Sentiment analysis of the user comments with the theme of migration posted as interactive content on the Hospodárske noviny website

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Abstract:

This paper reflects on the current discourse on migration in the Slovak digital environment. Given the need to examine the perception of migrants, and using the analysis of comments and posts, it captures social events. It views migration from the perspective of online readers of the Hospodárske noviny daily who send their feedback through interactive tools and actively respond to the media news and stories labeled with the "migrants" tag. The new authentic digital content is thereby considered a specific type of content – the so-called "user-generated content" (UGC). From the reader's perspective, it is one of the ways to show interest in the posts and/or news articles and express one's opinion. On the other hand, UGC also belongs to some of the highly influential tools that can affect the thinking and perception of other readers of UGC. Because UGC is largely involved in shaping the attitude of the online public and formation of public opinion, this type of digital content needs to be analyzed and steered in the desired way through an effective impact on users and/or contributors of digital content. The aim of our research is to find out how the active online readers of Hospodárske noviny view migrants in their non-anonymous comments. Using the content analysis method, and implementing the analysis of sentiment in the non-anonymous user comments (linked with their profiles on Facebook), we analyze (A) the specifics of online readers of the Hospodárske noviny daily and (B) the polarity of user comments posted by the online readers as a specific type of UGC. The sentiment of comments was measured with ternary classification, dividing the individual items into classes of positive (+1), neutral (0) and negative (-1) sentiment in the "men" and "women" category. The data were collected on the hnonline.sk website in the period 1.1.2019-5.1.2019. The data collection period was defined as one calendar year – 2018 – but descriptive statistics was also used on the comments added in 2017 to provide a broader insight into the perception of migration by the active readers. All in all, we collected 148 non-anonymous comments in 2018, out of which ¾ were male and ¼ were female. We characterized the active readers as persons involved in the communication process by posting comments to the articles tagged with the "migrants" tag and publicly adding unique user comments. The research results also suggest that active readers include men with accentuated negative emotional attitudes towards migrants who express their opinions in the comments on average once in every two news articles tagged with the "migrants" tag. The most important finding of the study is that a sizable group of active visitors of HNonline.sk perceived migrants very negatively. We also noted a difference in the user reactions between men and women. While women had a greater tendency for impartiality of opinion on the subject, men acted as the proponents of a more articulated and polar opinion on the positive - negative scale, with a proclivity to negative opinions. One of the possible explanations is that men (forming the majority of the Hospodárske noviny readership) are exposed to the digital media content more frequently, and the media that portray the migrants and refugees significantly negatively and stereotypically (Štefančík & Lenč, 2012; Mesežnikov & Bútorová, 2018; Žúborová & Borárosová, 2016; Hlinčíková, et al., 2014) have a strong impact on

the formation of their opinion. The results also show that a significant affirmation of the negative opinion on the subject of migration was observable during the course of the analysis, which is demonstrated by an increasing frequency of negative comments. The number of female comments with a negative sentiment increased by 2.5% in 2018, and the number of male comments with a negative polarity rose up to 15%. Conversely, the number of neutral comments during the analysis period decreased (in males by 17.6% and in females by 1.9% of the total number of analyzed comments). It is also important to note that men contribute to the discussion more often than women, and therefore are more significantly involved in shaping the attitude of the rest of the readers in some way, both in terms of frequency and opinion on a matter. This also indicates that the attitude of male readers of Hospodárske noviny is more intense and articulated and therefore potentially more resistant to change. The prevalence of negative comments may impact the perception of migrants by other recipients who show an interest in the views of the active readers of this daily. On the other hand, the active contributors may potentially be affected by the media image of migrants. The study also suggests that the individual impacts should be examined to come to a better understanding of the issue and analyze the causal or correlational nature of these relationships. Overall, the conclusions of our research on the negative perception of Slovak recipients against the migrants and refugees are consistent with other research studies (e.g. Mesežnikov & Bútorová, 2018; Žúborová & Borárosová, 2016; Lee & Nerghes, 2018; Spálová & Szabo, 2018) focusing on the research of migration and its perception by specific social and target groups. The present paper suggests that society is facing a difficult task to shape a more favorable attitude of the majority population to migrants for their easier integration into society. The changes in the current state of perception of migrants by the readers will be all the more demanding because of the great impact of active media readers and contributors on the development and shaping of attitudes.

Keywords:
Migration. Migrants. User comments. Hospodárske noviny. Sentiment analysis. Website. Interactive content. User generated content (UGC).

Introduction

The issue of migration is frequently discussed in the Slovak media. Various news portals or dailies express their views on the current discourse. This is probably also due to the fact that for the past 17 years the overall number of migrants has grown rapidly worldwide. In 2017 this number was 258 million, which is 3.4% (United Nations, 2017) of the total population.Although the EU countries have recorded a relatively high increase in the number of migrants, the Slovak Republic is not a target country for migrants according to the International Organization for Migration (IOM) (IOM, 2019). The proportion of migrants to the total population in Slovakia was at 30.9.2017 a mere 1.92% and at 31.12.2018 2,2% (IOM, 2018; IOM, 2019). In comparison with other countries of the European Union, there is a very slow and continuous growth of migrants in Slovakia. Despite the emergence of a number of organizations to help migrants and provide public education in the form of educational workshops and expert discussions, and despite the fact that the majority society could have a deeper personal experience with them, the attitudes of Slovaks to migrants are described as negative and stereotyped (Hlinčíková, et al., 2014) in a number of research projects. An example being the qualitative research conducted in 2011-2012 by R. Štefančík, and J. Lenč. With the help of eight focus groups in the research file of young people aged 16-23, these authors found that the perception of migrants by young people is negative, stereotypical and with elements of rejection (Štefančík & Lenč, 2012b). The research conducted by IOM in 2009 pointed to less favorable attitudes of the Slovak population to foreigners than to national minorities. The most important factors in the formation of attitudes were race and prejudice (Vašečka, 2009). According to Spálová and Szabo (2018, 351), the reinforcement of bias happens mainly through the media-distributed discourse, which "can negatively affect the process of integration of refugees in the EU", which explicitly refers to the importance of the media in creating the attitudes of the population to migration. This is in congruence with the opinion of the Center

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for Research Ethics and Culture (CVEK), which states that the creation of negative attitudes towards migrants in Slovaks is significantly fueled by the media, creating a negative media image of the foreigners in the public eye (Hlinčíková, et al., 2014). According to Štefančík and Lenč (2012a), the resulting negative stereotypes of Slovaks against migrants are caused by the perception of the media coverage, because the media have the power to decide how and which social issues will be discussed by the public. They claim that if negative information prevails in the media, or when the journalists describe the migrants unilaterally and stereotypically, portraying male migrants as terrorists, fanatics or criminals, and women as prostitutes, then one can expect that such a unilateral view on migrants will also be taken by the recipients of the media outlets. Our research is focused on the very recipients of the media news. The aim is to find out how migrants are perceived by active online readers of the Hospodárske noviny daily. This aim will be achieved by analyzing the sentiment polarity of non-anonymous user comments posted to the media articles with the "migrants" tag.We chose Hospodarske noviny as one of the Slovak dailies for several reasons. First, this daily is perceived as a non-tabloid and/or serious news outlet, presenting objective information to the readers. The objectivity of this daily was evaluated on the background of its overall perception in the online environment as a serious and non-tabloid daily along with other competing dailies in the same category (Pravda, Denník N, SME) (Antimonopoly Office of the Slovak Republic, 2016, Article 87; Lipták, 2014; Mafra Slovakia, 2012). An important reason for choosing this daily is the ability to post non-anonymous user comments, which makes it possible to determine the specifics of its readership, including gender and affiliation to Generation Y, based on the user profiles on Facebook. Other competing dailies from the "serious media" category in Slovakia (e.g. Pravda, Denník N, SME and others) either do not allow any user comments to the news articles on the official website, and therefore disallow UGC content, or the publication of such posts is anonymous and therefore potentially less reliable and more demanding in terms of analysis of the specifics of online readers. Another significant fact is the tagging of media articles with tags, which makes it possible to filter out the articles focused on migration. All the above reasons led to the decision to analyze the user-generated content on the Hospodárske noviny website (hnonline.sk). Due to the systematic nature of our paper, the theoretical section will be dedicated to a) user comments as a specific form of UGC (user-generated content) and OWOM (online word-of-mouth), b) sentiment analysis, which allows examining user comments in a methodical way, and c) the characteristic of this daily and specification of its readers. Subsequently, following the determination of research aims and problems, we will analyze the individual comments and determine how migrants are viewed by active online readers.

User comments and their relation to the elements of interactive content, user generated content and Online Word of Mouth

User comments can be defined as a specific way of communicating with the readers who are interested in discussing the subject of a published posted/news article. From the reader's perspective, it is an appropriate way of expression of interest in the post, and an expression of their opinion on the subject matter (Brieses, 2016). User comments on web platforms are possible thanks to the interactive content elements that allow a greater involvement of the recipient in a bi-directional dialogic communication (Rose, 2017). Thanks to the interactive feature of adding user comments to news articles, products or blog posts, the newly created content is considered to be a specific type of UGC - "user generated content". It is defined as any content (textual, visual, audiovisual, etc.) formed by the users and published on the digital platform (Sebastiani, 2018). According to Kohtes (2014), UGC is one of the forms of OWOM (Online Word of Mouth), which has other characteristics, such as high credibility. It is the very

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credibility of the source that determines the significant impact of OWOM on the purchasing decisions and the subsequent sale of the product, whether media or physical (Kohtes, 2014). Kohtes adds that the credibility of OWOM is explained in particular by the importance of knowledge of the opinions and sentiment expressed by other users.It follows from the above that user comments can be considered a highly influential tool that has an impact on how other visitors perceive and assess physical or media products. These comments are also a valuable source for the analysis of attitudes, perceptions and opinions of their authors, which makes them the subject of scientific research.

Sentiment analysis

With the development of UGC on the web platforms, the organizations and commercial and media companies increased their efforts to use the publicly available opinions of users for their decisions. User comments have thus become a valuable resource for the analysis of opinions, attitudes, feelings, perceptions, opinions or preferences of a subject representing a variety of products, services, public figures, organizations, and topics. Opinion on the said subjects can be captured by analyzing sentiment (also known as opinion mining). According to the literature, sentiment is defined as an "emotionally accentuated attitude" because it is one of the ways of expressing attitudes (Boroš, 2001, 16). Lacko (2016) understands sentiment as a subjective expression of will or mind, which has a positive or negative character. Sentiment analysis is defined as an analysis of mood. Liu (2012) describes it as an area of study of opinions, attitudes, evaluations and emotions of people to entities, events or topics. It is used to quantify the general opinion on a given subject or entity (Pang & Lee, 2008). In terms of categorization, it can be included under NLP (natural language processing) (Lacko, 2016; Pang & Lee, 2008). This is perhaps also due to the fact that the unstructured text placed in heterogeneous sources can be used in sentiment analysis to mine for useful information, which is necessary in decision-making (Lacko, 2016). This makes it a technically difficult but practically a very useful task. The primary task of sentiment analysis is to capture the polarity of the entities (Liu & Zhang, 2010). The polarity of views, ideas and attitudes present in the texts can be expressed numerically as a certain type of rating or range (Kohtes, 2014), which indicates the possibility to quantify UGC sentiment. Sebastiani (2018) defined this quantification as estimating the prevalence of classes related to the sentiment in the UGC items (for example, tweets, product reviews and user comments). Classification is closely related to quantification, and it may take the form of binary classification (positive, negative sentiment), ternary classification (positive, neutral, negative sentiment), or serial classification (Sebastiani, 2018). The positive, neutral and negative sentiment is also referred to as the polarity of sentiment or opinion orientation (Liu & Zhang, 2010). The said analysis of the overall sentiment expressed by the author of the content, and the subsequent classification of the text as positive, neutral or negative, is termed sentiment polarity classification (Pang & Lee, 2008).Sentiment analysis can take place at different levels: at the level of words, sentences or entire documents. Sentiment analysis of one single user comment is considered as an analysis at the document level because the entire document is considered the basic information unit.

Hospodarske noviny as an influential mainstream daily

Because of the aim of our work, it is necessary to specify the selected mainstream daily in which the user comments will be analyzed.

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Characteristics of Hospodárske noviny

Modern Hospodárske noviny have been operating on the Slovak media market since January 1993; the first issue of the newspaper was published already in the period of socialism in 1899 (Babitzová, 1999; Mafra Slovakia, 2018). Even at the beginning, Hospodárske noviny profiled itself as a serious and credible daily bringing objective facts and actual information from the field of economics, finance, politics, and sports. (HNonline, 2019). The daily has a printed form, which is issued 5 times a week by Mafra Slovakia, which in addition to Hospodárske noviny also publishes other specialized titles of predominantly vocational nature (the Strategie monthly, Obchod monthly, Horeca Magazine bimonthly, Diabetik, Rungo, Zdravotnícke noviny and other newspapers) (Mafra Slovakia, 2019).

Characteristics of the Hnonline.sk website

Hospodárske noviny also includes the digital platform HNonline.sk. The web says it is the "most read business daily in Slovakia, which provides the highest amount of information from the local and foreign economy. It offers comprehensive news, trends and stories from home and abroad about companies and entrepreneurs" (HNonline.sk, 2019). Within the digital platform, the individual articles are labeled with tags. The assigned tags represent the keywords related to the topic of the article. From the user's perspective, their importance lies in finding all the media articles bearing the respective tag, allowing us to focus on the specific topic or area of interest.The publication of media articles in the online format is rather a one-way communication flow from the source to the recipient. To increase the participation of the readers in the communication process, the administrators of the online media platform allow the readers, among other things, to add comments to the articles. The interactive element of adding a comment offers two ways of publication - anonymous (comment under the name Ján Novakk), or non-anonymous, with the publication of the name and surname of the author through the integration of Facebook. In addition to adding a comment, the reader can print the article, share it on social networks or send it by e-mail.

Specification of the Hospodárske noviny readership

Owing to the specific profiling of the newspaper, the readers want to acquire high-quality, current, highly reliable and credible information from the world of domestic and foreign economics, finance and business markets (HNonline.sk, 2019). In terms of a percentage, according to the MML - TGI national survey of consumption, media and lifestyle, the readership of Hospodárske noviny in 2018 covered about 3% of the Slovak population (Median SK, 2018). This reader segment is not very broad, but it is characterized by its interest in economics and public affairs (Babitzová, 1999). Given the specificities of Generation Y, which includes the online readers of Hospodárske noviny, this group can be characterized as follows. Generally, it is a generation of readers who grew up with digital technologies at the time of a dynamic development of social networks (Koníčková, 2018). Reading online newspapers is very natural for this generation, which also includes the publication of own content under own name linked to the account on the social network. As is clear from the positioning of Hospodárske noviny, the readers are interested in public affairs at home and in the foreign countries, which is also in congruence with the characteristics of Generation Y.

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Sentiment analysis in the user comments on the subject of migration in the online version of Hospodárske noviny

Research problem and research aims

The primary aim of our research is to find out how active online readers of Hospodárske noviny view migrants in non-anonymous comments. As a matter of priority, we want to find out whether the perception of active online newspaper readers is positive or negative in the area. The above primary objective was divided into the following partial objectives:

•   Specify the active online reader who comments on the media texts tagged with the "migrants" tag

•   Measure the sentiment polarity in non-anonymous user comments posted on the media article, in which the polarity will be measured as positive, neutral and negative. Under sentiment, we understand the "mood" of the published post

Subsequently, we formulated the research problem: Perception of migrants by active readers of Hospodárske noviny in non-anonymous user comments

Research questions

The above research problem is further elaborated in the following research questions:

VO1: What are the specifics of active online readers?

The first research question concentrates on the characteristics of the "opinion holder". In general terms, we could specify this reader as a person who is actively involved in the communication process by publicly posting unique user comments to the published articles and expressing his/her opinion on the topic. This characteristic is very general, without specifying other demographic or behavioral characteristics. By answering this question, we define the specifics of online readers, especially:

•   Gender as a basic demographic characteristic, on the background of which it is possible to capture the basic gender differences

•   Rate of comments to the Hospodárske noviny online media articles as a behavioral characteristic, which allows to capture the readers' activity and/or regularity

By specifying the above characteristics, it would be possible to better identify the individuals who wish to participate in the communication process at HNonline.sk. The identification of the characteristics of active users is a prerequisite for better targeting of the marketing and media reports. Such targeting on the given group results in a more significant impact on the readers with a specific perception of migrants.

VO2: Do the active online newspaper readers view migrants positively or negatively?

Based on the theoretical part, one of the following polarities may dominate in the reader comments: positive, negative, or neutral. The sentiment polarity analysis can significantly indicate the attitude of the users to the topic (Boros, 2001), which can then be translated into action. According to Nakonečný (2000, p. 132), the *"attitudes determine the course of action, and/or are consistent with the course of action where the situation allows."* In the broader context, both positive and negative perceptions of the migrants by the online newspaper readers may partly reflect how the members of society will view the integration of migrants (Hlinčíková, et. al. 2014).

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VO3: Is there is a difference in the perception of migrants in the user comments between men and women?

In psychological discourse, men and women may perceive the individual facts differently, with different polarities and intensity. This may be crucial in setting the communication message to one or both target groups of readers depending on the extremity of the "emotionally accented attitude" towards migrants.

VO4: How has the neutral sentiment in the user comments on migration evolved in time?

Sentiments are one of the manifestations of attitude (Boroš, 2001). According to Nakonečný (2000), neutral attitudes are present particularly in issues the subject knows nothing about. In this context, neutral sentiment may indicate the neutrality of views of the opinion holders. With the increasing number of media information, the number of neutral sentiments could also decrease, which would also reflect the possible impact of the media on the recipients of media messages.

Method

To answer the research questions and perform a systematic collection of data, we primarily used the content analysis method, including the analysis of sentiment polarity. The sentiment analysis method generally allows us to study attitudes, beliefs and emotions pertinent to the given themes and subjects (Liu, 2012). This results in capturing the sentiment polarity, which Liu and Zhang (2010) termed "opinion orientation". The research material consisted of user comments on the online media articles in the Hospodárske noviny daily with the "migrants" tag. The reason for selecting this daily was its objective and serious reputation in the Slovak media environment (Antimonopoly Office of the Slovak Republic, 2016; Lipták, 2014; Mafra Slovakia, 2012). It is also the only non-tabloid daily in Slovakia that allows the posting of non-anonymous user comments by linking the users with their Facebook accounts.The use of news articles with the "migrants" tag and the user comments published under such articles indicates a deliberate selection in relation to the pre-defined objective of our work. After having filtered out all the media articles on migration with the help of, and reviewed each article separately with the identification of user comments, the comments were recorded into the record sheet. The comments were collected on the HNonline.sk website in the period 1.1.2019 – 5.1.2019. We analyzed all user comments added in the 2017 and 2018 calendar years. All in all, we collected 148 non-anonymous comments during the analyzed period in 2018, ¾ of which were male and ¼ female. We only analyzed those comments where it was possible to identify the author through Facebook. Using the Facebook profiles and accounts on the social network, we also verified the authenticity of the authors who actively contributed to the debate on the website, as the number of fake accounts on the social network has risen in the recent years despite the efforts to de-activate the fake accounts upon registration or block the existing fake accounts (Facebook Newsroom, 2019). The accounts with fake profiles are defined by Facebook as "accounts where someone is pretending to be something or someone that does not exist." (Facebook, 2019, op. 9/10/2019). These accounts typically show abnormal behavior, and can be tracked down relatively easily. (Egele, et. al., 2013). The most reliable way to verify the authenticity of an account on Facebook is its consistent user behavior over time, including a relatively consistent URL of the given Facebook profile and the user name in the profile (Egele, et al., 2017). The fake Facebook profiles typically lack assigned usernames, which are often replaced by numerical values and/or the username does not correspond to the name in the URL address (Elwood, 2017; Gray, 2018). The interconnection of comments with the Facebook

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account allows us to check whether the posters are real or whether the comments are sent from fake accounts. After having verified the authenticity of Facebook user profiles, the analyzed research material was sorted into the following analytical categories:

• Author's gender (male, female)

• Polarity sentiment in the comments (positive, neutral and negative)

The author's gender was identified based on the link to Facebook. Polarity sentiment was determined based on the emotional charge of the comments using the ternary classification divided into positive (+1), neutral (0) and negative (-1) class. In content analysis, the comments followed the quantification procedures of frequency categories (polarity sentiment, frequency of posting) and dichotomy, i.e., presence/absence of an indicator (gender, polarity sentiment).To increase objectivity, the sentiment analysis was also supported by an online tool "Sentiment analysis for the Slovak language". Using an algorithm and percentage calculation, this tool allowed us to objectively classify the texts into different classes. The comment posted by Libor Řezníček is an example of positive sentiment: "The migration of humans and animals is a natural process, it is a form of freedom of expression. Unlike animals, however, people must also adhere to the laws. The laws should regulate this process with a sense of reality and should not be ´barbaric´." This comment was posted to the media article published on 11.18.2018 under the title in a video, Fico criticizes the Global Pact for Migration: Migrants bring enormous risks. Another example is the user comment by Simona Plajková „Things are happening", which carries a neutral sentiment because it is just a statement without a positive or negative emotional charge. This comment was posted to the article titled Trump resists the crying children in cages, Republicans are at a loss, published on the hnonline.sk website on 06/20/2018.

Results

As stated above, we collected a total of 148 non-anonymous comments in 2018 and 4 non-anonymous comments in 2017 during the analyzed period. In addition to the analysis of user comments in 2018, we also deliberately analyzed the comments from 2017 at the level of basic frequencies. This seemingly unrelated step is the foundation and starting point for any further analysis set out below in our paper because it shows us the readers' interest in the topic of migration in the longer term. These results show the duration of the trend, and/or the beginning, progress and anchoring of the topic from the perspective of readers who keenly engage in the presentation and formation of the image of migrants and thus contribute to the shaping of attitudes towards them. Using the calculation of basic frequencies, we can determine the development of comments in time and some behavioral specifics of the active readers regarding the frequency of user comments. The below chart shows the total number of comments divided into the individual months.

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Chart 1: Development of the number of comments with an identified author in 2017 and 2018
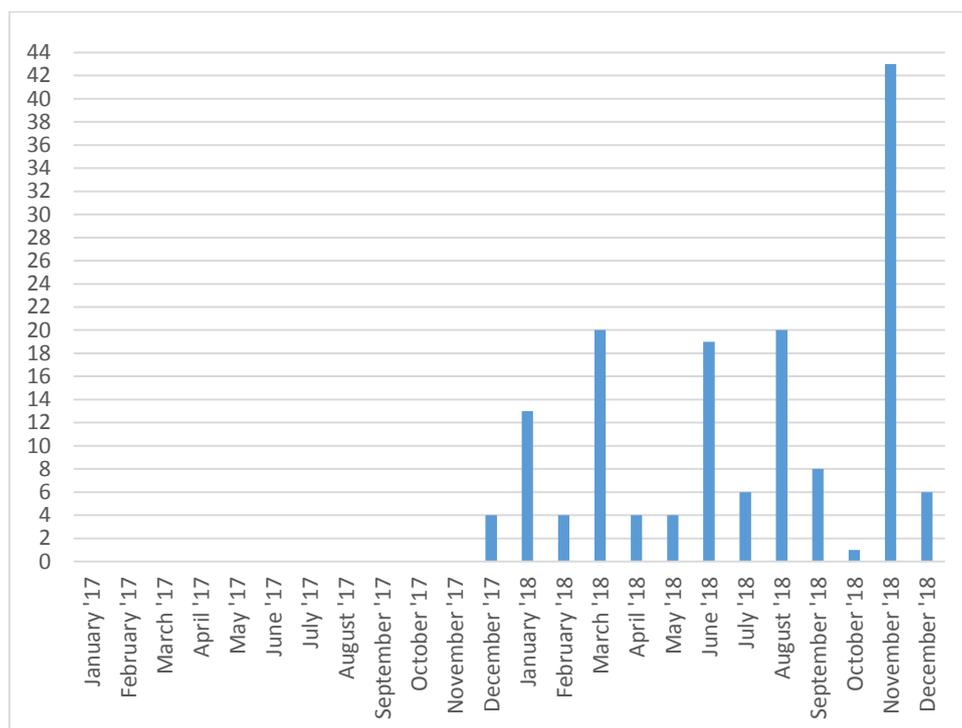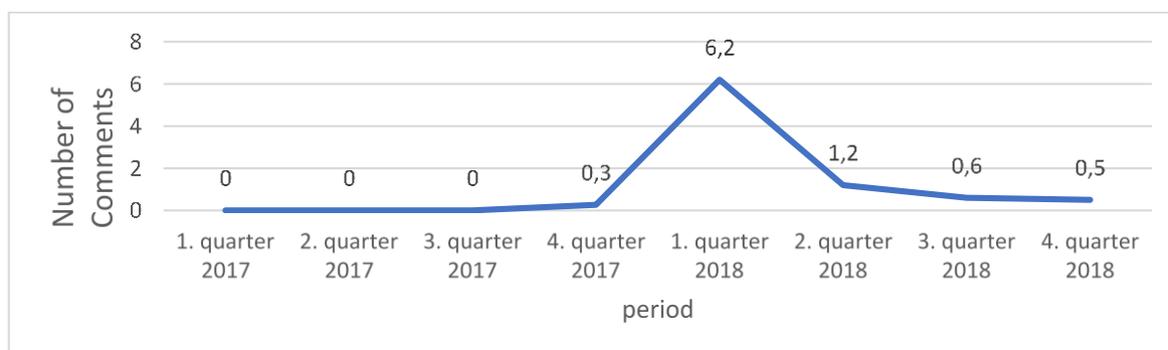

Chart 1 shows that the media articles on the topic of migration encouraged the readers to add a comment as late as December 2017. From this month on, the topic was regularly discussed throughout 2018, indicating the existence of a community of readers with information about the issue. The results indicate that migration continues to be a topic discussed by the readers and motivates them to broaden their knowledge in this field and/or boosts their active participation in the discussions on migration as presented by the media. Next, we investigated in which period the migration issue was most discussed in terms of UGC and how often the users added comments to media articles. To calculate this, we used the "average number of user comments to a media article". We show the data per individual quarters of the respective years 2017 and 2018.

Chart 2: Development of the average number of comments with an identified author to media articles in 2017 and 2018

Source: own research

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According to the chart, the readers began to discuss the topic already in the 4th quarter of 2017. The total involvement of the readers was low. On average, every third media article was commented on. The topic was most discussed quantitatively in the 1st quarter of 2018 with six comments per article. After this peak, the topic was discussed by a close community of readers who are interested in migration and comment on migration actively in their comments. On average, the current users comment on every other article labeled with the "migrants" tag. This behavioral specificity characterizes the contemporary readers of Hospodárske noviny. The frequency of comments to the news articles as a behavioral characteristic is a partial answer to the first research question. Both above charts refer to the fact that in 2017 the readers were rather passive in relation to the topic. All subsequent analyses will therefore concentrate only on the user comments in 2018. We first analyzed the demographic characteristics of active readers which, like the previous results on the frequency of comments by the readers of the given daily, can define the active contributors.

Chart 3: Share of the active commenting community of readers
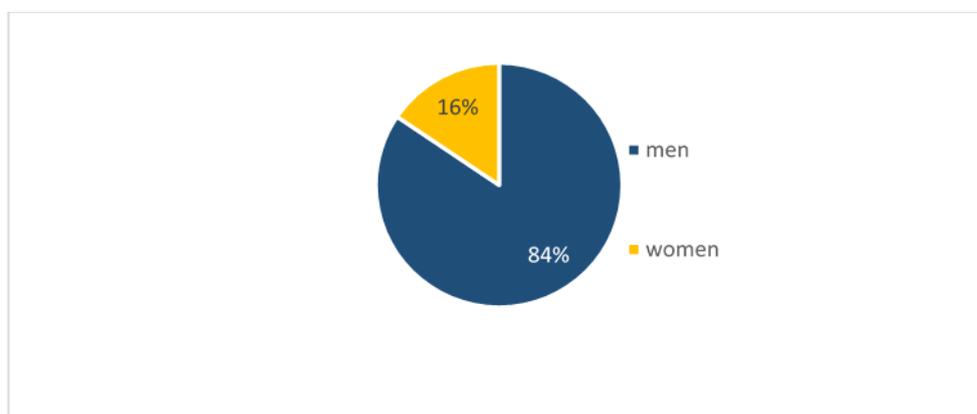
Source: own research

According to the findings in 2018, the community of active online readers consisted of men (¾) and women (¼). After the development of user comments in time and specification of active readers of Hospodárske noviny, we have performed the sentiment analysis. The overall sentiment in the non-anonymous comments divided into ternary classification classes (positive, neutral and negative) is shown in the following chart.

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Chart 4: Sentiment analysis in the comments to online articles in Hospodárske noviny with the "migrants" tag in 2018
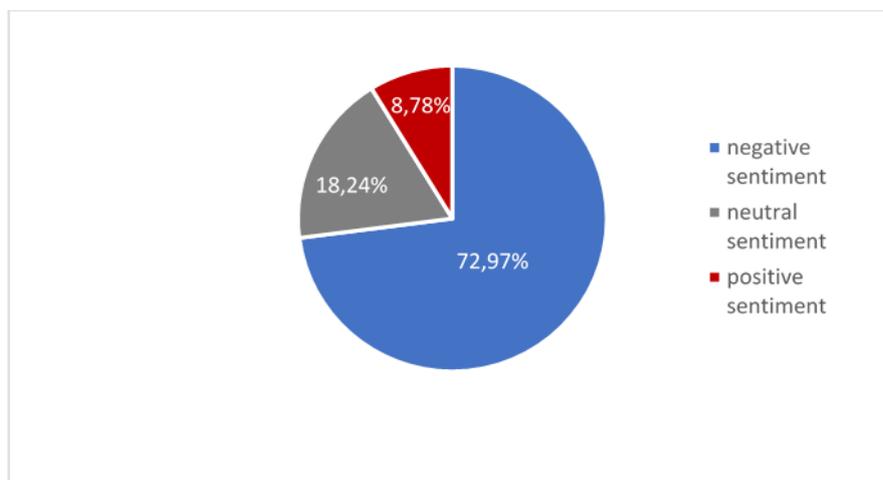
Source: own research

The analysis of sentiment polarity in the user comments showed that 72.97% of the comments includes a negative sentiment. Positive sentiment prevailed in 8.78% of the users and neutral in 18.24% of the comments. An overview of detailed results of the analysis is shown in Table 1.

Table 1: Sentiment analysis in the Hospodárske noviny user comments on the subject of migration by user gender

	Number of Comments in %		
	negative sentiment	**neutral sentiment**	**positive sentiment**
men	74.4%	16.0%	9.6%
women	65.2%	30.4%	4.4%

Source: own research

Negative sentiment was dominant in the comments in both sexes: in 65.2% of women's comments and in 74.4% of men's comments. Neutral sentiment was identified in 30.4% of the comments by women and 16% of the comments by men. Positive sentiment was present in 9.6% of the comments by men and 4.4% of the comments by women. The above score is visualized in the following chart.

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Chart 5: Sentiment analysis in the Hospodárske noviny user comments on the subject of migration by user gender
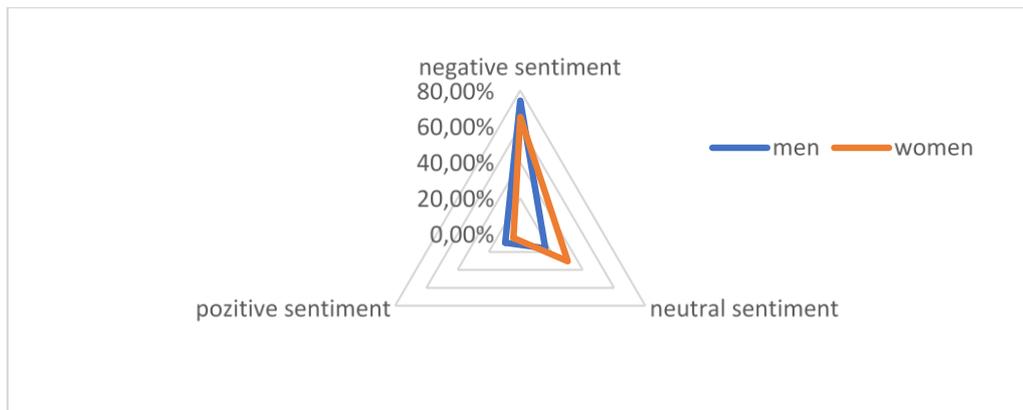
Source: own research

According to the chart, neutral sentiment is clearly represented in women's comments. In comparison with men, women add fewer comments with positive and negative sentiment, while men are more likely to express their polar views. The polarity of collective sentiment as one of the ways of expressing a position on the subject, therefore, can have varying degrees of intensity. The following graph shows the intensity of "emotionally accentuated attitude", which is calculated from mean values of positive (+1), neutral (0) and negative (-1) sentiment of the comments in the "men" and "women" category.
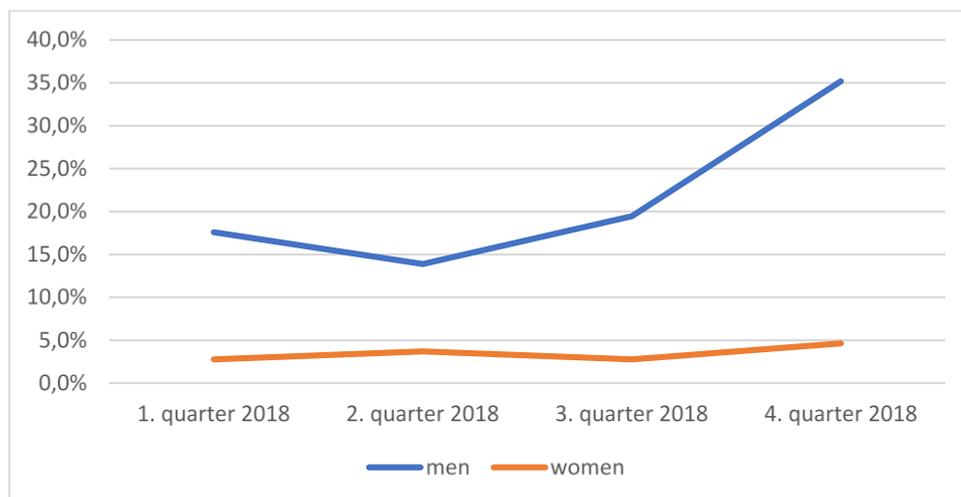
Chart 6: Continuous display of collective sentiment by gender

Source: own research

The continuous display of collective sentiment by gender shows that the accented emotional attitude towards migrants in women is not as pronounced as in men on the scale (-1) - 0 - 1. The women achieve the value of -0.61 on the scale, while the average value of collective sentiment in men is -0.65. There is a 4% difference in the relative indicators between the two sexes. Despite this difference, the dominant sentiment in the comments by both sexes is negative. The number of negative comments could change during the analyzed period, which may indicate the development of collective sentiment in time.

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Chart 7: Development of negative sentiment comments on the topic of migration in 2018

Source: own research

The above graph shows the evolution of the number of comments with a negative sentiment in 2018. According to the chart, the negative sentiment in the user comments markedly changed in men. While in the first quarter of 2018, almost 20% of male comments had a negative sentiment, in the fourth quarter it reached 35% of the total amount of analyzed research material. The negative sentiment in the user comments in women did not significantly change in time. During the year, the number of women's negative comments only increased by 2.5%.We also analyzed the development of neutral sentiment.

Chart 8: Development of neutral sentiment comments on the topic of migration in 2018
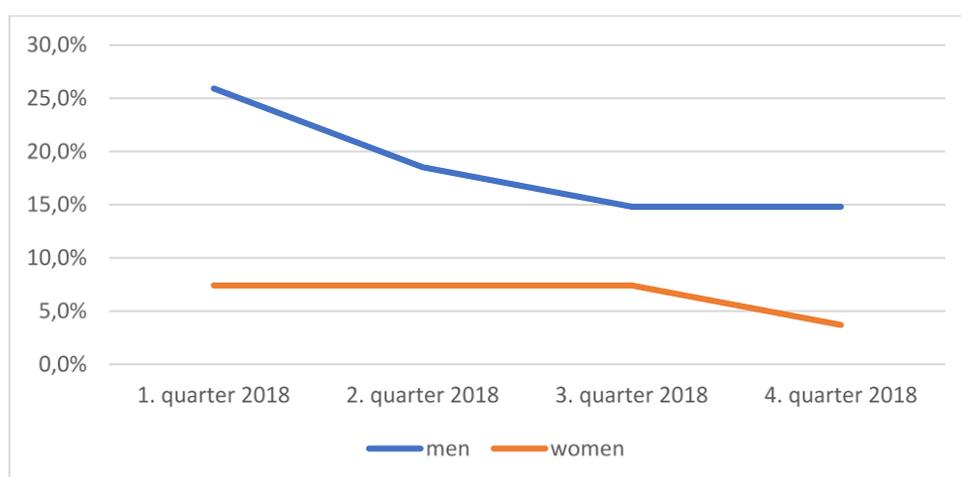
Source: own research

The results of sentiment analysis show that the share of comments with neutral sentiment during the period of analysis decreased in both sexes. During the year, the number of comments with

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a negative sentiment decreased by 17.6% in males and 1.9% in females.The development of sentiment in the positive comments is not shown because we identified just a few positive comments in 2018 (a total of 1 comment in women and 12 comments in men), and this result has a very low informative value in the visual assessment of the development of sentiment in time and in relative indicators. To analyze the positive sentiment of user comments in the Hospodárske noviny daily in time, it is necessary to collect the data from a period longer than one calendar year. The study points to the possibility of other analyses of positive sentiment in the user comments over an extended period of time.

Discussion

To measure the perception of active online readership of the Hospodárske noviny daily on the topic of migration, we used sentiment analysis of non-anonymous user comments. We found that the issue of migrants was first discussed by the HNonline.sk users in December 2017, while during the next calendar year, it was discussed each month (Chart 1) without exception.Based on the demonstrable community of readers interested in the topic of migration, it was possible to specify the active online readers the first research question relates to. With the help of our analyses, we might characterize these readers as men (Chart 3) actively involved in the communication process by posting comments to the articles tagged with the "migrants" tag and publicly adding unique user comments. Their opinions are expressed in the comments to every second newspaper article on this topic (Chart 2). Subsequently, we analyzed the sentiment polarity in the user comments to find out how the active readers perceive the migrants presented in the media texts. According to the results, the sentiment analysis showed that in 2018 the active readers perceived the migrants negatively in ¾ of the cases, which also answers the second research question. Only 9% of the analyzed comments had a positive polarity and 18% were neutral (Chart 4). Although the perception of migrants is significantly negative in both sexes (Table 1)   men showed a 4% greater intensity of negative "emotional accented attitude" than women (Chart 6) according to the measured values. According to the results, women have a greater tendency to impartiality of opinion on the subject. This is also evidenced by the fact that neutral sentiment is more clearly represented in the user comments of women by 14.4% compared to men (Table 1; Chart 5). Women also added fewer comments with positive and negative sentiment, while men typically assume one of the two polarities (Chart 5). That also means that there is a difference in the perception of migrants in the male and female user comments, which answers our third research question. Based on the results of our analyses, we can also conclude that the analyzed issue was most discussed in the first quarter of 2018, with an average of 6.2 to comments per media article (Chart 2). During this period, men and women added a larger number of neutral comments (Chart 8) and a lesser number of negative comments (Chart 7) compared to the other quarters in the year. At the end of the year, there was a significant increase in the comments with the negative sentiment (Chart 7), and a decrease in the number of neutral comments (Chart 8), which means that the opinion holders reinforced their positions during the analyzed period. Thus, the collective sentiment as an "emotionally accentuated attitude" is more extreme. According to Nakonečný (2000), the extreme attitudes are more resistant to change, and thus it will be more difficult to affect the change of attitude of the active newspaper readers.

The increasing number of media messages and repeated exposure to the negative image of migrants portrayed by the media can also be an explanation why the neutral sentiment decreased over time. According to Nakonečný (2000), the neutral attitudes indicate the neutrality of the view-holders. Given the number of media messages and repeated exposure to the said media

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image, the neutral position could have changed to one of the polarities. As in the previous case, the development is more pronounced in the male readers even in the case of a neutral stance. The results of the study, which show significant gender differences and/or stronger intensity of negative emotional attitudes of men towards the migrants along with a greater frequency of negative user comments by the males on the Hospodárske noviny website, can be explained as follows: Men make up the majority in the Hospodárske noviny online community and they comment on migration more often than women. In a sense, men are more intensely exposed to the presented media image, which significantly contributes to shaping the attitude of the recipients, notably in terms of distal topics such as migration (Spálová & Szabo, 2018). Several studies show that migrants and refugees in Slovakia are depicted in a strongly stereotypical, dismissive and negative way in the media both in the media coverage discourse and in the discourse of political leaders (Žúborová & Borárosová, 2016; Hlinčíková, et al., 2014; Spálová & Szabo, 2018; Mesežnikov & Bútorová, 2018). Even foreign research shows a significant predominance of negative sentiment in the comments and reactions of the users (Lee & Nerghes, 2018). This indicates the negative framing of migrants and refugees in the Slovak media and abroad, and generally points to a negative image of the migrants in society. The presented media image with a negative emotional polarity is also properly reflected in the perception of recipients (Štefančík & Lenč, 2012a), which in the case of Hospodárske noviny is mainly composed of men. For this reason, the negative attitudes towards migrants could have been strengthened over time in the group of male readers, which make up the dominant target group in Hospodárske noviny.This means that on the background of the negative media image of migrants and refugees and frequent reception of media content, the male recipients show a more intense perception, and consequently, formation of attitudes and/or the strength and stability of an emotionally accentuated attitude towards the migrants. The greater involvement of men in the presented social life is also reflected in the statements found in the user comments. This relationship, however, needs to be further examined, which opens up space for other studies.

Research limits

The proposed research design allows the data collection for the documentation of collective sentiment polarity in the user comments without the possibility of an explicit demonstration of the impact of the negative comments on the perception of migrants by other passive recipients of the media reports in this daily. In addition, there is no proven correlation between the perception of migrants in the media outlets and the perception of migrants in the comments of active readers of the analyzed daily. The measured differences should also be examined further in the long term, and the results should be statistically validated with appropriate methods. This opens additional space for text analysis in the media articles tagged with the "migrants" tag. The sentiment in the individual posts, as well as the information itself, may have an impact on user comments which were posted based on the media impetus.

Conclusion

The media play an important role in the process of increasing the integration of migrants into society, which can have a substantial effect on the general public. Using the image created by the media, the media effectively shape the opinions, attitudes and opinions of their audiences. One of the dailies affecting the Slovak public is Hospodárske noviny; its active readers were the subject of our research. The aim of our research was to find out how active online readers

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of Hospodárske noviny view migrants in non-anonymous comments. Based on the results of the analysis, we conclude that the active readers of this newspaper view migrants negatively, which is reflected in their comments to the media articles. We also found varying degrees of sentiment in the user responses between men and women because, according to the results, women showed a greater tendency to impartiality of opinion on migration. Men tend to assume one of the polar stances (positive – negative), with the negative polarity dominating. We also noted a significant affirmation of the negative opinion on migration in time in the analyzed period, which is demonstrated by the increasing frequency of negative comments. Conversely, the number of neutral comments during the analysis period decreased (in males by 17.6% and in females by 1.9% of the total number of analyzed comments). The results also show that men contribute to the Hospodárske noviny discussion more often than women, and therefore are more significantly involved in shaping the attitude of the rest of the readers in some way, both in terms of frequency and the negative opinion on a matter. The prevalence of negative comments may impact the perception of migrants by other recipients who show interest in the views of the active readers of this daily. These comments may subsequently impact the perception of migrants by other recipients who are interested in the views of active readers. From the perspective of marketing, user comments as one of the subsets of online WOM have a significant impact on shopping decisions and the formation of attitudes and mindsets of the recipients (Kothes, 2014). In a broader context, the identification of sentiment polarity in the comments made by active online readers may largely indicate the orientation of opinion of all online readers including the passive ones. This extends the space for further research questions focused on the relationship between user-generated content in response to the media outlets and the perception of the topic by other readers.The negative polarity of collective sentiment in the user comments can also be affected by the media news/texts in the given daily. The possible impact of the daily on the active recipients of the media reports is reflected in the present analysis. According to it, the increasing number of media information caused a decrease in the number of undecided neutral sentiments on migrants and an increase in the number of polar comments. During the year, the active readers of this daily reinforced their negative view of the migrants, which in a wider context may be a partial explanation of the less favorable situation in the full integration of migrants into society, which is described in the publication by Hlinčíková et. al. (2014). It will be all the more difficult for the media to change the existing perception of migrants of the readers. The creation of a positive image of migrants in the selected target groups requires that the media no longer predominantly publish negative information and portray migrants stereotypically: i.e. men are terrorists, fanatics, or criminals, and women are prostitutes (Štefančík & Lenč, 2012). These are two more variables that open space for further research into the perception of Slovak media coverage. The demonstration of an explicit impact of the media messages on their readers is crucial to the subsequent change of perception of the migrants by the recipients of the media messages. The change in the perception of migrants by the media with the subsequent formation of a positive media image of the migrants will act in favor of a more positive public perception and increase their adoption into the society. The contribution of this work is its theoretical insight into the issue of migration, which is portrayed negatively, stereotypically and dismissively in the Slovak media, as well as in analyzing the current status of perception of migration by the active readers of one of the serious dailies in Slovakia. The negative media reports and the negative attitudes of the readers of these media reports are interrelated, however, it is not clear whether in a causal or correlational way. This suggests that it is just not enough to change the media discourse with the aim to shape the perception; it is also necessary to effectively influence the attitudes of the recipients of the media reports, especially those who are actively involved in spreading the

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digital user-generated content. It is this very group of users that, in addition to the very media, significantly influences the attitudes to migrants in other readers.

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