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ENGAGEMENT FACTORS ANALYSIS OF COMPANIES MANAGING THEIR PRESENCE ON FACEBOOK PLATFORM: A QUANTITATIVE APPROACH RESEARCH IN AIRLINES SECTOR

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Abstract: Currently, idea of the marketing management - activity of social networks seems to be a strong source of building a competitive advantage. This activity should not be underestimated and should be the subject of continuous applied research.The aim of the research was to identify statistically significant differences in selected engagement indicators on Facebook - likes, comments and shares in relation to the different types of content that selected companies (airlines) manage and add to this platform. The analysis was carried out on a sample of 20 global airlines. A total of 4,858 contributions from the companies concerned were analyzed using quantitative statistical methods. Engagement differences between the type of post (image / photo, video, link, text / status) arrived at with the help of Wald-type MANOVA is significant. The most frequent forms of engagement were presented, as well as the dominance of specific types of content added. There were also significant differences in users commenting.

Key words: Facebook, engagement, content type, social media management, Wald MANOVA

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Introduction

Social media plays a very important role in the market today. Facebook, despite recent security issues, is still the undisputed market leader. Worldwide, Facebook has over 2.38 billion MAU (monthly active users), an 8% year-on-year increase. (Noyes, 2019) It is therefore really important from a marketing perspective to know how Facebook works behind the curtain. Engagement rate is one of the key factors that point to the effectiveness of activities of brands on Facebook. Facebook interactions include likes, sharing, comments, regardless their nature, whether it is positive or negative. Mariani et al. (2018), Grace Ji et al. (2017), Stefko et al. (2015), Slaba et al. (2014), Srivastava et al. (2018) and Sujarwoto et al. (2019) also dealt with these interactions in their research. To summarize, we understand interactions in this sense as any action a user takes in relation to our brand or

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content. Similarly, Machado et al. (2019) define the concept in their study of the mediation role of engagement in customer and brand relationships. The brand can manage this interaction to some extent. But it is crucial that the steps in this respect are based on data and metrics, not impressions. This hard data approach has also been applied by Fatehkia et al. (2018) to analyze Facebook data in relation to gender differences in the perception of ads on this platform. We could state that Facebook is set up perfectly because brands have access to this data.
Our research focuses on the likes, comments and shares in the context of the basic types of content that are added to this network - photos, videos, texts and links. Overall engagement can also be represented as a share of the sum of comments, likes and shares versus post reach, as defined by Driskill (2017). It is logical that if we are able to influence any of these factors, we can also influence the resulting engagement on Facebook to some extent. In this case, our goal is to support it through the right combination of the types of content that the brand adds to the social network. Therefore, our paper aims at verifying the existence of differences in user interaction in terms of "sharing", "commenting on" and "liking" selected forms of Facebook posts of the surveyed airlines (Bozogáň & Hurná, 2018).

Theoretical Background

The social network Facebook currently has more than 2 billion active monthly users and more than 1 billion active daily users (Facebook, 2019). Up to one third of Facebook users communicate regularly with a brand through this network. (Chen, 2019) Every 60 seconds, 317,000 statuses are updated, 400 new users are added, 147,000 photos are uploaded and 54,000 links are shared on Facebook (Smartinsights, 2018; Ibrahim and Huda, 2019). When Inter brand analyzed the top 100 global brands, the most favourite type of content was photos (51%, N = 5826), followed by text posts and links (35%, N = 4120), video content (13%, N = 1400) and statuses (1%, N = 176) (Chen, 2019). Pei-Wen et al. (2017) in their study presented a matrix of psychological stimulus and social capital focus. They discussed the relationships of incentives, social capital and the type of content on social media. Through a two-phase study, they pointed out that different incentives encourage sharing of different types of content. They also pointed out that users targeting different social capital (i.e. factors for the effective functioning of social groups) also have different sharing patterns. In their research, Kunal and Milne (2017) analyzed the content strategy of Fortune 500 companies focusing on services and goods. Findings from the multivariate multilevel Poisson model have shown that using a corporate brand is more beneficial when a brand wants to advertise a service, while it is more efficient to use a particular branded product name in social media content when selling goods (Dacko-Pikiewicz, 2019; Davidaviciene, Meidute-Kavaliauskiene & Paliulis, 2019; Esmaeilpour & Hosseini, 2017). According to the Brookes study (2010), images generate on average 22% more engagement than videos and 54% more engagement than text posts as content type. At the same time, videos generate 27% more engagement than text posts.

These results indicate that both photos and videos have a greater potential to reach the audience as a text post. In a study by Zell and Moeller (2018) and Kozel et al., (2013) on the potential impact of comments on Facebook status, they pointed out that there is an association between a number of status comments and the perception of its importance from the author's perspective. Along with this, they also pointed out that respondents could better recall statuses with more comments than those with fewer comments. In terms of the perceived value of likes versus comments Carr et al. (2016) found that in terms of their personal perception, likes are considered less engaging than comments, since clicking on the like button requires little user effort and so this process is often automated. Zell and Moeller (2018) add that it is the number of comments, not likes, which correlates with the belief that the Facebook community is more interested in the content posted. They add, however, that likes may predict the potential of a post on Facebook to be positively perceived. A large number of likes may be a signal that indicates to other users the importance of the post. Mariani et al. (2018) conducted a study of the top 10 most visited countries and their strategic use of Facebook to promote their destination. The study was based on big data obtained from the Facebook pages of these NTOs. The results pointed out that the way countries use Facebook to promote themselves varied from country to country. The analysis also showed that the engagement of the site is positively influenced by the visual type of content, especially the photographs. In terms of time, a positive relationship has been shown for posting content over the weekend and a negative relationship for posting content in the evening. Pawsey et al. (2018) analyzed the 20 largest Australian and U.K. water distribution companies from the point of view of their use of Facebook to awaken customer engagement. More than 300,000 responses to almost 17,000 posts between 2010 and 2017 have entered the analysis. Despite the trend, however, it turned out that most companies still add less than one post per day. They also identified shortcomings in the moderation of Facebook discussions and the underutilization of the potential of video content.

The research of Facebook accounts of the top 100 most valuable brands in the world by Sitta et al. (2018) has revealed a very important finding. It turned out that there was no statistically significant correlation between the brand size and the number of Facebook fans and that there was no consistent relationship between user engagement and brand size. Large brands have been shown to have a limited ability to increase their fan base without paid advertising. The reason is also the inability to create sufficiently targeted and personalized content, which is also logical given the size of companies. In their study (2017), Kim and Yang found that different types of content led to different types of behavior. Specifically, they found that sensory and visual content led to likes, rational and interactive content led to comments and sensory, visual and rational to sharing. This suggests that likes are based on emotions (affective), comments are based on cognitive behavior and sharing is either affective, cognitive, or a combination of both. Recent studies, such as that by Ananda et al. (2019), have identified the sources of eWOM

generation in relation to social media engagement for fashion brands. Consumer engagement in relation to social currency in online reviews was analyzed by Kesgin and Murthy (2019. They found that this relationship had a positive impact on the intention of re-visiting a brand's site or account. Dolan et al. (2019) and Walancik and Dacko-Pikiewicz, (2016) presented an empirical study of social media complaints addressed to large Australian airlines. Busalim et al. (2019) published an in-depth analysis of consumer engagement studies in the context of s-commerce, highlighting important factors that play a key role. The importance of brand confidence in mediating further customer interaction on social media was also addressed by Hsu (2019). Kumar et al. (2019) focused on the stages of user engagement on social commerce platforms, where they worked with Navigational ClickStrem Data. The nature of engagement of users in relation to communication in the context of parliamentary elections in 2013 and 2015 in the Czech Republic and Poland was examined by authors Stefko et al. (2019). They pointed out the significant influence gender has on the nature of the post. Engagement of news on social media was compared by Chan et al. (2019) on a sample of six countries with reference to factors supporting engagement and viral spread of these posts. The issue of consumer engagement in the virtual space was studied by Mirbagheri and Najmi (2019), Shugars and Beauchamp (2019), Aydin (2019) and Martin-Consuegra et al. (2019).

Methodology

Our research can be characterized in terms of scientific research as intradisciplinary, in terms of outputs as applied, in terms of data collection as secondary and in terms of analytical processing as relational research. The chosen methodological procedure partly refers to the research by Zell and Moeller (2018) and their analysis of status comments, as well as perceived value of likes versus comments by Carr et al. (2016), the extensive analysis of Facebook engagement increase by Pawsey et al. (2018) and the research into the relevance of the size of the fan base on the resulting engagement by Sitta et al. (2018).

The primary goal of this paper is to verify the existence of differences in user interaction in terms of "sharing", "commenting on" and "liking" selected forms of Facebook posts, i.e. text, photo, hyperlinks and video posts. On the basis of this objective, in conjunction with the results of the research mentioned in the previous section, we hypothesize as follows:

Main hypothesis 1:

We assume significant differences in selected forms of interaction between different types of Facebook posts in the selected industry.

As expected, sharing, commenting and liking are procedures that are very often performed together. This assumption was verified by a link test (Spearman ρ, Pearson r). Based on this assumption, the multivariate analysis of variance (MANOVA) or its variation of Wald-type statistics (WTS) will be used to analyze the homogeneity of these procedures. In order to apply this method, several

conditions must be met, one of the dominant conditions being the multivariate normality, which was verified by the Shapiro-Wilk Multivariate Normality Test. R language (3.6.1 - Action of the Toes) was used for the analytical processing, followed by primary packages - mvnormtest, MANOVA.RM in R-studio application. In this paper, we have analyzed the largest airlines operating in the global market. The condition for entering the analysis was the existence of an official company account on the social network Facebook with a regular activity of adding content to this platform once a month. Based on the above, 20 companies entered the analysis (Singapore Airlines, Qatar Airways, ANA, Emirates, EVA Air, Cathay Pacific, Lufthansa, Hainan Airlines, Garuda Indonesia, Thai Airways, Swiss Air Lines, Japan Airlines, Etihad Airways, Austrian Airlines, Air New Zealand, Turkish Airlines, KLM Royal Dutch, HongKong Airlines, Qantas Airlines, China Airlines). We only worked with posts on official brand sites that were verified by this platform and sites that were set by fans were not considered. As a result, we entered 4,858 posts published throughout the year 2018, with selected parameters being recorded for each one: content type, number of likes, number of shares and number of comments.

Result

In the following section, we will use descriptive and relational research tools to describe all the elements relevant to the analysis arising from our research question, thus meeting the research goal. This part is divided into three parts: in the first one we statistically describe the variables that belong to the research sample, the second one is devoted to proving suitability of the MANOVA method and in the third part we outline the results.

An independent variable - type of post, as well as three dependent variables, number of likes, number of comments and number of shares, enter the planned analyzes. The frequency of occurrence of each content type category was as follows: photo / image 56.4% (N - 2739), video 29.4% (N - 1426), text / status 4.3% (N - 208) and link 10.0% (N = 485). The most numerous variable is photo / image followed by video posts, while internet links and statuses lagged behind significantly. As already mentioned, this polytomic nominal variable enters the investigation as an independent variable. The following Table 1 shows the outputs of selected statistical characteristics.

Table 1: Descriptive statistic of dependent variable

Descriptive statistic	likes	comments	shares
Mean	5280.16	228.99	325.62
Median	457.00	47.00	31.00
Std. Deviation	28949.74	2046.53	3091.05
Skewness	16.25	55.20	50.12
Kurtosis	333.38	3476.12	3015.69
Minimum	0	0	0
Maximum	757846	131296	191287

First Quartile	121.75	13.00	7.00
Third Quartile	2962.50	155.00	152.25

The selection consists of 4,858 observations – posts published on Facebook. The arithmetic mean is presumably the highest for likes. Significant deviations occur between mean and median in all variables, suggesting the position of the data (different from the normal distribution), which is confirmed by the characteristics of Skewness, Kurtosis. The aim of the study is to determine the differences. Since there are three dependent variables which strongly correlate with each other (as shown in Table 2), it would not be appropriate to primarily analyze them bivarietely, i.e. a multivariate parametric approach is preferred where multivariate normality is the main condition.

Table 2: Relationship (ρ, r) – dependant variable

Spearman ρ	likes	comments	shares	Pearson r	likes	comments	shares
likes	1.000	0.806	0.906	**likes**	1.000	0.112	0.214
comments	0.000	1.000	0.843	**comments**	0.000	1.000	0.889
shares	0.000	0.000	1.000	**shares**	0.000	0.000	1.000

The previous Table 2 shows the correlations between dependent variables. This output should be understood as a secondary parameter in the selection of multivariate analysis. As is evident, the nonparametric alternative is very strong; the parametric method points to lower rates, but is still statistically significant. Thus, the method chosen for reaching the goal is MANOVA, where multivariate normality was tested using the Shapiro-Wilk Multivariate Normality Test (Royston P., 1982), which has a W value of approximately 0.048664 and a p value of less than 2.2 * 10-16. Therefore, we reject the hypothesis of multivariate normality and for the analysis we opt for Semi-Parametric MAN (Friedrich et al. 2018).

Table 3: MANOVA Wald-Type Statistic (WTS)

MANOVA	Test statistic	df	p-value
Pc type	169.228	9	<0.001

H0: there is no significant difference between the groups analyzed in the selected variables ({(Pa⊗Id)μ=0})

The previous Table 3 shows the outcomes of a diversity t performed using a parametric bootstrap approach at 1,000 iterations. Based on the p value, which is lower than any acceptable level of α, we recommend rejecting the statistical hypothesis H0 presented above and by analogy we accept its alternative. It follows that there is a difference between the frequency of liking, commenting and sharing in the categories such as photo / image, video, text / status and link. Thus, we accept our main hypothesis 1, which is set out in the methodology section of the paper. The following Table 4 shows the differences between the outputs.

The test shown in Table 3 informs us of the existence of differences. However, it neither says among which variables there exist differences nor does is say which variables acquire significantly higher values.

Table 4: Existence of differences

Post type	N	Statistics	Likes	Comments	Shares
Image /photo	2739	Mean	6220.07	142.88	165.18
		Median	525.00	46.00	23.00
		Std. Deviation	34592.72	408.79	873.22
		First Quartile	124.00	13.00	6.00
		Third Quartile	4231.00	134.00	139.00
Video	1426	Mean	5571.28	467.04	761.87
		Median	633.00	87.00	77.00
		Std. Deviation	23232.43	3720.21	5545.56
		First Quartile	203.75	24.00	22.00
		Third Quartile	2723.00	273.25	313.00
link	485	Mean	1165.24	91.33	72.62
		Median	193.00	17.00	11.00
		Std. Deviation	4257.73	301.47	460.34
		First Quartile	80.00	6.00	3.00
		Third Quartile	646.00	77.00	42.00
Text / status	208	Mean	502.27	52.06	37.50
		Median	77.50	14.00	5.00
		Std. Deviation	1884.02	101.94	114.12
		First Quartile	35.00	4.25	1.00
		Third Quartile	280.25	43.75	23.00

The focus should be on the characteristics of the central tendency, where, as can be seen, the differences in likes between image and video on average are in favor of image, but with medians video is in favor. It should be noted that there are no dramatic differences in terms of values. Thus, we do not assume any difference in this type of posts (image and video). The other two categories of post types in terms of likes are very different, thus, we assume a difference between video and image as well as between each other. Let's focus on the image and all three analyzed variables (likes, comments, shares). Talking about a significant difference between comments and shares would be hasty, but in Likes this difference is obvious. In this way, we recommend looking at all variables in the post types.

Results Discussion

The previous section was devoted to an in-depth analysis of differences in the frequency of liking, commenting and sharing, depending on the type of post. For all forms of interaction (liking, commenting, sharing), the greatest differences were shown for the posts featuring photo / image. If we focus on liking, we can see relatively large differences between the different types of content added, where, on

average, the highest liking rate was generated by images in terms of averages and by videos in terms of median. It is not possible to speak of significant differences in the image and video format of the content, but the differences with regard to links and text posts are evident in both. The least interaction was recorded in case of liking text statuses. In the case of comments, based on the central tendencies, the highest interaction was recorded for the video with a significant distance from other forms. The lowest interaction was recorded for text statuses. Sharing shows the highest interaction in terms of videos and the lowest in the case of text statuses. From the above it can be concluded that the highest interactions were recorded for the video content and the lowest for the text content.

We also see the correlation of our results with the findings of Mariani et al. (2018), and Astuti et al. (2019) who in their research pointed out that site engagement is positively influenced by the visual type of content, which is in our case represented by video and image. The differences in results for different types of content show us a potential parallel to the research by Kim and Yang (2017), who found that different types of content led to different types of behavior. In this case, however, this would require further examination as well as a shift to the qualitative spectrum of the nature of posts. To some extent, our results support statistical findings of Sproutsocial (Chen, 2019), which cumulatively show that more than half of the content added is in the form of photos and about a third in the form of video. Thus, we can say that big companies think through their content strategy on Facebook environment and try to invest efforts in the types of content that are most likely to get their audience's attention and improve the outcome of the engagement rate.

The study by Pei-Wen et al. (2017), which pointed out that different psychological incentives affect different patterns of sharing and responding to a post mirrors our results. In the study, the nature of the post and its ability to carry the emotion within it fully comes into play, allowing the post to attack the user's multiple senses. Text posts are largely about rational perception and often require longer time for the message to be understood by the user. On the other hand, photos and videos, when properly processed, can almost instantly affect the emotion, leading the user to a different pattern of responding to the post. This factor is also very likely to support the findings of our research.

Conclusion

In terms of businesses in today's world, the most important way ofsustainability is through a good sense of quality and a brand image (Yaman, 2018) which is also valid in case of managing social media accounts. Our study focused on large airlines and their activities on the social network Facebook. In the case of managerial implications, the fact that the companies in question invest a large amount of financial and human resources in social media should be taken into account. However, it should also be borne in mind that Sitta et al. (2018) found that there was no statistically significant correlation between the brand size and the number of Facebook fans and that there was no consistent relationship between

user engagement and brand size. By taking the right steps and taking into account the characteristics of the market in which the company operates, the social media manager can achieve in relative numbers several times better results than large companies. This implication is due to the fact that the number of fans is just one of the factors that help companies succeed on social media. Our future research will focus directly on other types and sizes of companies, other segments. These results could also be applied in any future research into posts on other social networks, where likes and sharing are also one of the indicators of engagement. Opportunities appear particularly on Instagram, YouTube and Twitter, but the specific analyzed companies and the market in which they operate are also to be taken into account, as they also have their own specifics and ignoring them could distort the results.

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ANALIZA CZYNNIKÓW ZAANGAŻOWANIA PRZEDSIĘBIORSTW ZARZĄDZAJĄCYCH OBECNOŚCIĄ NA PLATFORMIE FACEBOOK: BADANIE ILOŚCIOWE W SEKTORZE LOTNICZYM

Streszczenie: Obecnie idea zarządzania marketingowego - aktywność sieci społecznościowych wydaje się silnym źródłem budowania przewagi konkurencyjnej. Tego działania nie należy lekceważyć i powinno ono być przedmiotem ciągłych badań stosowanych. Celem badań było zidentyfikowanie statystycznie istotnych różnic w wybranych wskaźnikach zaangażowania na Facebooku - polubień, komentarzy i udostępnień w odniesieniu do różnych rodzajów treści wybranych przez firmy (linie lotnicze) zarządzają i dodają do tej platformy. Analiza została przeprowadzona na próbie 20 globalnych linii lotniczych. Analizie poddano ogółem 4 858 wkładów zainteresowanych przedsiębiorstw, stosując ilościowe metody statystyczne. Różnice w zaangażowaniu między typem postu (zdjęcie / zdjęcie, wideo, link, tekst / status) uzyskane za pomocą MANOVA typu Wald są znaczące. Przedstawiono najczęstsze formy zaangażowania, a także dominację konkretnych rodzajów dodawanych treści. Istniały również znaczne różnice w komentowaniu przez użytkowników.
Słowa kluczowe: Facebook, zaangażowanie, rodzaj treści, zarządzanie mediami społecznościowymi, Wald MANOVA

公司管理其在FACEBOOK平台上的参与度的因素分析:航空领域的定量方法研究

摘要:目前，营销管理的概念社交网络的活动似乎是建立竞争优势的重要来源。这项活动不应该被低估，而应该成为持续应用研究的主题。研究的目的是要确定Facebook上参与度指标的统计显着差异与选定公司不同类型内容相关的喜欢，评论和分享（航空公司）管理并添加到此平台。该分析是对20家全球航空公司的样本进行的。使用定量统计方法对有关公司的总计4858份捐款进行了分析。在Wald型MANOVA的帮助下，帖子类型（图片/照片，视频，链接，文本/状态）之间的参与度差异非常明显。介绍了最常见的互动形式，以及添加的特定类型内容的主导地位。用户评论也有显着差异。
关键词: Facebook，参与度，内容类型，社交媒体管理，Wald MANOVA

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