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Polish university libraries social networking services during the COVID-19 pandemic spring term lockdown

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ABSTRACT

During the spring 2020 COVID-19 lockdown, University libraries made available digital content of varying types. This article assesses the scope and breadth of content published by 18 Polish university libraries, how libraries compared in their approach to using social media, and the level of engagement and collaboration with patrons during a time when the physical library was closed. Data collection consisted of gathering social networking site information as used by Polish university libraries with the Fanpage Karma tool. The Fanpage Karma tool allowed the researcher to analyse and compare the fan pages of individual university library social networking sites. The tool simplifies the process to calculate key variables such as the number of user reactions to the library content; the number of posts, comments, likes, and dislikes; the average daily number of posts made; the most popular text, images, videos, links; and the kind of hashtags used by librarians. Findings indicate Polish university libraries most frequently used Facebook during the lockdown followed by Instagram and Twitter. To a much smaller extent, libraries also used YouTube. Not all Polish university libraries made equal use of social media during the lockdown despite the availability of content and ease of use.

Introduction

Advancements and increased accessibility of digital information provide new opportunities for libraries. This is particularly true of interactive tools integrated with the social media environment commonly referred to as Web 2.0. Increasingly, these tools are becoming resources for university libraries. These applications became noticeably beneficial for libraries during the recent global pandemic as organisations sought new ways to engage with patrons. These communications channels provided a means to promote library news as well as to provide remote access to library resources. Social media use also provides an opportunity to collaborate with users, conduct online discussions, and to offer new ways to engage with university libraries.

This article presents the results of social media use by 18 Polish university libraries, including public institutions (MNiSW, 2020), during the spring COVID-19 lockdown. The intention is to determine the scope and breadth of content published by university libraries, how these libraries compared in their approach to using social media, and the level of engagement and collaboration with patrons during a time when the physical library was closed.

The research was aimed at answering seven specific research questions:

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?
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?

Literature review

Library social media use has become essential to adequately provide library services to a connected world. Social media platforms enable wider communication and cooperation between academic librarians and online users (Hicks, 2012). Social media is also increasingly used in
The development and popularity of interactive and social tools have led university libraries to gradually implement IT solutions to better promote library services and resources (McCallum, 2015). Although, despite critics that reference the inefficiency of social media use among libraries (Magoi et al., 2017), it is evident that these tools have become a means for institutions to communicate with and meet the information needs of users (Ofil & Emwanta, 2014). Plus, innovative digital tools encourage younger generations to access library services (Williams, 2018), which is why university libraries need to participate in creating their online social reality (Garofalo, 2013). Effectively using social media is also seen as a critical 21st-century skill expected of academic library staff (Chawner & Oliver, 2013).

Polish university libraries use social Internet tools for marketing and promotion of library services, communication, and cooperation with users (Gmiterek, 2012; Gmiterek, 2018; Onak, 2013-14; Scheffs, 2012; Sidorczuk & Gogiel-Kuzmicka, 2012; Stach-Siegierczuk, 2014; Szmajser-Chylarecka, 2013). However, in the first decade of the 20th century, several academic libraries did not initially see the need for social media coverage (Lamberti & Theus, 2016). Only over time were these institutions convinced of the need to use social media tools in their daily operations. Today, this is the standard (Puksza & Witkowska, 2018) and all university libraries use at least Facebook. The desired goal is to build a committed library community and to establish a dialogue with patrons as well as to effectively adapt to better meet their needs (Jaskowska, 2012).

Methods

The research used qualitative and quantitative methods. Data collection consisted of gathering social networking site information as used by Polish university libraries with the Fanpage Karma tool (www.fanpagekarma.com). This tool was also used to analyse the collected data, which referred both to information made available by libraries and data coming from users, such as likes, comments, and posts (Fanpage Karma, 2018). The data was collected on June 24–27, 2020.

Fanpage Karma is a network service used to monitor activities and content on social networking sites, made available on fan pages (e.g. institutions). The tool gathers public information, meaning there is no concern for confidential data or privacy infringement. The Fanpage Karma tool allowed for an analysis and comparison of fan pages of particular university libraries on the social media used by those libraries. The tool also facilitated a relatively accurate determination of the coefficients relating to the number of users’ reactions to the shared library content; the number of posts, comments, likes; average number of shared posts per day; the most popular texts, images, videos, links; hashtags used by the librarians. The Fanpage Karma tool also makes it easier to visualize findings and organise the analysed content using tags. This mechanism can be useful when the user would like to organise the content they make available such as through the thematic categories with which they describe each post.

The analysis covered the period from 11 March (first closures of library buildings for their readers) to June 2020, when all libraries were already partially open to users. However, all Polish university libraries were not closed and opened at the same time. For example, the University Library in Warsaw (BUW) was closed on 11 March. On 18 May, some services in the building of this institution resumed (e.g. lending and return of books, scanning of books and magazines for readers, interlibrary loans). The Jerzy Giedroyce University Library in Białystok was closed on 16 March, and its lending library opened on 5 May. This is in contrast to the University Library in Rzeszow, which closed on 12 March and opened its lending library on 25 May 2020. On 1 June at the latest, the Library of the University of Łódź; the Nicolaus Copernicus University Library in Torun; the Main Library – University of Szczecin; the Scientific Information Centre and Academic Library (CINIBA) opened.¹

Considering all the social networking sites university libraries use is a priority; however, in the analysed period the libraries studied did not present much content outside of Facebook. While the Nicolaus Copernicus University Library in Torun has been using the Pinterest service for years, during the analysed period there was no activity on the account.

The official library profile or fan page on social networking sites was first identified by the information available on the institution’s website. This method of identification was not always effective. In more than a few cases, there was no information about such activity on the library websites. The Library of the University of Łódź, which has a profile on YouTube, has no mention of it on its website much like the Library of Rzeszow University and the Library of the University of Zielona Gora. On the other hand, the University Library University of Warmia and Mazury in Olsztyn did not inform on its website about the librarians’ Twitter account. The lack of information about all activities in the above-mentioned services forced additional searches for library profiles or fan pages on the most popular and most frequently used social networking sites. For this purpose, a standard Google search was conducted. Compiled library social media use is available in Table 1.

The library social media profiles were added to the Fanpage Karma “dashboard.” No posts were added to Pinterest during the analysed period; therefore, it was not taken into account. Snapchat was also not included due to the specificity of its functions. Eight of the eighteen analysed libraries used Instagram. Unfortunately, Fanpage Karma was unable to analyse four of the Instagram library accounts: the University of Warsaw Library; Jagiellonian Library; Library of the University of Łódź; University Library University of Warmia and Mazury in Olsztyn because they are not public business accounts. Thus, it was not possible to use the data provided by these institutions. These library accounts are not business profiles and Instagram policy does not allow for connecting such accounts to external systems like Fanpage Karma. In short, the data provided by the four library institutions have not been marked as fully public, which means that they cannot be analysed and monitored by external tools. As a result, these four profiles were not considered when carrying out further analysis. The remaining four accounts were analysed using the Fanpage Karma tool.

The researcher conducted a review of the social networking sites (Facebook, Twitter, Instagram, and YouTube) for the libraries in terms of the number of posts, their content, comments, user reactions, hashtag used by librarians, and the post-interaction index. The four social media networks provided a means of comparing the approach university libraries used to reach out to patrons during the lockdown.

Results and data analysis

Results suggest the most popular post among Polish library users was made by the Jagiellonian Library on Facebook announcing its partial reopening published on 20 May. The post collected 229 likes, 15 comments, 26 releases, and a total of 358 reactions from users. The second

¹ Information on the closure and opening of libraries was provided by data published on the institutional websites and on social media.
most engaging post was also made on Facebook by the University of Warsaw Library on 18 May. It also concerned the opening of the institution to patrons. The post gathered 215 likes, 3 comments, 13 releases, and 314 reactions. The third most engaging post, also on Facebook, was by the University of Warsaw Library on breaking a record of book lending published on 11 March. The post gathered 195 likes, 21 comments, 10 releases, and 314 reactions. It can be concluded that the content related to the functioning of the physical institutions and the services they offer was the most frequently interacted with by patrons.

In comparison, the most popular post on Instagram (5th overall) published by the Main Library of Maria Curie-Skłodowska University in Lublin on April 25th, entitled “Reading on the balcony, with a cherry blossom,” encouraged users to read; it gathered 103 likes. The second most favourable Instagram post (9th overall) was published by the University Library in Białystok and also focused on reading, recommending books from a librarian and wishes for its quick reopening for patrons. The post appeared on 30 March and gained 86 likes and 8 comments. The third most popular Instagram post (11th overall) was also posted by the Białystok library and featured a librarian’s recommended book, which gathered 84 likes.

The most popular Twitter post only ranked 225 overall. The post was published by the University Library in Poznan on 30 March and referred to remote access to JSTOR, a consortium of libraries and scientific publishers, available until 30 June gathered 17 likes. Whereas the most popular video on YouTube was material prepared by librarians from the University Library in Białystok. The video was produced as part of Library Week and presented the work of the Collection Sharing Department gathering 8 likes and displayed a total of 207 times.

An analyses of the activity of Polish university libraries on each of the social networking sites are detailed individually below.

### Facebook

In the period studied, the University of Warsaw Library had the largest number of Facebook followers (19,004 users). Next was the Library of the University of Lodz (6280 users), University Library in Poznan (5899 users), Jagiellonian Library (5897 users), and Nicolaus Copernicus University Library in Torun (4960 users). The Main Library of the University of Opole (136 users) and the Main Library – University of Szczecin (243 users) saw the lowest number of Facebook followers.

In the analysed period, all libraries published a total of 1171 posts. The largest number of posts, as many as 242, was published by the University Library in Białystok. These posts were on average three per day. Users added 38 comments to these Facebook posts, but all user reactions (including likes, comments, sharing, etc.) totalled 1615 including 1139 likes. The Facebook posting interaction rate for the University Library in Białystok was 0.66%. This is the engagement rate in Fanpage Karma tool, which shows “an average amount of how often a fan interacts with the posts of a page. It is calculated by dividing the daily amount of likes, comments and shares by the number of fans” (Wusthoff, 2014).

The most popular posts based on the number of likes and dislikes were those related to Librarian’s Day (8 May), construction of a new library building (22 April), special collections, and a digitisation workshop (15 May). The 2 April Facebook post referring to the International Children’s Book Day received three comments. However, a March 16th post which focused on remote access to the library resources was the most frequently made available (7 times). Throughout the Facebook posts, the most frequently used hashtags are #zostanwdomu (eng. #stayhome) (28 times); #tzbibliotek (eng. #librariesweek) (20 times); and #przyszatzbibliotek (eng. #libraryharbour) (18 times); #zaszumovibiblioteczne (eng. #tasteitinhilibrary) (18 times); and #niezostawiamczytelnika (eng. #I’mnotleavingthereader) (18 times). The University Library in Białystok published the most posts on Wednesdays and Fridays (38 times each); although, there was also content available on Saturdays (27 posts) and Sundays (30 posts each). The most frequently published posts were accompanied by media (152 documents) and links (75 documents).

Considering the number of posts made available, the second most engaged with library was the University Library in Poznan, which published 115 posts (1.4 per day on average). Users added a total of 30 comments and 1466 reactions including 892 likes. The interaction rate for the University Library in Poznan was 0.19%. The most popular posts included one on 27 March, referred to the capability of users to order an electronic copy of a publication by academics, doctoral students, and students (26 impressions); 11 May about the resumption of the library’s activity; and of Easter Christmas greetings of 9 April. Most comments were gathered by the 24th April post with a riddle concerning the photo presented in the post (4 comments). In the posts, hashtags most often used are #tzbibliotek2020 or #librariesweek2020 (8 times); #zaszumovibibliotec (eng. #tasteitinhilibrary) (20 times); and #niezostawiamczytelnika (eng. #I’mnotleavingthereader) (18 times). The University Library in Białystok published the most posts on Tuesdays and Thursdays (23 each). The most frequently published posts were accompanied by media (57 documents) and video materials (27 documents).

The third most active library on Facebook is the Library of the University of Lodz, which in the analysed period, made 109 posts available (1.3 per day on average). Users added a total of 101 comments and a total of 4225 reactions; most of all of the libraries studied, including 2590 likes. The engagement rate was 0.59%. The three most popular posts were published on 15 March which promoted museums presenting their collections online and on 18 April and 22 May with pictures of the library and wishes for its quick reopening for patrons. The post of 21 March, which referred to the remote ordering of electronic copies of magazines and books received the most comments (32 comments). The post promoting museum collections online was the most frequently made available (89 contributions). In the posts, hashtags used are #bulateam or #libraryofuniversityoflodzteam (16 times); #repozytorium (eng. #repositoryoftheuniversityoflodz) (8 times); and #zostanwdomu (eng. #stayhome) (5 times). The Library published the most posts on Wednesdays and Thursdays (21 documents each). Most of the posts were accompanied by media (104 documents).

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**Table 1**

| Polish university libraries and the social services they use (June 2020). |
|---------------------------------------------------------------|
| **Name of the library** | **Facebook** | **Other tools** |
| University of Warsaw Library | Fan page | YouTube, Instagram, Pinterest |
| University Library in Białystok | Fan page | YouTube, Instagram |
| Library of the University of Gdańsk | Fan page | None |
| University Library in Poznan | Fan page | YouTube, Twitter, Instagram |
| Jagiellonian Library | Fan page | Twitter, Instagram |
| Library of the University of Lodz | Fan page | Instagram, Twitter, YouTube |
| Main Library of Maria Curie-Skłodowska University in Torun | Fan page | Twitter, Instagram |
| Nicolaus Copernicus University Library in Torun | Fan page | YouTube, Twitter, Pinterest |
| Main Library of the University of Opole | Fan page | None |
| Main Library – University of Szczecin | Fan page | Twitter |
| Library of the University of Silesia | Fan page | Instagram, Twitter, YouTube, Snapchat |
| University Library in Rzeszow | Fan page | YouTube |
| University Library University of Warmia and Mazury in Olsztyn | Fan page | Instagram, Twitter, YouTube, YouTube, Instagram |
| Wrocław University Library | Fan page | Twitter, YouTube |
| Main Library of Cardinal Stefan Wyszyński University in Warsaw | Fan page | Twitter, YouTube |
| Library of the University of Zielona Gora | Fan page | YouTube |
| Library of Kazimierz Wielki University in Bydgoszcz | Fan page | None |
| University Library in Kielce | Fan page | YouTube |

* Information about library profiles and fan pages is available through the website of the Scientific Information Centre and the Academic Library (CIaNiBA), which is a collaboration of two universities in Katowice: the University of Economics and the University of Silesia.
The University of Warsaw Library saw the most number of Facebook user comments with 105 overall. This institution was also the second-largest in terms of the number of user reactions to the posts it made available with 3697 in total, including 2218 likes. Meanwhile, the Library of the University of Lodz had the most reactions; 4144 reactions, including 2590 likes.

The fewest number of Facebook posts was made by the University Library in Rzeszow with 21 posts and 104 user reactions, including 6 comments and 56 likes; the Library of the University of Zielona Gora with 13 posts and 25 user reactions, including 2 comments and 128 likes; and the Main Library of the University of Opole with 13 posts and 25 reactions, including 14 likes. Considering all libraries, on average they made 0.8 posts per day. Most content was published on Wednesdays (227 posts), Thursdays (211 posts), and Tuesdays (209 posts). A few Facebook posts were made on Sundays (45 posts) and Saturdays (75 posts).

The most frequently used hashtags by all the university libraries include: #zostawiwdomu (eng. #stayhome) (118 times), #ciniba (53 times), #niezostawiamcytelnika (eng. #iamnotleavingthereader) (47 times), #bibliotekaowarta (eng. #openlibrary) (44 times), and #tydzieñbibliotek (eng. #libraryweek) (28 times).

Regarding the largest number of reactions, the most popular Facebook book posts were two from the University of Warsaw Library and the Jagiellonian Library. The first post published on 11 March by the University of Warsaw Library concerned a record number of document loans (351 reactions). The second post on 20 May by the library from Krakow, referred to the opening of the institution (350 reactions).

Among the 18 Polish university library Facebook text postings, the most user reactions (59 reactions) were received by the Main Library of Maria Curie-Sklodowska University in Lublin. The post concerned the resumption of lending and returning books. Among graphic posts, the most popular was on 11 March with a record number of document loans, published by the University of Warsaw Library (351 reactions). As far as video materials are concerned, the most popular was the post published on 15 May by the Nicolaus Copernicus University Library in Torun (79 reactions). The post concerned a meeting devoted to the historical book “Powrót Pomorza w granice Rzeczpospolitej w setnicy 1920 – 2020” or in English “Return of Pomerania to the Borders of the Republic of Poland on The Hundreth Anniversary of 1920 – 2020.”

Among the most popular posts published on Facebook, the most “liking” (229 likes) was attributed to the 20 May Jagiellonian Library post, which informed patrons of the reopening of the library. The second most popular post was the University of Warsaw Library 18 May post with 215 likes. This post also concerned the reopening of the library following the lockdown. What is more, considering the 10 most popular posts (analysed in terms of the number of likes and dislikes) the third, fourth, fifth, sixth, and eighth-most liked posts were made by the library in Warsaw. These were posts relating to library services (making the library book drop available, waiving fees for scanning materials, a record number of loans, as well as graphics prepared for the library by University of Warsaw students). The seventh most liked post was by the Library of the University of Lodz on 15 March about museum collections made available online. Meanwhile, the ninth most liked Facebook post was by the Scientific Information Centre and Academic Library on 27th April about the launch of bookstores in the library building. Finally, the tenth most liked post was by the Nicolaus Copernicus University Library in Torun on March 11 referring to an increase in borrowed document limits.

The most frequently commented on Facebook posts were from the University Library in Torun and the University of Warsaw Library. In the first case, there were two posts on 15 and 13 May with the highest number of comments (30 and 23 comments respectively). They referred to the previously mentioned meeting devoted to the book “Powrót Pomorza w granice Rzeczpospolitej w setnicy 1920 – 2020” and the author’s meeting with Barbara Klićka – poet, writer, and cultural animator. The University of Warsaw Library posts on 15 May and 11 March published news relating to the partial reopening of this institution and the record number of document loans made by users.

**Instagram**

Eight libraries used the Instagram service. As previously indicated, Fanpage Karma was unable to analyse four other Instagram accounts because they are not business profiles. Therefore, only four Polish University library Instagram accounts, which published a total of 73 posts, were analysed. The accounts belong to the University Library in Bialystok, University Library in Poznan, Scientific Information Centre and Academic Library, and the Main Library of Maria Curie-Sklodowska University in Lublin.

The University Library in Bialystok published most often with 34 total posts. The Library in Poznan had 14 posts and CINiBA 13 posts. The Library of the Maria Curie-Sklodowska University in Lublin published 12 posts in the analysed period. Most users commented on the posts added by the University Library in Bialystok (34 comments). In the case of the other libraries, the number of comments was respectively: Library in Lublin (8 comments), CINiBA (4 comments), and Library in Poznan (3 comments). The most reactions among users were aroused by the posts of the University Library in Bialystok with 1891 reactions, including 1857 likes. The second most popular Instagram account was the Main Library of the Maria Curie-Sklodowska University in Lublin with 883 reactions, including 875 likes followed by CINiBA with 367 reactions, including 363 likes. The Library in Lublin had the largest number of observers (1094 followers) proceeded by the University Library in Bialystok (1081 followers). The CINiBA account saw 630 followers and the University Library in Poznan Instagram account had 590 followers.

The Library in Bialystok published an average of 0.4 posts per day. The most popular among users were the posts published between 24 and 30 March, in which librarians recommended books worth reading, and a post on 12 March that called for reflection on wasting food. The most engaging posts included those on 30 March with recommended books; 10 April with Christmas wishes; and 23 March with a photo of a librarian’s home workstation. University Library in Bialystok hashtags most often used include: #bu_uwb (eng. #UniversityLibraryUniversityinBialystok) (34 times); #bookstagram (19 times), #instabook (18 times), and #buchstagram (16 times). Instagram posts were most often published on Wednesdays and Fridays (7 posts) and Thursdays (6 posts).

The University Library in Poznan published an average of 0.2 posts per day. The most popular entries were those on 20 March with information about ebooks available for free online; 26 April about open resources at the University of Poznan; and 13 May with a post about architecture. Hashtags most frequently used on the University Library in Poznan account include #zasmakuwjbiblioteka (eng. #tastetithelibrary) (9 times); #tydzieñbibliotek2020 (eng. #librariesweek2020) (6 times); and #tydzieñbibliotek (eng. #librariesweek) (2 times).

CINiBA published an average of 0.2 hashtags per day. The most popular were the entries on 1 April with a primaaprilis joke; 22 May on the 23rd anniversary of the Animal Protection Act passed by the Sejm, and 4 May on the opening of the library’s lending library and the capability to use book machines. CINiBA’s Instagram account hashtags most often used are #ciniba (11 times), #bibliotekaowarta (eng. #libraryopened) (7 times), #ksiazka (eng. #book) (2 times). Most frequently, posts were published on Mondays (3 times) and Wednesdays (2 times).

The Main Library of Maria Curie-Sklodowska University in Lublin published 0.1 posts a day. The most popular entries were those on 25 April with the title: Reading on the balcony, with cherry blossom; 29 May with a post presenting books of the late Jerzy Pilch, and 22 March with a post encouraging users to boast about their home libraries. Hashtags most frequently used by the Main Library of Maria Curie-Sklodowska University in Lublin include #bookstagram (8 times), #bibliotekaucomes (eng. #libraryofUMCS) (8 times), #libraryumcs (7 times).
times), #instabook (7 times), and #terazitam (eng. #nowandthere) (7 times). Most posts were published on Saturdays (4 times) and Wednesdays (3 times).

Table 2 presents aggregate data for all the accounts analysed.

### Twitter

Ten libraries’ Twitter accounts with a total of 61 posts published were studied. These accounts included the following institutions: Library of the University of Lodz (652 followers), University Library in Poznan (423 followers), University Library in Torun (316 followers), Jagiellonian Library (305 followers), Main Library of Maria Curie-Skłodowska University in Lublin (214 followers), CINiBA (209 followers), Main Library of Cardinal Stefan Wyszynski University in Warsaw (201 followers), Wroclaw University Library (192 followers), University Library University of Warmia and Mazury in Olsztyn (18 followers), and Main Library – University of Szczecin (7 followers).

In general, the Twitter microblogging service was not as popular in the analysed period as Facebook or Instagram. Only five of the above-mentioned institutions were active on Twitter. The University Library in Poznan published frequently with 22 posts. In total, these posts gathered 128 reactions, including 82 likes and 46 retweets. The Library published an average of 0.3 posts a day. The most popular post was on 30 March referring to making the collection of digital documents available by the library; the post gathered 17 likes and 8 retweets. The second most popular post was on 26 March promoting the “Remote accessible resources” toolkit with 10 likes and 5 retweets. The third most favourite post was on 7 May and referred to the centenary jubilee of the University with 6 likes and 3 retweets. In Polish university library published tweets there appeared isolated hashtags. These were, for example, #dzienmatki (eng. #mother’sday), #zasamakujwbiobibliotece (eng. #takeinthecollectionlibrary), #tydzieńbiblioteki (eng. #libraryweek), #ŚwiatowyDzieńWłaściwościIntelektualnej (eng. #WorldDayofIntangibleProperty).

The Jagiellonian Library published 14 tweets gathering 14 user reactions, including 11 likes and 3 retweets. The most popular was the post on 18 May about technical problems with adapting the Library to epidemiological restrictions with 8 likes and 2 retweets, the post on 26 May sending wishes for Mother’s Day with 4 likes and 2 retweets, and the post on 27 May referring to the winners of the Adam Lysakowski Scientific Award of the Association of Polish Librarians for 2019 with 4 likes and one retweet. Also, in the case of the Jagiellonian Library Twitter account, there were isolated hashtags used, such as #dzienmatki (eng. #mother’sday), #nagroda (eng. #award), and #webinar.

Among the analysed library accounts on Twitter, the Library of the University of Lodz remained least active. The Twitter account published a total of 9 tweets, which gathered 31 reactions, including 21 likes and 10 retweets. The most popular post on 12 March referred to the reception of books by users from the library. The post gathered 8 likes and 4 retweets. The second most popular tweet contained a quote from the late Jerzy Pilch gathering 7 likes and 3 retweets. In the tweets hashtags used include #repozytoriumul (eng. #repositoryoftheUniversityofLodz), #bulatteam (eng. #teamoftheLibraryoftheUniversityofLodz), #motorzyzacja (eng. #motorizmotive), and #ul (eng. #theUniversityofLodz).

Table 3 presents aggregate data for all the accounts analysed.

### YouTube

Nine Polish university libraries have accounts on the YouTube social network. In the analysed period these accounts published 35 videos. However, only five institutions were active on YouTube at the time. The University Library in Białystok published the most videos with as many as 14 receiving 39 likes. The second most popular YouTube account was CINiBA with 10 videos and 6 likes. Rounding out third and fourth the University Library in Torun provided 6 video sequences with 5 likes and the University of Warsaw Library provided 3 documents with 15 likes. Two materials were published by the University Library in Poznan, which received 2 likes (Table 4).

Taking into account all the posts published in the analysed period, the most popular YouTube video (calculated by the number of impressions) was the manual “How to Log in to Databases Subscribed by the University of Silesia” prepared by CINiBA (535 impressions) and published on 25 March. The second most popular video was the instruction of the University of Warsaw Library published on 27 May that related to the new rules of document lending (397 impressions). Following up in third, by the University of Warsaw Library instruction to log in to the service with ebooks “IBUK Libra” with 271 impressions. Table 5 presents statistics on the video materials made available by the Polish university libraries on YouTube.

In the case of the Library in Białystok, all the YouTube posts referred to Library Week and the functioning of individual branches of this institution. The most popular post with 206 impressions and 8 likes was the material about the library making the collections available online.

Table 3
Use of Twitter microblogging service by libraries (ranking by number of posts). Data collected and processed through the Fanpage Karma tool.

| Name of the library | Number of posts | Number of likes | Posts – daily average | Number of comments | All reactions |
|---------------------|----------------|-----------------|-----------------------|-------------------|--------------|
| University Library in Poznan | 34 | 1857 | 0,4 | 34 | 1891 |
| Main Library of the University of Opole | 14 | 190 | 0,2 | 3 | 193 |
| Scientific Information Centre and the Academic Library (CINiBA) | 13 | 363 | 0,2 | 4 | 367 |
| Main Library of Maria Curie-Skłodowska University in Lublin | 12 | 875 | 0,1 | 8 | 883 |
The next most popular posts focused on one librarian’s gardening interests garnering 115 impressions and 6 likes and the collection accessibility branch with 113 impressions and 4 likes.

The Scientific Information Centre and Academic Library (CINiBA), presented in video materials on YouTube a set of tutorials on how to use the library’s resources. The most popular turned out to be the manual for logging into databases subscribed by the University of Silesia published on 25 March with 535 impressions. Next favourable was the instruction to use databases on the EBSCOhost platform with 185 impressions and then the manual for using the Academic Research Source eJournals database with 92 impressions.

As part of Library Week, the University Library in Torun published six video documents. The most popular being two that presented Omeka software and tips on how to install and configure the software as well as how to create virtual displays. The materials were viewed 103 times in total. The Library also presented through YouTube video a record of the author’s meeting with the poet and writer Barbara Klicka. The material was viewed by users 56 times.

Table 4
| Name of the library                  | Number of posts | Number of likes | Total number of views |
|--------------------------------------|-----------------|-----------------|-----------------------|
| University Library in Bialystok     | 14              | 39              | 79                    |
| CINiBA                               | 10              | 6               | 104                   |
| University Library in Torun         | 6               | 5               | 32                    |
| University of Warsaw Library        | 3               | 15              | 299                   |
| University Library in Poznan        | 2               | 2               | 18                    |

Table 5
| Name of the library | Date of posting | The topic of the post | Number of views | Number of likes |
|---------------------|-----------------|-----------------------|-----------------|-----------------|
| CINiBA              | 25.03           | Login instructions (bases) | 535             | 3               |
| University of Warsaw Library | 27.05       | New rules for rented documents | 397         | 5               |
| University of Warsaw Library | 6.05        | Login instructions (IBUK Libra) | 271         | 5               |
| University of Warsaw Library | 6.05        | Instructions for changing your account password | 228         | 5               |
| University Library in Bialystok    | 11.05          | Lending Department (Libraries Week 2020) | 206         | 8               |
| CINiBA              | 25.03           | Database instructions (EBSCOhost) | 185         | 0               |
| University Library in Bialystok    | 11.05          | Librarians in leisure time (Libraries Week 2020) | 115         | 6               |
| University Library in Bialystok    | 8.05           | Acquisitions and Collection Development Section | 113         | 4               |
| University Library in Bialystok    | 8.05           | Call for Library Week (2020) | 97          | 2               |
| CINiBA              | 25.03           | Instructions for using the Academic Research Source eJournals database | 92          | 0               |

Conclusion

The increased use of Web 2.0 tools by Polish university libraries is a phenomenon that has evolved over the last fifteen years. These tools have also become essential for communicating with library patrons.

This analysis shows that Facebook was actively used by all 18 Polish university libraries studied during the period in question. Individual librarians also posted the largest amount of multimedia content, which met with the greatest response from users, considering the response of all the services analysed. Facebook is therefore the most frequently used social network service by Polish university libraries. In several cases, it is currently also one of the basic tools of communication with online users, as well as a platform for publishing multimedia content related to information and library services as well as collected resources.

The next most used social media network by university libraries is Instagram. While significantly less active than Facebook, 8 libraries regularly posted content. Importantly, four of these institutions host fan pages that are not business profiles and have not been marked as fully public, which is directly linked to the lack of detailed analysis of their content.

In the case of Twitter, university libraries rarely used the opportunity to post on Twitter. Also, only five institutions were active during the analysed period on Twitter. Their activity was sporadic and met with limited response from users.

Even more rarely, libraries used the YouTube service infrequently. Often, the content was directly related to a specific event, such as Library Week, or a desire to present library services, collections, and library-friendly artists. YouTube is among one of the few social media networks that doesn’t allow communicating as much through text. Rather, it serves to complement the content presented through Facebook and Instagram, emphasizing the role of the former.

Findings show that not all Polish university libraries have made equal use of the opportunities provided by social media, whether in terms of the number of tools or the amount of content made available through them. Nevertheless, libraries did make digital content available for patrons during the COVID-19 spring lockdown. Posts included texts, graphic information, video sequences, and links to direct the user’s attention to the documents, events, and services offered by the library to engage with patrons while the physical location was closed.

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Declaration of competing interest

None.

References

AlAwadhi, S., & Al-Daihani, S. M. (2019). Marketing academic library information services using social media. Library Management, 40(3/4), 228–239. https://doi.org/10.1108/LM-12-2017-0132

Burclaff, N., & Johnson, C. (2014). Developing a social media strategy: Tweets, pins, and posts with a purpose. College & Research Libraries News, 75(7), 366-369. https://doi.org/10.5860/crln.75.7.9156

Chawner, B., & Oliver, G. (2013). A survey of New Zealand academic reference librarians: Current and future skills and competencies. Australian Academic & Research Libraries, 44(1), 29–39. https://doi.org/10.1080/00048623.2013.773965

Cheng, W. W. H., Lam, E. T. H., & Chiu, D. K. W. (2020). Social media as a platform in academic library marketing: A comparative study. The Journal of Academic Librarianship, 46(5), Article 102188. https://doi.org/10.1016/j.acalib.2020.102188
G. Gmiterek

MNiSW. (2020). Wykaz uczelni publicznych nadzorowanych przez Ministra w dziedziny szkolnictwa wyższego – publiczne uczelnie akademickie - Portal Gov.pl. Retrieved from http://www.gov.pl/web/mnsa/wykaz-uczelni-publicznych-nadzorowanych -przez-ministra . (Accessed 29 November 2020).

Chu, A. Y. K., & Goh, D. H. (2010). A study of Web 2.0 applications in library websites. Library and Information Science Research, 32(3), 203–211. https://doi.org/10.1016/j.lisr.2010.01.002

Fanpage Karma. (2018). Fanpage Karma. Retrieved from http://www.fanpagekarma.com/features. (Accessed 29 November 2020).

Garofalo, D. A. (2013). "Social Media Marketing Tool for Libraries in Educational Institutions." The Journal of Academic Librarianship, 39(2), 161–162. https://doi.org/10.1016/j.acalib.2012.10.007

Hicks, A. (2012). "Review of "Social Networking Tools for Academic Libraries."" Collaborative Librarianship, 4(4), 190–191.

Harrison, A., Burress, R., Velasquez, S., & Schreiner, L. (2017). "Social Media Use in Developing Countries: Boon or Bane for Academic Libraries?" A white paper from Taylor & Francis. Hershey, PA: Information Science Reference. https://digitalcommons.du.edu/librari es_facpub/25.

Mustafa, A., Zainuddin, I. N., Idris, S. R. A., & Aziz, M. F. A. (2016). Social Media Promotional Tools in Academic Library. International Journal of Computer Theory and Engineering, 8(3), 260–264. https://doi.org/10.7779/IJCTE.2016.V8.I3.55

Ofili, D. N., & Emwanta, M. G. (2014). "Facebook as an information service delivery tool: Perspectives of library staff at the University of Benin, Nigeria." African Journal of Library, Archives and Information Science, 24(2), 195–202.

Onak, J. (2013–14). "Serwis Facebook jako narzędzie promocji biblioteki." Polka Bibliologiczna, 55–56, 161–169. https://doi.org/10.17951/fb.2013.55.161

Pulksa, K., & Witkowska, E. (2018). "Facebook, Instagram, blog... i co dalej? – Biblioteka Uniwersytecka im. Jerzego Giedroyca w Białymstoku w mediach społecznościowych. Biuletyn EBIB, (178). Retrieved from http://ebibojs.pl/index.php/ebib/article/view/83/84. (Accessed 29 November 2020).

Scheffs, M. (2012). "Facebook jako forma promocji biblioteki." Toruńska Studia Bibliologiczne, 1(6), 117–140. https://doi.org/10.12775/TSB.2012.007

Stach-Siegelczuk, A. (2014). "Wykorzystanie narzędzi Web 2.0 przez wybrane biblioteki uczelniaw najlepszych uczelni odnotowanych w QS World University Rankings 2013. Toruńska Studia Bibliologiczne, 2(13), 161–188. https://doi.org/10.12775/TSB.2014.023

Szmajser-Chylarecka, D. (2013). "Facebook, jako forma promocji, na przykładzie polskich bibliotek." Forum Bibliotek Medycznych, 6(2012), 319-327.

Wusthoff, K. (2014). "Social media KPIs explained." Retrieved from https://blog.fanpagekarma.com/2014/07/01/social-media-kpis-explained/. (Accessed 29 November 2020).