

Digital news on public libraries: Media mapping and thematic and consumption analysis based on *Facebook* interactions

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Abstract

A study of digital news on public libraries is presented through media mapping and a thematic and consumption analysis based on *Facebook* interactions. A total of 7,629 digital news items published in 2019 have been considered. The media mapping includes the evolution of the volume of news publications, the most prominent media outlets and journalists, and the sections in which most news items are published. For the thematic and consumption analysis, the top 250 news items with the highest number of *Facebook* interactions are considered, defining 15 thematic categories. The most published topics include: new libraries and spaces, collections, and libraries from a historical perspective. The topics that generate the most interactions are the value of libraries (social, human, and cultural capital), libraries from other countries, and new libraries and spaces. The value and originality of the current study lie in the measurement of the consumption of news and digital media through *Facebook* interactions. The methods used and results obtained also provide new knowledge for the disciplines of Communication and Media Studies by developing the idea of media mapping for its application to other topics and media in future work, as well as for Librarianship, particularly the information obtained on public libraries.

Keywords

Digital media; Public libraries; Facebook; Value of libraries; Media mapping; Social networks; Press; Media; Thematic analysis; Consumption analysis.

1. Introduction and background

The importance of public libraries is understood in terms of the benefits that they bring to both society and people, therefore enhancing social, human, and cultural capital. The communicative dimension of libraries is of special importance in regard to the interaction with people. This is confirmed by Gallo-León and Quílez-Simón (2020) in their work on public libraries as they communicate activities with society.

Among the channels and media platforms most widely used by public libraries for communication purposes, social media stands out, as reflected in research on this subject. Lázaro-Rodríguez (2020c) based on Thelwall (2020) writes, beyond research on libraries, about how research on Twitter is more highly developed due to the accessible nature of tweets through free public application programming interfaces (APIs), as well as its widespread use and the familiarity of many Western researchers with this application. Therefore, focusing on other networks such as *Facebook* can be considered original and of value in studies on public libraries. For example,

- **Carlsson** (2012) explores the use of *Facebook* by public libraries from the perspective of participatory cultures and literacy.
- **Neo** and **Calvert** (2012) analyze the adoption of social media by libraries in New Zealand.
- **Grgic** and **Mucnjak** (2017) carried out a comparative study of Croatian and Irish public libraries' activity on *Facebook*, focusing on their main usage trends and their interaction with users. Similar work has been carried out on libraries in Brazil (**Calil-Junior**; **Almendra**, 2016) and the USA (**Joo**; **Choi**; **Baek**, 2018).

Other studies focus on the methodological aspects and research topics on *Facebook* and libraries.

- **Carlsson** (2015) defines general trends, shortfalls, and opportunities, suggesting possibilities for future research.
- **Alvim** and **Calixto** (2016) develop a content analysis model for the study of the social mission of the public library on *Facebook*.
- **Lund** (2019) focuses on the analysis of the correlation between the number of followers on public libraries' *Facebook* pages and their usage, finding a moderate correlation between followers and visits but a strong correlation between followers and attendance at events.
- **Mathiasson** and **Jochumsen** (2019) present a new research approach focused on public library programming through events on *Facebook*.
- **Lastly**, **Joo**, **Lu**, and **Lee** (2020) develop a content analysis based on text mining of themes, user participation, and features of libraries on social media.

Within the Spanish sphere, the review carried out by **Gallo-León** and **Quílez-Simón** (2020) is relevant and presents some examples of studies on *Facebook* and public libraries in Spain, in addition to the work itself. The ideas of **Arroyo-Vázquez** (2014) are also relevant, as it can be said that, in general although with some exceptions, libraries do not understand how to take advantage of the opportunities that *Facebook* offers. Indeed, the need for public libraries in Spain to establish a presence on *Facebook* was already defended by **García-Giménez** (2010). Other authors, such as **Cebolla-Talens** (2015), focus on a descriptive analysis of the different social media networks used by the *Valencian Public Reading Network* and their motivations for using them. Finally, **Ortigosa-Delgado** (2017) analyzes the presence and relevance of the *Arroyo de la Miel Public Library* in the local, provincial, and national press, to detect aspects of the production of information promoted by the institution.

All the above-cited work refers to libraries as being leading protagonists in a generation of communication. However, other research areas also exist, such as the study of the dissemination of news about libraries by the media:

- **Martin-Da-Silva** and **De-Almeida-Ferreira** (2006) propose a study on the promotion of reading and libraries in the Brazilian environment.
- **Yu** and **Chen** (2016) analyze the link between libraries and digital news with the aim of increasing their visibility and promoting the consumption of information about libraries.
- **Singh et al.** (2020) focus on the gender bias of the library profession in digital media, including in the electronic version of *The New York Times*.

Research on public libraries in the media has also been developed within the Spanish context; For example, **García-Delgado** (2013) analyzes the public discourse on reading included in *El País* news, comparing it with other newspapers such as *El mundo* and *ABC*. News about Spanish libraries in *El país* and *El mundo* was also analyzed by **Galluzzi** (2014; 2015).¹ These works are of particular interest because they are carried out within a comparative framework with other European countries such as Italy, France, and the UK. The author proposes a thematic analysis, defining a total of 13 categories for the analyzed news articles and analyzing the most published topics. Lastly, **Lázaro-Rodríguez**, **López-Gijón**, and **Herrera-Viedma** (2018) analyze the presence of public libraries and reading in Spanish media compared with other cultural activities such as cinemas, museums, and theaters. The authors relate the results to the use of public libraries, reflecting on the need for a positive feedback process between public libraries and reading, librarianship and documentation, politics, and the media.

Regarding the use of the Internet and *Facebook* in Spain, according to *Spain's National Institute of Statistics (INE)*, in 2019, 90.7% of the population had used the Internet within the last three months (*INE*, 2019). A total of 64.6% of internet users had used general social media such as *Facebook*, *Twitter*, and *YouTube* in the last three months. According to the *Center for Sociological Research (CIS)*, *Facebook* has the highest percentage of people with accounts, ahead of other social media such as *Instagram* or *Twitter* (*CIS*, 2020). The popular use of *Facebook* in Spain is also corroborated by scientific literature (**Callejo-Gallego**; **Agudo-Arroyo**, 2019), as well as its use globally (**Thelwall**, 2020).

Regarding the social media platforms used by libraries at a global level, the *WebJunction* survey (2018) can be mentioned. The results indicate a higher frequency of posts on *Facebook* and *Twitter*, with content mainly concerning events, images of the libraries themselves, and information about the services offered. Although this refers to all the different types of library, it should be noted that public libraries constitute 72% of those considered. The

“ The topics on which it is published the most refer to new libraries (new spaces and services), the collection, and libraries from a historical point of view ”

collection of data on the use of social networks such as *Facebook*, *Instagram*, *Twitter*, and *WhatsApp* by public libraries in Spain in the Fesabid report on public libraries in Spain, and their diagnosis after the economic crisis (**Arroyo-Vázquez; Hernández-Sánchez; Gómez-Hernández**, 2019), is considered to be deficient and limited, representing a global challenge. The authors therefore propose that the official indicators used in that study should be reconsidered to include some novel indicators that offer information in this regard.

However, the scientific literature on the subject in Spain includes studies on the presence on and use of social media by public libraries in specific regions. For example, **Sánchez-García** (2012) concluded that Malaga's public libraries had a low presence on social media, but their most used platform was *Facebook*, followed by *Twitter*, *Blogger*, and *LinkedIn*. Similarly, **Vallet-Sanmanuel** (2017) found that the social media platforms most widely used by public libraries in Valencia were also *Facebook* and *Twitter*.

Given the three main topics on public libraries described above, a focus on *Facebook* and the media can be considered to represent an original research area for libraries. This includes an analysis of news about public libraries in digital media, considering interactions on *Facebook* (shares, comments, and reactions) as a measure of their consumption. This is precisely what is proposed herein. This study focuses on digital news from 2019, as this is the most recent year, excluding the year 2020 due to the health crisis caused by Covid-19 being the major protagonist within digital news (**Lázaro-Rodríguez**, 2020b). In relation to interactions on *Facebook* as a measure of digital media news consumption, another recent work by the author serves as a reference (**Lázaro-Rodríguez**, 2020c).

The main objective of this study is to analyze digital news about public libraries in Spain. To achieve this, media mapping is carried out to analyze the volume of news published, the media and journalists that publish the most, and the sections in which they are most disseminated. Secondly, the news is analyzed by defining thematic categories studying the most frequent category news published in, and identifying the most consumed news and categories, considering interactions on *Facebook* (shares, comments, and reactions) as a measure of said consumption.

2. Materials and methodology

The *My News*² database was used to retrieve digital news about public libraries in Spain. This database has been used in many scientific works. Due to the thematic affinity of their work, we must mention **Lázaro-Rodríguez**, **López-Gijón**, and **Herrera-Viedma** (2018), whose article has already been discussed in the "Introduction and background" section above. The news search was planned with the intention of being as exhaustive as possible but without losing precision. The search was designed to retrieve news items with the concept of 'libraries' in the title, as well as items written in the different languages used in Spain. A first criterion was included in the original equation to automate the elimination of news items that alluded to school and university libraries, while confirming that it was not possible for them to be related to public libraries. The following equation was used:

("library" OR "libraries" OR "liburutegi" OR "liburutegiak" OR "biblioteques" NOT ("university library" "university libraries" "universitarias libraries" "crai" "university library" "university libraries" "biblioteques de la universitat" "school library" "school libraries" "school libraries" "eskolako liburutegi" "eskola liburutegiak"))&xoptions = contentfields = title: subtitle

The defined time window was from 1 January 2019 to 31 December of the same year, and the news retrieval was carried out on 19 June 2020. Filters were used to retrieve news from digital media and those included in media with local, regional, and national geographic scope. The search was divided to retrieve digital news for each month separately. It should be mentioned in this regard that, based on a primary exploratory exercise, some slight inconsistencies were detected in the database in terms of total news. When running a search for the year 2019 in its entirety, the total number of results differs from that retrieved by months, compared with the total sum. Furthermore, after exporting the news to a spreadsheet format, it was detected that some news items in the database results appeared in different months compared with the actual month in which they were published. For this reason, we decided to export the results of the searches by months, and then sort the news by date in the spreadsheet.

After obtaining the results, a manual cleaning of news items that did not refer to public libraries was also carried out, including those referring to university libraries in which the initials of the universities were written or news about specialized libraries such as military or private libraries. On the other hand, news referring to ancient libraries was not eliminated due to their relationship with the history of public libraries in general. It is equally important to emphasize that the news items recovered and analyzed in this study do not refer only to public libraries in Spain, but also to libraries in other countries. This is due to the fact that the analysis of news about public libraries within digital media in Spain may include news about libraries in other places. Finally, the results also included 15 news stories without URLs, all of which were eliminated because this study focused on digital news.

Table 1 presents the number of news items retrieved using the applied search equation, those eliminated after manual cleaning, and the total number of valid news items considered in this study.

Table 1. Total news items considered

	Based on the equation	Manually removed	Total considered
News items	8,389	760	7,629

Regarding *Facebook* interactions, in order to obtain the total number of interactions, the *SharedCount* program (*SharedCount*, 2020) was used, including the news items' URLs retrieved from the *My News* search engine. This program was also applied by **Lázaro-Rodríguez** (2020c) in his work on two digital-native Spanish media outlets, which includes a broader review of other works that use it. It should be noted that the interactions were calculated and retrieved on 20 June 2020, between 15:00 p.m. and 16:00 p.m.

Having retrieved the news from *My News* and the *Facebook* interactions from *SharedCount*, the data were processed using basic descriptive statistical methods. For the media mapping, the evolution of news was obtained based on months, the media and authors (journalists) who publish the most, and the most published sections. For the thematic and consumption analysis, the news items with the highest amount of *Facebook* interactions were obtained both individually and by categories as defined by a thematic analysis based on the work of **Galluzzi** (2014).

The news data have been made available in a project in the *Open Science Framework* (*OSF*) for consultation (to maintain anonymity in the review of the work, the link to the project will be attached after the review, now available in an attached spreadsheet to review).

<https://osf.io/b3p7r>

These data include,

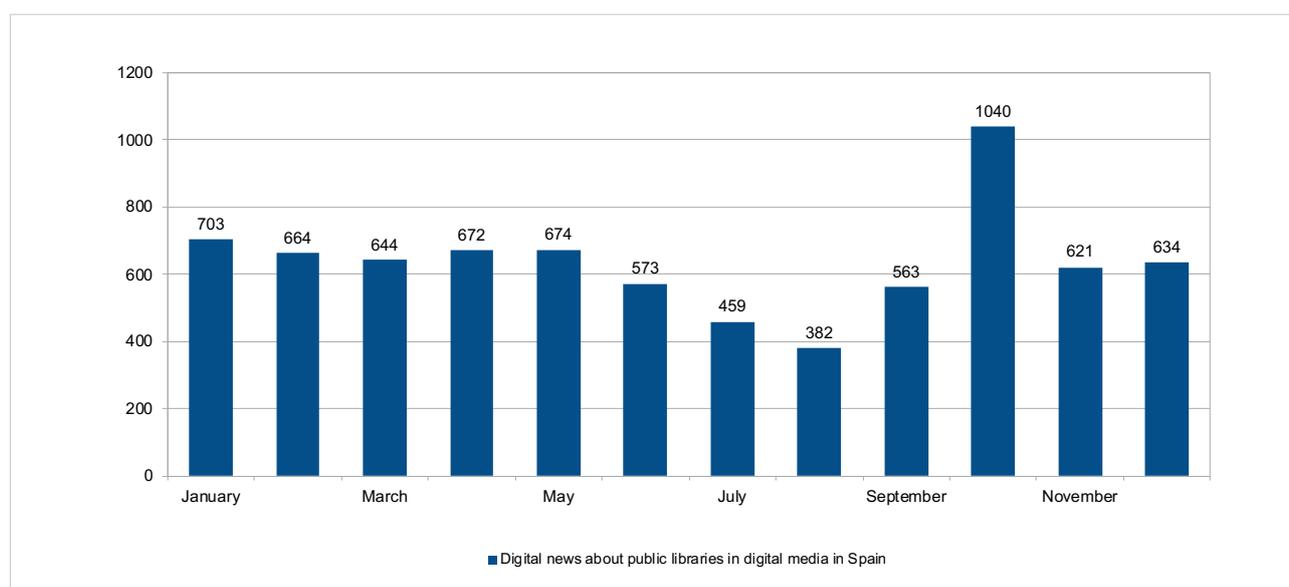
- the URLs of the news items, publication dates, news outlets, journalists, sections,
- *Facebook* interactions (shares, comments, reactions, and total reactions), and
- categories assigned to the first 250 stories with the highest number of *Facebook* interactions (used later in the study).

3. Results and discussion

3.1. Media mapping

Graph 1 shows the evolution of the publication of news about public libraries in digital media in Spain. With the exceptions of June, July, August, and September, which coincide with holiday periods and reduced hours, as well as the month of October, the volume of news items per month is quite homogeneous, hovering around 650 per month. The case of October, with 1,040 news items published in one month, may attract attention at first as the number is almost double that of other months, with the exception of the summer period. However, the number can be explained by Libraries Day in Spain on 24 October, which was promoted in news and analyzed media. The same cannot be said for International Book Day on 23 April.

Regarding the analysis of the media outlets with the most news items published, it should first be noted that a total of 251 different media outlets were identified. The top 20 media outlets with the most news items published are presented in Table 2.



Graph 1. Evolution of news publication by month

The media outlet with the most news items published was *europapress.es*, even more so if the news items from *europapress.es/epsocial.aspx* are taken into account as well. Among the top 20 outlets, some national ones stand out, such as *gentedigital.es*, *20minutos.es*, *abc.es*, and *eldiario.es*. Some radio news outlets are also detected, such as *cadenaser.com*. However, news outlets at the regional, provincial, and local level of Spanish autonomous communities predominate, such as Galicia with two media outlets, *lavozdegalicia.es* and *farodevigo.es*, Extremadura with *elperiodicoextremadura.com* and *hoy.es*, and Castilla–La Mancha with *lanzadigital.com* and *eldiadigital.es*. Catalonia is present with one media outlet, *elperiodic.com*, as well as the Basque Country with *diariorvasco.com*, Andalusia with *teleprensa.com*, Castilla y León with *diariodesalamanca.es*, Asturias with *elcomerciodigital.com*, the Chartered Community of Navarra with *noticiasdenavarra.es*, and La Rioja with *larioja.com*.

A total of 170 sections in which news items were published were identified. The top 20 sections with the most news are presented in Table 3.

Table 3. The top 20 sections in which the most news was published

Section	News items	Section	News items
Local	1,417	Society	111
Current/latest news	1,368	Economy	89
Autonomous communities and provinces	1,059	Culture and entertainment	86
Regional	943	Opinions	54
Culture	396	Users - opinions	51
Calendars	366	Books/literature	46
Radio/television	250	Politics	40
Multimedia/music/video	245	Press agencies	39
County	151	Radio/television – autonomous Communities and provinces	35
National	146	Communication – confidential	33

The section in which most news items were published was “Local” (1,417), which makes a lot of sense if one takes into account the fact that public libraries in Spain are mostly locally owned. If we look at the information for the number of publicly owned libraries on the website of *Spanish public libraries in figures* from the *Ministry of Culture and Sport (MCD)*, it is verified that, in 2017 (the last year with available data), 4,474 public libraries out of 4,600 in total depended on their local administration, representing 97.26% (MCD, 2020a).

If we do not consider the sections referring to geographical area such as “Autonomous communities and provinces” (1,059 news items), “Regional” (943), “County” (151), or “National” (146), the results highlight the sections of “Culture” (396), “Calendars” (366), and “Radio/Television” (250). Meanwhile, the other results by sections offer a primary thematic map of news publication about public libraries, relating to culture in general (“Culture,” “Culture and entertainment,” and “Books/literature” section), cultural activity and exhibitions in particular (“Calendars,” and again in “Culture and entertainment”), radio, musical and visual content, and digital content (“Radio/television,” “Multimedia/music/video,” “Radio/television – autonomous communities and provinces”, “Communication - confidential”, and “Users – opinions”), as well as others related to the political and economic dimension (“Economy” and “Politics”). That is, in the publication of news about public libraries, issues related to culture, new content in formats beyond the classic book, and issues on economics and politics are detected as protagonists.

Regarding the authorship of the news, it should be noted that only 1,071 of the 7,629 analyzed news items appear with at least one personal signature, representing 14.04% of the total. As for unique journalists, after the normalization of some names that appeared with initials but without referring to the actual person, a total of 627 were identified. The top 20 journalists who publish the most digital news about public libraries are presented in Table 4.

Isabel Andrés and Laura Grau are the journalists who publish the most about public libraries

Table 2. The top 20 media outlets that published the most news items

Media outlet	News items	Media outlet	News items
<i>europapress.es</i>	516	<i>lanzadigital.com</i>	156
<i>gentedigital.es</i>	353	<i>diariorvasco.com</i>	134
<i>europapress.es/epsocial.aspx</i>	337	<i>elperiodicoextremadura.com</i>	127
<i>20minutos.es</i>	300	<i>hoy.es</i>	113
<i>lavozdegalicia.es</i>	269	<i>diariodesalamanca.es</i>	112
<i>farodevigo.es</i>	267	<i>elcomerciodigital.com</i>	104
<i>abc.es</i>	235	<i>eldiario.es</i>	104
<i>elperiodic.com</i>	186	<i>eldiadigital.es</i>	96
<i>cadenaser.com</i>	185	<i>noticiasdenavarra.es</i>	92
<i>teleprensa.com</i>	158	<i>larioja.com</i>	89

Note: *europapress.es* and *europapress.es/epsocial.aspx* have been labeled separately because they are different web portals classified in this way by *My News*.

Table 4. Top 20 journalists who publish the most news articles (cut number = 6)

Journalist	News	Journalist	News
Isabel Andrés	20	Pedro Zaballo	8
Laura Grau	13	Blas Fernández	7
Álvaro Soto	11	Luisa María Sánchez Ballesteros	7
Daniel Roldán	11	Mari Carmen González Vázquez	7
Rosa Díaz	11	Alex De Matías	6
Alberto Iglesias Fraga	10	David García	6
Israel Aránguez	10	Inmaculada Acién	6
David Rodríguez	9	Isabel Leña	6
Francisco Navarro	8	Lola González	6
Lorena Japón	8	Xosé Gago	6
Paco Núñez	8	-	-

The journalist with the most published news is Isabel Andrés with 20 items, followed by Laura Grau with 13. If you look at the news retrieved from *My News* and included in the *OSF* project, Isabel Andrés publishes in the media outlet named *tribunasalamanca.com* and Laura Grau in *laveu.cat*. Álvaro Soto, Daniel Roldán, and Rosa Díaz appear with 11 news items each. The first two publish in various media with diverse geographical scope, such as *elcomerciodigital.com*, *diariovasco.com*, *elcorreo.com*, *nortecastilla.es*, *ideal.es*, or *larioja.com*, while Rosa Díaz does so in *lavozdealmeria.es*. If the gender variable is considered, among the top 20 journalists who publish the most about public libraries, it should be noted that 9 out of 20 journalists are women, which represents 45% of the total, with 84 news items, which is 47.19% of the total of 178. These results allow us to conclude that gender parity is very close to being proportionate, being close to 50%.

3.2. Thematic and consumption analysis based on Facebook interactions

In this study, *Facebook* interactions are considered as the sum of analyzed shares, comments, and reactions to digital news. Although these variables differ, as a positive reaction is not the same as a negative one, they all imply an interaction between the news and users on *Facebook*. The total number of shares, comments, reactions, and interactions, along with the percentage of the first three variables with respect to the last, are presented in Table 5.

Table 5. Total interactions on Facebook and percentage by type

	Shares	Comments	Reactions	Interactions
Total news items (7629)	115,725	24,145	267,870	407,740
% interactions	28.38%	5.92%	65.70%	100%

The interactions add up to 407,740. An interesting result is that digital news about public libraries generates more reactions than shares or comments. Specifically, 65.70% of the interactions are reactions, followed by 28.38% being shares. These two variables consist of clicking options in the social network to add a type of reaction or spread a news item among profiles or users. The percentage of comments with respect to the total interactions (5.92%) is low. If it is accepted that comments involve a more “active” interaction than shares and reactions —as they include writing or adding new information to a given news item rather than simply clicking on options provided by the social network— the interactions with news about public libraries occur in a more passive than active way. However, shares and reactions also imply activity and opinion on the part of users.

Because of the large number of news items analyzed in this study (7,629), for the thematic and consumption analysis, the decision was made to consider the 250 news items with the most *Facebook* interactions. This decision was based on recent work (Lázaro-Rodríguez, 2020c) showing that the shares, comments, reactions, and therefore total interactions generated represent around 80% of the total for each variable (Table 6).

Table 6. Percentage of interactions for the top 250 news articles

News set	Shares	Comments	Reactions	Interactions
Top 250 interactions	92,237	19,716	209,327	321,280
Total (7,629)	115,725	24,145	267,870	407,740
% top 250/total	79.70%	81.66%	78.14%	78.80%

The top 10 news articles with the most interactions are presented in Table 7.

Table 7. Top 10 news articles with the most interactions

Title	Date	Media outlet	Interactions
Unified management of libraries	04/07/19	<i>gencat.cat</i>	33,711
PP and C's cut in schools and libraries to pay banks in Zaragoza	24/09/19	<i>publico.es</i>	23,527
Book returned to the library 82 years after loan	23/05/19	<i>lavanguardia.es</i>	17224
The <i>Mio Cid</i> codex leaves the vault of the <i>National Library</i>	04/06/19	<i>lavanguardia.es</i>	9,767
A lost manuscript of the library of Ferdinand Columbus, son of the discoverer, found in Copenhagen	01/04/19	<i>abc.es</i>	9,343
An instrument library	09/05/19	<i>deia.com</i>	8,327
The 200 literary treasures recovered by a library in Bolivia	22/06/19	<i>elpais.com</i>	8,159
Library and courses move to a walk-in center	25/01/19	<i>deia.com</i>	8,116
The adorable mobile library that brings culture to Italian children without access to books	18/04/19	<i>elcomerciodigital.com</i>	7,512
The popular libraries of Argentina, seeds of the reading nation	13/05/19	<i>elpais.com</i>	7,033

The news item with the largest number of interactions, and therefore the one that generated the most consumption, was entitled “Unified management of libraries.” It was published by *gencat.cat* on 4 July 2019. Its URL leads to a press release on the testing phase of a collective catalog (*govern.cat*, 2019). Thus, the news that generated the most interactions was about Catalan library management. These results prove the appropriateness of the search equation used, including the retrieval of news about libraries in different languages used in Spain.

The second news item in the top 10 is also striking. It is entitled “PP and C's cut in schools and libraries to pay the bank in Zaragoza” and was published by *publico.es* on 24 September 2019. It refers to cuts by the *Partido Popular* and *Ciudadanos* in the libraries of Zaragoza. The relationship between political parties and Spanish public libraries has been explored in various scientific works; for example, **Sánchez-Sánchez** (1994) analyzed library policies in electoral programs between 1977 and 1993. **Parker et al.**, (2017) did the same in the electoral programs of the autonomous community of Castilla–La Mancha for the municipal elections from 2007 to 2015, concluding that the *PSOE* offered the largest number of library-related proposals.

Other works published in the form of a website or blog post allow us to suggest that public libraries have greater presence in the electoral programs of left-wing parties, and not so much in those of the Right (**Lázaro-Rodríguez**, 2020a; **Marquina**, 2020). Both authors proposed an analysis of the presence of libraries in the electoral programs of *Ciudadanos*, *Unidos Podemos* (*IU* and *Podemos*), *PP*, and the *PSOE* for the general elections of 2015 and 2016. While the *PP* only referred to libraries to provide them with connectivity and ultra-fast Internet connection, parties such as the *IU* developed up to seven points that even included training in values for library staff and the expansion of collections with funds related to feminism and the LGBTI collective.

However, due to the fact that almost all public libraries are locally owned, it is difficult to make general statements regarding the relationship between better libraries and left-wing governments or political municipalities, due to the existence of counterexamples with right-wing governments or city councils where libraries function at the same qualitative level. Given that public libraries are not only for reading, the identification of specific cases as counterexamples can be considered by analyzing the prizes awarded in the *María Moliner Campaign* to encourage reading within the *MCD Reading Promotion Plan* (*MCD*, 2020b). The list of winners for the different years includes libraries located in localities with diverse political governments. A wider analysis focusing on which public libraries in which localities are the winners in these types of announcements and awards, taking into account the governments and political parties of said localities, could be considered in future work.

Regarding the other news items in the top 10 by Facebook interactions, news about libraries in other countries and related to history, exhibitions, the library and its functions, and various events are identified. Based on, an analysis of the top 250 news items by category can be considered.

As a reference, **Galluzzi** (2014) defined 13 categories for the analysis of news about libraries in different media outlets from four European countries, including Spain, with *El mundo* and *El país*.³ In this study, 15 categories have been defined from the analysis of the top 250 news items by Facebook interactions, taking **Galluzzi** (2014) as an example. The 15 categories defined and the related content are presented in Table 8.

“The news item with the highest number of interactions on Facebook is entitled “Unified management of libraries” and was published by *gencat.cat*; the second was published by *publico.es* with the title “PP and C's cut in schools and libraries to pay banks in Zaragoza”

Table 8. Thematic and content-based categories

Category	Related content
Cultural activities	Cultural activities and exhibitions
Spaces	Buildings, services, equipment, and spaces
Library closures	Library closures, budget, and schedule cuts
Collection	Collections, acquisitions, donations, management, and library cooperation
Gender	Gender, libraries with a collection on women's studies
History	Historical, classical, and ancient libraries
Tributes and events	Tributes, awards, library days, obituaries, anecdotes, events, and book burning
International	Libraries in other countries
Children and students	Children, students, schools, secondary schools, and training
New libraries	New libraries, new spaces, new services, and mobile libraries
Staff	Working staff of libraries
Politics	Politics, political parties, library laws, and censorship
Digital services	Digital content, web, and video games
Usage	Library use, users, loans, visits, budget, and statistics
Value of libraries	Cultural capital, social capital, human capital, and the value of libraries

The distribution of categories ordered by the number of news items together with their percentages is presented in Table 9.

The category with the highest number of news items is new libraries with 62 (16.36%) items. This category focuses on news about new libraries, new spaces, and new services. Also noteworthy are the categories of collections (acquisitions, donations, library management, and cooperation), with 44 news items (11.61%), history with 39 items (10.29%), the value of libraries (cultural capital, social capital, and human capital) with 38 items (10.03%), and tributes and events (awards, library day, obituaries, anecdotes, etc.) with 36 items (9.50%).

Given that many of the categories defined in this study are based on those proposed by Galluzzi (2014) in his analysis of news in *El país* and *El mundo* about libraries in general (not only public ones), the results of the current study and those of that author can be related. In the case of the cited author, the category with the highest number of news items was new libraries and new buildings, as in the current study. The group of categories with the greatest number of news items identified by the cited author also included services and users, conservation, heritage, and catalogs, as well as one called mission and papers. Similar categories among those with the most news were identified in the current study. This is the case of those referring to collections (the category with the second most news items) and the value of libraries (fourth in terms of news items).

Despite the similarities between the results of the two compared studies, differences are also detected. In Galluzzi (2014), the categories of policy, strategy, and management, library closures and budget cuts, and that of digitization and digital libraries are among the seven categories with the most news items. However, in the current work, the category of politics appears in position 11 out of 14 (although there are 15 categories, two of them share the 11th position as shown in Table 9 and therefore there are 14 positions), library closures at position 9, and digital services in last place.

The next step is an analysis of the distribution of news by categories according to their consumption and interactions generated on *Facebook*. Table 10 presents the categories ordered by the number of interactions together with their percentage.

Table 9. Thematic categories ordered by the number of news items

Position	Category	News	Percentage
1	New libraries	62	16.36
2	Collection	44	11.61
3	History	39	10.29
4	Value of libraries	38	10.03
5	Tributes and events	36	9.50
6	Cultural activities	27	7.12
7	International	24	6.33
8	Library closures	23	6.07
9	Spaces	21	5.54
10	Usage	20	5.28
11	Staff	12	3.17
11	Politics	12	3.17
12	Children and students	9	2.37
13	Gender	7	1.85
14	Digital services	5	1.32
-	Total	379	100

Note: The total number of news items by category (379) differs from the total of 250 news items analyzed because each news item can belong to more than one category. That is, there are news items with more than one category assigned to them, increasing the total of number of categories assigned to 379 from 250 news articles.

These results can be interpreted as indicating the public library topics that attracted the most consumption and interest. These are related to the value of libraries (cultural capital, social capital, and human capital) with 92,540 interactions (14.27%), libraries in other countries with 78,341 (12.08%), new libraries (new spaces and new services) with 69,786 interactions (10.76%), history with 67,371 (10.39%), and collections (acquisitions, donations, management, and library cooperation) with 61,886 interactions (9.54%).

Considering the results presented in Tables 9 and 10, the categories that include the highest amount of articles published can be analyzed to determine whether they are also those that generate the most interactions on Facebook. For this, a linear relationship between the variables can be studied, considering the relationship between either the number of news items and their interactions, or the positions of each category in each table. Table 11 shows the results for the Pearson linear correlation coefficient used to analyze the former relationship when the variables follow a normal distribution, together with the results for the Spearman's rho linear correlation coefficient to compare the positions for the second relationship.

Table 11. Relationship between number of news items and their interactions by thematic category

Correlation coefficient	Results
Pearson (between the number of news items versus interactions by category)	0.79*
Spearman's rho (between the category positions of number of news items versus interactions)	0.84*

* $p \leq 0.001$

These results confirm the relationship between the variables on the number of news items per category and for their interactions on Facebook, the positive correlation being high, with statistical significance. Therefore, it can be accepted that the categories with the highest number of published news are also the ones that generate the most interactions. News about the value of libraries is the fourth category with the highest number of news stories, after those referring to new libraries, collections, and history, but it is the first category in terms of the number of Facebook interactions. On the other hand, the category of libraries from other countries is the seventh category by number of news items, but the second in terms of Facebook interactions with 78,341 interactions, representing 12.08%.

4. Conclusions

This article presents media mapping and a thematic and consumption analysis based on Facebook interactions. A total of 7,629 digital news items focused on public libraries in Spain published in 2019 were considered. Information was thus obtained on the volume of news published and its evolution, the most prominent media and journalists in the publication of news, the sections of the media in which articles were most published, and the most discussed topics and their Facebook interactions.

The volume of news was homogeneous during the year analyzed, excluding the summer months and the peak in October due to the celebration of Libraries Day. Regarding the media, national outlets stand out with more news, but also some regional and local outlets from autonomous communities such as Galicia, Extremadura, and Castilla-La Mancha stand out with more than one outlet among the top 20 with the highest volume of publications. Not counting the media from the *Europapress* news agency, the five media outlets with the most news items published were *gentedigital.es*, *20minutos.es*, *lavozdeg Galicia.es*, *farodevigo.es*, and *abc.es*.

Table 10. Thematic categories ordered by interactions

Position	Category	Interactions	Percentage
1	Value of libraries	92,540	14.27
2	International	78,341	12.08
3	New libraries	69,786	10.76
4	History	67,371	10.39
5	Collection	61,886	9.54
6	Tributes and events	57,867	8.92
7	Usage	39,991	6.17
8	Library closures	38,347	5.91
9	Politics	35,168	5.42
10	Cultural activities	30,819	4.75
11	Library as a space	30,279	4.67
12	Children and students	19,001	2.93
13	Staff	15,432	2.38
14	Digital services	8,511	1.31
15	Gender	3,133	0.48
-	Total	648,472	100

Note: As in Table 9, the total number of interactions in this table (648.472) differs from the 321,280 interactions of the top 250 news items in Table 6 because each news item can belong to more than one category; That is, there are news items with more than one category assigned to them, thus increasing the total of interactions when considered by assigned categories (379) rather than by news (250).

“ The topics that generate the most interactions refer to the value of libraries, libraries in other countries and the construction of new libraries and new spaces and services ”

The primary original contribution of this work is the identification of the journalists who publish the most about public libraries. The concept of media mapping is reminiscent of the bibliometrics discipline of scientific mapping for the evaluation of scientific activity. It is common in this type of mapping to determine the most prominent researchers in a scientific discipline, thus it is

considered of equal benefit to know the journalists who publish the most on a topic. Isabel Andrés and Laura Grau are the journalists who publish the most about public libraries. In addition, an analysis of the top 20 authors with the highest amount of published news items revealed results close to parity in terms of publication by gender.

The analysis of media sections can be considered a primary thematic analysis of the news on the subject analyzed. Not counting sections related to the geographical area, the sections with the most publications are focused on culture, agendas (cultural activities and exhibitions), or other media or formats such as radio, music, and video, and the social and economic sections, also related to politics. The fact that the section with the highest number of news is “Local” is related to the ownership of Spanish public libraries, as almost all of their administrations are also local. The fact that the news about Spanish public libraries is not classified mainly into the sections focused on culture does not mean that it is not related to facts about culture. If it is accepted that a good part of the digital media analyzed are of a general theme, the classification of the news they publish can be equally general, and therefore it is not surprising that the section with the most news is “Local.” The results obtained could be related to the perception that the media and the general population have of public libraries, and could be developed in future work. In this regard, one must highlight the work of **Fernández-Ardèvol et al.** (2018) on how public libraries are seen by nonusers, where it is established that libraries are seen mainly as cultural institutions, as well as places for study.

The thematic and consumption analysis of the news was carried out by defining thematic categories for the top 250 news items with the greatest amount of *Facebook* interactions. Although something similar was already developed in **Galluzzi's** (2014) work, the difference between this article and that of the cited author is that this article analyzed digital news on public libraries in Spanish media (up to 251 different media outlets were detected), while **Galluzzi** considered libraries in general, without limiting the analysis to public libraries, and his analysis included two specific Spanish media outlets in a comparative context with others in Europe. The results of this study regarding the categories with the highest number of news items coincide in part with those of **Galluzzi** (2014), specifically those referring to new libraries and new buildings, collections, and the value of libraries. However, differences were also identified within the categories related to politics, strategy and management, the closure of libraries and budget cuts, and digitization and digital libraries, which were not so prominent in the news and media analyzed in the current study.

Considering the digital news items, their URLs were used to analyze the interactions generated on *Facebook* as a measure of their consumption. This measure of news consumption is the study's most valuable and original contribution. The results lead to the conclusion that the news items that generate more interactions and consumption are those related to the value of libraries, libraries in other countries, and the construction of new libraries and spaces.

Future work in the discipline of Communication may take this study as a basis for developing mappings of specific media, or in relation to other topics that require some scientific knowledge. Other disciplines, such as Library Science and Documentation, can also use the results obtained in this study to relate them to the reality of Spanish public libraries, specifically, for example, evaluations of where libraries are more visible in the media, the relationship between said visibility and the use of libraries, and the benefits that increased library use can bring to society in general and people in particular.

“National outlets stand out with more news, but also stand out some regional and local outlets from autonomous communities such as Galicia, Extremadura, and Castilla–La Mancha”

“One of the most valuable and original contributions of this study is the measurement of news consumption based on interactions on *Facebook*”

5. Notes

1. The 2014 Galluzzi's work was published in English as a book chapter including an analysis of media from four countries. His work from 2015 is about the publication of the results referring to the Spanish media in the journal *BiD: universitaris texts de biblioteconomia i documentació*. For this reason, the reference to **Galluzzi** (2014) will be used, but in reference to both works.

2. Access by subscription from the electronic library of the university of the authors.

3. The categories that **Galluzzi** (2014) uses to classify news about libraries are:

- politics/strategy/management
- library closures/budget cuts
- digital/digitisation
- services/users
- conservation/holdings/catalogue

- new libraries/new buildings
- mission/roles
- buildings/architecture
- Internet/ebook/technology
- reading/marketing
- staff/recruitment
- history
- acquisition/open access.

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