades, both LIS researchers and librarians have worked and published extensively on numerous aspects of the library and e-book ecosystem, such as platforms, demand services and e-book sharing networks, challenges faced by libraries in this format, acquisition models, discovery tools, loans, e-books versus p-books, support in assisting in selection and purchase, uses, challenges and changes in cataloguing or quality of bibliographic records provided by suppliers, among others. Thus, without pretending to carry out an exhaustive bibliographic review since it would exceed the scope of this work, we will limit ourselves to some of these aspects that are more related, directly or indirectly, to our research, and which we group in seven sections.

2.1 Challenges and changes in e-book cataloguing

Nowadays cataloguers find themselves managing and manipulating large sets of catalogue records, but batch processing brings about a new set of challenges to expedite the process of getting vendor records into the catalogue. In this sense, work has been done to describe experiences in libraries about management and cataloguing practices for e-books such as batch-loading, workflow, quality control (Martin and Mundle 2010 (a); Zhao and Zhao 2010; Chen et al. 2016; Castro, et al. 2019).

2.2 Quality and quantity of metadata provided by suppliers

This issue, which is related to our research, has also been addressed in several publications (Wu and Mitchell 2010; Zhao and Zhao 2010; Park and Tosaka 2010; Ravit and Dana 2015; Frederick 2016; Wiersma and Towstiadi 2017 or Yuan et al. 2018). Frederick (2016, 68) noted that e-books require a robust and accurate bibliographic description, although we believe that this robust and accurate bibliographic description is not occurring in library environments. In this sense, Sánchez et al. (2006, 55), when checking NelLibrary records, detected errors in titles, formatting problems, and the absence of certain MARC fields. Wu and Mitchell (2010, 171) according to their experience in cataloguing e-books at the University of Houston libraries, reported that a significant number of e-book bibliographic records provided by suppliers contain syntax and content errors. Elsewhere, Zhao and Zhao (2010, 98) analyzed MARC records from various suppliers and detected the existence of general, unauthorized, and spellbound subject headings on the SpringerLink platform. Other significant examples were shown by Wiersma and Tovstiadi (2017, 628) who analyzed the descriptive content (keywords or subject headings) of certain e-books on various platforms and found that the differences are so great as to make us think that we are looking at different books. And finally, according to Breedt and Walter (2012, 5) and Wiersma and Tovstiadi (2017, 624), e-book publishers seem to be aware that they are providing bibliographic records that can be improved, and in the same way, they know that these data gaps and deficiencies affect their prestige and sales. Work has also been done to identify potential problems and strategies for data cleansing and editing before making records accessible to users (Sanchez et al. 2006; Mi and Pollock 2019).

2.3 Challenges for libraries concerning e-books

Work has also been done on the integration of e-books in libraries (Connaway and Wicht 2007); the description and development of digital services platforms to support workflows and shared data models (Buczynski 2010); changes in the acquisition and circulation of e-books (Rodrigues and Godoy Viera 2018); applications for downloading e-books by users (Wu et al. 2015); development of APP to enable users to read e-books from multiple vendors through a single interface (Beswick et al. 2017); interlibrary loan of e-books (Sewell and Link 2017); analysis of the roles, workflows of e-book life cycle and recommendations regarding the applications of various types of metadata (Lagace 2018); emphasis on shared values, building an ecosystem of interoperable platforms and tools and challenges as preservation, discovery and accessibility (Watkinson 2018); promoting awareness of e-book collections and enabling browsing and serendipitous discovery (Tingle and Teeter 2018); or the emergence of new technicians such as the electronic resource librarian (ERL) (Stachokas 2009 and 2019).

2.4 Acquisition models

The different options available for the acquisition of e-books have been described (Costello 2017; Serra and Segundo 2017); some recent experiences of PDA/DDA acquisition are: (Herrera 2012; Goedeken and Lawson 2015; Bennett 2016; Schroeder and Boughan 2018; Brown and Currie 2019); and demand-driven acquisition program of print books (England and Anderson 2019).

2.5 Discovery tools

The location and access to e-books has also been addressed, and we find publications focused on improvements to nav-

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igate all available content and user-guided navigation to encourage serendipitous discovery (Tingle and Teeter 2018), user experiences in browsing collections using discovery tools (Bardeen et al. 2017) or the enumeration of requirements for navigation interfaces (McKay et al. 2018).

2.6 E-books versus p-books

This topic has also been extensively covered in several studies, so only a few examples are brought here. Thus, the use of p-books and e-books for identical titles in a collection has been compared (Goodwin 2014; Lewellen et al. 2016); comparison of the influence of e-books and p-books on reading comprehension, eye strain and perception (Jeong 2012); reading preferences of college students over e-books or p-books (Aharony and Bar-Ilan 2018); how format (e-book/p-book) affects the use of e-books (Miller 2014; Fry 2018; Yuan et al. 2018); pricing of e-books versus p-books (Rao et al. 2018); or the relationship between the technology acceptance model and the preference for e-books (Smith et al. 2019).

2.7 Uses of e-books

Special attention has been dedicated to this topic and countless studies on perceptions, behaviour patterns and use of e-books have been published. Some examples are Noorhidawati and Gibb (2008), Lam et al. (2009), Croft and Davis (2010), Smyth and Carlin (2012), Romero-Otero et al. (2013), Gray and Howard (2017), Blummer and Kenton (2018), Casselden and Pears (2019); guidelines for librarians on the use of e-books in reference service and collection development (Rokusek and Cooke 2019; Proctor 2019); relationship between licensing and interlibrary loan (Frederiksen et al. 2011); relationship between academic e-book user practices and selection, browsing and reading (McKay 2011); university student perceptions of e-books versus printed books (Rojeski 2012; Rafiq and Warraich 2016); impact of the book's format on loans (McKay et al. 2015); use of mobile phone for reading e-books (Wang et al. 2018); the relationship between the technology acceptance model and preference for e-books (Aharony 2014; Smith et al. 2019); the effect of instruction on e-textbook use (Ragan et al. 2019). Elsewhere, work has also been done on the relationship between attitudes and use of e-books and to contextualize this in relation to sociodemographic background (Bergström 2018) or why students prefer both e-books and p-books (Noorhidawati and Gibb 2008; Croft and Davis 2010; Schonfeld 2013; Academic Student E-book Experience Survey 2018; Yuan et al. 2018; McKiel 2016 or Aharony and Bar-Ilan 2018).

3.0 Methodology

This research is based on the following sources and methods. First, a bibliographic review was carried out based on information searches in the Web of Science, Scopus and internet databases. Likewise, we prepared a web questionnaire on an internal platform of the University of Murcia with twenty-five matrix questions and closed questions. The content of the questions centered on the technical processes in e-books (assignment of subject headings and classification codes), discovery tools, collection stability, paradigm shift and frustration or stress among librarians and automation of the assignment of subjects and classification codes (Annex 1). This same articulation of content has also been used to present the results.

Before the mass mailing of the survey, we performed a pretest. We met with two librarians to discuss different aspects such as understanding of the questions, their suitability or their sequencing. Once the survey was prepared, we had to decide where and to whom to send it. Our intention was to gather as much information as possible and, if possible, from different geographical areas. Hence, the decision to translate the survey into three languages: English, Portuguese and Spanish. In this way, we could reach different countries and socio-cultural contexts. The English-language survey was sent to university libraries in the United Kingdom, Sweden, Norway, Finland, the United States and Australia. The Portuguese survey was sent to libraries in Portugal and Brazil, and finally, a Spanish survey went to Spanish university libraries. Furthermore, with the survey in Spanish, we could extend the research to countries in Central and South America.

As to whom to target with the survey, we decided that the best recipients would be the directors of the university libraries, or those responsible for the technical processes. So, we focused on getting the emails from these recipients. For each of the selected countries we searched the web for national directories of university libraries, and once located, we visited each of the university pages until we obtained the email of the director, the person responsible for technical processes or in their absence a cataloguing librarian. In this way, we tried to guarantee that the survey would be completed by the most appropriate people (in the presentation of the survey we expressly indicated that if there were a better suited person to complete it, the email would be redirected) and that it would reach all the university libraries in each selected country.

Once the surveys were available in web format in all three languages and with the e-addresses, more than six hundred surveys were sent to university libraries in Portugal, Spain, the United States and Brazil in December 2017. After three weeks we had eighty questionnaires completed. And at the end of November 2018, a second submission was made with

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the same questionnaire to one hundred and forty-two libraries, almost all university libraries in Sweden, Norway, Finland and Australia. After eight weeks we had obtained twenty-seven completed questionnaires. A total of seven hundred and fifty-three surveys were sent.

4.0 Results

As we have pointed out, we sent seven hundred and fifty-three surveys, and one hundred and seven responses were received, resulting in a response rate of 14.2%. The highest response rate was obtained from Spain with 43.2% of the surveys answered, followed by Sweden with 30.5%, while the lowest rates were obtained from Great Britain (4.8%) and the United States (7.05%). Although it may seem a relatively low response rate, we consider it enough for a first approach to this issue, taking into account also that one third of the questions contained the possibility of inserting observations and comments by the librarians. In this way, we obtained more than three hundred comments that provided us with very valuable data and information. Perhaps the low response rate is related to the dates of submission. The surveys were sent between the months of November and January, months possibly overloaded with work at the end and beginning of the year to which we would have to add holiday periods. Below we offer the results.

4.1.1 Technical processes in e-books: assignment of subject headings and classification codes

4.1.1.1 Assignment of subject headings

The assignment of subjects to e-books does not seem to be a widespread practice in university libraries according to the data in Figure 1.

Librarians informed us that they do not assign headings because of the instability of e-book collections, the existence of small staff or because some libraries do not yet have e-books. 31.8% of the librarians assign headings to only some of the e-books. As shown in Figure 1, there is some uniformity in the responses, however, the data from Spain and Brazil are noteworthy, because 37.5% and 54.1% respectively have indicated that "yes" they assign subject headings to e-books while the rest of the countries surveyed are mostly between "no" and "some." 24.3% of the librarians stated that on some occasion, after assigning subjects or classification codes and incorporating them into the e-book platform of the library, the publisher or supplier had eliminated or modified those records in overlapping processes in the common work areas. Elsewhere, they have indicated that due to the management policies of the libraries, and on occasions, to avoid being affected by this situation, they do not usually make changes or additions to the records that could be automatically modified; they do not assign subject headings or classification codes to the e-books if these are not provided by the suppliers, or they assign the subjects or classification codes only to those e-books that they are sure cannot be eliminated or modified by third parties. Finally, it is worth mentioning that 52.3% indicate that they do not know if, on any occasion, records have been modified by the publishers/suppliers.

4.1.1.1.1 Assignment of subject headings to p-books versus e-books

We also asked whether the process of assigning subject headings is the same as for printed books, and 85.7% of the librarians indicated that it is the same process, as many e-books also have the printed version; therefore, they found no reason to do it any differently. However, 14.3% indicated that

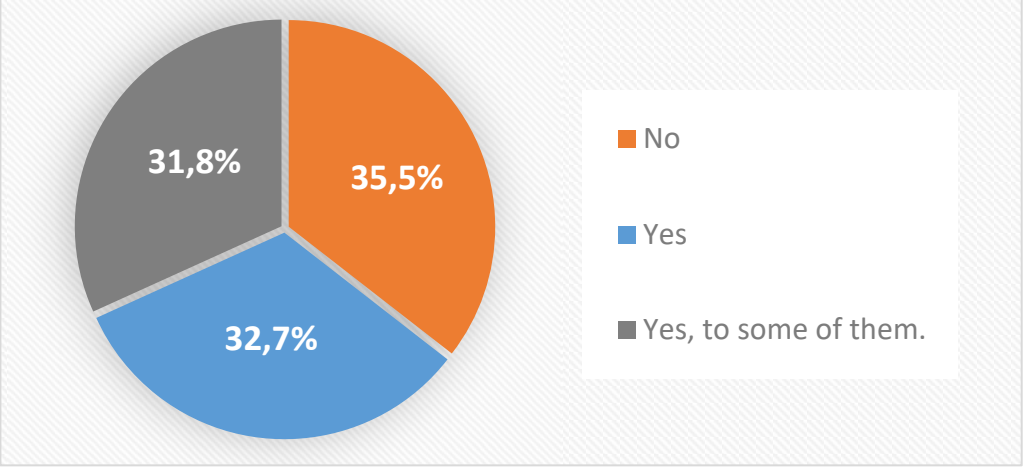

Figure 1. Assignment of subject headings to e-books.

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it is not the same, because more generic subjects are assigned, global changes are made from the headings provided by the supplier or they are assigned from the title.

4.1.1.1.2 Process of assignment of subject headings

We also wanted to know the details of the process of the assignment of the headings. We asked whether they assign more or less the same number of headings for e-books as for p-books and whether there have been changes in the technical processes regarding indexing and classification. We also asked if they had been included in the library's procedure manuals. Figure 2 provides the answers.

The high number of e-books subscribed/purchased by libraries makes an adequate allocation of subject headings unfeasible: this is the opinion of 54.36%, and almost 15% express doubt. On the other hand, 50.4% of respondents do not seem to agree with the assignment of subject headings in libraries, and almost 25% could be said to be undecided (Figure 3).

Similarly, 61.6% of librarians say that e-book subject headings should be provided by publishers while 19% is undecided (Figure 4).

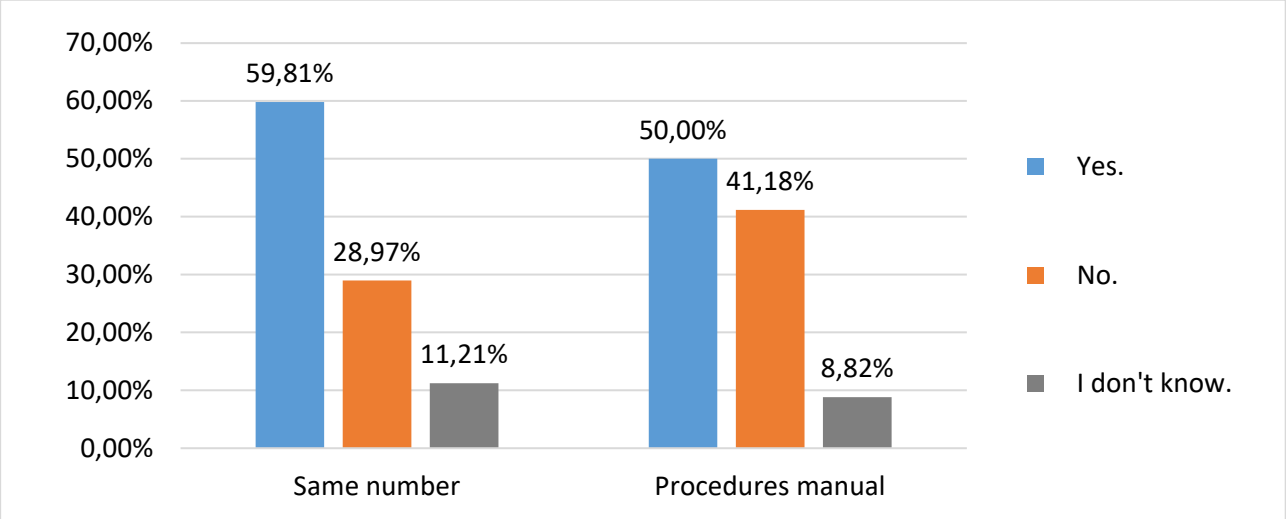

Figure 2. Number of subject headings assigned to e-books and printed books and changes made to library procedure manuals.

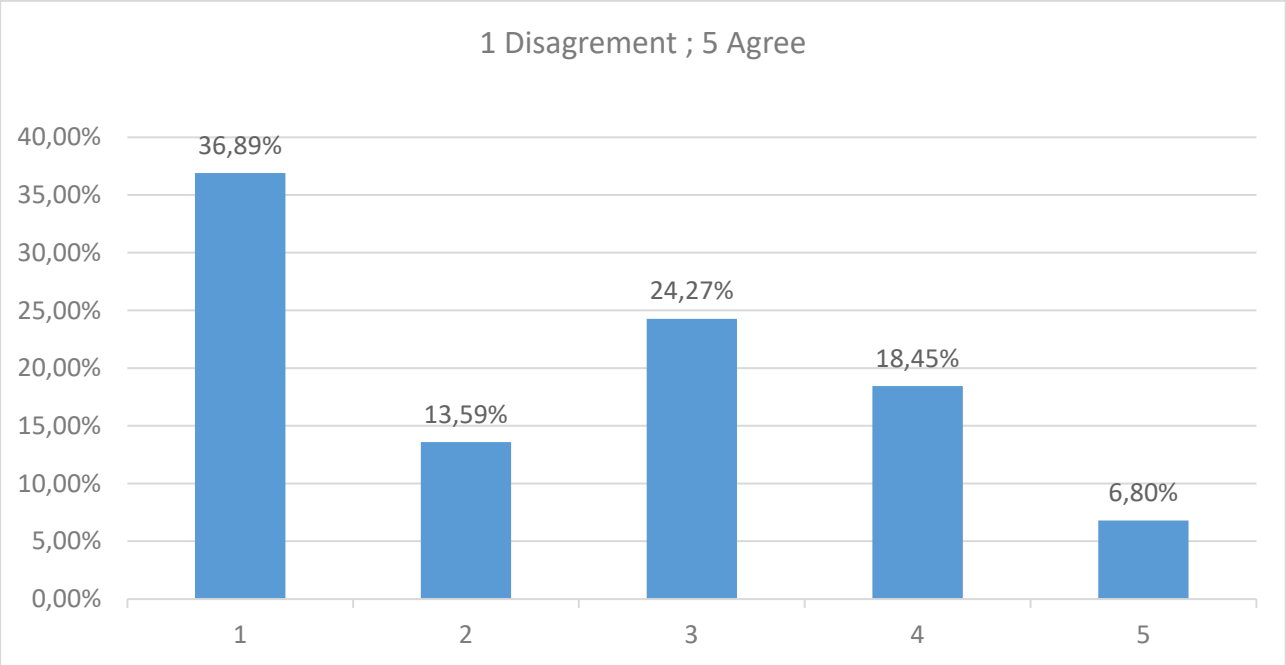

Figure 3. Library should provide the subject headings.

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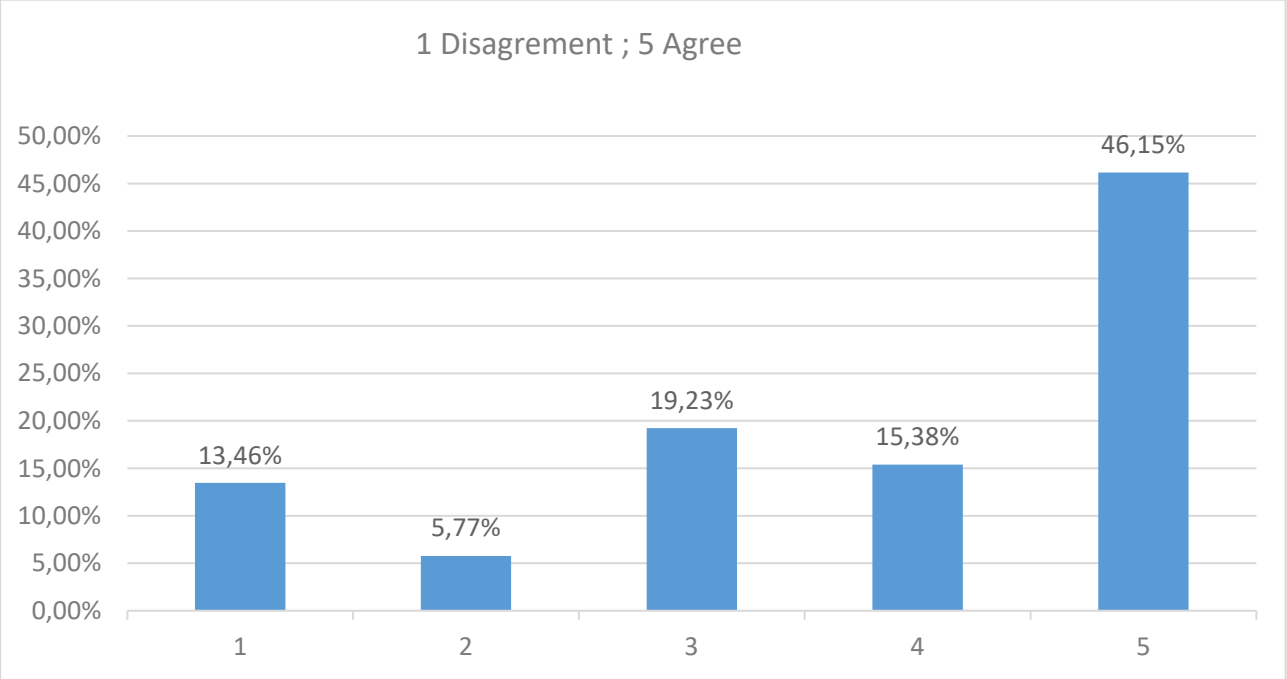

Figure 4. E-books publishers should provide the subject headings.

In fact, 58% of libraries do not assign subject headings to e-books, because they are provided by publishers/providers. Likewise, 42% state that the subjects provided are sufficient and not worth modifying while 31% are undecided and 28% do not share the idea that they are sufficient. Also, 40% consider that they are adequate while 37% are unclear and 23% say that they are not adequate.

Regarding the statements on whether the metadata provided by the publishers/providers on subject headings are "adequate" and "sufficient and not worth modifying," almost all librarians seem to agree, and so they opted for options four to five on the scale, except for the Spanish librarians since 30% did align themselves with these majority options by marking four to five in relation to them being "adequate," but another 30% marked the opposite (disagree, options one to two). Similarly, in relation to whether "the subject headings are sufficient and not worth modifying," 41% of Spanish librarians are against this statement compared to 27.6% who seem to agree.

4.1.1.1.3 Provider selection

Finally, we were also interested in knowing if the quality of the metadata provided by the providers is considered by the librarians when selecting one or another e-books provider. 53.93% consider that the quality of the subject headings and classification codes provided by the publishers/suppliers is not considered when choosing e-book packages for purchase or subscription while 35.3% consider that it is.

4.1.1.2 Assignment of classification codes

Regarding the assignment of classification codes, 59.4% of the librarians considered that the high number of e-books purchased/subscribed in the library made an adequate classification number unfeasible while almost 27% declared they were against it. On the other hand, according to Figure 5, libraries assign classification codes purchased/subscribed in only 22% of cases to maintain the coherence of the catalogue since they are assigned to printed books.

Sometimes librarians assign classification symbols to e-books to represent those purchased individually and in property, depending on the quality of the data provided by the suppliers, or to e-books that are incorporated into the library catalogue and form part of the recommended bibliography in the teaching guides.

The participants were also asked to mark on a scale from one to five (1=Disagreement; 5=Agreement) whether the numbers codes (CN) provided by the suppliers are adequate and sufficient (Figure 6). From the answers given, there does not seem to be a clear consensus, although they are inclined to note that they are adequate and sufficient.

We also asked if they used the same procedure for assigning classification codes to e-books as for printed books and 81.1% indicated that it was the same. Several libraries stated that they assign classification codes either by making global changes to e-book packages based on correspondence with the general subject or by using tools to auto-generate the *LCC*. Finally, more than half of the librarians (56%) stated

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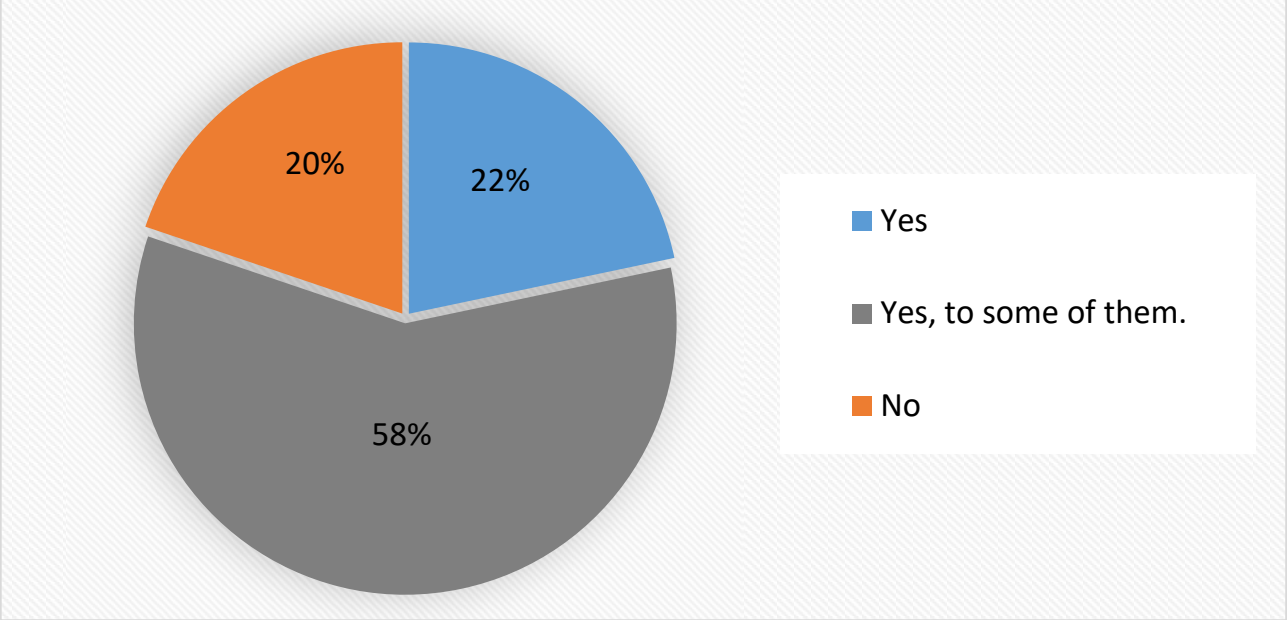

Figure 5. Assignment of classification codes to e-books.

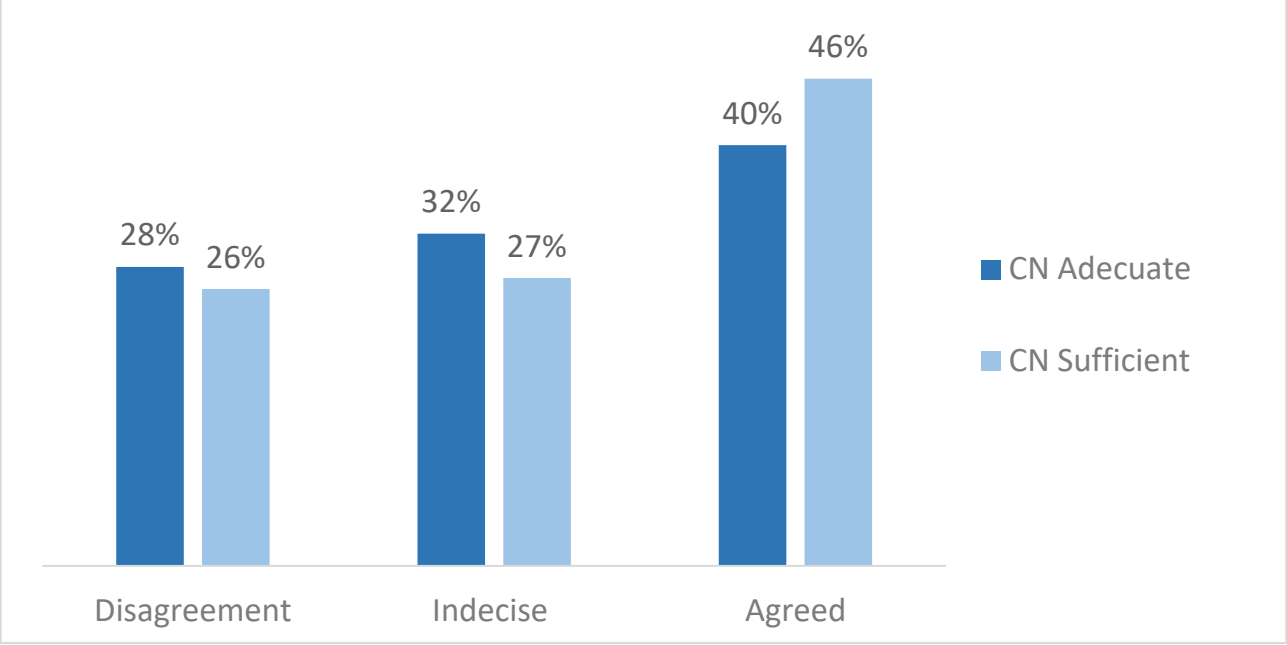

Figure 6. Adequacy and sufficiency of classification codes provided by suppliers.

that the classification numbers should be provided by the e-book publishers/suppliers while only 22% considered that the librarians should execute this process.

4.1.2 Discovery tools

80% of the librarians consider that the assignment of subject headings to e-books is useful for the users during the handling of the discovery systems while 9.71% indicated that it is not and 11.65% did not know.

75.5% of university libraries have a single discovery tool for printed books, e-journals and e-books. The libraries of the Anglo-Saxon group (United Kingdom, United States and Australia) and of the Nordic group (Sweden, Norway and Finland) have uniformly answered that they have a single discovery tool. However, in the libraries of the Ibero-

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American group, a certain divergence can be observed, since, in general, in the Spanish libraries there is a single discovery tool while in Brazil and Portugal half of the librarians indicate that there is no single discovery tool.

As for whether users are being offered easy and interactive options for discovering and searching for information, 48.1% said yes while 21.7% said no and 30.2% said they were not clear about this.

4.1.3 Collection stability, paradigm shift and frustration or stress among librarians

Sixty-six percent of those surveyed said that e-books are part of the university library just like p-books, although almost 30% said that they are not. On the other hand, there seems to be no agreement on the stability of e-book collections and their impact on catalogues according to Figure 7.

On the question of "whether e-book collections are unstable and make it difficult to keep the library catalogue up to date," almost all countries scored mostly three and four, except Sweden where 50% scored one and three. To the question of whether there is a certain "frustration" or "stress" among the librarians involved in the tasks of subject assignment and classification of e-books, we have found divided opinions, as can be seen in Figure 8, although it seems that there is no "frustration" or "stress" about this issue.

On this question, almost all countries have opted for an intermediate position by marking option three, followed by option one. Only Brazil has its answers almost uniformly distributed throughout the scale from one to five. Annex 2

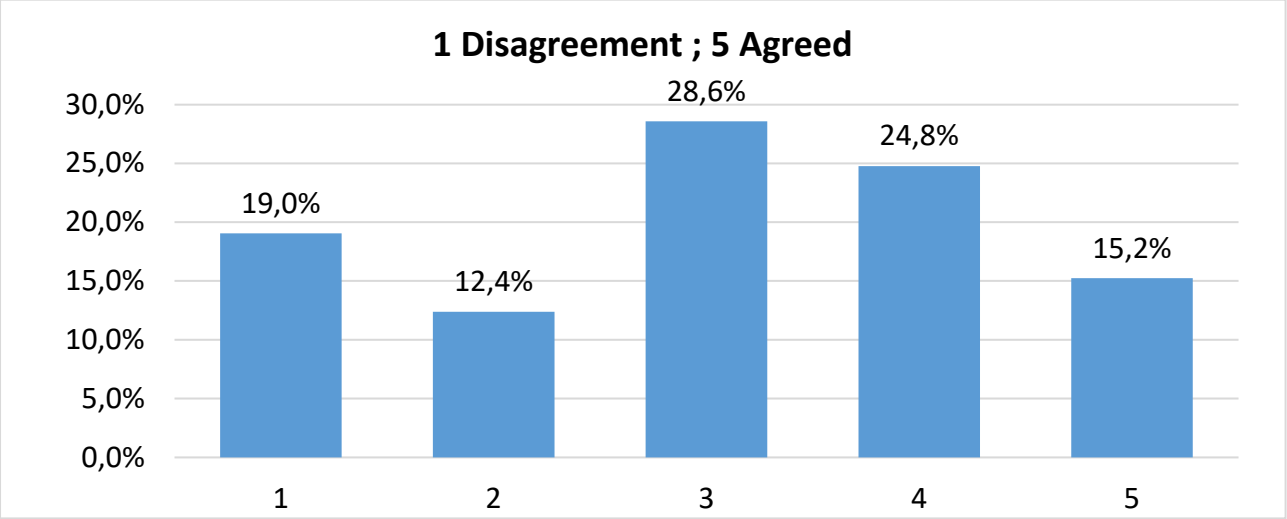

Figure 7. Stability of e-book collections.

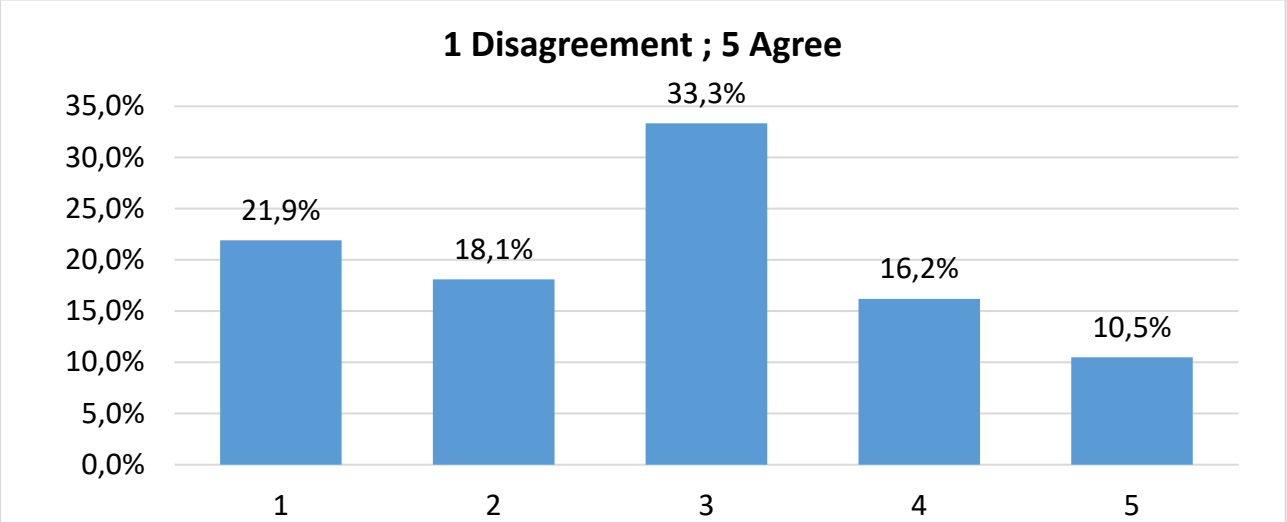

Figure 8. Existence of "frustration" or "stress" among librarians.

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provides some of the reasons given by librarians who have expressed that they do feel some frustration or stress.

When asked if they consider that such significant changes are being produced in relation to the technical processes executed in the e-books (assignment of subject headings or classification numbers) such that we can speak of a change of paradigm or a change of model, there does not seem to be a clear agreement, as can be seen in Figure 9.

4.1.4 Automation of the assignment of subjects and classification codes

Almost half of the librarians indicated that it is appropriate to introduce tools for the automatic assignment of subject headings, while for the automation of classification code assignment the percentage is a little lower (41.58%). And in both cases, there is a remarkable 23% of indecision (Figure 10).

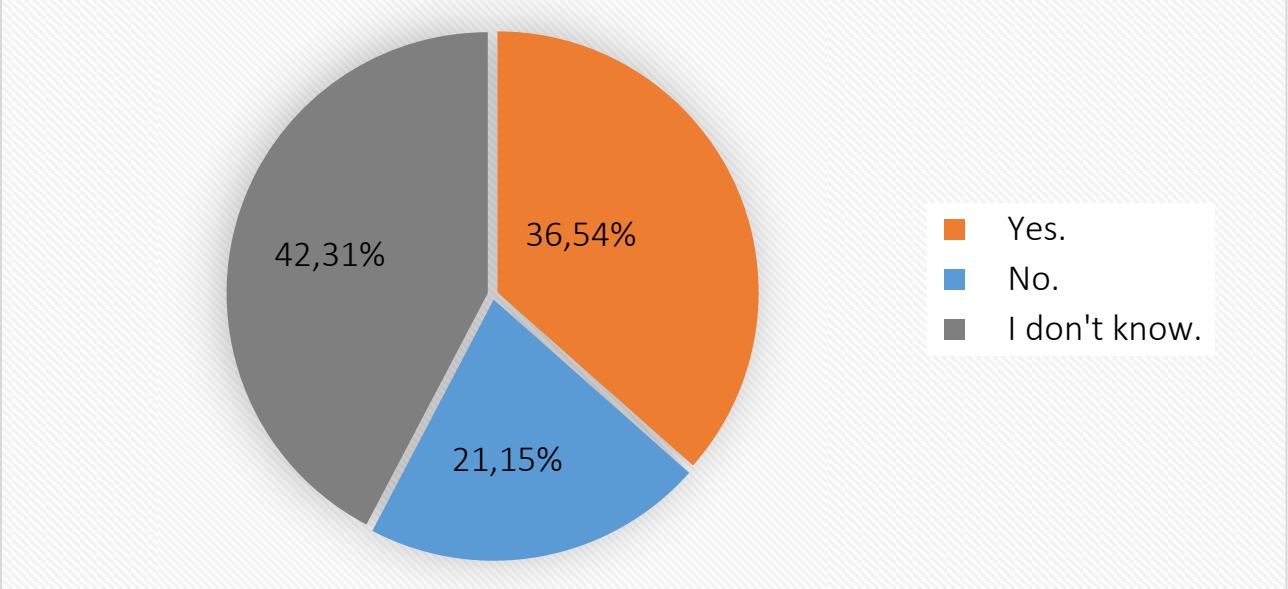

Figure 9. Paradigm shift due to changes in technical processes.

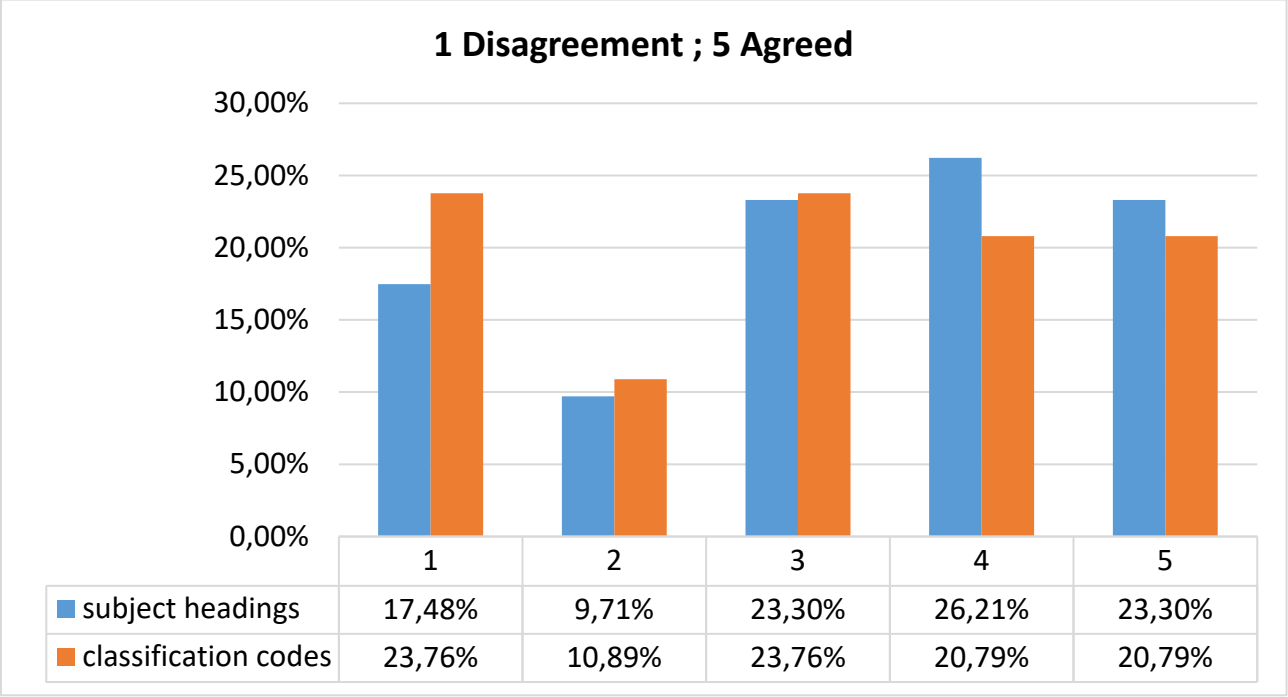

Figure 10. Need or need not to automate the assignment of subject headings and classification codes in libraries.

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In general, all countries have positioned themselves between values three, four or five, so, regarding the automation of these processes, despite the noteworthy responses of Sweden and Brazil, where a clear tendency to disagree with the automation of these two processes is observed, since a significant part of their librarians opted for options one and two.

5.0 Discussion

P-books have traditionally formed stable collections in libraries. However, with the incorporation and management of e-book packages this idea of stability is changing, because some e-books or e-book collections seem to come in and out of libraries for different reasons. One-third of the librarians surveyed believe that e-books are not part of the library like printed books. This real or perceived instability by librarians was also noted by Roncevic (2013, 5) and Frederick (2015, 206).

Regarding the assignment of headings, Stachokas (2009, 208) indicated that "the not-so-hidden secret of academic libraries today is that many cataloguing departments do not catalogue electronic resources such as e-serials, databases and e-books." On the other hand, Martin and Mundle (2010, 235) in the context of the massive incorporation of e-books and the metadata provided by the providers noted that "libraries by necessity may need to give up some control over their data as they find more efficient ways to serve their users. Tools to assist in the evaluation, clean-up, and enhancement of records in batch processes will become even more important." We understand that this cession or loss of control extends to several dimensions, among them the metadata related to the indexing and classification of e-books. Thus, according to the data we have obtained, 35% of the librarians surveyed do not assign subject headings to e-books and 58% do not do so because they are provided by publishers/suppliers. Also, in another question, 64% expressed that publishers/suppliers should provide the subject headings as opposed to only 20% who were against. This means that the presence of headings in the bibliographic records that are so useful in the discovery phase is practically being left to the e-book providers.

Librarians indicated that they do not assign subject headings because of the instability of the collections or staff scarcity. They did assign subject headings when the e-books were of great interest, the bibliographic records provided contained no subject matter, were inadequate, more specific subject matter was desired, the e-books were part of recommended bibliographies in the subject teaching guides or were purchased individually and not part of subscribed packages. In this sense, our data are aligned with what Wu and Mitchell (2010, 169) already pointed out when they stated that librarians only catalogue e-books when they are of great value to the collection, are proprietary or the providers do not provide the bibliographic records or are of questionable quality.

Libraries have been dealing with different criteria to select providers for the subscription or purchase of e-book packages. Perhaps the most widespread are price, subject areas and access models. In EBLIDA Key Principles (2012), access, ongoing access, long-term preservation, metadata availability, price and privacy are mentioned. Vasileiou, Hartley and Rowley (2012) refer to business model, license, price, platform features and interface, thematic coverage and correspondence with reading lists. Roncevic (2013) talks about content, technical specifications, functionality and business model. Yuan et al. (2018) referring to the University of Toronto Libraries talk about a model that guides procurement decisions and practice in evidence-based approaches, user demand, print usage pattern, cost and availability. Ciptayani and Dewi (2018) present a design of a decision support system for e-book selection based on the following criteria: price, DRM, content, type of provider, business model, license, technical support, resource capacity and customer support. Finally, concerning this, we offer some words from Albanese (2007) who, when talking about a survey answered by more than five hundred libraries, most of them academic, started that the respondents revealed that price is the main concern in the purchase of e-books, followed by content.

It is noteworthy that the quality of the bibliographic records in general and of the subject headings (as a fundamental element for the location of e-books during retrieval and their subsequent use) are not essential criteria that guide the decision-making of librarians. As mentioned above, the expert group that drafted the *EBLIDA Key Principles on the acquisition of and access to E-books by libraries* in 2012 identified one criterion to be considered: that e-books should be viewed with metadata but without express mention of minimum quality. It has also been noted above that numerous papers have drawn attention to both the gaps and the variety of errors in the bibliographic records (Sanchez et al. 2006; Wu and Mitchell 2010, 171; Zhao and Zhao, 2010, 98; Breedt and Walter 2012, 5; Wiersma and Tovstiadi 2017, 624; Mi and Pollock 2019).

We should remember here that when asked if they considered the quality of the headings and classification codes provided by the suppliers when selecting e-book packages, 54% said that they did not take this into account, compared to 35% who did. In this regard, Sanchez et al. (2006, 69) noted that "with the proliferation of e-book sources that use very basic cataloguing or none at all, we will face larger issues of how, or if, we can continue to provide consistent, quality cataloguing and authority control for these titles. If some entity does not provide cataloguing for the universe of e-books, will other methods such as basic Internet search engines be sufficient to provide access?"

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As regards the use of by users it is interesting to highlight that traditionally p-books have existed because readers have them readily available on shelves and they can also search for their metadata in catalogs. Therefore, there is a double path to reach them. However, nowadays an e-book exists for a user if its metadata exist and are traceable with the discovery tools. In this sense, Yuan et al. (2018) in their study on the use of identical titles in p-books and e-books formats by users have highlighted the importance of metadata to promote the use of electronic resources and specifically noted (2018, 47) that "if there were no e-book metadata within the library catalogue, e-book usage was low." Park and Tosaka (2010, 705) also wrote that the quality of metadata is "essential for resource discovery and sharing." And equally, therefore, discovery tools are essential in this electronic environment.

Concerning the use of e-books by users, it is interesting to note that traditionally a p-book has existed for users because they have it available on the shelf and it also has its descriptive metadata in the catalogue. According to our data, only 48.1% of the librarians consider that the user is being offered easy and interactive discovery tools and, on the other hand, we should remember that 80% consider that the assignment of subject headings to e-books is useful for users when using the discovery tools. This in line with Ravit and Dana (2015, 809) who in a study by the Ontario Council of University Libraries' Scholars Portal Platform found that 8.7% of users used the "subject'" field to search for e-books, 11.1% used the "author" field and 19.1% used the "title." In another similar study, Ravit and Dana (2015, 810) on a set of almost fifteen thousand searches randomly selected 637 and, after their detailed analysis, found that 40% of the searches were performed on the "subject" field, 30% combining "subject or title" and 9% combining "subject or author." They wrote (2015, 812) that "analysis of our use data suggested that subject searching and topical searching by users are more important to discovery than we had originally thought." The importance that users confer to the "subject" field is, therefore, clear. Stachokas (2014, 47) highlights the subject expertise when talking about types of professional services that librarians offer in the current library (hybrid library) and will offer in the future with the electronic library. Therefore, subject headings seem to be of interest to users and are used in their searches for information, but at the same time, the process that produces subject headings is either being abandoned or is being outsourced to e-book publishers/providers.

In summary, with this massive incorporation of e-books it seems that we are heading towards the quicksand where a weak polyhedral reality with deficient or improvable metadata is installed, with a few librarians who do not have the capacity to perform an exhaustive control of the records, where e-books without quality metadata have a high probability of not being recovered and, therefore, of not being used; on the other hand, as some studies point out (Jeong 2012; Miller 2014; Perrin 2016; Fry 2018; Aharony and Bar-Ilan 2018; Bergstrom and H.glund 2018; Kristensen and Kampen 2019), there could be a possible stagnation or decline in the acquisition of p-books, even though many users seem to prefer this format.

Librarians expressed that they do not assign classification codes for the following reasons: 1) the effort does not compensate for later use; due to the fluctuation of e-book packages they do not want to do work that could be lost; 2) it is irrelevant information during the user's search; 3) because-of the high workload and that classification codes are less important in electronic management; or, 4) the search system does not offer the possibility of retrieving e-books by classification.

Finally, several authors have used the concept of disruptive technology to refer to what the emergence of e-books in libraries has meant (Dillon 2002; Lewis 2004; Lafferty and Edwards 2004; Berube 2005; Wilson 2014; Goedeken and Lawson 2015; Frederick 2016; Aggerbeck et al. 2016). This expression has also been used in relation to the emergence of open access (Lewis 2012; Moulaison and Million 2014; Tapfuma and Hoskins 2019). David W. Lewis (2004) reviewed the changes that have occurred in libraries by analyzing collections, bibliographic control and reference service based on the theories of Clayton M. Cristense (1997), who coined the term disruptive technology. The closest question we asked in our survey on this subject was whether such significant changes were taking place in relation to the technical processes performed in e-books (assignment of subject headings or classification numbers) such that we could speak of a change of paradigm or a change of model. From the answers given by the librarians, it appears that there is no agreement on this issue.

6.0 Conclusions

In the discussion section, various recapitulations have been presented when commenting on the data collected. However, we would like to emphasize here several aspects that seem significant to us. Indexing as a conceptual representation to satisfy information needs implies an indissoluble union between the processes of indexing, retrieval and use of information. In the current library ecosystem, an electronic resource exists if it is represented by metadata, so it exists through its metadata. Thus, e-books exist for library users if their descriptive metadata is searchable with discovery tools.

On the other hand, in the absence of other research that completes or deepens what has been studied here, or to contrast more intensively our data and interpretations with other studies, different significant perceptions emerge from the preceding paragraphs: 1) librarians expect e-books to ar-

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rive with descriptive metadata relating to subject headings and classificacion codes; 2) the bibliographic records provided by publishers/providers seem to be improvable; 3) the quality of the metadata provided seems not to be considered when selecting the publishers for the purchase or subscription of e-books; 4) the discovery tools are also clearly improvable; 5) there seems to be no "frustration" or "stress" among librarians over changes in technical processes; and, 6) we do not seem to be facing a paradigm shift motivated by these issues.

With this massive incorporation of e-books, it seems that we are heading towards the quicksand where a weak polyhedral reality with deficient or improvable metadata is installed, with librarians who do not have the capacity to perform an exhaustive control of the records, where e-books without quality metadata have a high probability of not being recovered and, therefore, of not being used.

Therefore, taking as a reference some revealing data shown here and the possible connections that can be derived, we should consider whether it is appropriate for library managers to leave almost full control over bibliographic records to publishers and suppliers. We consider that we cannot renounce that e-books are always accompanied by quality metadata, because they are the key to their use by users. Therefore, as e-books are likely to increasingly displace p-books, it would be advisable that librarians grouped in lobbies, in strength and over time, that they demand from publishers and suppliers higher-quality metadata in general, and in particular, that the presence of metadata related to subject headings be an essential element in the bibliographic records and that these metadata of content representation are a reference point in the decision-making by librarians in the purchase of e-books.

Finally, we consider that this work has provided answers to various questions, but on the other hand, it also leads us to ask ourselves some questions that, perhaps, it would be interesting to address in future research; for example, to what extent do errors or gaps in the title, author or record subject headings metadata interfere with finding e-books using discovery tools and, therefore, with their end use? To what extent do searches in discovery tools with irrelevant results end up directing users to p-books available on shelves? Or how satisfied are users of my library with finding e-books after using discovery tools?

References

"Academic Student Ebook Experience Survey 2018 Report." *Library Journal Research*. https://www.libraryjournal.com/?detailStory=research

Aggerbeck, Mai, Kirsten Maibom and Karen Frederiksen. 2016. "The Disembedded Librarian: A Vision of the Librarian's Future Role in an Educational Context" In *The End of Wisdom? The Future of Libraries in a Digital Age*, ed. Evans, Wendy and David Baker. Sawston: Chandos, 65-73.

Aharony, Noa. 2014. "Library and Information Science Student's Perceptions of M-Learning." *Journal of Librarianship and Information Science* 46: 48-61. doi:10.1177/0961000613518819

Aharony, Noa and Judit Bar-Ilan. 2018. "Students' Academic Reading Preferences: An Exploratory Study." *Journal of Librarianship and Information Science* 50: 3-13. doi; 10.1177/0961000616656044

Albanese, Andrew Richard. 2007. "Ebooks Face Triple Threat." *Library Journal* 132: 23-4.

Ardito, Stephanie. 2000. "Electronic Books: to 'E' or not to 'E' That Is the Question." *Searcher* 8: 28-39.

Bardeen, Angela, Kristina Spurgin, Therese Triumph and Libby Wilcher. 2017. "Data-Informed Ebook Discovery: An Analytical Approach to the User Experience." *Serials Review* 43, no. 3-4: 231-8. doi:10.1080/00987913.2017.1368000

Barnes, M. 2009 "The Invisible Mainstream: E-Resources in Workflows and Organizations". Paper presented at Electronic Resources & Libraries conference

Bennett, Shaun R. 2016. "A Data-driven Approach to Understanding the Demand-driven Acquisition Program at North Carolina State University." *Serials Review* 42: 201-9. doi:10.1080/00987913.2016.1212638

Berube. Linda. 2005. "E-books in Public Libraries: A Terminal or Termination Technology?." *Interlending and Document Supply* 33: 14-8. doi:10.1108/02641610510582090

Bergström, Annika and Lars Höglund. 2018. "E-books: In the Shadow of Print." *Convergence. The International Journal of Research into New Media Technologies* 26: 895-911. doi:10.1177/1354856518808936

Beswick, Kevin, Nushrat Khan and Danica Lewis. 2017. "Single-Stop Ebook Reader "SimplyE": Is It APPlicable for Academic Libraries?" *Serials Review* 43: 179-82. doi:10.1080/00987913.2017.1322860

Blummer, Barbara and Jeffrey Kenton. 2012. "Best Practices for Integrating E-books in Academic Libraries: A Literature Review From 2005 to Present." *Collection Management* 37: 65-97. doi:10.1080/01462679.2012.660851

Breeding, Marshall. 2017. "The Complicated Story of Ebooks in Libraries." *Computers in Libraries* 37: 16-8.

Breedt, Andre and David Walter. 2012. "White Paper: The Link between Metadata and Sales." https://www.nielsenisbnstore.com/documents/3971_Nielsen_Metadata_white_paper_A4.pdf

Brown, Sherri and Lea Currie. 2019. "Shaping an eDDA Program through Assessment." *Technical Services Quarterly* 36: 155-76. doi:10.1080/07317131.2019.1584989

https://doi.org/10.5771/0943-7444-2020-8-646 https://www.inlibra.com/de/page/agb - Open Access - CC BY

Buczynski, James A. 2010. "Library eBooks: Some Can't Find Them, Others Find Them and Don't Know What They Are." *Internet Reference Services Quarterly* 15: 11-9. doi:10.1080/10875300903517089

Casselden, Biddy and Richard Pears. 2019. "Higher Education Student Pathways to Ebook Usage and Engagement, and Understanding: Highways and Cul de Sacs." *Journal of Librarianship and Information Science* 52: 601-19. doi:10.1177/0961000619841429

Castro, Jeannie, Richard Guajardo, Matthew Ragucci and Melissa Randall. 2019. "MARC Metamorphosis: Transforming the Way You Look at E-Book Records." *Serials Librarian* 76: 213-9. doi:10.1080/0361526X.2019.1586052

Chen, Mingyu, Misu Kim and Debbie Montgomery. 2016. "Ebook Record Management at the University of Texas at Dallas." *Technical Services Quarterly* 33: 251-67. doi:10.1080/07317131.2016.1169781

Ciptayani, Putu I. and Kadek Catya Dewi. 2018. "Decision Support System of E-Book Provider Selection for Library Using Simple Additive Weighting." *Journal of Physics: Conference Series* 953: art. no. 012066. doi:10.1088/1742-6596/953/1/012066

Connaway, Lynn Silipigni and Heather L. Wicht. 2007. "What Happened to The E-Book Revolution? The Gradual Integration of E-Books into Academic Libraries." *Journal of Electronic Publishing* 10. doi:10.3998/3336451.0010.302

Costello, Laura. 2017. "Comparison of E-Book Acquisitions Strategies across Disciplines Finds Differences in Cost and Usage." *Evidence Based Library and Information Practice* 12: 109-11.

Clayton M. Christensen, Clayton M. 1997. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston: Harvard Business School Press.

Croft, Rosie and Corey Davis. 2010. "E-books Revisited: Surveying Student E-Book Usage in a Distributed Learning Academic Library 6 Years Later." *Journal of Library Administration* 50: 543-69. doi:10.1080/01930826.2010.488600.

Dillon, Dennis. 2002. "Fishing the Electronic River: Disruptive Technologies, the Unlibrary, and the Ecology of Information." *Journal of Library Administration* 36: 45-58. doi:10.1300/J111v36n03_05

EBLIDA (European Bureau of Library Information and Documentation Associations) 2012. "Key Principles on the Acquisition of and Access to E-Books by Libraries" http://www.eblida.org/Special%20Events/Key-principles-acquistion-eBooks-November2012/GB_English%20Version %20Key%20Principles.pdf

England, Mark M. and Rick Anderson. 2019. "Demand-driven Acquisition of Print Books: Applying 21st-Century Procurement Strategies to a 5th-Century Format." *Collection Management* 44: 95-104. doi:10.1080/01462679.2018.1564715

Frederiksen, Linda, Joel Cummings, Lara Cummings and Diane Carroll. 2011. "Ebooks and Interlibrary Loan: Licensed to Fill?" *Journal of Interlibrary Loan, Document Delivery and Electronic Reserve* 21: 117-31. doi:10.1080/1072303X.2011.585102

Frederick, Donna E. 2016. *Managing eBook Metadata in Academic Libraries: Taming the Tiger*. Amsterdam: Elsevier.

Gil-Leiva, Isidoro, Mariângela Spotti Lopes Fujita, Pedro Manuel Díaz Ortuño and Daniela Majorie Akama dos Reis. 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?" In *Chalenges and Opportunities for Knowledge Organization in the Digital Age*: *Proceedings of the Fifteenth International ISKO Conference 9-11 July 2018, Porto, Portugal,* ed. Fernanda Ribeiro and Maria Elisa Cerveira. Advances in Knowledge Organization, 16. Würzburg: Ergon, 314-20. doi:10.5771/9783956504211-314

Goedeken, Edward A. and Karen Lawson. 2015. "The Past, Present, and Future of Demand-Driven Acquisitions in Academic Libraries." *College & Research Libraries* 76: 205-21. doi:10.5860/crl.76.2.205

Goodwin, Cathy. 2014. "The e-Duke Scholarly Collection: E-Book V. Print Use." *Collection Building* 33: 101-5.

Gray, Robyn and Vivian Howard. 2017. "Young Adult Use of Ebooks: An Analysis of Public Library Services and Resources." *Public Library Quarterly* 36: 199-212. doi:10.1080/01616846.2017.1316149

Herrera, Gail. 2012. "Deliver the eBooks Your Patrons and Selectors Both Want! PDA Program at the University of Mississippi." *Serials Librarian* 63: 178-86. doi:10.1080/0361526X.2012.700780

Jeong, Hanho. 2012. "A Comparison of the Influence of Electronic Books and Paper Books on Reading Comprehension, Eye Fatigue, and Perception." *Electronic Library* 30: 390-408. doi:10.1108/02640471211241663

Kristensen, Linn-Birgit Kampen. 2019. "How to Choose a Format: Consumers' Evaluation in Choosing a Format for Reading Books in Norway." *Journal of Electronic Publishing* 22. doi:10.3998/3336451.0022.102

Lafferty, Susan and Jenny Edwards. 2004. "Disruptive Technologies: What Future Universities and their Libraries?" *Library Management* 25: 252-58. doi:10.1108/01435120410699636

Lagace, Nettie. 2018. "The NISO E-Book Metadata Working Group: Varied Stakeholders Looking at a Common Goal." *Serials Review* 44: 75-6. doi:10.1080/00987913.2018.1431869

Lewellen, Rachel, Steven Bischof and Terry Plum. 2016. "EBL eBook Use Compared to the Use of Equivalent

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Print Books and Other eResources: A University of Massachusetts Amherst – MINES for Libraries® Case Study." *Performance Measurement and Metrics* 17: 150-64. doi:10.1108/PMM-04-2016-0013

Lewis, David W. 2004. "The Innovator's Dilemma: Disruptive Change and Academic Libraries." *Library Administration & Management* 18: 68-74.

Lewis, David W. 2012. "The Inevitability of Open Access." *College & Research Libraries* 73: 493–506. doi:10.5860/crl-299

Martin, Kristin E. and Kavita Mundle, 2010. "Notes on Operations Cataloging E-Books and Vendor Records: A Case Study at the University of Illinois at Chicago." *Library Resources & Technical Services* 54: 227-37.

McKay, Dana. 2011. "A Jump to the Left (and then a Step to the Right): Reading Practices within Academic Ebooks" In *OzCHI'11: Proceedings of the 23rd Australian Computer-Human Interaction Conference*. New York: Association of Computing Machinery, 202-10. doi:10.1145/2071536.2071569

McKay, Dana, Wally Smith and Shanton Chang. 2015. "Down the Superhighway in a Single Tome: Examining the Impact of Book Format on Borrowing Interactions." In OzCHI'15: *Proceedings of the Annual Meeting of the Australian Special Interest Group for Computer Human Interaction,* ed. Bernd Ploderer, Marcus Carter and Martin Gibs New York: Association of Computing Machinery, 517-25. doi:10.1145/2838739.2838766

McKay, Dana, George Buchanan and Shanton Chang. 2018. "It Ain't What You Do, It's the Way That You Do It: Design Guidelines to Better Support Online Browsing." *Proceedings of the Association for Information Science and Technology* 55: 347-56. doi:10.1002/pra2.2018.14505501038

McKiel, Allen. 2016. "ATG Special Report: ProQuest's 2016 Global Student and Researcher eBook Survey." *Against the Grain* 28: 73-6.

Mi, Xiying and Bonita M. Pollock. 2019. "Ebooks for the Classroom+ at University of South Florida Libraries: A Case Study of Database Management." *Journal of Web Librarianship* 13: 95-111. doi:10.1080/19322909.2018.1555779

Miller, Laura Newton. 2014. "Preference for Print or Electronic Book Depends on User's Purpose for Consulting." *Evidence Based Library and Information Practice* 9: 95-7. doi:10.18438/B8B891

Moulaison, Heather Lea and Anthony J. Million. 2014. "The Disruptive Qualities of Linked Data in the Library Environment: Analysis and Recommendations." *Cataloging & Classification Quarterly* 52: 367-87. doi:10.1080/01639374.2014.880981

Park, Jung-Ran and Yuji Tosaka. 2010. "Metadata Quality Control in Digital Repositories and Collections: Criteria, Semantics, and Mechanisms." *Cataloging & Classification Quarterly* 48: 696–715. doi:10.1080/01639374.2010.508711

Perrin, Andrew. 2016. "Book Reading 2016." Pew Research Center Internet & Technology. https://www.pewresearch.org/internet/2016/09/01/book-reading-2016/

Proctor, Julia L. 2019. "Knowledge Management for Collection Development: Transforming Institutional Knowledge into Tools for Selectors." *Serials Librarian* 76: 118-22. doi:10.1080/0361526X.2019.1551668

Rafiq, Sadaf and Nosheen Fatima Warraich. 2016. "Utilization of E-Books among Undergraduate Medical Students at Lahore" *Pakistan Journal of Information Management and Libraries* 17: 191-200.

Ragan, Amy, Jenna N. Kammer, Charlene Atkins and Rene Burress. 2019. "Learning to Read Online: The Effect of Instruction on E-Textbook Use." *Library Hi Tech* 37: 293-311. doi:10.1108/LHT-01-2018-0011

Rao, K. Nageswara, Sunil Kumar and Manorama Tripathi. 2018. "E-book and Print Book Price and Desirability for University Libraries: A Comparative Study." *Electronic Library* 36: 82-102. doi:10.1108/EL-06-2016-0142

Ravit H.David and Dana Thomas. 2015. "Assessing Metadata and Controlling Quality in Scholarly Ebooks." *Cataloging & Classification Quarterly* 53: 801-24. doi:10.1080/01639374.2015.1018397

Rodrigues, Charles and Angel Freddy Godoy Viera. 2018. "Criteria for Adoption of E-Books in Libraries in the Context of the Paradigm of Cloud Computing." *Information Discovery and Delivery* 46: 161-72. doi:10.1108/IDD-02-2018-0006

Rojeski, Mara. 2012. "User perceptions of Ebooks versus Print Books for Class Reserves in an Academic Library." *Reference Services Review* 40: 228-41. doi:10.1108/00907321211228291

Rokusek, Steve and Rachel Cooke. 2019. "Will Library E-Books Help Solve the Textbook Affordability Issue? Using Textbook Adoption Lists to Target Collection Development." *Reference Librarian* 60: 169-81. doi:10.1080/02763877.2019.1584597

Romero-Otero, Irene-Sofía, Esperanza Iglesias-Fernández and Elea Giménez-Toledo. 2013. " Ús, acceptació i expectatives del llibre electrònic en una biblioteca de recerca." *BiD* 31. http://bid.ub.edu/31/romero1.htm

Roncevic, Mirela. 2013. "E-Book Platforms for Libraries." *Library Technology Reports* 49, no. 3.

Sanchez, Elaine, Leslie Fatout, Aleene Howser and Charles Vance. 2006. "Cleanup of NetLibrary Cataloging Records a Methodical Front-End Process." *Technical Services Quarterly* 23: 51-71. doi:10.1300/J124v23n04_04

Sapon-White, R.E. 2012. "Kindles and Kindle E-books in an Academic Library: Cataloging and Workflow Challenges" *Library resources & Technical Services* 56: 45-52.

https://doi.org/10.5771/0943-7444-2020-8-646 https://www.inlibra.com/de/page/agb - Open Access - CC BY

https://journals.ala.org/index.php/lrts/article/view/5498/6751CachedSimilarThe

Schonfeld, Roger C. 2013. "Stop the Presses: Is the Monograph Headed Toward an E-Only Future?" *Ithaka S+R*. (blog), Dec. 10. doi:10.18665/sr.24686

Schroeder, Rebecca and Rebecca Boughan. 2018. "Doing More with Less: Adoption of a Comprehensive E-Book Acquisition Strategy to Increase Return on Investment While Containing Costs." *Library Resources and Technical Services* 62: 28-36. doi:10.5860/lrts.62n1.28

Serra, Liliana Giusti and José Eduardo Santarém Segundo. 2017. Modelos de negócios, bibliotecas e livros digitais." *Informação e sociedade* 27: 131-43.

Sewell, Bethany B. and Forrest E. Link. 2017. "Developing Workflows for Short-term Loans of Ebooks as an Adjunct to ILL: Part Two." *Technical Services Quarterly* 34: 34-9. doi:10.1080/07317131.2017.1238200

Smith, Susan Lynn, Allyson Rodriguez, Erin DeWitt Miller and Lu Xu. 2019. "The Relationship between the Technology Acceptance Model and Preference for Ebooks at a Large Research University." *Library Hi Tech News* 36: 13-5. doi:10.1108/LHTN-11-2018-0069

Smyth, Sarah and Andrew P. Carlin. 2012. "Use and Perception of Ebooks in the University of Ulster: A Case Study." *New Review of Academic Librarianship* 18: 176-205. doi:10.1080/13614533.2012.719851

Stachokas, George. 2009. "Electronic Resources and Mission Creep: Reorganizing the Library for the Twenty-First Century." *Journal of Electronic Resources Librarianship* 21: 206-12. doi:10.1080/19411260903446170

Stachokas, George. 2014. "The Problem for Libraries in The Twenty-First Century: The Need to Accept a Paradigm Shift." In *After the Book Information Services for the 21st Century*. Sawston: Chandos, 33-47. doi:10.1016/C2013-0-16962-0

Stachokas, George. 2019. *The Role of the Electronic Resources Librarian*. Sawston: Chandos.

Tapfuma, Mass Masona and Ruth Geraldine Hoskins. 2019. "Open Science Disrupting the Status Quo in Academic Libraries: A Perspective of Zimbabwe." *Journal of Academic Librarianship* 45: 406-12. doi:10.1016/j.acalib.2019.05.005

Tingle, Natalia and Keith Teeter. 2018. "Browsing the Intangible: Does Visibility Lead to Increased Use?" *Technical Services Quarterly* 35: 164-74. doi:10.1080/07317131.2018.1422884

Vasileiou, Magdalini, Richard J. Hartley and Jennifer Rowley. 2012. "Choosing E-books: A Perspective from Academic Libraries." *Online Information Review* 36: 21-39. doi:10.1108/14684521211206944

Wang, Xiaoguang, Hanghang Cheng, Jing Liu, Hongyu Wang and Chen Zhang. 2018. "How Do People Read eBooks on Mobile Devices? Implication for Digital Reading Environment Design." In *JCDL '18: Proceedings of the 18th ACM/IEEE on Joint Conference on Digital Libraries*. New York: ACM, 393-94. doi:10.1145/3197026.3203872

Watkinson, Charles. 2018. "The Academic E-book Ecosystem Reinvigorated: A Perspective from the USA." *Learned Publishing* 31: 280-7. doi:10.1002/leap.1185

Wiersma, Gabrielle and Esta Tovstiadi. 2017. "Inconsistencies between Academic E-Book Platforms: A Comparison of Metadata and Search Results." *Portal: Libraries and the Academy* 17: 617-48. doi:10.1353/pla.2017.0037

Wilson, Thomas D. 2014. "The e-Book Phenomenon: A Disruptive Technology." *Information Research*, 19, article 612.

Wu, Annie and Anne M. Mitchell. 2010. "Mass Management of e-Book Catalog Records: Approaches, Challenges, and Solutions." *Library Resources & Technical Services* 54: 164-74.

Wu Xu, Jiada Shi and Xiaqing Xie. 2015. "The Design and Implementation of APK eBooks Online Generation System Based on FBReader." In *Trustworthy Computing and Services: International Conference, ISCTCS 2014, Beijing, China, November 28-29, 2014, Revised Selected Papers,* ed. Lu Yueming Wu Xu and Zhang Xi. Communications in Computer and Information Science 520. Berlin: Springer, 389-400. doi:10.1007/978-3-662-47401-3_50

Yuan, Weijing, Marlene Van Ballegooie and Jennifer L. Robertson. 2018. "Ebooks Versus Print Books: Format Preferences in an Academic Library." *Collection Management* 43: 28-48. doi:10.1080/01462679.2017.1365264

Zhao, Shuzhen and Wei Zhao. 2010. "Addressing the Challenge: Cataloguing Electronic Books in Academic Libraries." *Evidence Based Library and Information Practice* 5: 93-103. doi:10.18438/B84034

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Annex 1: Survey

UNIVERSIDAD DE MURCIA

Survey on the assignment of subject headings and classification to ebooks in university libraries

1. Please, mark as appropriate:

	Yes	No	We're on it
Have you developed a procedure/ policy for the management of electronic documents?	[ ]	[ ]	[ ]

2. Mark as appropriate (1 Disagree; 5 Agree):

	1	2	3	4	5
With the management that is currently being carried out with ebooks in your library, ebooks are part of the library as well as printed books.	[ ]	[ ]	[ ]	[ ]	[ ]

3. Does the library have a unique discovery tool for printed books, ejournals and ebooks?

[ ] Yes
[ ] No
[ ] We are working on it
Observations:

4. Mark as appropriate (1 Disagree; 5 Agree):

	1	2	3	4	5
The collections of ebooks are unstable and make it difficult to keep the library catalogue updated.	[ ]	[ ]	[ ]	[ ]	[ ]

5. Are the publishers who supply ebooks to your library the same publishers who supply eBooks?

[ ] Yes
[ ] No
[ ] Sometimes

6. Mark as appropriate (1 Disagree; 5 Agree):

	1	2	3	4	5
There is confusion among users about what ebooks are and what electronic journals are.	[ ]	[ ]	[ ]	[ ]	[ ]

7. Mark as appropriate (1 Disagree; 5 Agree):

	1	2	3	4	5
Bearing in mind that the location of an ebook can be more difficult than a printed book because it cannot be placed on a shelf, discovery and search options should take precedence in this environment. **Is the user being offered real, easy and interactive options for discovering and searching information?**	[ ]	[ ]	[ ]	[ ]	[ ]

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8. Has it ever been the case that a librarian has assigned subject headings or classification codes to a set of ebooks and after their incorporation into the library platform, after some time, the publisher / provider of ebooks has eliminated or modified the records in overlay processes?
[ ] Yes
[ ] No
[ ] I do not know
Observations:

9. Does your library assign subject headings to purchased or subscribed ebooks?
[ ] Yes
[ ] No.
[ ] Yes to some of them.
Please comment briefly on why or on wich:

10. If the answer to QUESTION 9 has been affirmative, is the process of assigning subject headings the same as for printed books?
[ ] Yes, the same as for printed books
[ ] It is not the same.
Please comment briefly on the difference:

11. If the answer to QUESTION 9 has been NEGATIVE, check as appropriate (1 Disagree; 5 Agreed):

	1	2	3	4	5
We do not assign subject headings to ebooks because they are provided by publishers/providers.	[ ]	[ ]	[ ]	[ ]	[ ]

12. Mark as appropriate in relation to metadata provided by publishers/ providers (1 Disagree; 5 Agreed):

	1	2	3	4	5
Metadata related to the **subject headings** of ebooks are adequate.	[ ]	[ ]	[ ]	[ ]	[ ]
Metadata related to **subject headings** are sufficient and are not worth modifying.	[ ]	[ ]	[ ]	[ ]	[ ]
Metadata related to the **classification codes** of ebooks are adequate.	[ ]	[ ]	[ ]	[ ]	[ ]
Metadata relating to **classification codes** are sufficient and are not worth modifying.	[ ]	[ ]	[ ]	[ ]	[ ]

13. Does your library assign classification codes to purchased or subscribed ebooks?
[ ] Yes
[ ] No. Please comment briefly on why
[ ] Some of them do. Please comment briefly on which
Please comment briefly on why or on wchich:

14. If the answer to QUESTION 13 has been affirmative, is the process of assigning classification codes the same as for printed books?
[ ] Yes, the same as for printed books [ ] It's not the same.
Please comment briefly on the difference:

15. If the answer to QUESTION 13 has been NEGATIVE, check as appropriate (1 Disagree; 5 Agreed):

	1	2	3	4	5
We do not assign classification codes to ebooks because they are provided by publishers/ providers.	[ ]	[ ]	[ ]	[ ]	[ ]

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16. We want to know your opinion on the following aspects. Mark as appropriate (1 Disagree; 5 Agree):

	1	2	3	4	5
The high number of ebooks purchased/subscribed in the library makes an adequate assignment of **subject headings** unfeasible.	[ ]	[ ]	[ ]	[ ]	[ ]
The high number of ebooks purchased/subscribed in the library makes an adequate assignment of **classification codes** unfeasible.	[ ]	[ ]	[ ]	[ ]	[ ]
Ebook publishers / providers should provide the **subject headings**.	[ ]	[ ]	[ ]	[ ]	[ ]
Ebook publishers / suppliers should provide **classification codes**.	[ ]	[ ]	[ ]	[ ]	[ ]
In the selection of ebook packages (eBook packages) for purchase or subscription, the quality of the metadata related to the **subject headings** and the **classification codes** provided by the publishers / suppliers is taken into account.	[ ]	[ ]	[ ]	[ ]	[ ]
Librarians must assign **subject headings** to ebooks.	[ ]	[ ]	[ ]	[ ]	[ ]
Librarians must assign **classification codes** to ebooks.	[ ]	[ ]	[ ]	[ ]	[ ]

17. We assign more or less the same number of subject headings to ebooks as for printed books.
[ ] Yes.
[ ] No.
[ ] I don't know.
Please comment briefly on why:

18. If there have been changes in applying the technical processes to ebooks in relation to indexing and classification, have they been introduced in the library's procedures manual?
[ ] Yes.
[ ] No.
[ ] I don't know.
Please comment briefly on why:

19. Do you consider that assigning subject headings to ebooks is useful for users when handling discovery tools?
[ ] Yes.
[ ] No.
[ ] I don't know.
Please comment briefly on why:

20. Do you consider that assigning classification codes to ebooks is useful for users when handling discovery tools?
[ ] Yes.
[ ] No.
[ ] I don't know.
Please comment briefly on why:

21. Mark as appropriate (1 Disagree; 5 Agreed)

	1	2	3	4	5
I consider that there is some 'frustration' or 'stress' among the librarians responsible for executing these technical processes.	[ ]	[ ]	[ ]	[ ]	[ ]

22. If you have marked 4 or 5 in the previous question, briefly indicate why you think there is some' frustration' or' stress' among the librarians responsible for executing these technical processes. Please explain it briefly:

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23. Mark as appropriate (1 Disagree; 5 Agreed)

	1	2	3	4	5
In this new and massive digital environment, it would be appropriate to introduce the automatic assignment of subject headings.	[ ]	[ ]	[ ]	[ ]	[ ]

24. Mark as appropriate (1 Disagree; 5 Agree):

	1	2	3	4	5
In this new and massive digital environment, it would be appropriate to introduce the automatic assignment of classification codes.	[ ]	[ ]	[ ]	[ ]	[ ]

25. I believe that such significant changes are taking place in relation to the processes of assigning subject headings or classification codes to ebooks that we could talk about a paradigm shift, a model change.
[ ] Yes.
[ ] No.
[ ] I do not know.

Please comment briefly on why:

Annex 2:
The reasons why librarians feel some "frustration" or "stress"

- The number of documents is overwhelming. In mass uploads, we even try to translate some basic or general subjects.
- This is a very time-consuming task, and there are few staff to do this.
- It is difficult to achieve the objectives and process all the e-books properly
- The records provided by suppliers force many revisions and still break, in many cases, the consistency of the catalogue.
- It is a very difficult task to keep up to date.
- Loss of control.
- Any change in the way of operating implies a certain degree of stress until the procedures are clear. On the other hand, there is a lot of cases in the e-books (some are property, others by subscription, others large collections, others individual), and it is difficult to have a single and clear procedure, many times it is decided on the fly.
- Subjects in English, bad quality in the MARC ... instability of the collections, now they are, now they are not, especially in subscription packages.
- The quality of the original metadata of e-books is very poor, requiring a high level of reprocessing by librarians.
- Due to the more unstable character of signed digital libraries, exclusion and inclusion of titles by the provider, for example, can generate a feeling of work without completion.
- There is frustration because of the amount that is processed at once, with records provided by publishers, which necessarily interferes with the quality of records.
- Concerns exist because there are many variables to be considered in this "hybrid" phase. The normative instruments of the area do not yet fully cover this type of material.
- The migrations when they take place leave the catalogue inadequate for searching and the work of redoing the processes frustrate, because it seems that we are doing rework.
- Many doubts when processing, because it is a virtual exemplar.
- Because the indexing of e-book providers is very general and little specific. My impression is that this task is not performed by librarians.
- It is not always possible to reconcile the demands of analysis with the quality and depth needed to represent the contents.
- Frustration or stress comes from the fact that technology evolves, but quickly that the training of librarians and also the adjustments of software tools and hardware that librarians use are always out of step with technological evolution. The library has been the poor relative in the adequacy of both human and technological resources and then it cannot function in the timings of social evolution.
- They deal with criticism from selectors and reference when e-book vendor records are inadequate for discovery. Selectors are furious about paying for e-books with bad metadata.
- The quality of records vary from vendor to vendor, so different bulk edit operations have to be performed

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based on the vendor. Some vendors only supply files of all the records rather the ones that were added/deleted since the last load. The most harrowing issue arises when vendors decide to change their unique identifiers so there's no longer a reliable match point, e.g., ebrary and EBL merged to ProQuest e-book central.

- There is not always a valid subject heading to cover the subject matter of the material; this can lead to stress as the librarians are unsure if there are enough relevant subject terms used so that the item can be discovered.
- Because we're importing large datasets of e-books, it then becomes difficult to check the quality of the bibliographic data.
- Often requires complex technical workflows to ensure quality of records and correct coverage of subscriptions in supplied record sets.
- There are not enough staff to do this properly, and yet it does need to be done properly, putting a lot of pressure on existing staff. Non-cataloguers do not seem to understand this and are unhelpful and yet are the first to complain if an e-book is not properly catalogued.
- The technical processes are complex
- Knowing we should, but do not have the time, would create stress. We do not provide the right metadata to make our e-books found by the users. This is especially the case as we do not use English as our primary language, and subject headings/key words assigned to our books will be in our maternal language for p-books.
- The county keeps on changing the system that delivers the e-books. New systems all the time
- We do not have resources to catalogue all e-books in our catalogue, but we activate them in our link resolver. The metadata in the link resolver is very limited, and unfortunately it cannot be enriched even manually. Not being able to let the users find books by subject headings given by the library can cause stress for the librarians wanting the purchased resources to be found and used by our patrons.
- Some vendors do not employ qualified cataloguers to create the data, so it is often lacking, substandard or inadequate.
- I believe the subject heading and classification codes might be helpful, but we do not consider these as major factors in e-book discovery. We rely on the deep metadata behind the discovery layer and have seen the increase of usage in e-books without local work to update title records
- Staff time and knowledge in subject heading and classification codes are limited.
- The quality of metadata from each supplier varies from average to lamentable. Each supplier's records needs a different process to massage them into a form acceptable to us.
- Frustration is caused by poor metadata in catalogue records provided by providers. Unless we can obtain records from another source (e.g., OCLC's WorldShare) there is little we can do to rectify the problem, apart from try to work with the provider for them to improve the records.

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