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Research methods and criteria in content analysis of library social media profiles

Introduction

The widespread use of social media and its constantly changing landscape make it important for libraries to keep up with newer technologies[1]. Libraries are changing "with the development of information technology and the social paradigm shift in the functions and roles of libraries. Spatial layouts are shifting to accommodate the new, expanded functions of public libraries"[2]. Currently, social media is the most important digital space used by Internet users, and libraries cannot be left out of it. However, the mere presence of libraries in this space is not enough. It requires that their presence and participation on these networks be active, effective, and noticeable.

Libraries have begun using social media to promote their services[3], to conduct media interactions[4], as well as a marketing tool[5] and the reviews of library social

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1 A. Alley, J. Hanshew. *A long article about short videos: A content analysis of U.S. academic libraries' use of TikTok*, "Journal of Academic Librarianship" 2022, vol. 48, s. 1, https://doi.org/10.1016/j.acalib.2022.102611.

2 G.D. Shin, K. Jeon, H.E. Lee, *Public library needs assessment to build a community-based library: Triangulation method with a social media data analysis*, "Library and Information Science Research" 2022, iss. 1, s. 1.

3 S.L. Steiner, *Strategic Planning for Social Media in Libraries: (THE TECH SET® #15),* "The Australian Library Journal" 2012, vol. 62, s. 330, https://doi.org/10.1080/00049670.2013.859553; M. Mensah, O.B. Onyancha, *A social media strategy for academic libraries*, "The Journal of Academic Librarianship", 2021, vol. 6, s. 102462, https://doi.org/10.1016/j.acalib.2021.102462.

4 Y. Ming, M.L. Matteson, J. Sun, *Reddit use in the LIS community*, "Journal of Librarianship and Information Science" 2022, iss. 4, s. 770–778, https://doi.org/10.1177/09610006211052084.

5 S. AlAwadhi, S.M. Al-Daihani, *Marketing academic library information services using social media*, "Library Management" 2018, iss. 3/4, s. 228–239, https://doi.org/10.1108/LM-12-2017-0132; W.W.H. Cheng, E.T.H. Lam, D.K.W. Chiu, *Social media as a platform in academic library marketing: A comparative study*, "The Journal of Academic Librarianship" 2020, vol. 46, iss. 5, https://doi.org/10.1016/j.acalib.2020.102188; A. Muhammad, T. Zhiwei, *Social media and library marketing*, "Library Hi Tech News" 2021, iss. 10, pp. 10–13, https://doi.

media studies conducted in recent years[6] have not focused on the specific methods and criteria for these activities. Instead, the emphasis has been on the possibilities of using various social media for communication within and outside the library. Evaluating the content of library social media sites can provide insights into the effectiveness of the activities of many libraries, which they have been successfully conducting for more than fifteen years. Further, by analysing the methods and criteria used for evaluation, library researchers can design more precise and useful strategies of using social media to promote their services.

State of the art

Beginnings of library social media research
The term "social media" in its contemporary meaning first appeared in the literature around 2000 when their potential application in various areas of life was recognised, and it was noticed that they changed the behavior of users[7]. Since then, the number of social media has grown, and their potential was soon recognised by libraries, which saw social media primarily as a space for young people because it encouraged them to connect with their peers, create groups of friends, and develop real-life friendships"[8].

The earliest papers describing studies on the content of the Facebook profiles of libraries were published in the second decade of the 21st century, by Gerolimos (2011), Aharony (2012) and Glazer (2012)[9], among others. The latter noted that:

> There is one area of this booming field of libraries activity that is woefully underdeveloped. That void exists in the lack of reliable metrics, which we can use to assess the strength of our Facebook pages and their "return on investment" for our libraries[10].

The number of platforms analysed by researchers has been increasing with the continued development of social media since 2012. For example, research into the use of YouTube in library settings has grown in popularity, but is still undertaken less frequently than that on Facebook or Twitter[11]. Recently, the growing popularity

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org/10.1108/LHTN-09-2021-0056; M.J. Jones, M. Harvey, *Library 2.0: The effectiveness of social media as a marketing tool for libraries in educational institutions*, "Journal of Librarianship and Information Science" 2019, iss. 1, pp. 3–19, https://doi.org/10.1177/0961000616668959.

6 T. Ballard, *Google This!: Putting Google and Other Social Media Sites to Work for Your Library*, Chandos Publishing, Oxford 2012; S.L. Steiner, *Strategic Planning for Social Media in Libraries*...; P. Bradley, *Social Media for Creative Libraries*, Facet Publishing, London 2015.

7 R.H. Wicks, N.J. Mahwah, *Understanding Audiences: Learning To Use the Media Constructively*, Routledge, New York 2000.

8 A. Schmidt, *The Young & the Wireless*, "School Library Journal" 2005, no. 10, p. 44.

9 M., Gerolimos, *Academic libraries on Facebook: An analysis of users' comments*, "D-Lib Magazine" 2011, vol. 11/12; N. Aharony, *Facebook use in libraries: An exploratory analysis*, "ASLIB proceedings: New information perspectives" 2012, no. 4, pp. 358–372; H. Glazer, *"Likes" are lovely, but do they lead to more logins?: Developing metrics for academic libraries' Facebook pages*, "College & Research Libraries News" 2012, no. 1, pp. 18–21.

10 H. Glazer, *"Likes" are lovely, but do they lead to more logins?*..., p. 18.

11 Y. Ming, M.L. Matteson, J. Sun. *Reddit use in the LIS community*...

of Tik-Tok has resulted in its recognition in the LIS field as a new marketing tool[12], and new research articles have also been published on other social media, such as WhatsApp, WeChat and Telegram[13].

Social media research is now one of the most popular topics undertaken by LIS researchers[14], and since 2018, it has been the most popular keyword mentioned in research in the LIS field[15].

Types of library social media research

Three main types of research on social media profiles of libraries have been identified, namely, the use of social media generally, declarative research, and content analysis.

1. General use of social media in libraries.
This includes guides on the use of selected types of social media [16] as well as works dealing with the use of the media for various situations and purposes, such as introducing new services[17], fighting disinformation[18], communicating during the SARS-CoV-19 pandemic[19], carrying out fundraising activities[20] or indicating the use of social media in professional development[21].

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12 R. Stephens, *Getting started with TikTok for library marketing*, "Public Services Quarterly" 2022, iss. 1, p. 59.

13 A. Shabani, H. Keshavarz, *Media literacy and the credibility evaluation of social media information: students' use of Instagram, WhatsApp and Telegram*, "Global Knowledge, Memory and Communication" 2021, iss. 6/7, pp. 413–431; A.H. Chaputula, H. Abdullah, B. Mwale, *Proliferation of social media in academic libraries: use of WhatsApp as a platform for providing library services*, "Library Management" 2020, iss. 8/9, pp. 717–729; Q. Zhu, *The application of social media in outreach of academic libraries' resources and services: A case study on WeChat*, "Library Hi Tech" 2016, iss. 4, pp. 615–624.

14 A. Ullah, K. Ameen, *Growth, subject areas, and application of research methods in user studies: A content analysis of articles produced by Pakistani authors*, "Journal of Librarianship and Information Science" 2023, iss. 4, pp. 1068–1077.

15 M. Jinxuan, B. Lund, *The evolution and shift of research topics and methods in library and information science*, "Journal of the Association for Information Science & Technology" 2021, no. 8, p. 1067.

16 R. Stephens, *Getting started with TikTok for library marketing*…; J. Wright, *Assessment of Social Media in the Library: Guidelines for Administrators*, "Journal of Library Administration" 2015, no. 8, pp. 667–680.

17 S.E. Okolo, R.E. Eserada, *Adoption of social networks media for reference services in academic libraries*, "Library Philosophy and Practice" 2019, no. 5, pp. 1–32.

18 M.C. Sullivan, *Leveraging library trust to combat misinformation on social media*, "Library and Information Science Research" 2019, iss. 1, pp. 2–10, https://doi.org/10.1016/j.lisr.2019.02.004.

19 Y. Choi, S.U. Kim, *Public library Twitter use during the early period of the COVID-19 lockdown in the United States*, "Electronic Library" 2021, no. 5, pp. 713–731.

20 J. Garczynski, *#Donate: the role of social media in academic library fundraising*, "The Bottom Line" 2016, no. 2, pp. 60–66.

21 J. Gross, *Building Your Library Career with Web 2.0*, Chandos Publishing, Oxford 2011.

2. Declarative research.
Conducted using the diagnostic survey method, declarative research focuses on the use of social media by readers of specific libraries, and it adopts a variety of research perspectives[22]. The studies are not limited to one social media platform, but involve determining the participants' extent of use and attitudes towards several[23]. The studies often relate to their perception of specific social media profiles[24] and how they build and maintain the participants' involvement[25].

3. Content analysis of library profiles.
The authors of this kind of study pursue different objectives and arrive at different findings, depending on the specific research area (i.e., the list of social media platforms selected for the study), the scope (the number of libraries analysed), the methods applied, the research questions formulated, and the *criteria used to assess the content of the profiles.* The analysis of this kind of research is the focus of this paper and so the details are presented and discussed in the findings section.

Research Methods

This study used both the declarative and content analysis research methods. The EbscoHost platform and the Sage Journals database were used to find articles on the topic of interest. These sources were searched using the following search phrase: "content analysis AND [name of social media] AND libraries" across four social media platforms: Facebook, Twitter, YouTube, and Instagram. After a thorough review of the content of the publications found, only articles with content analysis of specific social media used by libraries were included. This excluded articles relating to broad surveys or a general reflection on social media. This led to the identification

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22 Cf. R.W. Gehl, *The Case for Alternative Social Media*, "Social Media + Society" 2015, no. 2; N. Desrochers et al., *Authorship, citations, acknowledgments and visibility in social media: Symbolic capital in the multifaceted reward system of science*, "Social Science Information" 2018, no. 2, pp. 223–248; C. Nyasulu, W.D. Chawinga, *Using the decomposed theory of planned behaviour to understand university students' adoption of WhatsApp in learning*, "E-Learning and Digital Media" 2019, iss. 5, pp. 413–429.

23 I. Bashir, A. Malik, K. Mahmood, *Social media use and information-sharing behaviour of university students*, "IFLA Journal" 2021, 4, pp. 481–492; K.T. Ihejirika, A. Goulding, P.J. Calvert, *Do they "like" the library? Undergraduate students' awareness, attitudes, and inclination to engage with library social media*, "The Journal of Academic Librarianship" 2021, vol. 6, pp. 1–15; B. Rabatseta, J. R. Maluleka, O.B. Onyancha, *Adoption and use of social media in academic libraries in South Africa*, "South African Journal of Libraries & Information Science" 2021, no. 1, pp. 20–31; A. Shabani, H. Keshavarz, *Media literacy and the credibility evaluation of social media information*…

24 W.W.H. Cheng, E.T.H. Lam, D.K.W. Chiu. *Social media as a platform in academic library marketing*…

25 C. Fonseca, *The Insta-Story: A New Frontier for Marking and Engagement at the Sonoma State University Library*, "Reference & User Services Quarterly" 2019, no. 4, pp. 219–226; S. Joo, N. Choi, T.H. Baek, *Library marketing via social media : The relationships between Facebook content and user engagement in public libraries*, "Online Information Review" 2018, iss. 6, pp. 940–955.

and selection of 22 articles applying content analysis to the social media profiles of libraries. The publications appeared between 2012–2022 (cf. Appendix A) and the research was conducted on June 10, 2022.

This study aimed to answer the following research questions:

(1) How has the research on the content of the social media profiles of libraries developed?

(2) What was the research focus of the articles analysed?

(3) What research methods were used to study the content of the social media profiles of libraries on the various social media platforms?

(4) What criteria for evaluating the content of the profiles were adopted in the research on the content of the social media profiles of libraries?

Results

The development of the research on the content of the social media profiles of libraries

Since 2012, it was observed that there was an increase in the number of papers dedicated to analysing the content of the social media profiles of libraries. For example, there was one publication on the topic in 2012[26]and the same in 2014[27] and 2016[28]. No documents were found on this subject in 2013 and 2017, while from 2018, there was an increase in the number of articles analysing the content of specific library social media profiles.

Social media content studies are dominated by those done on Facebook and Twitter, which were the most popular social media platforms analysed by the researchers during the period considered. Nineteen (90%) of the 22 articles analysed mentioned social media, and when the content of the libraries' Instagram and YouTube profiles was separately examined by the researchers in a lesser extent. Four[29] and two[30] articles, respectively, were found on this topic. Some authors undertook

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26 S. Colburn, L. Haines, *Measuring Libraries' Use of YouTube as a Promotional Tool: An Exploratory Study and Proposed Best Practices*, "Journal of Web Librarianship", 2012, vol. 1, pp. 5–31.

27 S. Palmer, *Characterizing University Library Use of Social Media: A Case Study of Twitter and Facebook from Australia*, "The Journal of Academic Librarianship" 2014, vol. 6, pp. 611–619.

28 C. J. Neilson, *What Do Health Libraries Tweet About? A Content Analysis*, "The Canadian Journal of Library and Information Practice and Research" 2016, no. 1, pp. 1–18.

29 Y.B. Rachman, H. Mutiarani, D.A. Putri, *Content Analysis of Indonesian Academic Libraries' Use of Instagram*, "Webology" 2018, no. 2, pp. 27–37; J. Doney, O. Wikle, J. Martinez, *Likes, Comments, Views: A Content Analysis of Academic Library Instagram Posts*, "Information Technology and Libraries" 2020, vol. 3, pp. 1–16; Y.B. Rachman, *Examining academic libraries' use of Instagram*, "College & Undergraduate Libraries" 2020, no. 2–4, pp. 462–473; T.T. Wai Chan, A.H. Ching Lam, K.W. Dickson, *From Facebook to Instagram: Exploring user engagement in an academic library*, "The Journal of Academic Librarianship" 2020, vol. 6, pp. 1–15; G. Gmiterek, *Polish university libraries social networking services during the COVID-19 pandemic spring term lockdown*, "The Journal of Academic Librarianship" 2022, vol. 3, pp. 1–7.

30 S. Colburn, L. Haines, *Measuring Libraries' Use of YouTube as a Promotional Tool*...; G. Gmiterek, *Polish university libraries social networking services during the COVID-19 pandemic spring term lockdown*...

research regarding more than one social media platform, resulting in articles identified on Twitter and Facebook[31], Facebook and Instagram[32] and Facebook, Instagram, Twitter, and YouTube[33].

The research focus of the analysed articles

Of the twenty-two articles identified, the specific nature of the research material meant that the researchers mostly analysed social media posts (13 articles) and library profiles (6) with little focus on the users (2) and videos (1). The analysis of the articles also showed that the sampling in the works examined was diversified. In terms of post analysis, there were both papers where more than 10,000 posts were studied[34] and those where the research sample was smaller. The smallest sample was used in the work of Duong Thi Phuong Chi (in 2021), where only 260 posts were analysed[35].

In the case of research on library profiles, not all authors reported the sample size (See Table 1). However, where this was done, it was observed that these studies were mostly conducted with small samples, with the largest one being 100 libraries used by Al-Daihani and Abrahams[36] in their study.

The research methods used to study the content of the libraries' social media profiles on various social media platforms

The most popular research methods used to study the content of library profiles was content analysis (11 articles) followed by the quantitive method (5) and the technical method (4). The less frequently used methods were text and data mining[37], the diagnostic survey method[38], qualitative analysis, and the observational method. Sometimes, researchers referred to the method used as network analysis[39] or quantitative analysis[40]. In general, most researchers use a single method,

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31 S. Palmer, *Characterizing University Library Use of Social Media…*

32 T.T. Wai Chan, A.H. Ching Lam, K.W. Dickson, *From Facebook to Instagram…*

33 G. Gmiterek, *Polish university libraries social networking services during the COVID-19 pandemic spring term lockdown…*

34 A. Kushniryk, S. Orlov, *'Follow us on Twitter': How public libraries use dialogic communication to engage their publics*, "Library and Information Science Research" 2021, iss. 2, pp. 1–7; S.M. Al-Daihani, A. Abrahams, *Analysis of Academic Libraries' Facebook Posts: Text and Data Analytics*, "The Journal of Academic Librarianship" 2018, vol. 2, pp. 216–225; S.M. Al-Daihani, S.A. AlAwadhi, *Exploring academic libraries' use of Twitter: a content analysis…*

35 D.T.P. Chi, *Content Analysis of the Facebook Pages of Selected Academic Libraries in Vietnam*, "Journal of Information Science Theory & Practice" 2021, no. 1, pp. 79–89.

36 S.M. Al-Daihani, A. Abrahams, *Analysis of Academic Libraries' Facebook Posts…*

37 S.M. Al-Daihani, A. Abrahams, *A Text Mining Analysis of Academic Libraries' Tweets*, "The Journal of Academic Librarianship" 2016, vol. 2, pp. 135–143; S.M. Al-Daihani, A. Abrahams, *Analysis of Academic Libraries' Facebook Posts…*

38 C. Marino, C. Lista, D. Solari, M.M. Spada, A. Vieno, L. Finos, *Predicting comments on Facebook photos…*

39 R. Carrasco-Polaino, E. Villar-Cirujano, M.-Á. Martín-Cárdaba, *Redes, tweets y engagement…*

40 E. Tak Hei Lama, C. Hang Au, D.K.W. Chiu, *Analyzing the use of Facebook among university libraries in Hong Kong…*

as found in 14 of the 22 articles, with another seven using two methods and one researcher applying three.

Table 1. Sample size of the analysed articles devoted to analysis of the content of libraries' social media profiles depending on the subject of research (n=22)

Subject of research	Sample size
Nature and volume of posts	28788[41]; 23707[42]; 23027[43]; 16602[44]; 1669[45]; 1465[46]; 858[47]; 738[48]; 524[49]; 378[50]; 377[51]; 342[52]; 260[53]
Profiles of libraries	100[54]; 7[55]; 5[56]; N.A.[57]
Users	567[58]; 227[59]
Films	373[60]

41 A. Kushniryk, S. Orlov, *'Follow us on Twitter'...*

42 S.M. Al-Daihani, *A. Abrahams, Analysis of Academic Libraries' Facebook Posts*...

43 T. Çakmak, Ş. Eroğlu, *Public libraries on Facebook: content analysis of Turkish public libraries' posts*, "Library Hi Tech" 2021, iss. 2, pp. 602–624.

44 S.M. Al-Daihani, S.A. AlAwadhi, *Exploring academic libraries' use of Twitter: a content analysis*, "The Electronic Library" 2015, no 6, pp. 1002–1015.

45 G.D. Shin, K. Jeon, H.E. Lee, *Public library needs assessment...*

46 Y. Choi, S.U. Kim, *Public library Twitter use during the early period of the COVID-19 lockdown in the United States...*

47 Y.B. Rachman, *Examining academic libraries' use of Instagram...*

48 S. Yang, B. Ju., *Library support for emergency management during the time of natural disasters: Through the lens of public library Twitter data*, "Library and Information Science Research" 2021, vol. 43, iss. 1.

49 C.J. Neilson, *What Do Health Libraries Tweet About?...*

50 R. Carrasco-Polaino, E. Villar-Cirujano, M-Á. Martín-Cárdaba, *Redes, tweets y engagement: análisis de las bibliotecas universitarias españolas en Twitter*, "El Profesional de la Información" 2019, no. 4, pp. 1–14.

51 J. Doney, O. Wikle, J. Martinez, *Likes, Comments, Views...*

52 H. Çolak, C.H. Kagnicioglu, M. Argan, *Sosyal medyada etkģlesim ve dönüsüm orani arasindaki iliskinin incelenmesine yönelik Facebook ornegi*, "Elektronik Sosyal Bilimler Derg" 2022, vol. 21, pp. 242–257.

53 D.T.P. Chi, *Content Analysis of the Facebook Pages of Selected Academic Libraries...*

54 S.M. Al-Daihani, *A. Abrahams, Analysis of Academic Libraries' Facebook Posts*...

55 E. Tak Hei Lama, C. Hang Au, D.K.W. Chiu, *Analyzing the use of Facebook among university libraries in Hong Kong*, "The Journal of Academic Librarianship" 2019, iss, 3, pp. 175–183.

56 Y.B. Rachman, H. Mutiarani, D.A. Putri, *Content Analysis of Indonesian...*

57 S. Palmer, *Characterizing University Library*...; T.T. Wai Chan, A.H. Ching Lam, K.W. Dickson, *From Facebook to Instagram*...; G. Gmiterek, *Polish university libraries...*

58 L.H. ChanLin, Y.R. Su, *Assessing Information Needs and Interaction Needs for Library Facebook*, "Procedia – Social and Behavioral Sciences" 2015, vol. 191, pp. 319–322, https://doi.org/10.1016/j.sbspro.2015.04.703

59 C. Marino, C. Lista, D. Solari, M.M. Spada, A. Vieno, L. Finos, *Predicting comments on Facebook photos: Who posts might matter more than what type of photo is posted*, "Addictive Behaviors Report" 2022, vol. 15, pp. 1–10.

60 S. Colburn, L. Haines, *Measuring Libraries' Use of YouTube as a Promotional Tool*...

The research methods used determined the research questions formulated in the individual articles. They were most often related to the use of the social media platform, the types of content published, and user engagement. Moreover, the researchers asked questions about the frequency of publication, the topics of the posts, their attractiveness, their effectiveness, and the users' needs. Library profile ranking lists were rarely presented, nor was the source of the published content investigated (see Table 2).

Table 2. Research questions posed in the articles devoted to analysis of the content of the social media profiles of libraries depending on the subject of research (n=22).

Problems addressed in research questions	Number of articles
Use of the platform	16
Content types	12
Engagement	11
Frequency of publication	8
Topics of posts	8
Attractiveness of the content	4
Efficiency	3
Users' needs	3
Ranking list of library profiles	2
Source of published content	2

Note: Data do not add up to 100% because authors of the articles asked more than one research question. In the absence of research questions, the aim of the article was analysed, or the formulated research hypotheses were considered.

The criteria for evaluating the content of the profiles adopted in the research on the content of the social media profiles of the libraries

When evaluating the libraries' online profiles studied, the researchers mostly used categorisation and thematic analysis. User reactions and engagement, as well as publication data and frequency, were also examined. In the papers analysed, the collected data were presented in a graphic form or subjected to semantic analysis. There were very few papers that examined the information- and interaction-related needs of profile users and how these patrons used the content. The best content and tits use were also an evaluation criterion. The basic data of the pages, the number of views, photographs, sources and the usability of the content published were rarely analysed (see Table 3).

Table 3. Profile content evaluation criteria in the articles devoted to analysis of the content of the libraries' social media profiles depending on the subject of research (n=22).

Content assessment criterion	Number of indications
Thematic categorisation	12
Thematic analysis	9
Reactions	8
Engagement	6
Quantitative analysis	5

Content assessment criterion	Number of indications
Frequency	5
Data visualisation	4
Semantic analysis	3
Information needs	2
Interaction needs	2
The best content	2
Use	2
analysis of the basic data	1
Financial analysis	1
Number of views	1
Photos	1
Sources	1
Usability	1

Note: Data do not add up to 100% because authors of some articles applied more than one content evaluation criterion.

Discussion

As a result of the research, it should be noted that not all of the social media platforms were analysed with equal frequency. The need to develop research on Instagram and YouTube was recognised, assuming that libraries continue to use them while communicating with their users. Generally, it was observed that social media resources managed by academic libraries were more often analysed.

Among the studies analysed, quantitative research related to the analysis of content (topics), comments, and shares was more numerous. With special regard to the case of YouTube and Instagram, where we find mostly visualised information, the undertaking of qualitative research related to the reception of information and its impact on the user should be considered. It was also observed that the actual impact of social media on the recipient, in particular, was so far under-researched. It was thought that the area of visual (perceptual) research should be given greater importance, considering that we are currently facing a revolution caused by the increased use and influence of artificial intelligence capable of generating both text and graphics.

As shown by the data, the researchers analysed a selection of specific social media units (posts, tweets, pages as a whole, etc.) and not the individual social media using various methods which could provide knowledge of which content fosters greater or lesser user interaction. In-depth unit studies of profiles, posts, and tweets over a selected period would allow us to better assess the effectiveness of our action and provide a starting point for planning further actions to build greater user engagement[61]. From the point of view of effective communication, it seems that the study of the profiles of several social media users has greater

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61 M. Mensah, O.B. Onyancha, *Building and enhancing library services: Patrons' awareness of, and engagement with social media in academic libraries in Ghana*, "Journal of Librarianship and Information Science" 2022, iss. 4, pp. 604–621.

cognitive value, as it reveals which of them is better managed (i.e. more engaging users). Comparing different platforms should help libraries plan better, operationally and strategically, how to more successfully use social media. This type of analysis allows the libraries to decide the necessity of maintaining many social media profiles and which ones are at a given time the most relevant.

The study identified nine methods that researchers used to examine library social media. Most of them were quantitative, that is, using content analysis, statistical technical methods, text mining, text and data mining, and diagnostic surveys. Qualitative research (e.g., interviews, online observations) was rarely used. However, their appearance in the analysis highlights that, in some cases, it was not enough to calculate certain indicators to answer the question of how the selected social media works. This finding could imply the need to make greater use of mixed methods for social media research in libraries, which are not currently widely used[62], as reflected in the articles analysed[63]. Such a research perspective will more likely become increasingly necessary.

The related articles that were the subject of analysis indicated that to answer this question, it would be necessary to consider:
1) ways to measure the effectiveness of media profiles[64],
2) the forms of publication that most engage users[65],
3) how to determine the frequency of publication[66], and
4) how to examine user interaction[67].

They represent the most important criteria considered by researchers in the last ten years.

At this point, it is worth reconsidering to what extent the quantification of the content that libraries publish on social media is sufficient to examine their

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62 V. Granikov, Q.N. Hong, E. Crist, P. Pluye, *Mixed methods research in library and information science: A methodological review*, "Journal of Library & Information Science Research" 2020, iss. 1, pp. 1–10.

63 T.T. Wai Chan, A.H. Ching Lam, K.W. Dickson, *From Facebook to Instagram: Exploring user engagement in an academic library*…; G.D. Shin, K. Jeon, H.E. Lee, *Public library needs assessment to build a community-based library*…

64 S. Colburn, L. Haines, *Measuring Libraries' Use of YouTube as a Promotional Tool*…; E. Tak Hei Lama, C. Hang Au, D.K.W. Chiu, *Analyzing the use of Facebook among university libraries in Hong Kong*…; G.D. Shin, K. Jeon, H.E. Lee, *Public library needs assessment to build a community-based library*…

65 S.M. Al-Daihani, S.A. AlAwadhi, *Exploring academic libraries' use of Twitter*…; S.M. Al-Daihani, A. Abrahams, *Analysis of Academic Libraries' Facebook Posts*…; S. Palmer, *Characterizing University Library Use of Social Media*…; Y.B. Rachman, H. Mutiarani, D.A. Putri, *Content Analysis of Indonesian Academic Libraries' Use of Instagram*…; T. Çakmak, Ş. Eroğlu, *Public libraries on Facebook*…; T.T. Wai Chan, A.H. Ching Lam, K.W. Dickson, *From Facebook to Instagram: Exploring user engagement in an academic library*…; C. Marino, C. Lista, D. Solari, M.M. Spada, A. Vieno, L. Finos*, Predicting comments on Facebook photos…*

66 S.M. Al-Daihani, A. Abrahams, *A Text Mining Analysis of Academic Libraries' Tweets*…; A. Kushniryk, S. Orlov, *'Follow us on Twitter'*…; D.T.P. Chi, *Content Analysis of the Facebook Pages of Selected Academic Libraries in Vietnam*…

67 T. Çakmak, Ş. Eroğlu, *Public libraries on Facebook…*; J. Doney, O. Wikle, J. Martinez, *Likes, Comments, Views…*

communicative effectiveness. This raises the question of the need for other methods to validate research on the social media profiles of libraries. Some believe that social media should be studied primarily by qualitative methods[68], although other studies show that quantitative methods still dominate[69].

Certainly, the number of different social media platforms, the emergence of new ones, and the need to decide which one to include in the study can be challenging for the researchers. Although this paper discusses research on four social media platforms, it is worth noting that libraries are also increasingly making use of other platforms, e.g., TikTok and Reddit[70]. In their case, researchers still need to know what publication strategy to adopt and so, the conclusions presented in this article about the criteria for evaluating profile content are still valid and can also be applied to the study of other social media.

Generally, this study found that researchers examine library social media in a variety of ways and pay attention to different aspects of library social media activity. The findings presented on library social media research methods can help library profile managers better design their studies by selecting the most valuable assessment methods and criteria for their own research. The results can also be practically applied to the design of effective library communication using social media, and they can contribute to further research on the use of social media by different types of libraries. The findings of this study can also be used by both librarians and other researchers as a reference in selecting the most effective methods as well set of evaluation criteria for their own research., ed. by E. Hargittai. University Press, Columbia, 2021.

Finally, it should be recognised that well thought out and properly designed content research on social media profiles libraries can assist them to more successfully reach and keep their users on social media and increase interest in the library services as well as positively affect the latter's information literacy rates. Moreover, this study of library social media profiles can be considered useful within the broader GLAM sector.

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70 P. Fernandez, *TikTok and the future of discovery*, "Library Hi Tech News" 2022, iss. 9, pp. 1–5; Y. Ming, M.L. Matteson, J. Sun, *Reddit use in the LIS community*, "Journal of Librarianship and Information Science" 2022, no. 4, pp. 770–778, https://doi.org/10.1177/09610006211052084.

Appendix A. Supplementary data

Article and year	Research subject and research sample	Social media analysed	Research methods	Research questions, hypotheses or the objective of the work	Criteria for evaluating the content of profiles
Colburn & Haines, 2012	Survey of 373 videos about libraries and librarians	Youtube	Content analysis method	1. How are online library outreach videos engaging their intended audiences? 2. What are potential measures of the efficacy of online library outreach videos? 3. What practices may lead to successful implementation of library outreach and marketing on YouTube, and result in widespread viewing by the intended audience?	Categorisation of the videos found Thematic evaluation of videos Research on the number of views Survey of the number of comments Examination of the type of comments (positive, negative, neutral)
Palmer 2014	Twitter and Facebook profiles of a library in Australia (no details available)	Twitter Facebook	Technical method	"to identify the forms of Twitter and Facebook activity that engage library stakeholders in social media conversations"	Evaluation of the publication frequency and types of tweets posted by the library Visualising the relationship between tweets Visualising the relationship between posts on Facebook
Al-Daihani & Al Awadhi 2015	17 Twitter accounts of academic libraries n=16602	Twitter	Statistical method Content analysis method	1: How do academic libraries use Twitter? 2: What type of information do academic libraries post on Twitter? 3: What type of content do academic libraries post on Twitter? 4: How do academic libraries communicate and interact with users on Twitter? 5: Are subcategories with the highest number of tweets in each main category associated with libraries' tweets with the highest numbers of followers and the highest numbers of tweets	Quantitative assessment of the number of tweets posted Thematic evaluation of the tweets posted Visualising the relationship between tweets
ChanLin & Su 2015	Students of The Fu-Jen Catholic University n= 567	Facebook	Diagnostic survey method (questionnaire)	"(1) to provide information for the promotion of library resources and services; and (2) to provide interaction between library and users"	Declarative evaluation of the use of the selected Facebook functions Characteristics of users' information needs Characteristics of users' interaction needs
Al-Daihani & Abrahams, 2016	Analysis of 23707 tweets from the academic libraries of ten US universities	Twitter	Text mining (methodology)	1: How often do academic libraries use Twitter? 2: What type of content is posted by academic libraries on Twitter? 3:What are the themes associated with academic libraries' tweets?	Determining the frequency of using Twitter Semantic analysis of the content published Establishing categories for the published tweets
Neilson 2016	Analysis of 524 tweets from academic and special libraries in Canada	Twitter	Content analysis method	n.a.	Evaluation of the subject matter of tweets Analysis of sources Thematic categorisation of tweets

Article and year	Research subject and research sample	Social media analysed	Research methods	Research questions, hypotheses or the objective of the work	Criteria for evaluating the content of profiles
Al-Dai-hani & Abra-hams 2018	Profiles of 100 academic librar-ies from four English-speak-ing countries (Canada, the United King-dom, Australia and the United States)	Facebook	Text and data mining	1. What extracted data describes the librar-ies' patterns of Facebook use? 2. Which library content has the highest and lowest engagement? 3. What are the semantic categorizations of the content of posts?	Semantic analysis of the content of posts Quantitative analysis of reactions, as per type Thematic analysis of posts with the highest number of reactions Analysis of the level of user engagement
Rachman et al. 2018	Instagram profiles of five libraries	Instagram	Obser-vation method	1. What profile picture do libraries use on Instagram? 2. How do libraries keeping update their posts on Instagram? 3. What type of information do the libraries post on Instagram? What style of language do they use? 4. How do libraries communicate and inter-act with their users on Instagram?	Assessment of the pres-ence of a profile picture Assessment of publica-tion frequency Thematic and quanti-tative characteristics of published posts User interaction study
Carras-co-Polai-no et al. 2019	378 university libraries' tweets	Twitter	Content analysis method Network analysis	"to determine how the network of Spanish university libraries is organised on Twitter, the use they make of the platform and their interaction on the platform and the interaction of their different messages according to their content."	Visualising the relation-ship between tweets Assessment of the de-gree of user interaction (engagement) Quantitative character-istics of tweet content types
Tak Hei Lama E. et al. 2019	Profiles of seven univer-sity libraries in Hong Kong	Facebook	Qualitative analysis Quantita-tive anal-ysis Online ob-servation method Internet content analysis	1: What are the characteristics of Facebook page usage among university libraries in Hong Kong? 2: How effective is the university libraries' use of Facebook to interact with their patrons, in terms of engagement rate? 3: From the perspective of university library users, which Facebook post categories and media types attract their attention mostly?	Measuring post likes (popularity), shares (engagement) and shares (virality of posts) Categorisation and the-matic analysis of posts Analysis of the basic data of the websites Analysis of the type of content posted Calculation of the website users' level of engagement with the Kruskal-Wallis test Development of recom-mendations for libraries on how to make better use of Facebook
Çakmak & Eroglu 2020	23027 posts shared by 116 public libraries	Facebook	Statistical method Content analysis method	1: What is the level of user interaction to the posts shared by public libraries in Turkey on their Facebook pages (based on likes, comments and shares)?	Assessment of the de-gree of user interaction (engagement)

Article and year	Research subject and research sample	Social media analysed	Research methods	Research questions, hypotheses or the objective of the work	Criteria for evaluating the content of profiles
				2: On which timelines do public libraries in Turkey share more posts on their Facebook pages? 3: What types of content do public libraries in Turkey share on their Facebook pages? 4: Which subjects and library services are addressed in the categories containing posts of Turkish public libraries on Facebook?	Thematic evaluation of the published content Characteristics of the most popular categories of published posts
Doney et al., 2020	377 Instagram posts published by University of Idaho libraries	Instagram	Content analysis method Statistical method	1: Which type of post category is used most frequently by libraries on Instagram? 2: Is the number of likes or the existence of comments related to the post category?	Establishing categories of the published posts Investigating the relationship between the number of likes and the category of the post
Rachman 2020	Analysis of 858 posts from 15 academic libraries	Instagram	Statistical method	1: How do academic libraries use Instagram, and what type of information do academic libraries post on Instagram? 2: What type of content do academic libraries post on Instagram? 3: What categories of Instagram posts are more frequent for any given month?	Thematic and quantitative characteristics of the published posts Assessment of publication frequency
Wai Chan et al., 2020	University of Hong Kong library profiles	Facebook Instagram	Content analysis method Qualitative method (interview)	1: How does HKUL use Facebook and Instagram? 2: How effective is HKUL's use of Facebook and Instagram for engaging with users? 3: What are HKUL users' perspectives and preferences about connecting with HKUL on Facebook and Instagram?	Categorisation and thematic analysis of posts List of the most popular posts
Choy & Kim 2021	Analysis of 1,465 tweets from 57 public libraries	Twitter	Content analysis method	1: to identify what content was communicated on Twitter; 2: to evaluate to what extent information related to the pandemic was shared; and 3: to gauge the level of interaction and engagement on Twitter.	Analysis of the number of users following the profiles Establishing categories of the published tweets
Duong Thi Phuong Chi 2021	Analysis of 260 posts of academic libraries in Vietnam	Facebook	Content analysis method	1: What are the characteristics of academic libraries' posts on Facebook? 2: How often do academic libraries post on their Facebook pages? (3) How do users interact with libraries' posts?	Establishing categories of published posts Examples of post categories Characteristics of post types Posting frequency analysis Study of reactions to posts
Gmiterek 2021	Profiles of 18 university libraries in Poland	Facebook, Instagram, Twitter, Youtube,	Technical method	RQ1: What social media tools did university libraries use most often during the lockdown? RQ2: What type of social media content did university libraries make available during the lockdown?	Quantitative assessment of the libraries' activity on their social media profiles during the pandemic

Article and year	Research subject and research sample	Social media analysed	Research methods	Research questions, hypotheses or the objective of the work	Criteria for evaluating the content of profiles
				RQ3: What social media content was the most popular and which hashtags were most often associated with that content during the lockdown? RQ4: What level of engagement did social media users have with university library social media accounts during the lockdown? RQ5: What was the frequency of social media content made available by individual university librarians during the lockdown? RQ6: Which university libraries were most active on social media during the lockdown? RQ7: Are there significant differences in the use of Web 2.0 tools among university libraries during lockdown? If so, what are they	Thematic analysis of posts with the highest number of reactions
Kushniryk & Orlov 2021	Twitter messages from six Canadian and seven US public libraries n=28788	Twitter	Technical method	H1. Public libraries will use dialogic cluster principles in their Twitter profiles more often than technical design cluster principles. H2. The tweets categorised as a technical and design cluster will be more likely to be retweeted than the 'dialogic cluster' tweets. H3. There will be a significant difference between the type of dialogic principle utilised in a tweet and the likelihood of the tweet to be retweeted H4. There will be a positive relationship between the frequency of trust messages sent to a library @name and the number of followers. H5. There will be a negative relationship between the frequency of distrust messages sent to a library @name and the number of followers. H6. There will be a positive relationship between the frequency of unrelated messages sent to a library @name and the number of followers. H7. There will be a positive relationship between the frequency of trust messages sent to a library @name and the number of followings. H8. There will be a negative relationship between the frequency of distrust messages sent to a library @name and the number of following	Comparison of libraries' revenues, the number of readers and the number of users of their Twitter accounts Evaluation of the usability of the types of tweets published Characteristics of the types of tweets sent by the users to the library
Yang & Yu 2021	17 public library Twitter accounts n=738	Twitter	Content analysis method	RQ1. What types of informational content via Twitter were shared between public libraries and the communities that those libraries serve?	Categorisation and quantification of the analysed content

Article and year	Research subject and re-search sample	Social media analysed	Research methods	Research questions, hypotheses or the objective of the work	Criteria for evaluating the content of profiles
				RQ2. What social network patterns were evolved and observed? RQ3: To what extent did the information shared by the public libraries come from external agencies and organizations throughout the phases of the hurricane?	Examples of the pub-lished content
Çolak et al. 2022	Analysis of 342 posts	Facebook	Content analysis method Statistical method	1- What type of content shared on Face-book results in more interactions? 2- Does the brand's web link influence the interaction rates of the shared content? 3- Does the content shared on Facebook guide users to the brand's website? Does the content type have an effect? If so, is the effect significant? 4: Does the content type have an effect on the purchasing activity of users accessing the website? If yes, is the effect significant?	Evaluation of user en-gagement Quantitative characteris-tics of posts
Marino 2022	Italian Face-book users n=227	Facebook	Diagnostic survey method (question-naire) Technical method	"to explore and highlight the most relevant factors predicting the popularity of a Face-book picture, using three groups of varia-bles: (i) Facebook user-related features; (ii) Facebook photo-related features; and (iii) and psychological variables (PFU, personal-ity traits, self-esteem, and positive mental health [...]"	Psychological assessment of reactions to photo-graphs based on the earlier user activity
Shin et al. 2022	Analysis of 1,669 posts of public libraries in South Korea	Facebook	Content analysis method as a part of trian-gulation analysis (in addition to the survey and inter-views)	1: What are the needs and characteristics of users and non-users at Yongsan-gu public library? 2: What is the current status of the Yong-san-gu library infrastructure (facilities and manpower) and operation, library services, and improvement of facilities? 3: How have the Yongsan-gu public libraries been affected by COVID-19?	Determining the fre-quency of words on Facebook

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Abstract

Research regarding the use of social media by libraries has been increasing, but does not focus on comparing how to evaluate the content published through the media. This article examines research reports that evaluate the contents of social media profiles from selected libraries, indicating the research methods used, the size of the samples used, and the most common subjects covered. Both declarative research and content analysis methods were used, which revealed that the researchers examined library social media in a variety of ways and paid attention to different aspects of the libraries' social media activity. The results of the study

can help libraries to better plan, operationally and strategically, how to more successfully use social media.

Keywords: social media, libraries, research methods, content analysis

Metody i kryteria badawcze w analizie treści bibliotecznych profili społecznościowych

Streszczenie

Badania dotyczące wykorzystania mediów społecznościowych przez biblioteki są coraz częstsze, ale nie koncentrują się tylko na porównywaniu sposobów oceny treści publikowanych za pośrednictwem mediów. W niniejszym artykule przeanalizowano raporty z badań oceniających zawartość profili w mediach społecznościowych wybranych bibliotek, wskazując zastosowane metody badawcze, wielkość wykorzystanych prób i najczęściej poruszane tematy. Zastosowano zarówno metody badań deklaratywnych, jak i analizy treści, które ujawniły, że badacze badali biblioteczne media społecznościowe na różne sposoby i zwracali uwagę na różne aspekty aktywności bibliotek w mediach społecznościowych. Wyniki badania mogą pomóc bibliotekom lepiej zaplanować, operacyjnie i strategicznie, jak skuteczniej korzystać z mediów społecznościowych.

Słowa kluczowe: media społecznościowe, biblioteki, metody badawcze, analiza zawartości