MEASURING SOCIAL MEDIA ENGAGEMENT ON SPORTS CLUB WEBSITES

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Purpose: The main purpose of this article is to measure the effects of the communication of football sports clubs using social media. An additional aim is to create a versatile, flexible tool for managing online communication.

Design/methodology/approach: The method of a taxonomic synthetic development measure was used to achieve the intended purpose. This measure was calculated using data covering the activity of selected sports clubs on Facebook (Meta) from 1 to 10 October 2022 and the users' perception of this activity. The subjects of the study were sports clubs of the highest men's football competition class in Poland.

Findings: The study resulted in a ranking of the optimal use of Facebook (Meta) in the communication of clubs with their stakeholders.

Research limitations/implications: The main limitations of the study are the variety of factors that may influence the communication management of sports clubs and the fact of similarity between the subjects of the study. The main focus of the paper is to show how data from web statistics can be used. In the future, the method can be adapted to communication management problems.

Practical implications: The research method used in the paper is flexible, which allows it to be used freely to find out the effectiveness of companies' social media activities. Companies operating in homogeneous markets are provided with a tool for identifying their competitive positioning in terms of marketing communication.

Social implications: It is assumed that, with the optimal application of the proposed statistical method, companies, not only sports clubs, gain a tool to objectively assess their communication management policy through social media. The method replaces the qualitative assessment of this management, the position among different types of media or competitors.

Originality/value: The article is aimed at fims operating in a single market, where benchmarking is used in online communication. The novelty is that this is the only application of the taxonomic method of synthetic development measure in the management of communication through social media.

Keywords: taxonomic synthetic growth measure, social media, communication management

Category of the paper: Research paper.

1. Introduction

The Internet is an important medium today. A special role here is played by social media, which are an important means of communication between the company and its customers. Internet development enabled the creation of mobile applications (Druć et al., 2021) and social reality (Zawierucha, 2021), among other things. From the role of the Internet in the modern world, it is clear that corporate communication management is a very important part of marketing policy.

An important issue in approaching the topic of measuring the effects of social media is to determine how we will define engagement with these communication channels. This can be the non-monetary return on social media investment This means, among other things, the emotional relationship subscribers have with a company on its profile (Khan et al., 2019). Another author points out what happens when a user builds relationships with other users and brands. This is more than just liking, commenting or posting on a social network. Instead, it reveals a long-term relationship between users or between users and a brand (Hallock et al., 2019). Engagement is studied by calculating non-financial metrics as a key objective of social media marketing (Sitta et al., 2018).

Other terms for social media engagement are a concept that encompasses consumers' relationship with advertising, media and brands, creation with layers of engagement, something to participate in, something to spread, something to talk about (Le et al., 2018).

Social media engagement can be understood in many ways. Each social media can also be assessed separately. Engagement is then examined as the intensity of interactions and their implications, towards the offers and actions of a brand, product or company, whether initiated by an individual or by a company. Along with traditional marketing channels, social media outlets are integrated as a part of the marketing mix. Social media has changed the dynamics of interaction between companies and consumers that foster this relationship. Managing brand fan pages on social networking sites is a specific way the companies are using. Customers can become brand fans on these pages and indicate that they like the brand posts, share on their wall or simply comment (Khan et al., 2016).

Among the methods of studying online consumer behaviour, the predominant ones measured are through so-called online engagement metrics, including the number of users, click-through rates, page views, content likes and comments, depending on the platform (Muñoz-Expósito et al., 2017). It is also possible to take as a basis the motivation of the individual resulting from their experience with the object, manifested in object behaviour, and viewer engagement understood as the attitude towards the brand in terms of likes, comments and shares (Segijn et al., 2019). This approach will be the basis for this article.

The diversity of approaches to social media engagement confirms that there is no theoretical consensus among authors on how to measure social media engagement.

Hence, the conclusion is that studies on social media engagement indicators can be grouped and divided into different categories (Trufno, Rossi, 2021).

One of these is the most widely described 'quantitative metrics'. These predominantly assess the impact of social media engagement based on the number of comments, likes, shares, followers, etc. (Yoon et al., 2018; Khan et al., 2019; Medjani et al., 2019). This approach is also the method used in this article.

The second group of studies are those that identify indicators of social media engagement by developing a 'set of indicators'. These may use three social media metrics to measure engagement with a particular behaviour, for example conversation. In detail, the conversation rate measures the number of comments or reviews in response to a post, the amplification rate measures the amount of online content shared, and the applause rate measures the number of positive responses to posts (Li et al., 2019).

The third group of studies are 'normalised metrics', where an average measure of user engagement by dividing the sum of interesting shares by the total number of posts, or other factors such as liking, sharing or commenting (Zanini et al., 2019; Osokin, 2019; Mariani et al., 2018).

The last group of engagement studies is a qualitative approach, where contemporary social media and social research indicators are considered (Abuljadail, Ha, 2019).

This article is intended to include elements of the approach and methodology of each of the first three groups of research. It deals with a homogeneous group of actors who maintain their profiles on Facebook (Meta). To date, quantitative analysis of stakeholder engagement on club profiles has not been attempted in sports marketing. The method used in the study is a taxonomic method, which has also not been used to date to solve research problems in the field of online engagement. The taxonomic method in sport-related research has only been used in the study of sport rating systems (Stefani, 1999). The method is mainly used in geography, in studies of the attractiveness of tourist regions. The attempt made in this article is to transfer the presented taxonomic method to the field of sport communication management.

2. Research methody

The basis of the consideration is to determine the level of development of the clubs' communication with stakeholders through the social medium of Facebook (Meta).

Statistical indicators were used in the analysis regarding:
- number of posts,
- number of reactions to posts,
- number of comments on posts,
- attendance.

The datasets cover the Facebook activity period from 1 to 10 October in the case. Bearing in mind that the activities of the football clubs surveyed are similar to each other and that their activity is mainly related to sporting events, it is not necessary to extend the time range. The time range is limited intentionally to facilitate the subsequent adaptability of the indicated statistical method to the practice of sports companies.

All necessary calculations were carried out in an Excel spreadsheet using its calculation capabilities.

The statistical method used in the study is taxonomic analysis.

The procedure consists of the following steps (Bąk, Szczecińska, 2013):

- preparation of numerical data,
- selection of variables for analysis,
- ordering and grouping.

The coefficient of variation can be used to indicate the variables to be eliminated from the analysis. If the coefficient of variation takes values greater than 0.1 (or 10%) then the diagnostic characteristic should be eliminated.

$$V = \frac{S_j}{x_j} \tag{1}$$

where:

V - coefficient of variation.

x_j - arithmetic mean of the values of characteristic x_j.

The second method of feature elimination is correlation. If two features are highly correlated then they carry similar information, so one of them becomes redundant. Therefore, it is necessary to consider the correlation coefficients of all pairs of features and then eliminate those features that are most similar to the other, i.e. take correlation values close to 1.

$$R = \begin{bmatrix} 1 & r_{12} & \cdots & r_{1m} \\ r_{21} & 1 & \cdots & r_{2m} \\ \cdots & \cdots & \cdots & \cdots \\ r_{m1} & r_{m2} & \cdots & 1 \end{bmatrix}, \tag{2}$$

where r_{jk} – Pearson linear correlation coefficient of the j-th and k-th traits.

In this article, the model method in the classical approach is used to construct a taxonomic measure of development. The classical measure is based on standardised z_{ij} values of diagnostic characteristics.

$$z_{ij} = \frac{x_{ij} - \overline{x}_j}{S_j}, \; (i = 1, 2, ..., n, \; j = 1, 2, ..., m). \tag{3}$$

The distances of each test object (di) with the form shown in the formula were then determined.

$$d_i = \sum_{j=1}^{m} \left| z_{ij} - \varphi_j \right|, \ (i = 1, 2, ..., n), \tag{4}$$

where:
$\varphi_j = \max z_{ij}$ for stimulants,
$\varphi_j = \min z_{ij}$ dla destimulants.

A stimulant is a statistical characteristic whose increase in value leads to an increase in the value of the explanatory variable. A destimulant is a statistical characteristic whose increase in value leads to a decrease in the value of the explanatory variable.

The final step was the calculation of the synthetic measure of development (Formula 5).

$$\mu_i = 1 - \frac{d_i}{d_-}, \tag{5}$$

where d_- - variable calculated as the sum of the arithmetic mean of the coordinates of the distance vector (d) and twice the standard deviation of these coordinates.

This procedure was also used to determine synthetic measures of development for the communication activity of football clubs in the Polish Ekstraklasa in order to see how the effectiveness of individual clubs on Facebook evolved over the period indicated.

3. The study results

The research was conducted in two stages. The first was the presentation of basic information on the activity of the surveyed football clubs on Facebook. In the second part of the research, a taxonomic method was applied, based on statistics of all Polish Ekstraklasa clubs. It standardised selected data, such as the number of posts, reactions to these posts, comments, attendance, and its links to data on the clubs' communication with stakeholders on Facebook. This allowed the application of a taxonomic method (measure) and the classification of Poland into a specific group of countries according to these data.

The data in Table 1 was used as the baseline for the analysis.

Table 1.

Factors related to the communication of Ekstraklasa S.A. sports clubs on Facebook

	Number of posts	Median reactions	Median comments	Number of popular posts	Number of frequently commented post	Percentage of popular posts	Percentage of frequently commented post	Max reactions
Raków Częstochowa	72	347,5	22	69	14	0,96	0,19	2900
Widzew Łódź	75	398	23	66	9	0,88	0,12	6600
Wisła Płock	69	93	2	33	2	0,48	0,03	851
Legia Warszawa	52	750,5	26,5	50	12	0,96	0,23	5200
Pogoń Szczecin	74	697,5	28	71	10	0,96	0,14	3800
Stal Mielec	90	85	6	42	3	0,47	0,03	3600
Lech Poznań	82	588,5	30	80	13	0,98	0,16	7000
Cracovia Kraków	54	122	3	32	2	0,59	0,04	684
Jagiellonia Białystok	16	71,5	10	5	0	0,31	0,00	179
Warta Poznań	58	137,5	6,5	36	1	0,62	0,02	1600
Radomiak Radom	26	134,5	26	21	2	0,81	0,08	746
Śląsk Wrocław	41	300	26	36	1	0,88	0,02	2400
KGHM Zagłębie Lubin	62	88	4	26	2	0,42	0,03	734
Górnik Zabrze	72	166,5	12	51	12	0,71	0,17	1400
Piast Gliwice	51	66	12	17	4	0,33	0,08	350
Korona Kielce	43	88	12	20	4	0,47	0,09	558
Lechia Gdańsk	54	181	21	43	6	0,80	0,11	337
Miedź Legnica	33	77	21	13	2	0,39	0,06	116

Source: Own compilation based on data from Ekstraklasa S.A. clubs profiles.

The subsequent figures in the columns of Table 1 represent data collected between 1 and 10 October 2022. The data taken for further calculations are:

1. The number of posts made by the club during the study period. It allows us to check the clubs' activity on the social network Facebook (Meta).

2. The median response to a post. The reaction represents the interest in a given post expressed by clicking an emoticon (liking, expressing displeasure or regret) next to the post. The use of the median is due to the fact that reaction numbers vary widely, so positional measures are more appropriate.

3. Median of comments per post.

4. Number of popular posts. A minimum of one hundred reactions is taken as a measure of the popularity of a post.

5. Number of posts frequently commented on. As in the previous section, one hundred comments was taken as the measure of frequency.

6. Percentage of popular posts. The rate of popular posts was calculated by dividing the number of popular posts by the number of all posts in the period under review.

7. Percentage of frequently commented posts. The index of frequently commented posts was calculated by dividing the number of frequently commented posts by the number of all posts in the period under study.

8. Maximum reactions. The column presents the maximum number of reactions to determine the maximum interest in posts by Facebook users.

Five factors were taken into account in order to calculate a synthetic development indicator in the communication process through:

1. The number of posts made by the club during the study period.
2. The median response per post.
3. Median comments per post.
4. Percentage of popular posts.
5. Percentage of posts frequently commented on.

Based on the data in Table 1, the interdependencies of each group of factors were calculated. The Pearson correlation coefficient was used for the calculations. After analysing the results obtained, none of the factor groups was eliminated.

Table 2.
Pearson's linear relationship index for groups of factors

	Number of posts	Median reactions	Median comments	Number of popular posts	Number of frequently commented post
Number of posts	1,00	0,35	-0,05	0,34	0,36
Median reactions	x	1,00	0,72	0,82	0,36
Median comments	x	x	1,00	0,50	0,55
Number of popular posts	x	x	x	1,00	0,68
Number of frequently commented post	x	x	x	x	1,00

Source: Own compilation based on data from Ekstraklasa S.A. clubs profiles.

In purpose of constructing a taxonomic measure of development, the benchmark method was used in the classical approach. The classical measure was calculated based on the standardised zij values of the diagnostic characteristics and the distances of each study object (di) were determined. The results of the calculation are presented in Table 3 and from the calculated indicators it can be seen that the most developed in terms of communication through the social network Facebook (Meta) are the clubs that have achieved sporting success in recent years related to high positions or promotion. The influence of tradition and the size of the centres are also apparent here.

The first group includes Legia Warsaw, Lech Poznań and Pogoń Szczecin. They have the highest synthetic development indicators, which means in practice high communication effectiveness determined by the popularity of posts and high interest in the club and its activities.

The second group includes Raków Częstochowa and Widzew Łódź, which were first and second in the Ekstraklasa table on 10 October. Sporting success led to higher interest in social media.

The third group of clubs active in the researched social media are sports-stable clubs, mainly from large, traditional centres such as Gdańsk, Wrocław and Zabrze. The only exception to this is Radomiak Radom, which stayed in the Ekstraklasa as a newcomer the season before. This is an important factor driving interest in the local club.

The fourth group of clubs active on Facebook is the broadest. For this group, the activity and fan interest in the content posted by the club is relatively average or low.

The fifth group includes only Jagiellonia Białystok, which is ranked last in each group of factors surveyed and has a relatively low level of interest.

The groups of sports clubs resulting from the study therefore show similar characteristics related to involvement in club life, curiosity about sports results and preparation for matches. Nor is it just derived from the sporting outcome. Stakeholder engagement is related to the ability to make the audience curious and the diverse use of Facebook (Meta) in a homogeneous marketing market.

Table 3.
Synthetic development index for factors related to communication of Ekstraklasa S.A. clubs

	Indicators d_i for individual factors					Sum of indicators d_i	Synthetic development indicator μ_i	Ranking	Group
	Number of posts	Median reactions	Median comments	Number of popular posts	Number of frequently commented post				
Raków Częstochowa	0,91	1,80	0,83	0,07	0,54	4,15	**0,75**	4	**2**
Widzew Łódź	0,76	1,57	0,73	0,40	1,65	5,11	**0,69**	5	**2**
Wisła Płock	1,06	2,94	2,92	2,07	3,01	11,99	**0,28**	15	**4**
Legia Warszawa	1,91	0,00	0,36	0,06	0,00	2,34	**0,86**	2	**1**
Pogoń Szczecin	0,81	0,24	0,21	0,07	1,42	2,74	**0,84**	3	**1**
Stal Mielec	0,00	2,97	2,50	2,12	2,94	10,53	**0,37**	10	**4**
Lech Poznań	0,40	0,72	0,00	0,00	1,08	2,20	**0,87**	1	**1**
Cracovia Kraków	1,81	2,81	2,81	1,60	2,89	11,91	**0,29**	13	**4**
Jagiellonia Białystok	3,73	3,03	2,08	2,77	3,44	15,05	**0,10**	18	**5**
Warta Poznań	1,61	2,74	2,45	1,48	3,18	11,46	**0,31**	12	**4**
Radomiak Radom	3,22	2,75	0,42	0,70	2,29	9,38	**0,44**	9	**3**
Śląsk Wrocław	2,47	2,01	0,42	0,41	3,07	8,38	**0,50**	8	**3**
Zagłębie Lubin	1,41	2,96	2,71	2,32	2,96	12,35	**0,26**	17	**4**
Górnik Zabrze	0,91	2,61	1,87	1,11	0,95	7,46	**0,55**	6	**3**
Piast Gliwice	1,97	3,06	1,87	2,68	2,27	11,84	**0,29**	13	**4**
Korona Kielce	2,37	2,96	1,87	2,13	2,05	11,38	**0,32**	11	**4**
Lechia Gdańsk	1,81	2,54	0,94	0,75	1,78	7,82	**0,53**	7	**3**
Miedź Legnica	2,87	3,01	0,94	2,43	2,53	11,78	**0,29**	13	**4**

Source: Own compilation based on data from Ekstraklasa S.A. clubs profiles.

4. The final results

The research and its results showed that, with the method used, the effects of communication can be measured by creating a communication ranking for individual clubs. It is also possible to monitor the ranking in cyclical studies based on the same factors in other periods. Further, by calculating a synthetic development index, it is also possible to check an entity's place among its competitors and to manage communication by modifying its activities.

An additional aim of the article was to create a tool to measure the effects of communication. In this case, the subjects of the study were football clubs playing their matches in the top division - Ekstraklasa S.A.

As a result of the research, it was shown that in addition to ad hoc results, the research method can be used as a basis for comparing communication management activities in social media. The statistical method used can also be used to measure the effectiveness of reaching and communicating with stakeholders.

Among its advantages are:
- high flexibility in the use of data sets,
- possibility to compare one's communication policy with similar entities,
- the possibility of systematic monitoring of the effectiveness of communication activities over different time periods,
- ease of application of the method to other forms of communication activities on the Internet,
- possibility to compare the effectiveness of other social media.

The drawbacks of the method, on the other hand, are the difficulty in selecting data relevant to the identified problem and the high variability of the studied environment.

The high flexibility in the use of data sets means that specific data can be substituted depending on what one wants to investigate, while maintaining the principles of logic, representativeness and objectivity. Thus, the method can be used in sports clubs when studying communication, their sporting effects, factors influencing attendance, etc.

The method used in the article gives the opportunity to compare their communication policy with similar entities. There is no phenomenon of increased competition in the sports club market. For example, there is competition in the leisure market by fans and for funding from local authorities and sponsors, and these decisions are made for the long term (by declaring to be a supporter, support or cooperation). In local markets, there is also a certain hierarchy depending on the sports performance and tradition of the club (Lech Poznań and Warta Poznań, Korona Kielce and KS Łomża Industria Kielce - handball, Wisła Płock - football and handball, Raków Częstochowa and Włókniarz Częstochowa - speedway sport and others). As the entities are similar in terms of their activities, it is possible to objectively compare which of them communicates most effectively with the environment, using a set of selected data.

The method makes it possible to systematically monitor the effectiveness of communication activities over different time periods. On their basis, communication can be managed by taking, modifying or not taking specific actions.

The method also makes it easy to apply it to other forms of communication activities on the Internet. Facebook is just one of many social media. Similar studies can look at the activity of content audiences on TikTok, Youtube, Twitter, Instagram and others. Hence, it is possible to compare the effectiveness of other social media, measured as the activity of content audiences (fans, sponsor representatives, local governments and other stakeholders).

In applying the method, it is important to use variables that are relevant to the problem and to recognise the variability of the environment. For communication management, it is worth mentioning that during the off-season there is much less interest in a sports club than during games (Kowalski, 2020), so there is no need to overload potential content audiences with information whose reception will be minimal.

The method used is an attempt to fill a research gap and can be successfully applied to manage the way sports clubs communicate with their environment, to use the free tools available on the internet effectively. The need to use them more effectively stems from the fact that the Internet is not so much about being on the Internet, but about directing attention to the information desired by communication managers.

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