RESEARCH ARTICLE

Social media and libraries in the scientific production of the United States

Maira Nani França [1] iD https://orcid.org/0000-0002-7636-8966

Angela Maria Grossi [2] iD https://orcid.org/0000-0002-5425-4917

Ana R. Pacios [3] iD https://orcid.org/0000-0003-2887-882X

[1] Paulista State University, Marília, SP, Brazil / e-mail: mairanani@hotmail.com
[2] Paulista State University, Marília, SP, Brazil / e-mail: angela.grossi@unesp.br
[3] Carlos III University of Madrid, Madrid, Spain / e-mail: areyes@bib.uc3m.es

ABSTRACT

Introduction: As organizations responsible for providing accurate and up-to-date information, libraries are continually experimenting with new technological resources and reshaping their services to meet the expectations of their users. At the beginning of the 21st century, social media emerged as another opportunity for them to connect to these spaces and access their information resources. **Objective:** Therefore, this study seeks to identify the characteristics of investigations on social media and libraries in the American scientific production, in order to follow its evolution and point out trends. **Methodology:** To this end, we opted for descriptive research, of a qualitative and quantitative nature, based on the domain analysis, proposed by Hjørland. The corpus consists of 69 articles, published in scientific journals of Information Science in the USA. In this sense, it was found that the theme of social media and libraries has been discussed in the context observed since 2006, mainly within the scope of university libraries. **Results:** It was also identified a possible epistemic community in formation. In turn, the Library 2.0 concept emerged as one of the theoretical contributions that influenced librarians and impacted services performed in the segment. In addition to Information Science, the knowledge produced on the analyzed interdomain circulates in various fields, such as Social Communication, Education, Computer Science, Sociology, among others. Apart from the term Web 2.0, social networks are the most used by this discursive community, although social media stands out as a trend. There is also a predisposition for research on practical applications, followed by theoretical studies. **Conclusion:** Emerging terms and representatives of the analyzed interdomain were identified, not yet covered in the main thesaurus used by researchers in the field.

KEYWORDS

Social media. Social networks. Web 2.0 technologies. Libraries. Domain analysis.

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Mídias sociais e bibliotecas na produção científica dos Estados Unidos

RESUMO

Introdução: Como organizações responsáveis por disponibilizarem informações precisas e atualizadas, as bibliotecas estão continuamente experimentando novos recursos tecnológicos e remodelando seus serviços para atender expectativas de seus usuários. No início do século XXI, as mídias sociais surgiram como mais uma oportunidade para eles se conectarem a esses espaços e acessarem seus recursos informacionais. **Objetivo**: Diante disso, este estudo busca identificar as características de investigações sobre mídias sociais e bibliotecas na produção

científica estadunidense, de modo a acompanhar sua evolução e apontar tendências. Metodologia: Para tanto, optou-se pela pesquisa descritiva, de natureza qualiquantitativa, fundamentada na análise de domínio, proposta por Hjørland. O corpus é constituído por 69 artigos, publicados em periódicos científicos da Ciência da Informação dos EUA. Nesse sentido, constatou-se que a temática mídias sociais e bibliotecas tem sido discutida no contexto observado desde 2006, principalmente no âmbito das bibliotecas universitárias. Resultados: Identificou-se, ainda, uma possível comunidade epistêmica em formação. Por sua vez, o conceito Library 2.0 surgiu como uma das contribuições teóricas que influenciou bibliotecários e impactou serviços realizados no segmento. Além da Ciência da Informação, o conhecimento produzido sobre o interdomínio analisado circula por vários campos, como Comunicação Social, Educação, Ciência da Computação, Sociologia, dentre outros. Fora o termo Web 2.0, redes sociais é o mais usado por essa comunidade discursiva, embora mídias sociais se destaque como uma tendência. Há também uma predisposição para pesquisas de aplicações práticas, seguida de estudos teóricos. Conclusão: Foram identificados termos emergentes e representantes do interdomínio analisado ainda não contemplados nos principais tesauros utilizados por pesquisadores da área.

PALAVRAS-CHAVE

Mídias sociais. Redes sociais. Tecnologias da Web 2.0. Bibliotecas. Análise de domínio.

JITA: HT. Web 2.0, Social networks.

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1 INTRODUCTION

The constant changes in the web environment and the rapid expansion of the digital world have impacted the routine of the information units. Consequently, this transformation has become a challenge for professionals in the area, who have started to dedicate more time and investment to technological resources. With the intention of "being where the user is" and identifying other ways to provide information resources and services, libraries are reinventing themselves. In recent years, many of them have actively embraced the great potential of social media, incorporating it into their daily practice. Given this, such platforms "[…] are dynamically documenting the here and now of life [...] and shaping the future of how we communicate." (CHARNIGO; BARNET-ELLIS, 2007, p. 31, our translation).

Currently, almost 60% of the world population has access to the internet, notably through mobile devices, and about half (49%) are active on social media. Facebook remains the absolute leader in number of users, followed by YouTube and the instant messaging applications WhatsApp, Facebook Messenger and WeChat. Online gaming platforms, which are globally popular with users aged 16 to 64, have high growth potential (KEMP, 2020).

In turn, in the United States (USA), the number of connected people grew by 0.6% compared to 2019, in a universe in which 87% of them have access to this technology. In this sense, the time devoted to the web is, on average, six hours a day, with a third devoted to social media. This environment is still explored by about three quarters (70%) of the population, mainly in the age group of 25 to 34 years old. YouTube is the most used (79%), followed by Facebook (74%), Facebook Messenger (55%), Instagram (52%) and Twitter (40%) (KEMP, 2020).

In view of the data pointed out, maintaining an active presence in these environments is an essential condition and a continuous challenge for libraries that wish to perpetuate a lasting relationship with the public, in addition to reinforcing their relevance in today's society. Thus, improving communication channels and encouraging their participation and collaboration are some of the direct benefits of joining the new modern lifestyle.

The key developments that impact the formation of the informational ecosystem, an environment in which libraries operate, as indicated by the International Federation of Library Associations and Institutions (IFLA), in the IFLA Trend Report 2013, are: access to information, online education, privacy of data, digital participation and technological transformation. When discussing these five trends, the North American library community pointed out, as comprehensive themes, the future role of these spaces, their responsibility in the physical and digital environments, their effective forms of communication and the involvement of professionals in the field with innovation (IFLA, 2016). Both in the mentioned document and in the discussions of these specialists, it is clear that social media are intrinsically related to the guiding questions raised. In addition to these pillars fostering reflections and discussions in situations of academic and technical training, training activities, as well as scientific events have been the object of research and knowledge production (papers, articles, books and theses) in the area.

Given the above, the objective of this research is to characterize the interdomain of social media and libraries through the analysis of the American scientific production inserted in Information Science, in order to integrate the data of the doctoral research developed at PPGCI/Unesp. Therefore, it is assumed that researchers in the area turn to the fields of Sociology and Social Communication to support their investigations. Thus, the concept of interdomain by Leila Bufrem and Juliana Freitas (2015) is adopted here, conceived as a relational process between domains or fields of knowledge, validated by the authors in later

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studies. The term social media is also used because it is a comprehensive concept, that is, with a wide potential for communication, interaction, participation and collaboration, such as video and image sharing platforms, online social networks, blogs, among other resources.

2 METHOD

This descriptive study on knowledge organization applies bibliographic research as a technical procedure and develops from the combination of 5 of the 11 ways, suggested by Birger Hjørland (2002), to analyze a domain of Information Science: historical studies; bibliometric studies; epistemological and critical studies; terminological studies; special classifications and thesaurus.

To collect data from the American scientific production, the Library and Information Science Abstracts (LISA) database was chosen. In a survey carried out in the second half of 2019, via Capes Journals Portal (Acess CAFEe by Unesp), the precise search option was used, using the combined syntax:

(TI("social networks" AND library) OR AB("social networks" AND library) OR IF("social networks" AND library)) AND PBLOC(united states)[1].

After that, the filters were applied: *type of source*: academic journals; *publication date*: 01.01.1969[2] to 12.31.2017[3]; *type of document*: articles, limited to those reviewed by specialists. Thus, a total of 355 documents were extracted, which respond to the following case series: 111 articles by the terms "*social media*" *and library*; 41, for "*social networks*" *and library*; 5, for "*social web*" *and library*; 198, for "*Web 2.0*" and *library*. Exclusion criteria were also considered: repeated titles; approaches not related to the evaluated interdomain (analysis of the title, abstract and keywords), as well as unavailable texts in full format. Then, a volume of 79 documents was obtained as a sample of research (Table 1), encompassing the categories: original articles, regular articles, research articles, review article, feature (article), papers and special issue (article).

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Table 1. Selection of the survey sample.

ARTICLES		TERMS RELATED TO THE DESCRIPTOR LIBRARY				TOTAL
		Social media	Social networks	Social web	Web 2.0	
Retrivied		111	41	5	198	355
Exclusion criteria	Repeated titles	7	6	0	33	46
	Other topics	78	22	4	125	229
	Unavailable	0	0	0	1	1
Final sampling		26	13	1	39	79

Source: the authors.

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[1] TI: title; AB: abstract; IF: keyword; PBLOC: publication location.
[2] LISA creation year.
[3] Final date established in the ongoing doctoral research.

The recovered articles were exported from LISA to the Microsoft Excel XML file format. For data treatment, the following metadata was considered: title, abstract, author, pubtitle, year, classification and subject terms.

Bibliometric studies were performed based on the procedures presented below. To identify the nucleus of specialized journals in the analyzed interdomain, the Bradford Dispersion Law was applied, so that the dispersion zones contained "[...] the same number of articles as the nucleus, whenever the number of journals and successive zones [were] equal to 1:n:n2. " (PINHEIRO, 1983, p. 62).

The influence of the journals that publish the most on the subject in question was defined by the citation indexes of the *Journal Citation Reports* (JCR), whose objective is to measure the quality of journals indexed in the Web of Science, and by the *SCImago Journal Rank* (SJR), which compares the scientific prestige of the sources indexed in Scopus. In the SJR, data related to country, subject area, subject category and quartile indicator of each title were also consulted. It should also be noted that the *quartile ranking* is attributed to journals based on the value of citations weighted per document, compared to other sources in the subject area:

> Q1 represents the first 25 percent of the SJR distribution, Q2 represents the medium-high SJR distribution (between 50 percent and 25 percent higher), Q3 represents the medium-low SJR distribution (between 75 percent and 50 percent higher) and Q4 represents the low SJR distribution (lower 25 percent SJR distribution) (OKAFOR, 2018, our translation).

The affiliation of the most productive authors (citing authors) was based on the institution with which they were linked, as reported in each article. Their country and academic background were extracted from the platforms: LinkedIn, Orcid, Google Scholar, ResearchGate, Wikipedia, Taylor & Francis Online, institutional website or personal websites. Still at this level, the first aspect was abbreviated according to the *ISO 3166-1 alpha-3 code*, while the second was based on the fields (broad and detailed) determined in the International Standard Classification of Education (ISCED-F 2013), by UNESCO (2015). In order to know the collaborative tendencies of the analyzed interdomain, we started with the identification of types and index of collaboration, which was determined by the average number of authors per article.

In turn, the elaboration of the citation analysis was based on the authors of the references of the analyzed articles, including self-citations. Regarding the adoption of the Latin expression et al. (and others), in works by multiple authors, a survey was carried out on the original documents to identify each name indicated. However, works by organizations or with authorship not presented were not considered. As for the determination of the most cited authors, Price's Law was applied, that is, the square root of the total number of those who constitute the elite group of a field (domain) (URBIZAGÁSTEGUI ALVARADO, 2009).

The epistemic community, conceived as a network of professionals, with recognized competence and experience in a specific field of knowledge, was selected due to the intersection of the set of researchers that produce the most on the analyzed interdomain (citing authors) and the set of the most cited in these situations. The studies of *historical*, *epistemological/critical* and *terminological types* started from textual analysis, as well as from the content of the articles, information mentioned by the authors citing in the text.

For organization and, consequently, better understanding of the knowledge produced, some *classifications and thesaurus* are used, as will be shown below. The typologies of social media most used by libraries in recent years were supported by the conceptual map proposed by Lara Infante-Fernández and Cristina Faba-Pérez (2017) with some adaptations. Libraries, as

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objects of investigation, were categorized according to typologies defined by the IFLA (2019). The social media metrics and indicators, on the other hand, were structured according to these tactical objectives, proposed by Nieves González-Fernández-Villavicencio (2016): scope and frequency of the activity; loyalty (web traffic); influence (brand perception) and participation; interaction or engagement; conversion (Return On Investment - ROI). In addition, two other systems of organization of knowledge in the field of Information Science, developed at the Brazilian level, were considered: a) categories of the context of Communication and Information Technologies (ICT) - theory, development, use, evaluation, policies, ethics (SANTOS et al., 2013), as well as competence in information (FRANÇA; CARVALHO; GRÁCIO, 2018); b) *General Classification Plan* for the *Brazilian Information Science Thesaurus* (TBCI) of the Brazilian Institute of Information in Science and Technology (IBICT) (PINHEIRO; FERREZ, 2014).

3 RESULTS

79 articles were selected from the 355 retrieved in LISA, from descriptors related to the observed interdomain. However, during the survey of the impact factor (SJR and JCR) of the journals that publish the most on the topic, it was noticed that two titles, *DESIDOC* (India) and *Health Information and Libraries Journal* (United Kingdom), did not belong to the USA, despite the database having a feature to filter search results by country [*PBLOC (united states)*]. After confirmation by its technical support team on the subject, the corpus of analysis was reset to 69 articles, signed by 138 authors. In the sequence, the results discussed from the 5 Hjørland domain analysis approaches will be presented.

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3.1 *Historic studies*

The first investigation on social media and libraries identified in American scientific production was published by Melissa Rethlefsen and collaborators in the *Journal of Hospital Librarianship*, in 2006 (Figure 1). Almost two years after the term Web 2.0 gained notoriety as a second generation of communities and services, the authors described the concept of social software (social bookmarks, social media applications and collaborative tools - wikis, Really Simple Syndication - RSS, blogs) and discussed their potential for use in these locations, highlighting the advantages of improving connections and communication with users, in addition to increasing visibility and productivity in their activities (RETHLEFSEN et al., 2006).

Figure 1. Annual American scientific production on interdomain, 2006-2017.
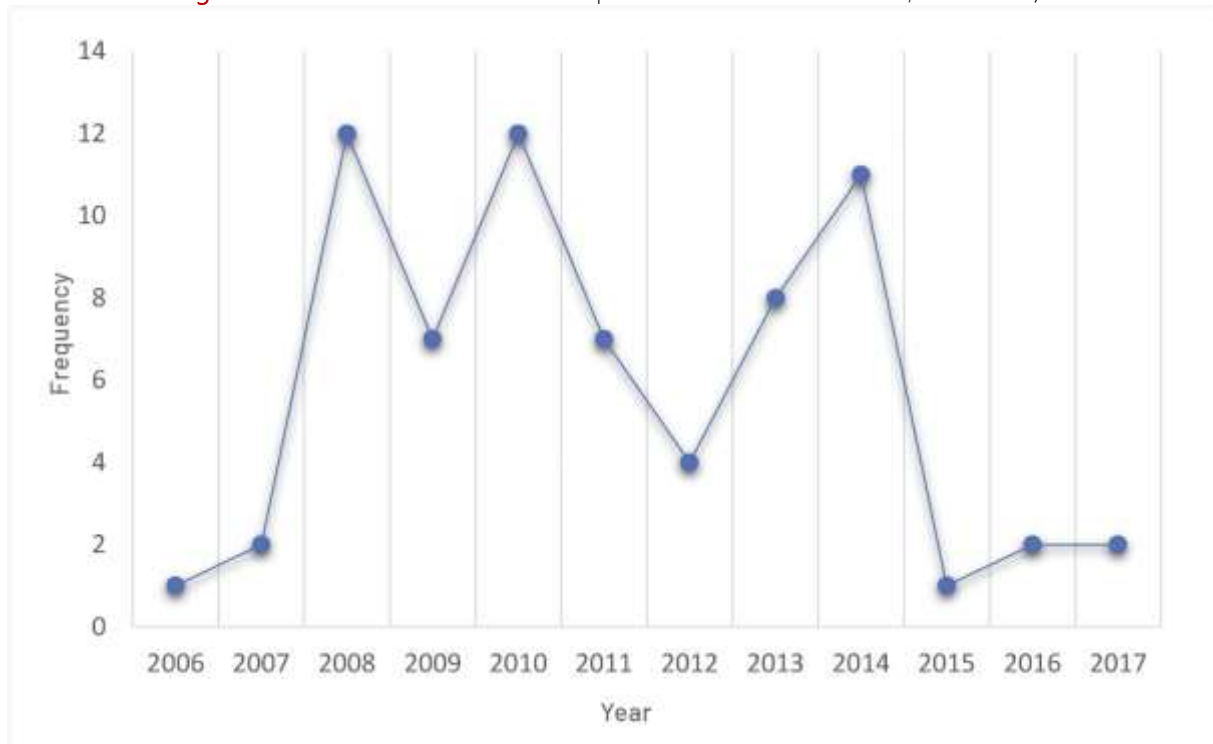
Source: the authors.

Figure 1 illustrates the uninterrupted and diachronic perspective of scientific production on the interdomain in question, from 2006 to 2017. In this case, the highest rates recorded in 2008, 2010 and 2014 are observed, in addition to a considerable fall registered from 2015.

3.2 Bibliometric studies

In this section, the behavior of American scientific publications that discuss the analyzed interdomain will be described, as well as the profile of the most cited authors, and those who most cited others (considered classics) and the formation of an epistemic community in the area.

3.2.1 Scientific journals that publish on social media and library

The 69 analyzed articles were published in 25 journals, corresponding to approximately 5.5% of the documents indexed in LISA. Most of them had Library and Information Sciences (56%) as their main field. With regard to the others verified, it is possible to mention: Information Systems, E-learning, Applications in Computer Science, Philosophy, Music, Health (Social Sciences) and Development.

From the application of Bradford's Law, it was observed that from the core emerged 3 journals disseminating the analyzed interdomain (12%), among which 36.2% of the articles are concentrated, with a productivity index of 8.3. In turn, the journals that most published on the topics of *social media* and *libraries* are: *Medical Reference Services Quarterly* (10 articles), *Journal of Web Librarianship* (9 articles) and *Internet Reference Services Quarterly* (6 articles) (Table 1).

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In Zone 1, there are 5 central journals (20%) that together published 21 articles (30.4%), followed by a productivity index of 4.2. Zone 2, on the other hand, includes a total of 17 (68%), 23 (33.3%), 1.4 (Frame 1), respectively. The results for the three zones indicate the multiplier = 2.2, number of magazines in the nucleus = 3 and the number of articles in each zone ≅ 23 (nucleus = 25, Zone 1 = 21, Zone 2 = 23).

Frame 1. Distribution of journals in Bradford areas.

Zones	Journals	Articles
Core	*Medical Reference Services Quarterly*	10
	Journal of Web Librarianship	9
	Internet Reference Services Quarterly	6
Zone 1	*Library Philosophy and Practice*	6
	Journal of Library Administration	4
	Information Technology and Libraries	5
	Journal of Electronic Resources in Medical Libraries	3
	Library & Information Science Research	3
Zone 2	*Journal of Hospital Librarianship*	2
	Library Trends	2
	Public Services Quarterly	2
	Reference & User Services Quarterly	2
	Reference Librarian	2
	School Libraries Worldwide	2
	Cataloging & Classification Quarterly	1
	Chinese Librarianship: An International Electronic Journal	1
	Journal of Consumer Health on the Internet	1
	Journal of Electronic Resources Librarianship	1
	Journal of Library & Information Services in Distance Learning	1
	Library Resources & Technical Services	1
	Music Reference Services Quarterly	1
	Portal: Libraries and the Academy	1
	RBM: a Journal of Rare Books, Manuscripts, and Cultural Heritage	1
	Science & Technology Libraries	1
	Technical Services Quarterly	1

Source: the authors.

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The scope of these 25 publications is directly related to the interdomain analyzed, by exploring topics such as: reference librarianship in the digital age, use of blogs and RSS feeds by libraries, virtual reference (chat), trends in social networking sites, etc. The production in these cases occurred from 2008 to 2014, in a concentrated way between 2009-2010 and with greater uniformity in the *Medical Reference Services Quarterly* (2008-2012, 2014).

Of the journals identified, 6 (16%) had a JCR index; on the other hand, the majority (88%) had an SJR index, while 3 did not have an Impact Factor (FI). In view of this aspect, the following titles were presented as most prestigious publications and internationally disseminated: *Library & Information Science Research* (JCR: 1,485 and SJR: 0.99), *Information Technology and Libraries* (JCR: 0.811 and SJR: 0.77) and *Portal: Libraries and the Academy* (JCR: 0.783 and SRJ: 1.06), indexed in Web of Science and Scopus, databases recognized worldwide for bringing together mainstream science (Table 2).

Frame 2. Impact factor of journals.

Journals (Nº of Articles	JCR 2019		SJR 2019	
	FI	Quartile (Field)	FI	Quartile (Field)
Libr. Inf. Sci. Res. (3)	1.485	Q3 (SSCI)	0.99	Q1 (*Information Systems*)
Infor. Technol. Libr. (5)	0.811	Q4 (SCIE)	0.77	Q1 (*Information Systems*)
Portal: Libr. Acad. (1)	0.783	Q4 (SSCI)	1.06	Q1 (*Development*)
Ref. User Serv. Q (2)	0.708	Q4 (SSCI)	0.69	Q2 (*Library & IS*)
Libr. Trends. (2)	0.62	Q3 (SSCI)	0.49	Q2 (*Library & IS*)
Libr. Resour. Tech. Serv. (1)	0.485	Q4 (SSCI)	0.71	Q1 (*Library & IS*)
Ref. Libr. (2)	-	-	0.8	Q1 (*Library & IS*)
J. Libr. Adm. (4)	-	-	0.7	Q1 (*Library & IS*)
J. Web Librarian (9)	-	-	0.69	Q1 (*Library & IS*)
Internet Ref. Serv. Q (6)	-	-	0.59	Q1 (*Library & IS*)
J. Libr. Inform. Serv. Dist. Learn. (1)	-	-	0.58	Q1 (*Library & IS*)
Med. Ref. Ser. Q (10)	-	-	0.5	Q2 (*Health Informatics*)
Public. Serv. Q (2)	-	-	0.3	Q2 (*Library & IS*)
J. Electron. Resour. Librariansh (1)	-	-	0.29	Q2 (*Library & IS*)
Sci. Technol. Libr. (1)	-	-	0.26	Q2 (*Library & IS*)
Cat. Classif. Q (1)	-	-	0.22	Q3 (*Library & IS*)
Lib. Philos. Pract. (6)	-	-	0.22	Q2 (*Philosophy*)
Music. Ref. Serv. Q (1)	-	-	0.21	Q1 (*Music*)
Tech. Serv. Q (1)	-	-	0.19	Q3 (*Library & IS*)
J. Consum. Health Internet (1)	-	-	0.19	Q4 Health (*Social Sciences*)
J. Hosp. Librariansh (2)	-	-	0.17	Q3 (*Library & IS*)
J. Electron. Resour. Med. Libr. (3)	-	-	0.15	Q3 (*Library & IS*)

SCIE: Computer Science, Information Systems; SSCI: Information Science & Library Science; IS: Information Science.
Source: the authors.

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Still regarding the bibliometric indicators of the SJR, 68% of the journals were found in the upper quartiles (Q1: 10 and Q2: 7); 20% had a lower classification (Q3: 4 and Q4: 1) (Table 2) and 3 of them (12%) did not have this position, as they were not indexed in Scopus. Considering that WoS, owner of the JCR, and Scopus, of the SJR, adopt different criteria for calculating and classifying the FI, these two indicators and their respective quartiles cannot be comparable. However, Table 2 shows the most prestigious publications and international dissemination within the scope of the referred databases.

3.2.2 Productive authors

Considering the scope of this study (libraries), most of the 138 citing authors had training in Librarianship and Information Sciences (87.7%). However, the collaboration of researchers from other fields of knowledge was observed, such as: Education; Arts and Humanities (Arts, English, Philosophy); Social Sciences, Journalism and Information (Communication); Business, Administration and Law (Business Administration); Natural Sciences, Mathematics and Statistics (Biochemistry and Chemistry); Information and

Communication Technologies (Computer Science). Thus, the integration of Information Science with many other domains is ratified.

Although most authors were affiliated with a US institution or organization (75.4%), researchers from universities, research institutes and an association of information professionals from Canada, Nigeria, Iran, Israel, Italy, Pakistan, Greece, Singapore and China were observed. The types of scientific collaboration identified can be classified as: a) without collaboration (single authorship), b) national or domestic and c) international (USA and China). Both nationally and internationally, inter and intra-institutional scientific partnerships were noted, with a predominance of the former.

When evaluating the 50 North American states, in addition to the Federal District, New York and Texas had the largest number of researchers (25%) focused on the interdomain analyzed (Figure 2). Next up are authors affiliated with universities, organizations and colleges in Alabama (9.6%), Florida (7.7%), Ohio (5.8%), California (4.8%), Pennsylvania (4.8 %), Kentucky (3.8%), Massachusetts (3.8%), Minnesota (3.8%) and South Dakota, Nevada, New Jersey, Utah, Georgia, Kansas, Maryland, Montana, Tennessee, Vermont, Washington, South Carolina, Colorado, Illinois, Maine, Missouri and Wisconsin. This group corresponds to 30.8% of the country's productions (Figure 2).

The data also indicates that *social media* and *libraries* have been topics of interest for American studies from 2006 to 2017, without interruption. In this sense, institutions with the largest number of researchers are: Sam Houston State University, Texas (5.8%); Troy University Library, Alabama (3.8%); University of South Alabama, Alabama (3.8%); Murray State University, Kentucky (3.8%); Mayo Clinic, Minnesota (3.8%); University at Buffalo, New York (3.8%).

Although there is a considerable number of single authors (16.7%), the pattern reveals a tendency towards collaborative works with a range of 2 to 6 researchers per publication, in addition to the predominance of articles written in pairs (46.4%), ratified by the index of authorship (= 2). One of the studies is signed by a trio of specialists who are part of the GIDIF-RBM Web 2.0 Working Group, of the Italian Association of Biomedical Documentalists (Milan, Italy). The only document prepared by multiple researchers (6) is an interinstitutional collaboration by a group of librarians who investigate the use and preferences of the internet and ICT among students at Sam Houston State University.

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Figure 2. Geographical distribution of US authors investigating interdomain.

Source: the authors.

Frame 3 shows the authors with the most publications, responsible for at least 2 publications each. Notable in this respect: Noa Aharony and Jenny Bronstein, from Israel, as well as Danielle De Jager-Loftus and Melissa Rethlefsen, from the USA.

Frame 3. Cited authors with more publications.

Most productive authors	Nº of articles
Aharony, Noa (Bar-Ilan University, Ramat Gan, Israel)	2
Bronstein, Jenny (Bar-Ilan University, Ramat Gan, Israel)	2
De Jager-Loftus, Danielle P. (University of South Dakota, Vermillion, South Dakota, USA)	2
Rethlefsen, Melissa L. (Mayo Clinic, Rochester, Minnesota, USA)	2

Source: the authors.

The mentioned names represent 5.8% of the total number of citing authors, being responsible for 8.7% of the analyzed publications. They still have a background in Education or Information Science and are linked to departments in the latter area at the following institutions: Bar-Ilan University, University Libraries at the University of South Dakota, in addition to the Mayo Clinic libraries.

3.2.3 Cited authors

Of the 1,678 authors cited in the references found, 1,459 (86.9%) were mentioned only once. When applying Price's square root law, to the total indicated (t), $\sqrt{t} = 40.9633$ was obtained. Since this is not an integer, there was a need to round it to 41. However, 43 names

participating in the production of 5 or more documents each were considered to be a prolific group in this research (Frame 4).

Frame 4. The 43 most cited authors in articles on social media and libraries.

Authors	Articles	Authors	Articles
O'Reilly, Tim (IRL)	15	Crawford, Walt (USA)	6
Farkas, Meredith G. (USA)	12	Eckel, Edward J. (USA)	6
Mathews, Brian S. (USA)	10	Hendrix, Dean (USA)	6
Aharony, Noa (ISR)	9	Langan, Kathleen A. (USA)	6
Casey, Michael (USA)	9	Sachs, Dianna E. (USA)	6
Chu, Melanie (USA)	9	Barnett-Ellis, Paula (USA)	5
Jacobson, Terra B. (USA)	9	Bell, Steven J. (USA)	5
Meulemans, Yvonne Nalani (USA)	9	Charnigo, Laurie (USA)	5
Stephens, Michael (USA)	8	Clyde, Laurel A. (AUS)	5
Chu, Samuel Kai-Wah (CHN)	8	Connor, Elizabeth (USA)	5
Connell, Ruth Sara (USA)	8	Fichter, Darlene (CAN)	5
Savastinuk, Laura C. (USA)	8	Glazer, Harry (USA)	5
Boyd, Danah M. (USA)	7	Hasman, Linda (USA)	5
Dickson, Andrea (USA)	7	Linh, Nguyen Cuong (VNM)	5
Ellison, Nicole B. (USA)	7	Murphy, Joe (USA)	5
Holley, Robert P. (USA)	7	Murphy, Sharon (USA)	5
Kamel Boulos, Maged N. (GBR)	7	Phillips, Nancy Kim (USA)	5
Kroski, Ellyssa (USA)	7	Rainie, Lee (USA)	5
Maness, Jack M. (USA)	7	Smith, Aaron (USA)	5
Abram, Stephen (CAN)	7	Wheeler, Steve (GBR)	5
Bejune, Matthew M. (USA)	7	Zafron, Michelle L. (USA)	5
Chiarella, Deborah (USA)	7	-	-

AUS: Australia; CAN: Canada; CHN: China; GBR: United Kingdom; IRL: Ireland; ISR: Israel; USA: United States; VNM: Vietnam.

Possible epistemic community

Source: the authors.

Although the majority of the most cited authors are from the USA (79.1%), influences from experts from other countries were identified, such as: Canada and the United Kingdom (4.7%), as well as Australia, China, Ireland, Israel and Vietnam (2.3%). Tim O'Reilly, from Ireland, received the highest number of citations (15), followed by Meredith G. Farkas (12) and Brian S. Mathews (10) from the USA, respectively, being mentioned in 42% of the analyzed articles. In addition, the following stood out in the field of Librarianship and Information Sciences: Noa Aharony, Michael Casey, Melanie Chu, Terra Jacobson and Yvonne Nalani Meulemans, cited in 9 articles (Table 4).

Although the most prestigious scientific researchers (Table 4) were not mentioned in 12 articles (17.4%), it was observed that these studies had a direct relationship with the analyzed interdomain, as they describe social media platforms (services social networks, photo and video sharing applications, messaging services, as well as collaboration, discussion or information websites); discuss their creation, implementation and maintenance; explore its use in libraries (profile information, integration, interactivity, marketing); reflect on collaborative opportunities.

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3.2.4 Epistemic community

Interestingly, only Noa Aharony, from the Information Science Department at Bar-Ilan University (ISR), stands out among the most productive and, at the same time, most cited authors (sources of information) in the American context. In addition to two productions as a citing author, the researcher is recognized by the scientific community for five other works, including: *Twitter use in libraries: an exploratory analysis*, published in 2010. By expanding this analysis to the core of names considered productive (138 citing authors), we found that the researcher is one of the first references to compose a possible epistemic community in the formation of the interdomain analyzed in the American scientific production (Table 4).

3.3 Epistemological and critical studies

Technological innovations introduced from the second half of the twentieth century directly impacted the processes of production, treatment, storage and distribution of data and information in the most diverse segments. In this way, other conceptions of society started to be discussed and defended, at a given moment, based on a certain main orientation of the new predominant social order. Faced with the receptivity of post-industrial theories in Japan, the concept of the *information society*[4] started to be disseminated by Yoneji Masuda, in 1968. In 1973, through the publication *The Coming of Post-Industrial Society*, Daniel Bell foreshadowed the arrival of the *post-industrial society*, based on services and information and, consequently, on the increasing advance of knowledge. The term *knowledge society*, on the other hand, was used for the first time by Peter Drucker in *The Age of Discontinuit*, in 1968. The latter defended knowledge as the main economic source of society, with a view to alerting organizations that are dedicated to the production and distribution of knowledge and information to occupy the central place of the economy (DRUCKER, 1993).

According to the historical and epistemological contexts of the analyzed articles, it is clear that their minority (7.2%) explicitly inserted the phenomenon investigated in a certain type of society. The most common typology employed was the *information society*, linked to theoretical reflections and the application of the new structuring of activities and services offered by libraries from the adoption of ICT. In developing countries, such as Pakistan, the use of technologies by information professionals has increased, representing a positive contribution to the construction of the information society, although it is a distant reality. The *knowledge society*, considered an heir to the contributions of the *information society* by Unesco (2005), was also used as a background in some works. Libraries are social agents that contribute to the creation and development of knowledge. In this sense, librarians come to know, interpret (theoretical knowledge) and experiment (empirical knowledge) technologies from a pedagogical perspective. The collaboration between these professionals and teachers in the information literacy process is an essential action for the functioning of the *knowledge society*.

In scientific research, the paradigms "[...] provide problems and model solutions for a community of practitioners of a science." (KUHN, 1998, p. 13). This sense is manifested in the expressions *constructivist paradigm* and *educational paradigm*, mentioned in the observed articles. Information Science, for example, has sought a foundation in the first, field of Education, to understand the way users learn from their own previous experiences and knowledge acquired, while social media are pointed out as a phenomenon that challenges the

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[4] Term coined by Fritz Machlup, in 1962, in the book *The Production and Distribution of Knowledge in the United States*.

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second. In the studies analyzed, some cases were also identified that refer to the general concept of breaking values, beliefs and previous practices, such as the transition from the *paradigm of information consumption* to that of creation, in addition to the departure from a *hard copy paradigm*. On the other hand, the advent of the internet, Web 2.0, streaming, Wikipedia, social networks and Library 2.0 were mentioned as significant new paradigms in library services that favorably impact the quality of service to users' needs. Although many authors point out the need for a new *paradigm* for librarianship, while librarians are challenged to break with outdated structures, there is still resistance to change.

In literature, it is common to find the use of the term *philosophy* in the sense of *thoughts* and *ideas* that have an influence on society. Therefore, the expression *philosophy of Web 2.0* is used to designate the ideas of professionals in the field of technology related to the use of the web as a platform and its democratization, in addition to new methods of information distribution. In Information Science, the application of this expression, as well as the *philosophy of Library 2.0*, can be interpreted as thoughts that present themselves as a rich experience for librarians and users. It is also common to use qualifying adjectives in the analyzed expression. Exemplified in the following context, the *collaborative and interactive philosophy of Web 2.0* adds new values to the library's services and activities.

In addition to the Web 2.0[5] concept, popularized by Dale Dougherty and Tim O'Reilly, in 2004, the theories, concepts, definitions, terms, models and frameworks from other divisions of knowledge that support the analyzed interdomain will be presented in Frame 5. Once some of these contributions can be attributed to different fields, the works cited by the researchers were considered as the basis of their investigations.

Frame 5. Theoretical contributions of Information Science researchers.

Fields of study	Contributions
Administration	Pareto principle (80/20 rule) – term (1941)
Computer Science	Computer-Supported Collaborative Work (CSCW) – concept (1984); WikiWikiWeb – first wiki (1995); Tripartite model of ontologies (actors, concepts, and instances) (2007); Web 3.0 – definition (2007)
Communication	Petronio's privacy management theory (1991); context – definition (1997); relationship marketing – concept (2005); Web 3.0 – term (2006); social media – concept (2010); social network – definition (2010)
Law	Information literacy – term (1974)
Economics	Return on Investiment – definition
Education	Conversation Theory (1975); Keller's ARCS motivational model of instructional design (1979); active learning – concept (1991); Online video education using the internet – concept (1996); digital literacy – definition (2005); P21 Framework for 21st Century Learning (2009)
Philosophy	Communicative action – concept (1984); Honneth's theory of recognition (1995); Technological determinism – concept (1999); social networks – definition (2005)
Computational Physics	The long tail – term (2006)
Mathematics	Graph theory
Sociology	Digital dualism – term (2011)
Technology	Weblog – term (1997); Web 2.0 – term (1999); Internet 2.0 – term (2006); Internet 2.0 services – definition (2006); curation – definition (2011)
Interdisciplinarity	Social Network Theory

Source: the authors.

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[5] Term coined by web designer Darci DiNucci, in the *Fragmented Future* article, published in *Print Magazine*, in July 1999 (DiNUCCI, 1999).

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RDBCI
Revista Digital de Biblioteconomia e Ciência da Informação
Digital Journal of Library and Information Science

The collaboration between different fields of knowledge in the discussion of the same object of investigation ratifies the interdisciplinary nature of Information Science. In this interactive process of discourse, theorists of the latter field (Shiyali Ranganathan) stand out, in addition to Philosophy (Jürgen Habermas, Axel Honneth, Stephen Downes), Sociology (Nathan Jurgenson, Zeynep Tufekci), Education (John Keller), Social Communication (Henry Jenkins) and Technology (Steven Rosenbaum).

In Information Science, conceptual bases have also been identified that have contributed to the consolidation of the analyzed interdomain (Frame 6). Theoretical contributions were extracted from the concepts, terms and theories mentioned by the authors, taken from the works cited by them. The term/concept *Library 2.0*, for example, reverberated worldwide in the way of reflecting and conceiving the changing trends in libraries (processes, relationships, services, products), arising from the second generation technologies of the web.

Frame 6. Contributions from other fields of knowledge.

Fields of Study		Contribuitions
Concepts	Librarian 2.0 (2005)	Stephen Abram
	Wiki (1995)	Gerry McKieman
	Participatory networking (2017)	David Lankes, Joanne Silverstein e Scott Nicholson
Definitions	Information-literate person (1989)	*American Library Association (ALA)*
	Digital reference services (2003)	Catherine Jane e Dawn McMillan
	Blog (2006)	Michael Stephens
	Folksonomies (2006)	Louise Spiteri
	Library 2.0 (2005[1]-2006[2])	Paul Miller[1], Michael Casey e Laura Savastinuk[2], Jack Maness[2]
	Marketing (2006)	Dinesh Gupta
	Tag (2006)	Marieke Guy and Emma Tonkin
	Web 2.0 (2006)	Michael Stephens
	Liaison librarian (2009)	Kara Whatley
Frameworks	*Framework for integration of participatory librarianship* (2007)	David Lankes, Joanne Silverstein e Scott Nicholson
Models	Taylor's Value-Added Model (1986)	Robert Saxton Taylor
	Learning 2.0 – modelo de ensino (2006)	Helene Blowers
Coined terms	Library anxiety (1986)	Constance Mellon
	Library 2.0 (2005)	Michael Casey
	Helicopter librarian (2012)	Felicia Smith
Theories	Library 2.0 theory (2006)	Jack Maness

Source: the authors.

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The quality of the results achieved in a research is directly linked to the scientific and methodological rigor employed. Defining and presenting the path of the latter is a fundamental aspect that researchers must guarantee. Therefore, based on this information, the knowledge produced is evaluated, validated and replicated by the scientific community (CORNEJO; SALAS, 2007).

Although in the majority of studies evaluated (84.1%) the type of approach used was not mentioned, there was a variation between mixed (7.2%), quantitative (5.8%) and qualitative (2,9%) surveys. The use of an inductive approach to address research questions was also pointed out. As for the objectives, they were supported by descriptive (13%), exploratory (10.1%) modes, while a large portion (76.8%) of them did not record this type of information.

Real problems related to the implementation of social media in libraries were analyzed by means of case studies (13%) and reports of experiences (5%) [6]. As techniques and instruments for data collection, the following stand out: questionnaires or quiz (21.7%), observation (4.3%), interviews (2.9%) and focus group discussion (1.4%), sometimes employed in a combined manner. One of the articles also indicated the application of the triangular research method. In turn, online questions were elaborated on Survey Monkey, UW's Catalyst Web Tools and Prezza Checkbox. To study and characterize the total population of some investigations, probabilistic (simple and stratified random) and non-probilistic (for convenience) sampling methods were used. We also identified the use of the Likert scale to scale responses in surveys that used questionnaires. The analytical strategies used to assign meaning to the object were: statistical (descriptive) (14.5%), content (8.7%), comparative (2.9%), semantics (1.4%), snapshot (1.4%), textual (1.4%) and thematic (1.4%). For that, some studies that applied the statistical method, in general, used the software Statistical Package for Social Sciences (SPSS) (version 20) and homogeneity tests of variance.

Structurally, 58% allocated a specific division to discuss methodological approaches, justify the chosen parameter and describe the research process. On the other hand, in the majority there is, at the end, a section dedicated to the list of cited sources, whose title presented the variations: *References* (87%), *References and notes* (5.8%), *Notes* (2.9%) and *Bibliography* (2.9%). The most recurring technical limitations in a citation analysis are homonymous regarding the authors' names, more than one way of presenting it, use of et al. in the works of several researchers and data inconsistency. In addition to these problems, there were some documents referenced only in footnotes or endnotes; also, in a separate section mixed with these divisions, making the data extraction process more difficult.

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3.4 Terminological studies

Variation and linguistic change are heterogeneous, living and dynamic phenomena. Thus, the use of language is conditioned to internal and external factors, which change according to the discursive community and type of communication, such as: geographic, sociocultural, contextual and historical. In the literature, generally the terms Web 2.0, social web, social networks and social media are used interchangeably to represent online communication channels that make it possible to share content. However, each has its specificity. The first refers to the second generation of web design and development. Popularized in 2004, it started to be used by the discourse community of Information Science from 2006, with a peak of application registered until 2012 (Figure 3). One of the causes of this representative reach (78.3%) is attributed to the infinity of services and web applications originated from this concept.

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[6] Quantified data from information recorded in the articles. The number of experience reports is greater than recorded, as most of the works discussed the use of social media in libraries through real situations.

Figure 3. Temporal representation of the use of terms (year/articles).

	2006(1)	2007(2)	2008(12)	2009(7)	2010(12)	2011(7)	2012(4)	2013(8)	2014(11)	2015(1)	2016(2)	2017(2)	Total(69)
Web 2.0	1	1	12	6	10	6	3	7	7		1		54
Social Web				1	2	1		1	1		1		7
Social networks	1	2	8	6	10	3	4	6	8	1	2	2	53
Social media	1				3	2	3	7	10	1	1	2	32

Source: the authors.

The expression *social web*, on the other hand, is more related to the purpose of the Web 2.0 concept of facilitating communication through interaction, collaboration and information sharing. Understood as a set of social relationships, which brings people together through the internet, it was used in an article (10.1%) with a focus on discussing training for the use of social media linked to the Learning 2.0 teaching method.

In turn, the terminology *social networks* is conceived in Social Anthropology as a complex network of social relationships that interconnects human beings. After the introduction and application of the Web 2.0 concept, *social networks*, usually employed, were complemented by other words that refer to the World Wide Web. In Information Science, the term has been indicated since 2007, uninterruptedly (2007/2017), with a considerable reach (76.8%) (Figure 3). Their first entry occurred in the article by Laurie Charnigo and Paula Barnett-Ellis, when they used the term *online social networks*, referring to Facebook as a digital trend in university libraries. Also in 2007, David Lankes, Joanne Silverstein and Scott Nicholson reflected on the opportunities and challenges of participatory networks for these spaces, highlighting the characteristics of *social networking sites*[7].

Like Web 2.0, the phrase *social media* was used for the first time in 2006 by Rethlefsen and collaborators, when they described the applications of *social media*, among other *social software*[8]. However, this terminology started to be used with greater frequency and consistency as of 2010. "In recent years, the technological landscape of the Web has undergone profound transformations requiring new labels. As a result, the popularity of the term Web 2.0 declined and that of social media began to gain ground." (FARRELL; MAYER; RETHLEFSEN, 2011, p. 234, our translation). *Social media*, despite not being the most used (46.4%), stands out as a trend both for evidence and, mainly, for being an *umbrella concept*, including several complementary applications among themselves. From this context, this study conceives *social media* as a set of applications and online communication platforms, which enables the creation of content, in addition to sharing data and information in a collaborative way, in the most diverse formats (photos, videos, texts, audios, etc.), through computers or mobile devices.

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[7] In the literature, *social network* and *social networking* variations were identified. On this subject, Garcia-Millian, Norton and Tennant (2012, p. 172-173, translation and emphasis added) explain that Boyd and Ellison "[...] use the term *social network* instead of *social networking* to emphasize that, although networking (starting relationships with strangers) is possible on these sites, it is not the primary use of many of them. rather, individuals use these computer-mediated social networks primarily to view and keep their *social networks offline* [...]".

[8] Term defined by Rethlefsen et al. (2006) as software that enables the collaboration, communication and connection of people with each other.

Often, the expressions Web 2.0, social web, social networks and social media are complemented by adjacent terms of two types:

a) anteposites (*tools of* or *software application of* + Web 2.0 / *technology of* or *realm of* + *social networking* / *online* or *application of mobile* + *social media*) or

b) postponed (Web 2.0 + *approach*, *efforts*, *products*, *methods*, *communication methods*, *software applications* or *learning tools* / *social Web* + *technologies* / *social network* + *platforms*, *sites* or systems / *social networking* + *applications*, *environments*, *features*, *realm*, *services*, *site tools* or *Web sites*) / *social media* + *channels*, *resources*, *space* or *-sharing sites*).

It was also identified the registration of expressions between two *adjacent elements* (*mobile social media platform / online social networking Web sites*) and even the use of two conjugated expressions (*Web 2.0 social media tools / Web 2.0's social networking platforms / social media networks*).

3.5 Special classifications and thesaurus

The Web 2.0 phenomenon has promoted structural changes in libraries, directly impacting the way of interacting, generating and distributing content through different social media, such as video sharing platforms, image sharing platforms, content sharing, online social networks, blogs and Content Management Systems (CMS), as well as instant messaging applications, online gaming platforms, social bookmarks, RSS feeds and wikis (Figure 4).

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Figure 4. Social media most used by libraries, 2006-2017.
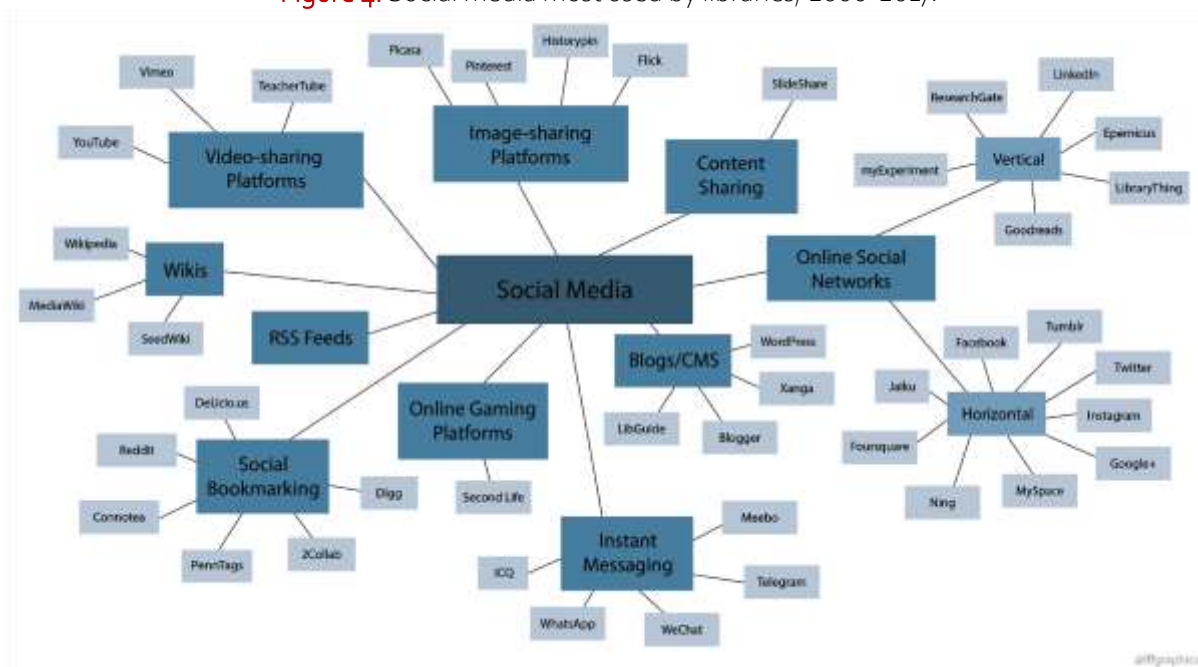
Source: adapted from Infante-Fernández and Faba-Pérez (2017).

In the dynamic contemporary society, in which "[...] agreements are temporary, and only valid until further notice [...]" (BAUMAN, 2013, p. 14, our translation), social media are created, reinvented, extinguished or fall by the wayside in a short time. In the survey, Web 2.0

tools and applications adopted by the libraries in question were identified, such as Friendster and Orkut (online social networks), in addition to the instant messaging platforms Yahoo Messenger, MSN Messenger and AIM, which, despite their success and relevance, they longer exist. Moving in this context requires continuous effort by the teams from the information units to adapt to changing circumstances, as "[...] the conditions of action and reaction strategies age quickly and become obsolete before the actors have a chance to learn them effectively" (BAUMAN, 2007, p. 7).

In addition to reflections on the implementation of Web 2.0 technologies in libraries in general (17.4%), the works evaluated have been applied mainly to those aimed at the university and research segments (72.5%) in the United States, Nigeria, Canada, Israel and China, with emphasis on the Health Sciences area. As higher education institutions receive financial investment and other types of support, consequently, their libraries tend to have more advanced technologies and equipment, combined with higher standards, being pioneers in the provision of information services (HUANG; GUO, 2017). Studies were also identified in health and biosciences libraries (4.3%), school libraries (2.9%) and digital libraries (2,9%).

In the literature, the use (56.5%) of social media in conventional (internal activities, services and management) and digital libraries, as well as by information professionals and users was exhaustively discussed from 2006 to 2017, in an uninterrupted manner (Figure 5). In addition to analyzing the presence of these organizations on such platforms, the studies aimed to understand and explore their use; verify the degree of awareness, knowledge and collaboration of librarians; know the preferences and level of interaction of users; share successes, failures and challenges; develop guidelines and suggest good practices.

Figure 5. Perspective of research on social media and libraries, 2006-2017.
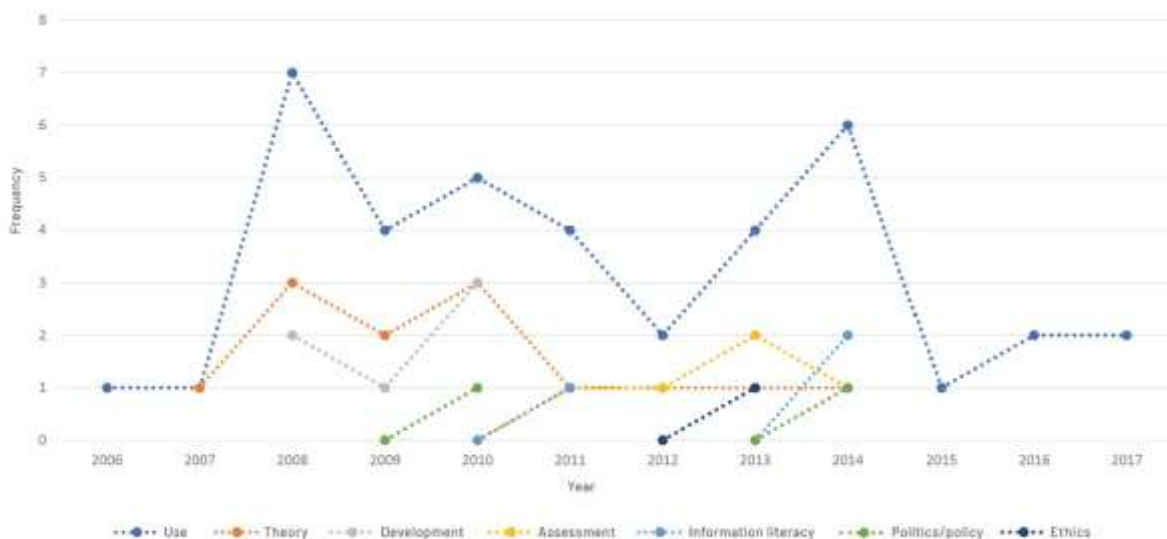
Source: the authors.

Theoretical investigations (18.8%), recorded from 2007 to 2014, sought to reflect critically and establish theoretical bases; describe social technologies; analyze the creation, rise and fall of social media; assess problems, opportunities and challenges; as well as exploring next generation catalogs. On the other hand, in the area of *development* of information resources on the internet (8.7%), they referred to the sharing of experiences regarding the incorporation of library resources in course content management systems (CMS), in addition to the CMS planning, construction and implementation process, customizable pages and collaborative

websites. These studies, dated from 2008 to 2010, also discussed challenges faced, presented recommendations and summarized best practices.

Contributions that dealt with *evaluation* (7.2%) discussed the use of the Facebook Insights and Page Insights tools, integrated with the anecdotal evidence metric. The application of indicators and metrics related to tactical business objectives was also identified: scope and frequency of activity, loyalty, influence, participation and ROI. It was also verified the creation of own systems to examine the implementation of wikis in the technical services departments and to measure the quality of their websites on social media. It should be noted that in the categories of use, policy and development, some articles were identified whose objective was indirectly linked to an evaluation process or project.

In turn, surveys related to *information competence* (4.3%) discussed the process and creation of didactic material for training users and training library staff, as well as the impact of social media on information literacy. Although the number of articles in this category is not representative, the process of training users and information professionals stands out as a constant concern. In fact, the theme appears subliminally in the approaches of theoretical, development and practical applications, presented as a challenge or recommendation to librarians, professional associations and schools of librarianship.

In the *political* category (2.9%), there are studies that elaborate communication policies with a focus on social media (privacy, use, content and reach), as well as technical and organizational policies for social marking to expand the user's information flow capacity. Finally, the protection of your privacy in the context of Library 2.0 was the subject of discussion of a work classified in *ethics* (1,4%).

Through the covid-19 pandemic, disseminated in the world in the first quarter of 2020, the international library communities (associations and institutions in this segment) started to publish statements (initial responses) regarding the new scenario, reinforcing the importance of the role of such spaces in emergency situations and times of crisis. Therefore, *the migration of services to digital platforms* stands out as one of the five main topics for discussion and recommendation. This initiative suggests that *information literacy* practices by libraries will emerge as one of the major trends of the coming years, whose challenge lies in the development of specific skills for teams in the area and information for their users. Still on the promotion of digital resources, the Library Association of Ireland (LAI) reported that these professionals have facilitated the involvement of remote groups (online book club and storytelling) through social media (KOSCIEJEW, 2020). In Germany, the Netherlands, Norway and Spain, for example, the digital narrative service was offered through Facebook groups and YouTube profiles; while in Bulgaria, the first nominated network and Instagram were used to promote traditional meetings with poets and writers, "[...] exchange of libraries and (re) use of digital products." (EUROPEAN BUREAU OF LIBRARY, INFORMATION AND DOCUMENTATION ASSOCIATIONS - EBLIDA, 2020, p. 11, our translation). Regarding *inter-library collaboration*, another relevant theme in this context, LAI declares the use of social media as an official communication channel, in addition to institutional websites and videoconferencing platforms for meetings, study groups and sessions in general (KOSCIEJEW, 2020). So libraries are definitely being modified and their practices remodeled by technologies.

For a better understanding of the scope of the interdomain analyzed in Information Science, the main ideas and concepts obtained were systematized based on the TBCI classification of IBICT (PINHEIRO; FERREZ, 2014). In this sense, discussions about social media and libraries fall within the contexts of information representation (1.4%), knowledge organization systems (4.3%), library management (1.4%), services (62,5%), collections development (1.4%), users (8.7%), communication and information networks (10.1%), ICT management (1.4%), right to information (1,4%) and the information society (4.3%) (Frame 7).

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The construction of knowledge is a dynamic process that accompanies the evolution of society. Considering the use of indexing languages to optimize the information retrieval process, "[...] controlled vocabularies remain an essential tool and must be updated accordingly" (VÁLLEZ et al., 2015, p. 881).

Frame 7. Representativeness of the TBCI/IBICT interdomain and proposal for new descriptors.

Classification TBCI/IBICT	Ideas and concepts	New descriptors
2.1.1 Representation of information	Collective catalog	Social OPAC. OPAC 2.0.
2.1.2 Knowledge organization systems	Folksonomia. Biblioteca 2.0. Etiquetas. *Searchable signatures*. Social Web	Folksonomies. Social tagging. Tags.
3.1 Management of libraries and information resources	Marketing	Digital marketing. Digital identity. Engagement. Social reach. Quality indicators. Return On Investiment. Social media management. Channels of communication[1] (Marketing).
3.1.1 Library services	Library 2.0. Librarian 2.0. Online referral services. Technical services. Meta-data. Collaborative work. Library cooperation. Dissemination of the collection. Resource sharing. Marketing. Popularity. Visibility. Influence. Image. Learning 2.0. Digital literacy. Course management systems (CMS). Best practices. Use of social networks by libraries and perception of librarians and library staff	Online reference services. User services. Outreach programs[2]. Dissemination of the collection. Social collaboration. Library staff. Information professionals. Best practices[2].
3.1.2 Development of collections	Digital collection. Video collections	Digital collection.
3.2 Users and uses of information	User behavior. User generated content. Community creation	User-generated content. Online instruction.
5.4 Redes de comunicação e informação, internet e web	Information resources on the internet. Library collaboration. Web pages. Library 2.0. Digital libraries	–
5.5 ICT management	Digital curation. Social curation	Social curation.
6.2.1 Right to information and intellectual property	Right to privacy. Digital library. Library 2.0	–
6.4 Information society	Social media . Library 2.0. Digital literacy. Social software. Social participation. Collaboration. Collective intelligence. Participatory networks	Web 2.0 technologies[2]. Online social networks. Weblogs. Social Web. Social media[1,2]. Wikis. Content sharing. Blogs. Microblogs. Social software. Library 2.0. Instant messaging. Content Management Systems. Social bookmarkings. Video-sharing platforms. Image-sharing platforms. RSS feeds. Online gaming platforms. Collective intelligence. Social participation[1]. Social interaction[1].

[1] Thesaurus Unesco. [2] ERIC Thesaurus.
Source: the authors.

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Table 6 describes the emerging terms (general, specific and related) that represent the analyzed domain (2006-2017). The study of this approach (classifications and thesaurus) enabled the identification of new elements and, consequently, the adaptation of existing instruments, such as the conceptual map on the social media taxonomy of Infante-Fernández and Faba-Pérez (2017), categories of the context technological development by Plácida Santos et al. (2013), as well as the proposal to update the *Brazilian Information Science Thesaurus* (PINHEIRO; FERREZ, 2014). Some of the proposed terms are included in *Unesco Thesaurus* and *ERIC Thesaurus* (Table 6).

Finally, when reflecting on social media and related terms (Web 2.0, social web, social networks), the *Web 2.0* concept is concluded as the basis for the structures presented in the concept map (Figure 4). In this sense, *social networks* are a very relevant node, as there is a considerable part of the justifiers for the existence and permanence of libraries: users. This platform category is also directly linked to the main *social media* node that is segmented into other *social web* technologies. In turn, in the TBCI/IBICT the expression social networks is included in the 6.4 Information Society classification (Table 6), in which the largest number of new suggested terms is grouped. However, it is questioned in this study the pertinence of allocating it in the set *5.4 Communication and Information Networks, Internet, Web*, in which are other information and communication resources of the internet.

4 CONCLUSION

In 2006, when social media was pointed out as a trend and there were few studies that addressed its insertion in the context of libraries, most librarians believed that this technological phenomenon was not suited to their work reality. However, the new behavior of society in the face of the popularization of Web 2.0 and facilities for the acquisition of mobile devices drove the readjustment of activities and services offered in these spaces. Accompanying this movement, researchers and Information Science professionals began to reflect and seek solutions to meet informational demands more effectively. In the years 2008 and 2010, the largest number of scientific publications on the subject were recorded, with contributions of an experimental, theoretical, developmental and usage policy nature. A characteristic feature of the United States' scientific production in this interdomain is the predominance of practical application research (value, purpose, impact and use). Surprisingly, more significant contributions come from a journal for library and information science professionals who specialize in medical and scientific health information services in clinical, educational or research settings.

Most of the citing authors belong to the area of Library Science and Information Sciences. Alabama, Florida and Ohio are the states with the most researchers of publications on the subject. A particularity is the existence of international collaboration between researchers from the USA and China. Another striking feature is the dominance of American origin, which suggests the appreciation of peers in works developed in the country, accompanied by maturity and theoretical consistency in the area. *Web 2.0* is also highlighted as one of the most recent concepts of impact on contemporary society worldwide, when it was created in 1999 and popularized in 2004 in the region. There is also a possible epistemic community in the making which, interestingly, is made up of American and Israeli scholars, notably Noa Aharony (IL) and Deborah Chiarella (USA).

The authors and works cited represent principles, theories and explanatory guidelines regarding the use, as well as the interaction of information in the analyzed interdomain. Meanwhile, the integration and articulation of the knowledge produced arises from the

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collaboration between Information Science and other fields. In addition to Social Communication and Sociology, as was supposed, there was the application of concepts, models, definitions, theories, frameworks and terms arising from Education, Computer Science, Technology, among others. In the scope of Information Science, amidst the various theoretical contributions identified, Library 2.0 stands out, which brings with it the duality of the traditional library and the philosophy of Web 2.0. This polysemic concept is directly related to the modernization of the services of these spaces, based on the web and more centered on the user, in addition to the collective sharing of content and library cooperation.

Apart from the term *Web 2.0*, the scientific community in 2006 already used the term *social media*, more popular since 2010. The latter emerges as a trend, as it represents a comprehensive concept and involves a range of online communication channels. . In contrast to the *social web*, rarely used in the evaluated context, *social networks* stood out among the most applied and widespread in the scientific literature.

Still, the information units started to implement the same technologies used by their users, due to the continuous social and technological changes, as well as the need to reorganize themselves with a focus on their audience. Consequently, the incorporation of these interactive resources in the work activities and services offered occurred mainly in university libraries, considering their institutional commitment to the generation of knowledge, research and technological innovation.

The countless discussions of a practical nature, permeated by theoretical contributions, indicate the transition and dynamic evolution of an initial phase, of novelty, in addition to curiosity, critical reflection and maturity. In this sense, social media, as a means of communication and social connection, have become increasingly indispensable. In view of this, the rapid changes in relationships and the fluidity of contemporary society have stimulated the use of intuition and learning by trial (right and wrong) in the most diverse segments. As a result of this fact, the sharing of good practices, guidelines and policies has been an increasing trend. "In the area of use, important questions remain to be asked, areas to be explored and research to be conducted" (BODNAR; DOSHI, 2011, p. 109, our translation), in addition to theoretical deepening in strategic areas, already explored in the literature, such as metrical studies for planning, management and decision making (policies and evaluation); systems integration (development); use of data and privacy policies (ethics and policy); information literacy (information competence). In the most recent context, the skills of information and e-learning competencies, in the face of the covid-19 pandemic, are a *sine qua non* condition to guarantee access, use and sharing, while being part of the global propensities of the next decade (IFIJEH; YUSUF, 2020).

Research on *social media* and *libraries* was carried out in four of the eight major areas of the TBCI / IBICT classification plan: *organization of knowledge and information retrieval, information management, information and communication technologies, communication and access to information*. Currently, one of the biggest problems faced by researchers and researchers of emerging themes is the difficulty of finding in the controlled vocabularies, indicated by editorial teams of the main journals in the area, terms that represent the content of the document to be published. In addition to keywords usually specified in articles based on thesaurus, relating free vocabularies (tags) can be a possibility to minimize this limitation and contribute to the updating of knowledge organization systems.

That said, the in-depth study of the analyzed interdomain enabled the identification of terms capable of representing new ideas and concepts from the dynamic contemporary society. It is hoped that the results indicated can contribute effectively to the process of updating the TBCI / IBICT, widely known in Information Science, as well as other controlled vocabularies used by researchers in the field, such as *Unesco Thesaurus* and *ERIC Thesaurus*.

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As an effective contribution of this work, it is worth mentioning the indication of possible inconsistency in LISA, analyzed and considered relevant by its technical team, which reaffirms the principle of integrity of information made available in the database.

Finally, in order to guarantee contributions to the analytical process of future research, it is recommended to explain the methodological trajectory followed in this process, thus allowing its replication and transfer. In order to optimize the citation analysis process, it is suggested that publishers evaluate criteria on publication standards, such as the requirement for a specific section for *references*, in order to avoid mentioning listed works only in footnotes and final notes to be condensed with that division. Still, it is emphasized that Brazilian periodical publications have required the specification of the name of all authors cited in this type of listing, instead of using the expression *et al.* It is also noted the orientation to present your name and surname in full, in order to avoid entering with a continuous line to replace this data, when dealing with several works by the same researcher.

These conditions are in accordance with the guidelines of the Brazilian Standard *ABNT NBR 6023* (preparation of references), of the Brazilian Association of Technical Standards (ABNT), updated in 2018. In this sense, the document recommends the indication of the names of all authors in the references when referring to dealing with works with four or more authors, although the use of *et al.* is allowed. Also, in this version, the use of the subline line, with six touches, used to identify repetition by the same author is no longer in force (ABNT, 2018). These, therefore, are examples that attribute quality to bibliometric studies.

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