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## POLISH UNIVERSITY LIBRARIES AND THEIR FACEBOOK ACTIVITY BEFORE AND DURING- THE COVID-19 PANDEMIC (IN 2019-2021)<sup>1</sup>



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in the name of Adam Łysakowski (category: Works of theoretical, methodological, source character).

**KEYWORDS:** Social media. Facebook. Academic libraries. COVID-19. Libraries and lockdown.

**ABSTRACT:** **Thesis/Objective** – The primary purpose of this paper is to present the results of a quantitative comparative analysis of the activity of 18 Polish public university libraries on the social networking site Facebook in the period before and during the COVID-19 pandemic. The goal of this research is to evaluate the use of Facebook by university libraries and to assess the popularity of the content shared by these organizations. **Research methods** – The methods study involved the use of quantitative approaches, with a commercial online tool the Karma Fanpage service for social media analytics monitoring being used to collect data from individual fanpages. This service enabled the data collected to be processed for statistical purposes. The data collected were then analyzed using a spreadsheet. Data collection was done separately for the pre-pandemic and pandemic periods. **Results/Conclusions** – All Polish university libraries (part of public universities) used Facebook as part of their daily activities, both before and during the pandemic. However, Facebook use varied across institutions, for example, in terms of types of posts (graphic posts, posts with links, video posts). Importantly, libraries did not use Facebook in the same way. It is clear that for some institutions, it was one of the primary tools for library marketing and also for communicating with users. It seems important to note that the libraries belonging to the largest universities in Poland were not the only ones most active and able to mobilize the largest number of users to respond to the published posts. Based on the number of posts published by each library, it could be seen that there was not always a correlation between the size of the university, of which the library is a part, and its activity on Facebook.

The use of Facebook by Polish university libraries is now a standard in the presentation of information and library resources and services. During the COVID-19 pandemic, this instrument has also become one of the tools for communicating with library patrons. Facebook, by virtue of its large audience, is now the platform that provides up-to-date information to the social media user quickly and easily. It is also significant that Facebook allows the user to simultaneously share their digital content and reactions to information that librarians present on their fanpage. The primary purpose of this paper is to present the results of a comparative analysis of the activity of 18 Polish public university libraries (MNiSW, 2021) on the social networking site Facebook in the period before and during the COVID-19 pandemic. In addition, the aim was to answer the research questions:

**RQ<sub>1</sub>:** Are there significant differences in Polish public university libraries' use of Facebook before and during the pandemic? If so, how do they manifest themselves? For example, what was the average frequency

of posting by librarians in each library? Was there a noticeable increase in the number of posts during the pandemic? What types of posts were most frequently published?

**RQ<sub>2</sub>:** Which Polish public university libraries were most and least active on Facebook before and during the pandemic?

**RQ<sub>3</sub>:** What was the level of interest by users of Polish public university libraries' Facebook posts before and during the pandemic? That is, what were the reactions of users to the posts of particular libraries? How many of these reactions were there? Did the pandemic affect the number of reactions?

## LITERATURE REVIEW

There have been many scholarly publications to date on the use of Facebook in libraries. Research revealed that Facebook is the most effective tool in providing feedback, answering users' questions and publishing news about the library (Chi, 2021; Mustafa, Zainuddin, Idris, & Aziz, 2016; Gupta, Gautam, & Khare, 2014). Facebook has become the most popular academic library platform (Cheng, Lam, & Chiu, 2020). In addition, it was shown that a fanpage on this site can effectively help improve the visibility of these libraries. By analyzing the findings from various studies, it was concluded that Facebook was used by librarians for several purposes, including marketing and promotion, communication and relationship building with users, and as a way to improve user services generally (Canty, 2012; Cheng, Lam, & Chiu, 2020). Additionally, it was used for sharing multimedia content, creating virtual communities centered around the library and as a platform for social interaction (Magoi, Aspura, & Abrizah, 2019). It is considered as very helpful in information exchange and knowledge sharing, and it is a preferred choice due to its availability at a minimal cost (Chu, & Du, 2013). From a professional standpoint, it is also considered useful by academic librarians for discussion groups and professional and self-development (Magoi, Aspura, & Abrizah, 2019). Thus, Facebook becomes a platform for sharing experiences and for general communication with other colleagues.

With regard to Facebook's fanpage analysis, it is particularly valuable for researching and measuring library-user interactions. Facebook insights data provide about more than sixty usage parameters (Giri, Kar, & Sen, 2014). This fact is confirmed by the possibilities of using the Fanpage Karma tool. For example, on Facebook, users can explicitly 'like' content through the use of a 'thumbs up' or 'heart' icon. This type of reaction can directly convey a sense of appreciation regarding the content published (Lowe-Calverley, & Grieve, 2018) and liking a particular post can also indicate its suitability for the user (Giri, Kar, & Sen, 2014). Importantly, for

several years, Facebook has also enabled the use of additional icons relating to emotional reactions which is of immense value. Users can also react by adding their comments to a post or easily share a post with others. The possibilities for measuring interactions are many, and one can easily find data for conducting research based on selected indicators, for example likes, comments and shares. For example, *“Popularity” can be measured by the number of likes, “Commitment” by the number of comments, and “Virality” by the number of shares* (Lam, Au, & Chiu, 2019).

Challenges do arise in using Facebook in libraries, and the research has shown that certain recurring problems include technophobia, privacy risks, and the lack of the following: awareness of social media application by the users, institutional control, ICT skills and time, and of adequate technical infrastructures in the academic libraries (Magoi, Aspura, & Abri-zah, 2019). Occasionally, these problems also arise from the inept use of the social networking sites that results in the posts published by librarians being of little interest to the users. This can happen when there are no attractive graphics, movies, or texts created by librarians. The result can be a low number of responses to the shared content. A poor response can also occur when the content has a formal character and the fanpage duplicates the information contained on the library’s website (e.g., about its opening hours, etc.) (Roos, 2014). A poor concept of how to organize and manage a fanpage may also cause negative feelings among users as well as the publishing of inappropriate posts, all of which might be counterproductive to the library’s intention (Szmajser-Chylarecka, 2013). Although the library staff might lack a proper concept of marketing and adequately managing the fanpage, nevertheless, most university libraries try to maintain a Facebook page, even without a specific objective in mind (Roos, 2014).

Other previous research reports claim that the marketing use of Facebook in academic libraries does not bring positive results and the level of interaction between users and librarians is low. This is frequently reflected in the number of followers and comments left under library posts (Gerolimos, 2011). A library that wishes to attract the users’ attention should carefully identify the subject area that interests them and only then invite them to contribute content. However, it was observed that constantly updating the fanpage and publishing a large number of posts with typical library content do not guarantee success (Gerolimos, 2011).

The reluctance to make changes to traditional library services may also be a problem as well as the need for a significant time commitment of library staff to operate the social networking site. Moreover, some librarians do not see social media as an effective academic tool (Magoi, Aspura, & Abri-zah, 2019), nor are they considered as important in the delivery of library services (Wordofa, 2014). The lack of willingness on the part of the library to offer users a new interactive communication channel could also

be a problem as was evident in smaller Estonian academic libraries and others until a few years ago. According to Jaan Roos' research, sometimes the directors of these institutions saw no reason to over-promote the libraries on social networking sites because, according to them, other previously used media (e.g., the website) worked well enough (Roos, 2014). Similar doubts were also raised in Polish academic libraries a few years ago by Szmajser-Chylarecka (Szmajser-Chylarecka, 2013).

As noted earlier, at the time of the research, the use of Facebook was widespread in Polish university libraries. Moreover, the use of social networking sites by libraries became even more important in response to the extraordinary circumstances caused by the COVID-19 pandemic, especially during periods of complete closure of these institutions. In March 2020, Polish academic libraries faced major changes overnight, one of which was the need to transform their traditional services into electronic ones. This was where social media, especially Facebook, became an important platform for communicating current information about available services and changes and as guide to the world of digital resources (Gałęcka-Golec, Puksza, & Witkowska, 2020; Gmiterek, 2021a; Gmiterek, 2021b; Gmiterek, 2022; Jaskowska, 2020a; Jaskowska, 2020b; Kaminska, Książczak-Gronowska, & Wiorogórska, 2020; Razik, Szumiec, & Wyszyńska, 2020). The same was reported as happening globally (Alvim, Silva, & Borges, 2021; Koulouris, Vraimaki, & Koloniari, 2020; Peachey, 2020; Tammamaro, 2020; Wałek, 2020; ). Moreover, Facebook's role in user communication proved invaluable, especially in terms of providing reliable information about the pandemic (Ladan, Haruna, Madu, 2020). In Poland, this service has become one of the fastest channels of communication with users as seen, for example, in the case of the University Library in Warsaw (Kaminska, Książczak-Gronowska, & Wiorogórska, 2020).

## METHODS

The methods study involved the use of quantitative approaches, with a commercial online tool the Karma Fanpage service for social media analytics monitoring being used to collect data from individual fanpages (Fanpage Karma, 2018). This service enabled the data collected to be processed for statistical purposes. The data collected were then analyzed using a spreadsheet. Data collection was done separately for the pre-pandemic and pandemic periods. The use of Fanpage Karma facilitated the identification of the relevant indicators to answer the research questions posed by the study. The indicators selected for the study largely reflected the activities undertaken by librarians and fanpage users. On this basis, it was possible to show the differences in the activities of the individual libraries on Facebook before and during the pandemic. In particular,

this included the number of posts published and their type, the number of reactions to posts (the most common types of reactions by users were selected), and the increase or decrease in the number of user reactions to the content published by the individual libraries. For the purposes of the research conducted, the following indicators were analyzed<sup>2</sup>:

- Number of posts (*Number of posts published in selected time period*).
- Number of picture posts and percentage of picture posts of a single library (*Number of posts in picture format published in the selected period*<sup>3</sup>).
- Number of link-posts and percentage of link-posts of a single library (*Number of posts in URL format published in the selected period*).
- Posts per day (*Average number of posts per day published in the selected period*).
- Total reactions, comments, shares and reactions per post (*Number of reactions like, love, haha, thankful, wow, sad, angry; comments and shares on posts published in the selected period*).
- Number of likes, comments, shares and love (*published in the selected period*).
- Likes per post (*Average number of "like" reactions on posts published in the selected period*).

The chronological scope included two time periods of similar length. The first, pre-pandemic, was established as being from February 17, 2019 (the conventional start of the second semester of the 2018–2019 academic year) to March 10, 2020 (the last day of standard operation for some Polish university libraries in the 2019–2020 academic year) (Gmiterek, 2022). The second period, during the pandemic, was marked as being from March 11, 2020, when the first instances of closing library buildings to patrons began (Gmiterek, 2021a) to March 15, 2021. It is worth noting that there were two lockdowns relating to the closure of Polish university library buildings during the pandemic. The first, from March 11 to the end of May (when all institutions were already open to users). The second, pertaining to the fall lockdown, covered the period beginning from November 7 to 30, 2020 (Gmiterek, 2022).

## RESULTS AND DATA ANALYSES

### ***Pre-pandemic Period (February 17, 2019 – March 10, 2020)***

In pre-pandemic period (February 17, 2019 – March 10, 2020) the Polish academic libraries published a total of 3,333 posts which generated 49,400

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<sup>2</sup> Descriptions of the indicators are from the Fanpage Karma tool website.

<sup>3</sup> In the case of picture posts and link-posts, additionally, information about the percentage of such posts in relation to the content published by libraries is available.



user reactions. Most posts were published by the Library of the University of Lodz, the University of Warsaw Library, and the University Library in Poznan. Thus, the most active library in the time period studied was the fourth largest university in Poland (taking into consideration the number of students).

The fewest number of posts were published by the library of the University of Zielona Gora, University Library in Rzeszow and Main Library of the University of Opole. The library of the smallest university (Library of Kazimierz Wielki University in Bydgoszcz) published 77 posts (0.19 post per day). Table 1 presents information about the posts and the total reactions to each library's Facebook fanpage.

Table 1. Information about Posts Published on Each Library's Facebook Fanpage (February, 17, 2019 – March 10, 2020, before the pandemic period).

No.	Name of the library	Number of posts	Picture Posts/ Percentage of picture posts of a single library	Link-posts/ Percentage of link- posts of a single library	Posts per day	Total Reactions, Comments, Shares	Reactions per post
1	Library of the University of Lodz	376	349/92%	16/4%	0,96	13,513	31
2	University of Warsaw Library	369	310/84%	29/7%	0,95	6,722	14
3	University Library in Poznan	341	236/69%	84/24%	0,87	4,575	10
4	Main Library of Maria Curie-Skłodowska University in Lublin	332	210/63%	108/32%	0,85	3,909	10
5	Scientific Information Centre and the Academic Library (CINiBA)	326	302/92%	13/3%	0,84	4,078	11
6	Library of the University of Gdansk	283	187/66%	55/19%	0,72	6,287	19
7	University Library in Bialystok	245	163/66%	66/26%	0,63	1,686	6
8	Nicolaus Copernicus University Library in Torun	184	100/54%	54/29%	0,47	2,006	9
9	University Library in Kielce	132	86/65%	21/15%	0,34	828	5
10	Wrocław University Library	131	22/16%	65/49%	0,33	520	3

11	Main Library of Cardinal Stefan Wyszyński University in Warsaw	128	47/36%	52/40%	0,33	134	0,81
12	Main Library – University of Szczecin	118	81/68%	28/23%	0,30	423	3
13	University Library University of Warmia and Mazury in Olsztyn	117	95/81%	12/10%	0,30	1,391	9
14	Jagiellonian Library	91	66/72%	13/14%	0,23	2,110	19
15	Library of Kazimierz Wielki University in Bydgoszcz	77	44/57%	25/32%	0,19	837	8
16	Main Library of the University of Opole	38	14/36%	7/18%	0,09	71	1
17	University Library in Rzeszow	23	9/39%	11/47%	0,05	87	2
18	Library of the University of Zielona Góra	22	15/68%	7/31%	0,05	221	7

Compiled from data collected via Fanpage Karma on June 28, 2021.

The types of posts that libraries published included image posts, video posts, so-called link posts, and text posts. However, the libraries published picture posts in the greatest number which totaled 2,336 (70% of all posts). The largest number, as many as 349 picture posts, was published by the Library of the University of Lodz (almost 93% of the posts made available by this library). In second place was the University of Warsaw Library (310 posts; 84% of messages), with the Scientific Information Centre and the Academic Library in third place (302 posts; almost 93% of messages). Importantly, graphic posts attracted the most interest from users. This was evident in terms of the number of their reactions to the top 10 most popular graphic posts (these posts accumulated a total of 2,236 reactions). In comparison, based on the data processed in Fanpage Karma, it could be seen that the 10 most popular text posts garnered 691 user reactions with the 10 most popular video posts receiving 925 reactions.

However, graphic posts did not constitute the bulk of the published content in all libraries. An example was the Wrocław University Library which published a total of 131 posts, including “only” 22 graphic posts (16% of its total featured posts). Another example was the Main Library of Cardinal Stefan Wyszyński University in Warsaw (47 graphic posts out of 128 messages; 36% of posts) and the Main Library of the University of Opole (14 graphic posts out of 38 total messages presented; 36%). Thus, it



was evident that in the case of the fanpages of Polish university libraries, there was an important difference in the way library content was presented. Nevertheless, libraries with the highest number of published posts provided at the same time a higher percentage of graphic content.

Much less frequently, libraries published link-posts, totaling 663 messages. The Main Library of Maria Curie-Sklodowska University in Lublin published the highest number of link-posts (108 out of 332 posts, i.e., 32.5% of all library posts). The highest percentage of link-posts in the published content was characterized by Wrocław University Library (49%; 65 posts out of 131 total posts) and the University Library in Rzeszów (47%; 11 posts out of 23 total posts). It is worth noting that all of the posts published by these libraries elicited a small number of user reactions with Wrocław University Library elicited 531, and University Library in Rzeszów 87 reactions.

The general data relating to the reaction of users to the content published by the libraries was also interesting. The leading one was the library of the University of Łódź, which posts gathered 13,513 user reactions (an average of 31 reactions per post). This clearly shows that it was not the libraries of the largest universities in Poland that attracted the greatest number of users. It is worth mentioning that the second library (University of Warsaw Library) garnered 6,724 user reactions (14 reactions per post), although the number of posts published by this institution was only slightly lower than the number of messages presented by the library in Łódź. It is also interesting to note that the Jagiellonian Library published "only" 91 posts in the period under analysis which gathered 2,108 reactions, or 19 reactions per post. This example shows that even with a smaller number of posts, the library can generate a significant number of responses from its users. It is worth noting that Jagiellonian University in Kraków is the second largest university in Poland. Therefore, the library has a large group of potential users of its services, as well as people who follow its activity on social media, including Facebook. In comparison, the fewest reactions were generated by the Main Library of the University of Opole (71 reactions), the University Library in Rzeszów (87 reactions), and the Main Library of Cardinal Stefan Wyszyński University in Warsaw (134 reactions). However, looking at the activity of Polish public university libraries in terms of the number of posts, the Library of the University of Zielona Góra published the least with only 22 posts; they gathered 221 reactions.

Table 2 presents detailed data on user reactions to posts published by the individual libraries. The focus is on the most common reactions during the study period. In particular, the number of "likes" (33,762 in total); the number of "love" (5,983 in total); the number of comments (1,288 in total), and the number of shares (5,276 in total).

Table 2. Information on user reactions to content published by university libraries in Poland (before the pandemic period).

No.	Name of the library	Number of Likes	Likes per post	Number of Comments	Number of Shares	Number of Love
1	Library of the University of Lodz	9,382	24	401	1,153	1,642
2	University of Warsaw Library	4,410	11	193	908	721
3	University Library in Poznan	3,060	8	73	810	525
4	Main Library of Maria Curie-Skłodowska University in Lublin	3,020	9	91	270	279
5	Scientific Information Centre and the Academic Library (CINiBA)	2,791	8	76	336	782
6	Library of the University of Gdansk	4,039	14	149	548	810
7	University Library in Białystok	1,294	5	31	154	167
8	Nicolaus Copernicus University Library in Torun	1,425	7	69	214	242
9	University Library in Kielce	614	4	13	131	50
10	Wrocław University Library	346	2	15	100	36
11	Main Library of Cardinal Stefan Wyszyński University in Warsaw	94	0,72	1	28	8
12	Main Library – University of Szczecin	319	2	12	41	47
13	University Library University of Warmia and Mazury in Olsztyn	878	7	56	193	228
14	Jagiellonian Library	1,300	14	75	190	324
15	Library of Kazimierz Wielki University in Bydgoszcz	577	7	27	104	101
16	Main Library of the University of Opole	38	1	2	27	4
17	University Library in Rzeszow	57	2	0	21	8
18	Library of the University of Zielona Gora	156	7	4	48	9

Compiled from data collected via Fanpage Karma on June 28, 2021.

According to the data collected, users liked the shared library posts 33,762 times. This is the highest number of likes in relation to other reactions to posts. The highest number of likes (9,382) was added to Library of the University of Lodz posts. Further, the first places were occupied by the University of Warsaw Library (4,410 likes) and Library of the University of Gdansk (4,039 likes). The fewest reactions of this type were obtained by the Main Library of the University of Opole (38 likes), University Library in Rzeszow (57 likes) and Main Library of Cardinal Stefan Wyszyński University in Warsaw (94 likes). Undoubtedly, there is a correlation between the higher number of library posts published by an institution and the number of likes added by users. Only in one case (Jagiellonian Library) was a relatively high number of likes observed (1,300) with a low number of posts (91). As mentioned earlier, this is a library that is part of one of the largest Polish universities and has some of the highest indicators for fanpage likes.

Considering all four indicators visible in the table, it was clear that the most frequent users reacted to the posts of the Library of the University of Lodz, University of Warsaw Library, Library of the University of Gdansk, University Library in Poznan, Scientific Information Centre and the Academic Library and Main Library of Maria Curie-Skłodowska University in Lublin. The least reactions were caused by the posts of University Library in Rzeszow, the Main Library of the University of Opole, and the Main Library of Cardinal Stefan Wyszyński University in Warsaw.

### *Period During the Pandemic (March 11, 2020 – March 15, 2021)*

In the period during the pandemic (March 11, 2020–March 15, 2021), the libraries published a total of 3,662 posts which generated 53,552 user reactions<sup>4</sup>. Most posts were published by the University Library in Białystok (608; 1.64 posts per day), the Library of the University of Lodz (463; 1.25 posts per day), and the University Library in Poznan (358; 0.96 post per day). Thus, the most active library in the period under study was the library that was part of one of the smallest universities in Poland. The lowest number of posts was published by the library of the University of Zielona Góra (70 posts; 0.18 post per day), the Main Library of the University of Opole (63 posts; 0.17 post per day), and the University Library in Rzeszow (43 posts; 0.11 post per day). For comparison, the library which is part of the smallest university (Library of Kazimierz Wielki University in Bydgoszcz) published 115 posts (0.31 post per day). Thus, similar to the previously studied pre-pandemic period, the size of the university did not always matter in terms of the university library's Facebook activity.

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<sup>4</sup> Compiled from data collected via Fanpage Karma on June 29, 2021.

Table 3. Information about Posts Published on Each Library's Facebook Fanpage (in pandemic period)

No.	Name of the library	Number of posts	Picture Posts/ Percentage of picture posts of a single library	Link-posts/ Percentage of link-posts of a single library	Posts per day	Total Reactions, Comments, Shares	Reactions per post	Follower growth (in %)
1	University Library in Białystok	608	356/58%	198/32%	1,64	4,618	6,86	88
		+148%	+118%	+205%	+160%	+174%	+13%	+8,7%
2	Library of the University of Lodz	463	439/94%	9/1%	1,25	12,296	22,16	327
		+23%	+26%	-44%	+29%	-8%	-29%	+5,2%
3	University Library in Poznan	358	211/58%	79/22%	0,96	4,237	9,70	188
		+5%	-11%	-6%	+10%	-7%	-10%	+3,2%
4	Main Library – University of Szczecin	274	169/61%	56/20%	0,74	2,509	7,77	218
		+132%	+109%	+100%	+143%	+493%	+150%	+90%
5	Scientific Information Centre and the Academic Library (CINiBA)	245	224/91%	5/2%	0,66	2,571	8,92	225
		-25%	-26%	-62%	-21%	-37%	-19%	+4,8%
6	University of Warsaw Library	237	195/82%	17/7%	0,64	11,509	39,74	1257
		-36%	-37%	-37%	-33%	+71%	+169%	+6,6%

7	Wrocław University Library	230	52/22%	140/60%	0,62	1,329	4,70	243
		<b>+76%</b>	<b>+136%</b>	<b>+115%</b>	<b>+84%</b>	<b>+156%</b>	<b>+54%</b>	<b>+15%</b>
8	Jagiellonian Library	218	125/57%	59/27%	0,58	4,838	19,01	431
		<b>+140%</b>	<b>+89%</b>	<b>+354%</b>	<b>+151%</b>	<b>+130%</b>	<b>-1%</b>	<b>+7,3%</b>
9	Nicolaus Copernicus University Library in Torun	177	89/50%	62/35%	0,47	2,557	10,88	206
		<b>-3%</b>	<b>-11%</b>	<b>+15%</b>	<b>+0,8%</b>	<b>+28%</b>	<b>+19%</b>	<b>+4,2%</b>
10	Library of the University of Gdansk	141	98/69%	26/18%	0,38	2,097	12,96	82
		<b>-50%</b>	<b>-48%</b>	<b>-53%</b>	<b>-48%</b>	<b>-67%</b>	<b>-33%</b>	<b>+2,7%</b>
11	University Library in Kielce	122	29/23%	39/31%	0,32	540	3,59	87
		<b>-7%</b>	<b>-66%</b>	<b>+86%</b>	<b>-3%</b>	<b>-35%</b>	<b>-30%</b>	<b>+8,1%</b>
12	Library of Kazimierz Wielki University in Bydgoszcz	115	74/64%	26/22%	0,31	1,578	11,65	67
		<b>+49%</b>	<b>+68%</b>	<b>+4%</b>	<b>+57%</b>	<b>+89%</b>	<b>+31%</b>	<b>+2,5%</b>
13	Main Library of Maria Curie-Skłodowska University in Lublin	106	56/52%	37/34%	0,28	1,328	10,87	109
		<b>-68%</b>	<b>-73%</b>	<b>-66%</b>	<b>-67%</b>	<b>-66%</b>	<b>+3%</b>	<b>+6,2%</b>
14	Main Library of Cardinal Stefan Wyszyński University in Warsaw	103	48/46%	21/20%	0,27	198	1,41	75
		<b>-19%</b>	<b>+2%</b>	<b>-60%</b>	<b>-15%</b>	<b>+48%</b>	<b>+74%</b>	<b>+13%</b>
15	University Library University of Warmia and Mazury in Olsztyn	89	65/73%	17/19%	0,24	885	7,34	187
		<b>-24%</b>	<b>-32%</b>	<b>+42%</b>	<b>-20%</b>	<b>-36%</b>	<b>-24%</b>	<b>+7,7%</b>
16	Library of the University of Zielona Gora	70	52/74%	11/15%	0,18	395	5,41	32
		<b>+218%</b>	<b>+247%</b>	<b>+57%</b>	<b>+234%</b>	<b>+79%</b>	<b>-29%</b>	<b>+2,7%</b>
17	Main Library of the University of Opole	63	36/57%	16/25%	0,17	174	1,38	179
		<b>+66%</b>	<b>+157%</b>	<b>+129%</b>	<b>+74%</b>	<b>+145%</b>	<b>+25%</b>	<b>+3,9%</b>
18	University Library in Rzeszow	43	20/46%	18/41%	0,11	210	3,88	89
		<b>+87%</b>	<b>+122%</b>	<b>+64%</b>	<b>+96%</b>	<b>+141%</b>	<b>+35</b>	<b>+3,9</b>

Table 3 presents the number of posts and total reactions associated with each library's Facebook fanpage. In the case of picture and link-posts, the percentage share of these types of posts within the total content presented by each library is also provided. The table also presents the percentage increase or decrease in the number of posts and user reactions to the content published by the libraries. The data are presented in comparison to figures for the pre-pandemic period previously analyzed.

As in the pre-pandemic period, libraries most often published picture posts (a total of 2,338, or 63% of all posts). The Library of the University of Lodz again published the most, with 439 picture posts (94% of the posts shared by this library). In second place was the University Library in Bialystok (previously in 8th place), which published 356 picture posts, i.e., 58% of all posts, and in third place was the Scientific Information Centre and the Academic Library (224 picture posts, i.e., 91% of all posts). Similar to the pre-pandemic period, Wrocław University Library published the fewest graphic posts (52 out of 230 posts; 22%). Another example was the University Library in Kielce which presented a total of 122 posts, of which only 22 graphic posts (23% of all posts). Analogous to the pre-pandemic period, graphic posts attracted the most user interest. This was the conclusion after checking the number of reactions to the 10 most popular graphic posts (a total of 4,383 reactions). The 10 most popular video posts gathered far fewer reactions. In this case, there were 601 reactions.

A smaller number of libraries also published link-posts, totaling 836. The University Library in Bialystok presented the largest number of such posts (198 posts, 32%). Similar to the pre-pandemic period, the highest percentage of link-posts was presented by the Wrocław University Library (60%; 140 out of 230 total posts). It is worth noting that the library's posts elicited significantly more user reactions during the pandemic period than before it. There was a total of 1,329 of them (an increase of 156%). It should be added, however, that the largest increase in user interest in posts during the pandemic period was recorded by the Main Library – University of Szczecin (+493% compared to the earlier period). This was followed by the University Library in Bialystok (+174%) and the Main Library of the University of Opole (+145%).

Despite the large differences in the number of reactions from the users of the above libraries, the greatest number were generated by the posts of the Library of the University of Lodz (12,296 reactions; an average of 22.16 reactions per post). Importantly, this was not the library publishing the highest number of posts. Nevertheless, it attracted the most attention from users, although compared to the pre-pandemic period, there were 8% fewer reactions. In second place was the University of Warsaw Library (11,509 reactions; 39.74 reactions per post), which ranked only sixth in the above ranking (by number of posts shared). In this case, the number



of reactions compared to the pre-pandemic period increased by 71%. The third ranked Jagiellonian Library (4,838 reactions; 19.01 reactions per post) came in eighth in the above ranking (an increase of 130% in the number of reactions). In comparison, the fewest reactions were generated by the posts of the Main Library of the University of Opole (174 reactions; 1.38 reactions per post; increased by 145%), the Main Library of Cardinal Stefan Wyszyński University in Warsaw (198 reactions; 1.41 reactions per post; increased by 48%), and the University Library in Rzeszów (210 reactions; 3.88 reactions per post; increased by 141%). It is worth noting that only one university library recorded lower figures in relation to all the indicators analyzed for the purpose of this study. This was the Library of the University of Gdańsk, which published 50% fewer posts during the pandemic period and they also generated 67% fewer user responses. On the other hand, the Main Library of Maria Curie-Skłodowska University in Lublin recorded the biggest decrease in the number of posts with 68% fewer posts than in the pre-pandemic period.

Table 4 presents data on the most common user reactions during the pandemic. There were significantly more of them than in the pre-pandemic period. The most frequent reactions were the number of likes (total of 34,003); number of loves (8,664); number of comments (total of 1,491) and number of shares (total of 6,366). The table also presents the percentage increase or decrease in the number of user responses compared to the pre-pandemic period.

Table 4. Information on user reactions to content published by university libraries in Poland (during the COVID-19 pandemic)

No.	Name of the library	Number of Likes	Likes per post	Number of Comments	Number of Shares	Number of Love
1	Library of the University of Lodz	8,225	17	256	1,575	1,598
		-12%	-29%	-36%	+37%	-2%
2	University of Warsaw Library	6,344	26	416	1,275	2444
		+44%	+125%	+116%	+40%	+239%
3	University Library in Bialystok	3,251	5	123	269	824
		+151%	+1%	+297%	+76%	+393%

4	Jagiellonian Library	3,041	13	114	486	696
		<b>+134%</b>	<b>-2%</b>	<b>+52%</b>	<b>+156%</b>	<b>+115%</b>
5	University Library in Poznan	2,646	7	98	636	740
		<b>-14%</b>	<b>-18%</b>	<b>+34</b>	<b>-21%</b>	<b>+41%</b>
6	Main Library – University of Szczecin	1,714	6	77	262	380
		<b>+437%</b>	<b>+131%</b>	<b>+542%</b>	<b>+539%</b>	<b>+709%</b>
7	Scientific Information Centre and the Academic Library (CINiBA)	1,683	6	38	313	462
		<b>-40%</b>	<b>-20%</b>	<b>-50%</b>	<b>-7%</b>	<b>-41%</b>
8	Library of the University of Gdansk	1,396	9	49	197	240
		<b>-65%</b>	<b>-31%</b>	<b>-67%</b>	<b>-64%</b>	<b>-70%</b>
9	Nicolaus Copernicus University Library in Torun	1,391	7	142	428	469
		<b>-2%</b>	<b>1%</b>	<b>+106%</b>	<b>+100%</b>	<b>+95%</b>
10	Library of Kazimierz Wielki University in Bydgoszcz	1,029	8	34	187	189
		<b>+78%</b>	<b>+19%</b>	<b>+26%</b>	<b>+80%</b>	<b>+87%</b>
11	Wrocław University Library	883	3	22	216	171
		<b>+144%</b>	<b>+42%</b>	<b>+47%</b>	<b>+112%</b>	<b>+362%</b>
12	Main Library of Maria Curie-Skłodowska University in Lublin	883	8	54	87	171
		<b>-71%</b>	<b>-8%</b>	<b>-41%</b>	<b>-68%</b>	<b>-39%</b>
13	University Library University of Warmia and Mazury in Olsztyn	521	5	23	199	120
		<b>-41%</b>	<b>-22%</b>	<b>-59%</b>	<b>+3%</b>	<b>-47%</b>
14	University Library in Kielce	369	3	21	73	45
		<b>-40%</b>	<b>-35%</b>	<b>+62%</b>	<b>-44%</b>	<b>-10%</b>
15	Library of the University of Zielona Gora	334	4	4	11	40
		<b>+114%</b>	<b>-33%</b>	<b>0</b>	<b>-77%</b>	<b>+344%</b>
16	Main Library of Cardinal Stefan Wyszyński University in Warsaw	118	1	5	44	21
		<b>+26%</b>	<b>+56%</b>	<b>+400%</b>	<b>+57%</b>	<b>+163%</b>
17	University Library in Rzeszow	105	2	7	30	45
		<b>+84%</b>	<b>-1%</b>	<b>0</b>	<b>+43%</b>	<b>+463%</b>
18	Main Library of the University of Opole	70	1	8	78	9
		<b>+84%</b>	<b>+11%</b>	<b>+300%</b>	<b>+189%</b>	<b>+125%</b>

Compiled from data collected using Fanpage Karma on June 29, 2021.

The Main Library – University of Szczecin recorded the greatest increase in users' interest in posts. This can be seen in the total reactions index, which was +438%, as well as the number of likes (+437%), number of shares (+539%), number of comments (542%) and number of loves (+709%). The library also published 132% more posts than in the pre-pandemic period. It should be noted, however, that the Library of the University of Zielona Gora (+218%), an institution that is part of a small university, saw the largest percentage increase in the number of posts published. The higher number of posts, apart from the number of shares (-77%), translated into an increase of other indicators, such as: number of likes (+114%), total reactions (+79%) and number of loves (+344%). The library in Zielona Góra belongs to those institutions (next to Main Library of the University of Opole and University Library in Rzeszow) that published the smallest number of posts. Nevertheless, in each of these three cases, a clear increase of the indicators noted in the survey could be seen. Noteworthy was the activity of the University Library in Białystok which published the highest number of posts during the pandemic (an increase of 148% compared to the pre-pandemic period). The library's fanpage also showed an increase in other indicators: number of likes (+151%), total reactions (+174), number of shares (+76%), number of comments (+296%) and number of loves (+393%).

## CONCLUSION

To sum up and answer the questions posed in the introduction, it should be noted that the study showed that all Polish university libraries (part of public universities) used Facebook as part of their daily activities, both before and during the pandemic. The use of Facebook, however, varied from one institution to the next, relative especially to the number of posts published, their types (graphic posts, link-posts, video-posts), and the number of user responses. Importantly, not all libraries used Facebook in the same way. It is clear that for some institutions, it was one of the primary tools for library marketing and also for communicating with users. Posts appeared more frequently and, to a large extent, the content shared was supplemented with graphic elements, which further strengthened the users' perception of the message content. This, in turn, was associated with a greater number of user responses.

It seems important to note that the libraries belonging to the largest universities in Poland were not the only ones most active and able to mobilize the largest number of users to respond to the published posts. Libraries belonging to medium-size universities (Library of the University of Lodz; Center for Scientific Information and Academic Library), and also smaller universities (University Library in Białystok; Main Library – Uni-

versity of Szczecin) also fell into this group. These libraries recorded some of the highest increases in the values of the analyzed indicators during the pandemic. Based on the number of posts published by each library, it could be seen that there was not always a correlation between the size of the university, of which the library is a part, and its activity on Facebook.

It is worth noting that the fanpages of the Warsaw University Library, the University of Łódź Library and the Jagiellonian University Library were the most popular. These institutions had the highest number of likes. The largest number of posts analyzed in the first period was published by the library of Łódź, whereas, in the second period, by Jerzy Giedroyc University Library in Białystok. The biggest number of reactions (in the two periods) was caused by the Library of Lodz posts. In the first of the examined periods, the university libraries published on average about 0.5 posts per day, although there were those (Library of the University of Lodz and University of Warsaw Library), which published on average one post per day. The lowest activity in this respect was observed at the University Library in Rzeszow and the Library of the University of Zielona Góra (in both cases it was 0.05 posts per day). On average, libraries published slightly more posts per day during the pandemic than before it. This was about 0.6 posts per day. However, there was a large increase in the number of posts (+148%) on the fan pages of the University Library in Bialystok, the Main Library – University of Szczecin (+132%), the Jagiellonian Library (+140%) and the library of the University of Zielona Gora (+218%). It should also be noted that as many as seven institutions recorded a slight decrease in the number of available posts (the biggest decrease was in the case of the Main Library of Maria Curie-Sklodowska in Lublin -68%). The most frequent posts were published by the University Library in Bialystok (1.6 posts per day) and the University Library of Lodz (1.25 posts per day); the least frequent were published by the University Library in Rzeszow (0.11 posts per day) and the Main Library of the University of Opole (0.17 posts per day).

During the pandemic period, libraries published 329 more posts than in the period preceding it. This situation was not surprising as for many institutions, the pandemic period was a time when Facebook became one of the primary channels of communication with users, increasing the effectiveness and speed of delivering information to them. It was on the library's fanpage that information about its work organization, online services, and the possible opportunities to use library resources, among other things, often appeared. In total, they published 3,662 posts at that time, with the University Library in Białystok (608) and the library of the University of Lodz (463) being the most productive.

In terms of the types of posts published, similar to Lam, Au and Chiu's study (2019), it is clear that most libraries preferred graphic posts which

were particularly appropriate for institutions with the most popular fan-pages. In the second place were the librarians publishing so-called link-posts (posts in URL format). Sharing contents seemed to be helpful to maintain high posting frequency while saving production time (Lam, Au, & Chiu, 2019). This appeared to be similar for both time periods studied, although during the pandemic, most libraries generally published more image posts and link-posts (for example, the University Library in Białystok increased image posts by 118% and link-posts by 205%). However, there were libraries that published fewer such posts than in the pre-pandemic period, for example, the Main Library of Maria Curie-Skłodowska University in Lublin decreased their number -73% and -66%, respectively. It is, therefore, difficult to speak of a strategy common to all libraries for increasing the number of graphic content and link-posts. However, there were some differences.

The COVID-19 pandemic affected the level of user interest in posts by Polish public university libraries. In the period preceding it, a total of 49,400 user reactions were recorded, including 33,762 likes; 5,276 shares; 1,288 comments and 5,986 loves. During the pandemic, of all the reactions, it was already 53,552, including 34,003 likes; 6,366 shares; 1,491 comments and 8,664 loves. The largest increase in reactions to their posts was recorded by the Main Library of the University of Szczecin (a total of 2,509 reactions and an increase of +493% compared to the pre-pandemic period). The largest decrease in the number of responses was recorded for the Library of the University of Gdansk (-67% of responses). However, it is worth noting that this library published 50% fewer posts than in the earlier period analyzed.

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## POLSKIE BIBLIOTEKI UNIWERSYTECKIE I ICH AKTYWNOŚĆ NA FACEBOOKU PRZED PANDEMIĄ I W TRAKCIE PANDEMII COVID-19

SŁOWA KLUCZOWE: Media społecznościowe. Facebook. Biblioteki akademickie. COVID-19. Biblioteki a lockdown.

**ABSTRAKT:** **Cel artykułu** – W artykule przedstawiono wyniki ilościowej analizy porównawczej aktywności 18 polskich publicznych bibliotek uniwersyteckich na portalu społecznościowym Facebook, w okresie bezpośrednio przed i w trakcie pandemii COVID-19. Celem badań jest ocena wykorzystania Facebooka przez biblioteki uczelniane oraz ocena popularności treści udostępnianych przez te organizacje. **Metody badawcze** – W badaniu zastosowano metodę ilościową, a do zbierania danych z poszczególnych tablic (fanpage) wykorzystano komercyjne narzędzie internetowe – serwis Karma Fanpage, służący do monitorowania mediów społecznościowych. Usługa ta umożliwiła także przetwarzanie zebranych danych do celów statystycznych. Dane te zostały następnie przeanalizowane za pomocą arkusza kalkulacyjnego. Dane zbierano oddzielnie dla okresu przed pandemią i dla okresu pandemii. **Wyniki/Wnioski** – Wszystkie polskie biblioteki uniwersyteckie (będące częścią uczelni publicznych) korzystały z Facebooka w ramach codziennej działalności, zarówno przed pandemią, jak i w jej trakcie. Wykorzystanie Facebooka różniło się jednak w poszczególnych instytucjach, na przykład pod względem rodzajów postów (posty graficzne, posty z linkami, posty wideo). Co ważne, biblioteki nie korzystały z Facebooka w ten sam sposób. Nie ulega wątpliwości, że dla niektórych instytucji był on jednym z podstawowych narzędzi marketingu bibliotecznego, a także komunikacji z użytkownikami. Istotny wydaje się fakt, że biblioteki należące do największych uczelni w Polsce nie były jedynymi najbardziej aktywnymi i potrafiącymi zmobilizować największą liczbę użytkowników do odpowiedzi na publikowane posty. Na podstawie analizy liczby opublikowanych przez poszczególne biblioteki można zauważyć, że nie zawsze istniała korelacja między wielkością uczelni, której częścią jest biblioteka, a jej aktywnością na Facebooku.