

Research Article | Araştırma Makalesi

An Overview of the Measurement Problem in Public Relations in the Context of Digitalization and Standards: A Data Mining Practice*

Halkla İlişkilerde Ölçme Sorununa Dijitalleşme ve Standartlar Bağlamında Bir Bakış: Bir Veri Madenciliği Uygulaması

Hıdır POLAT (Asst. Prof. Dr.)

Tokat Gaziosmanpaşa University
Niksar Faculty of Applied Sciences
Tokat/Türkiye
hidir.polat@gop.edu.tr



Derya ÖCAL (Prof. Dr.)

Ataturk University, Faculty of Communication
Erzurum/Türkiye
deryaderyaocal@gmail.com



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Abstract

One of the most fundamental problems in terms of the public relations profession is measurement and evaluation. In particular, considering the international standards put forward in the context of Barcelona Principles 3.0, measurement actions are required that combine outputs, outcomes, and potential impact. With the increasing use of social media in the public relations industry, the inadequacy of traditional measurement techniques is obvious. This study is intended for measuring communication effectiveness in public relations using big data and analytics. The research aims to contribute to overcoming the measurement and evaluation problem of public relations. A mixed method was used in the research. Data scraping was used a data collection method. Content analysis technique was used to measure the outputs of the communication activity, sentiment analysis technique, which is one of the data mining techniques, and descriptive statistics methods were used to measure the potential impact. According to the results of the research, tangible outputs for the results and the outputs of the communication activity based on social media data have been obtained. The relationship and potential impact of the data obtained on the communication activity results with the institutions' current outputs (income status, the number of customers, etc.) have been determined.

Keywords: Public Relations, Social Media, Measurement and Evaluation, Barcelona Principles, Data Mining.

Öz

Halkla ilişkiler mesleği açısından en temel sorunsallardan birisi ölçme ve değerlendirmedir. Özellikle Barselona Prensipleri 3.0 bağlamında ileri sürülen uluslararası standartlar göz önünde bulundurulduğunda çıktıları, sonuçları ve potansiyel etkiyi bir arada ele alan ölçme eylemleri gerekmektedir. Sosyal medyanın halkla ilişkiler endüstrisi içerisinde artan kullanımı ile birlikte geleneksel ölçüm tekniklerinin yetersizliği aşikârdır. Bu araştırma, büyük veriyi ve analitiğini kullanarak halkla ilişkilerde iletişim etkinliğinin ölçülmesine yöneliktir. Araştırmanın amacı, halkla ilişkilerin ölçme ve değerlendirme sorunsalının aşılmasına katkı sunmaktır. Araştırma kapsamında karma yöntem kullanılmıştır. Veri toplama yöntemi olarak veri kazıma tekniğinden yararlanılmıştır. İletişim etkinliğinin çıktılarını ölçerken içerik analizi tekniği, sonuçları ölçerken veri madenciliği tekniğinden biri olan duygu analizi tekniği ve potansiyel etkinin ölçülmesinde de betimsel istatistik yöntemleri kullanılmıştır. Araştırmanın sonucuna göre sosyal medya verilerinden hareketle iletişim etkinliğinin çıktıları ve sonuçlarına yönelik somut çıktılar elde edilmiştir. İletişim etkinliğinin sonuçlarına ilişkin elde edilen verilerin kurumların mevcut çıktıları (gelir durumu, müşteri sayısı vb.) ile olan ilişkisi ve potansiyel etkisi tespit edilmiştir.

Anahtar Kelimeler: Halkla ilişkiler, Sosyal Medya, Ölçme ve Değerlendirme, Barselona Prensipleri, Veri Madenciliği.

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Introduction

The Internet and Web 2.0 technology has accelerated the globalization of public relations. In this framework, it is inevitable for institutions to adapt to global standards in the context of their practices and to keep up with change. This picture points to a process in which nothing will remain the same in terms of public relations (Grunig, 2009). Because new communication technologies that reorganize the rules of communication with stakeholders and the media are active (Kaul, 2013). New environments have the power to maximize or minimize the quality of the relationship to be established with public institutions on an institutional basis. How this power is perceived and used (Ihator, 2001). The main reason for this is that public relations, in essence, is the process of managing the relationship between institutions and their target audiences (Grunig et al., 2005). The emphasis on relationship management in public relations conceptualizes it as a management function that uses communication strategically rather than from a traditional perspective (Ledingham & Bruning, 1998). This process, which is considered the transition from communication management to relationship management, means that public relations have achieved its primary mission (Ehling, 2005). In terms of public relations, being a part of the internet revolution is a necessity both to move from being a tactical tool used in communication to the center of strategic management and to reveal its true potential (Petrovici, 2014). In the literature, it is often thought that social media makes serious contributions to the public relations process (Kirat, 2007; Elmer, 2007; Peltekoğlu, 2009; Harden & Heyman, 2009; Kaul, 2013; Komodromos, 2014; Gabriel & Koh, 2016). It can be said that the interest of professionals and academics in social media can be associated with the rapid increase in the number of researchers (McCorkindale & Distaso, 2014; Navarro et al., 2017; Sebastião et al., 2017), since it reveals great changes in public relations practices (Wright et al., 2013; Bashir & Aldaihani, 2017). Social media, which has become a rising value and focus in the field of public relations, obliges practitioners to add digital skills to the qualifications they need to have in the process of being involved in the profession (Sutherland et al., 2020). However, it is observed that practitioners still cannot get rid of their traditional habits while using social media platforms. In the current social media usage process, a one-way communication structure is adopted and social media is mainly used for information/information dissemination (Bashir & Aldaihani, 2017; Sebastião et al., 2017). For this reason, practitioners cannot produce concrete outputs regarding the value that social media adds to public relations activities in organizations, and they use traditional measurement techniques to measure the impact of social media. Therefore, they measure visibility by focusing on quantitative aspects such as likes and shares in social media measurements (Valentini, 2015). According to research, social media allows for more successful results in facilitating the work of practitioners and contributing to organizational goals (Avery et.al., 2010; Güçdemir, 2017; Jiang et. al., 2017).

The measurement should go beyond the studies that deal with the quantification of likes, followers, and comments, and focus on outcome measures that include changes in participants' emotions and behaviors (McCorkindale & Distaso, 2014). In this context, it is necessary to develop an understanding of which outcome measures come to the fore rather than the traditional emphasis on output measures in the measurement and evaluation process with the internet and social media (Watson, 2012). Because the issues that have been discussed frequently in recent years within the framework of the public relations discipline and profession are "accountability" and "evaluation" (Mccoy & Hargie, 2003; Xavier et al., 2005; Macnamara, 2011; Jakus, 2018). Especially by European

practitioners, the problem of measurement and evaluation is defined as one of the biggest obstacles to the further professionalization of public relations (Zerfass et al., 2012). For this reason, measurement and evaluation have been among the topics that have been frequently discussed for more than 40 years in the history of public relations (Noble & Watson, 1999; Buhmann et al., 2019). Although the basic views on this subject point out that there is no consensus (Thurlow et al., 2017) and it is difficult to measure the effectiveness of public relations (Gregory, 2001; Watson, 2012). To successfully evaluate the effectiveness of public relations, it is necessary to determine measurable targets (Wilcox et al., 1998) and establish measurement standards (Macnamara & Likely, 2017). Organizations spend \$11 billion annually on public relations activities and demand tangible outputs on the results of communication activities (Marx, 2017).

As the weight started to shift from outputs to results in the measurement and evaluation process in public relations, the problem of standards came to the fore (Michaelson & Stacks, 2011, p. 1). Standards allow comparisons, and they increase reliability and efficiency. It gives credibility to public relations (Institute for PR, 2014). For this reason, serious efforts have been to develop and establish professional standards within the scope of measurement and evaluation in recent years (Buhmann et al., 2019).

Establishment of the Public Relations Research Standards Coalition in 2012; The determination and development of the Barcelona Principles (2010-2015-2020) and the creation of the Integrated Evaluation Framework in 2016 are standardization efforts that stand out (Eisenmann, 2013; Buhmann et al., 2019). Among these, the Barcelona Principles, which was organized by the International Association for The Measurement and Evaluation of Communication (AMEC) in Spain in 2010 and accepted by PR practitioners from 33 countries (Jakus, 2018), is defined as a movement that enables the adoption of outcome measures instead of output measures within the scope of the global public relations industry (Chung & Taneja, 2016). The Principles are a basis for promoting high standards in the measurement and evaluation process. The principles of setting goals and the importance of measurement, measuring results rather than outputs, and measuring potential impact are three of the seven principles determined are linked to the theory of excellence (Likely & Watson, 2013). While there is a shift in principles from output-based measurement to result-oriented measurement, on the other hand, there is also a strong emphasis on the communication value of social media instead of advertising value equivalent (AVE) (Jakus, 2018).

Wright and Hinson (2013), in their eight-year research in which they measured how other emerging media tools, especially social media, are used within the framework of public relations activities, found that the use of new media increases every year. He states that less than a third of the measurements focus on communication results that show the effect on the target audience's thoughts, attitudes, and behaviors. On the other hand, the internet and social media provide a great basis for measuring results rather than measuring output and directing practitioners away from AVEs to measuring the relationship (Watson, 2012). Social media penetration into public relations practices makes it difficult to use traditional measurement methods. This situation pushes practitioners to seek new methods. The main reason for this is that traditional techniques used in measuring outputs are insufficient to embody the success that emerges within the scope of public relations activities (Chung & Taneja, 2016). Social media analytics is needed to obtain the emotional and behavioral patterns of the target audience in digital environments (Tam & Kim, 2019). As a matter of fact, at this point, traditional analytical

approaches are becoming dysfunctional, and the use of big data and analytics makes result measurements in public relations processes much easier (Chung & Taneja, 2016).

1. Literature Review

When the national and international literature is scanned, it is seen that measurement and evaluation at the national level (Türkiye) are searched by very few academic studies. At the national level, first of all, when the extent of measurement and evaluation within the scope of public relations is the subject of postgraduate (master's-doctorate) studies, it is investigated through the YÖK Thesis Center; It has been determined that there are 6 master's theses and 4 doctoral theses. The first study on the measurement and evaluation process of master's theses was carried out in 2001, and the last study was carried out in 2018. The first study at the doctoral level was done in 1999 and the last study in 2016. Master's studies, on the measurement and evaluation problem in public relations; It was carried out to learn the approaches and research types of public relations professionals, agencies, and public relations firms (Gürgöze, 2001; Kamiloğlu, 2004; Öncü, 2017; Gökgez, 2018). In two studies, measurement studies were carried out for the measurement and evaluation process (Uğursoy, 2009; Aydın, 2014). Both studies cover the measurement efforts for the outputs of the studies performed by the public relations technician role. In doctoral studies, the approach to the measurement and evaluation problem in public relations is quite different. While it is aimed to make an exemplary evaluation by using the survey technique in a study within the scope of the research (Örs, 1999), in another study, the attitudes and judgments of the actors in the field of public relations regarding measurement and evaluation (Demir, 2003) are discussed. In the two most recent studies to date, the effect of public relations on brand value has been measured (Zeytin, 2005; Armutlu, 2016). These can be cited among studies using traditional measurement techniques.

It is seen that limited studies have been carried out in Türkiye based on the articles in the journals scanned in the national indexes such as TR Dizin and field indexes. Two studies (Demir, 2002; Ertem, 2014) dealing with the importance and requirements of measurement and evaluation in public relations have been identified. Despite the national literature, many studies deal with the measurement and evaluation process of public relations in studies scanned in international indexes such as SCI, SSCI, A-HCI, and ESCI. These studies can be summarized according to the following classification;

- Studies were carried out to identify the deficiencies in the process of measuring and evaluating the effectiveness of public relations (Baskin vd., 2010),
- Studies dealing with standardization efforts in the measurement and evaluation process (Michaelson & Stacks, 2011; Macnamara, 2014; Volk, 2016; Buhmann et al., 2019),
- Studies that emphasize the diversity offered by social media in the public relations measurement and evaluation process (Wright et al., 2012; Chung & Taneja, 2016),
- Studies addressing and questioning the importance, necessity, guidelines, and measurement tools of measurement and evaluation in public relations (Anderson et al., 1997; Gray, 1998; Hon, 1998; Hon et al., 1999; Lindenmann, 2001; Xavier et al., 2005; Laborde & Pompper, 2006; Watson, 2012; Macnamara & Likely, 2017; Jakus, 2018),

- Studies that deal with models in the measurement and evaluation process and aim to develop new models (Gregory, 2001; Noble & Watson, 1999; Macnamara, 2011, 2015; Thurlow et al., 2017),
- Studies on the importance, necessity, and direction of target setting in the public relations measurement process (Gregory & Macnamara, 2019).

Although measurement is of great importance in terms of the public relations profession, it is seen that it is considered a research subject in a limited number of scientific studies conducted within the national framework. In the international context, the opposite is valid. However, in both national and international studies, it is seen that the importance, necessity, tools, models, and standardization efforts of measurement and evaluation in public relations are emphasized, but measurement attempts are ignored.

Starting from here the main objective of the analysis presented is to contribute to overcoming the measurement problem, which has become an impasse in the public relations discipline and profession. The principle of “Measurement and evaluation should identify outputs, outcomes, and potential impact”, which is emphasized in the Barcelona principles, has been a guide in the creation of research questions and hypotheses. In this study, which includes an application to measure communication effectiveness in public relations, answers to the following research questions and hypotheses are sought.

R.Q. 1: Can the outputs of public relations activities be measured based on the social media data of the institution?

R.Q. 2: Can data mining be used as an alternative method of measuring the results of public relations activities based on corporate social media data?

R.Q. 3: Can the potential impact be determined based on the social media data and outcome measurement findings of the institutions?

Hypothesis 1

H₀: There is no relationship between positive emotions and the current parameters of the institution.

H₁: There is a relationship between positive emotions and the existing parameters of the institution.

Hypothesis 2

H₀: There is no relationship between negative emotions and the existing parameters of the institution.

H₁: There is a relationship between negative emotions and the existing parameters of the institution.

2. Methodology

2.1. Research method

The qualitative method is used in the sending process of the research also the quantitative method is used for the aggregation of results and profit utilization. In summary, to have research mixed method.

2.2. Sample

In determining the sample of this study, the Turkish Reputation Index Report, which is carried out by the Turkish Reputation Academy regularly every year, was applied. Among the 44 different sectors and 440 institutions/brands mentioned in the Turkish Reputation Index Report, the institution with the highest rate of interaction on social

media was determined. During the determination process of the institution, all official social media accounts of 440 institutions/brands, and contents for the institution/brand were examined and included in the research of the institution/brand with the highest interaction.

For the institution/brand determined by the report;

- User reviews on social media accounts (Twitter, YouTube)
- User reviews on eksisozluk.com, one of the most popular digital platforms where users share their thoughts on every topic, organization, and brand
- Complaint data for the institution/brand were collected by data scraping method from the website of sikayetvar.com, which stands out among the platforms where users express their complaints about institutions/brands.

2.3. Data collection

The data obtained from the social media platform for the relevant institution and brand are defined in two categories. The first data set; consists of user comments about the institution/brand from Twitter, YouTube, sikayetvar.com, and “eksisozluk.com” addresses. A data scraping technique was used to obtain the data. At this stage, MAXQDA 2020 qualitative data analysis package program was used to obtain Twitter and YouTube data. The data contained within the other platform, eksisozluk.com, was obtained using the WebHarvy program. The second data set consists of comments about the institution/brand on the sikayetvar.com address. The data set with the first set was used in the measurement process of enterprise outputs together.

2.4. Analyzing of data

In the process of the given analysis, the content analysis technique was used in the output analyses of the institution/brand. In measuring the results of communication efficiency, the text scraping technique, one of the types of data scraping, was used. Emotion analysis was carried out on the data obtained by text scraping. Open-source R Statistical Programming language was used to analyze the data. Since the data type analyzed in the study is textual, that is, unstructured, data preprocessing is of great importance. During the data preprocessing phase, KNIME Software was used, which is one of the software used effectively in the data mining process. In addition, it is essential to have a criterion to reveal the potential impact. In this context, the relationship between the income given in the annual activity reports of the institution/brand, market share, number of mobile customers, fixed customer numbers, and positive and negative emotions obtained as a result of emotion analysis was analyzed. IBM SPSS Statistics 20 package program was also used in correlation and regression analyses for the potential impact.

3. Finding

Datasets are defined in two categories. The first data set contains a total of 21153 rows of data. These data consist of user comments for the institution/brand. In addition, the first data set is subjected to sentiment analysis, which is one of the data mining techniques, to reveal the sentiment categories (positive, negative, and neutral) of user comments about the institution/brand. The second data set is used to measure outputs. This data set contains a total of 97746 rows of data.

3.1. Measuring Outputs

“Can the outputs of public relations activities be measured based on the social media data of the institution?” research question has been shaped within the framework of the understanding of traditional measurement techniques, where public relations practitioners focus on quantitative parameters that symbolize the visibility of communication elements in the media. These parameters, defined as outputs, are not the results of public relations activity, but they should not be ignored. Variations of the parameters (centimeter-column calculations, clipping cuts, etc.) emphasized in this traditional measurement approach in social media are likes, views, shares, etc. are parameters. Therefore, the large data sets obtained have data on these parameters.

Barcelona Principles 3.0 updated in 2020, updated standards for measuring the effectiveness of public relations “measurement and evaluation; should determine the outputs, outcomes and potential impact”. Measuring outputs requires focusing on scores such as followers, likes, and recommendations that express the visibility of the institution/brand on social media.

3.1.1. Twitter Data

Based on the data obtained in December 2020, the communication outputs obtained from the Twitter platform for the institution/brand are given in Table 1.

Table 1. Interaction figures between the user and the institution/brand in Twitter data

Commenting on tweet content for the institution/brand			Reactions to those who comment on tweet content for the institution/brand		
Number of comments	Number of Followers	Number of Users Followed	Number of Tweets	Retweet	Likes
3075	8307602	2657186	21638286	52	1740
Those who tweet about the institution/brand			Reactions to the tweets about the institution/brand		
Number of comments	Number of Followers	Number of Users Followed	Number of Tweets	Retweet	Likes
2952	35470198	2955479	35425389	1540	26409

When the table is examined, users interact in two ways regarding the institution/brand. First, it interacts by commenting on the institution/brand content and creating content for the institution/brand. When we look at users who comment on the institution/brand; we obtained that 3075 people contacted the institution/brand. The main issue here is the social media activity of the people who are connected to the institution/brand. When Table 1 is examined, the 3075 people have over 8 million people followers. This means that the comments are visible to all followers. In addition, it can be seen from the number of tweets that these people are active on social media. The comments on the content related to the institution/brand were retweeted by 52 people and liked by 1740 people so it expands the influence of the comment. Therefore, there is a multiplier effect.

When the outputs are evaluated in terms of tweets about the institution/brand, it is seen that 2952 people created tweet content for the institution/brand. The fact that the total number of followers of the users tweeting about the institution/brand is above 35 million is important in terms of communication outputs. At the same time, the number of tweets created by these people is proportional to the number of followers. Like commenters, tweeters are also very active users on the Twitter platform. The fact that the content of these users about the institution/brand is retweeted by 1540 people and liked by 26409

people increases the effectiveness of communication outputs. The multiplier effect comes into play here as well.

3.1.2. YouTube Data

The fact that it allows a maximum of seven days retroactively in the process of extracting data from the Twitter platform regarding the institution/brand prevents the data from previous years from being obtained. However, the same situation does not apply to the YouTube platform. It is possible to obtain all the interactions that come to the YouTube content for the institution/brand, regardless of the date, with the data scraping technique. In this context, it is possible to reveal the communication outputs of the institution/brand on the YouTube platform in a more comprehensive time frame. Therefore, within the scope of the study, the outputs of the communication activity are measured based on the 5-year YouTube data covering the years 2016-2020.

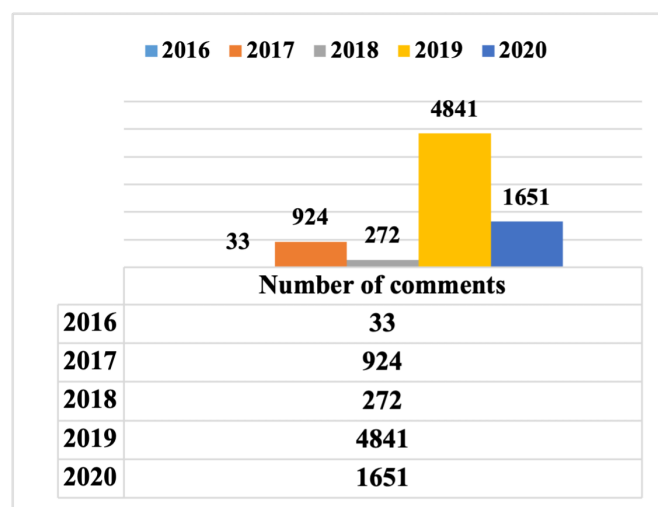


Figure 1. User-institution/brand interaction figures in Youtube data

The biggest indicator of the interaction between the institution/brand and users on the YouTube platform is user comments. As can be seen in Figure 1, the number of comments on the institution /brand content on the YouTube platform every year draws a fluctuating image. Especially in 2019, it can be stated that users interact more with institution /brand content. When Figure 2 is examined, there is a proportional table in the interpretation and appreciation of user comments by other users.

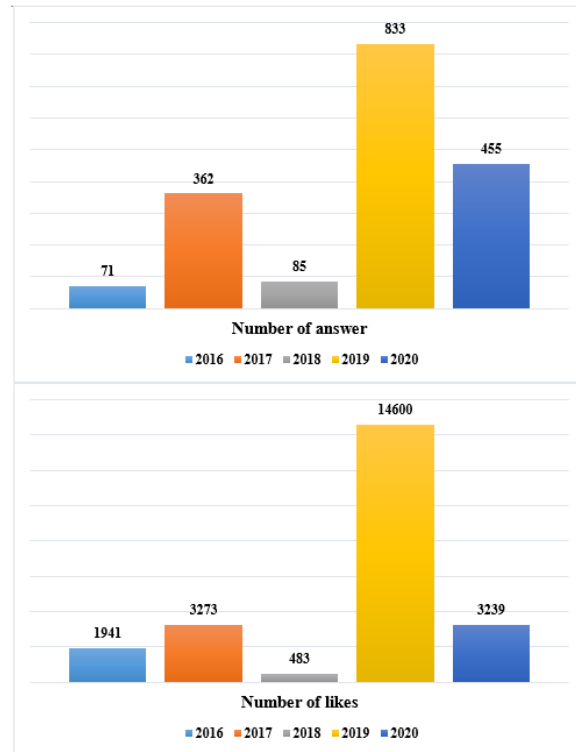


Figure 2. Other users' reactions to Youtube user comments

The main thing to pay attention to here is the visibility of YouTube user comments by other users and the amount of support. This means that the content of the institution/brand is not limited to the users who comment on the YouTube platform.

3.1.3. Sikayetvar.com data

“sikayetvar.com” is among the most effective platforms where customers can freely express their discomfort on all kinds of issues regarding institutions/brands. In this platform, target groups do not only express their complaints; it also publishes thank-you content for their resolved complaints. Therefore, it is among the digital platforms that institutions should follow closely. Institutions need to be active on these platforms, to communicate with target groups and resolve their dissatisfaction.

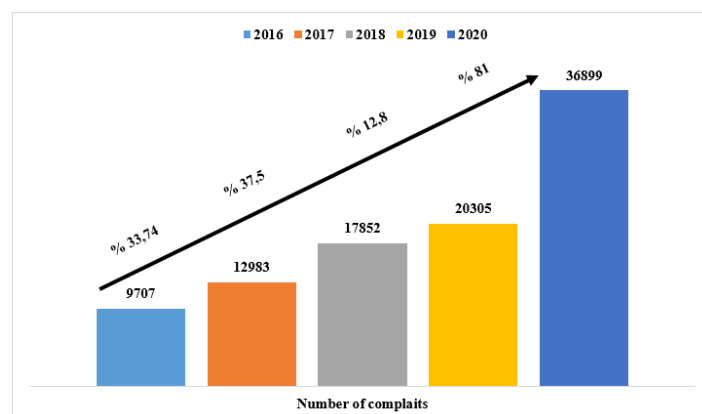


Figure 3. The number of complaints against the institution/brand by years

When Figure 3 is examined considering the data obtained from “sikayetvar.com” within the scope of his study; it is observed that the complaints against the institution/brand increase every year. The number of complaints, which has an increasing profile every

year, has gained momentum, especially after 2019. The rate at which these complaints are viewed and supported by other consumers is vitally important at this stage.

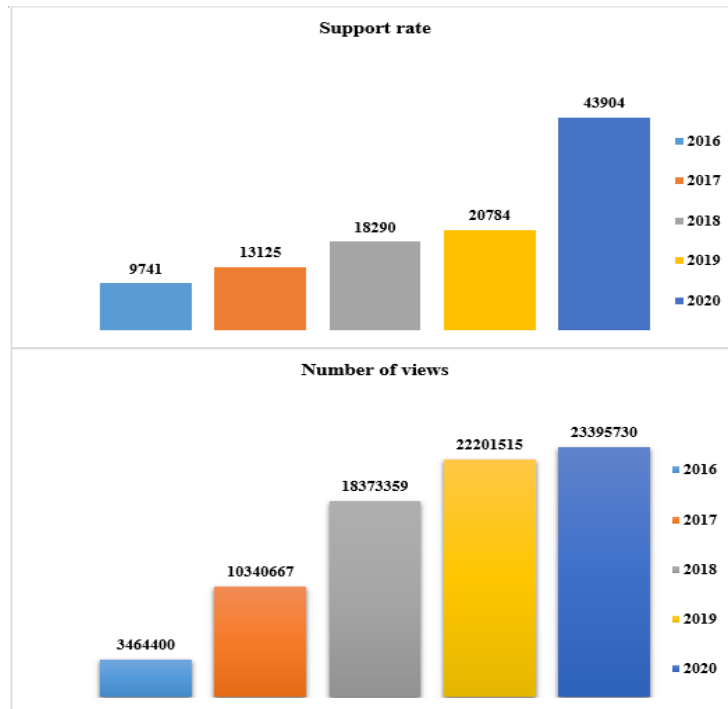


Figure 4. *Visibility of complaints*

These parameters are the factors that determine the visibility of complaints. In this context, when Figure 4 is examined; while the number of complaints is at quite high levels, the visibility of the complaints is also quite high. Looking at the highest increase in 2019-2020, more than 22 million people viewed complaints in 2019, while more than 23 million people viewed them in 2020. In addition, the content is supported by consumers who have similar complaints. There is a similar situation in the rate of support as in the number of complaints. The curve, which increases every year, is even more evident between 2019 and 2020.

Institutions that monitor complaints take action to provide solutions. When the report card of the institution included in the research is examined on “sikayetvar.com”, it is stated that all complaints are answered. However, a different picture emerges when we look at the numbers of those whose complaints have been resolved. Figure 5 shows the number of resolved complaints.

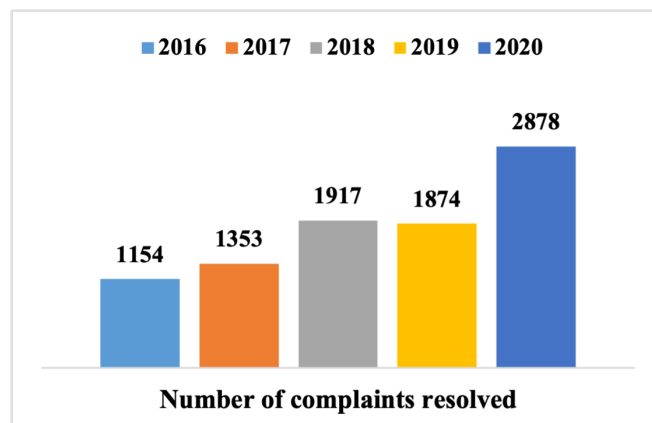


Figure 5. *The number of complaints resolved by the institution/brand*

According to the large number of complaints received by the institution/brand on social media, the number of consumers who stated that their complaints were resolved is quite low. For example, while the number of complaints in 2020 was 36899, the number of resolved complaints corresponds to a small portion of 7.79 % of this figure. A similar table is valid for previous years. This situation again shows that institution /brand customers are eager to express their dissatisfaction more. Users who state that their complaints are resolved are of great importance as outputs of communication activity. The most important indicators that increase this degree of importance are the amount of visibility.

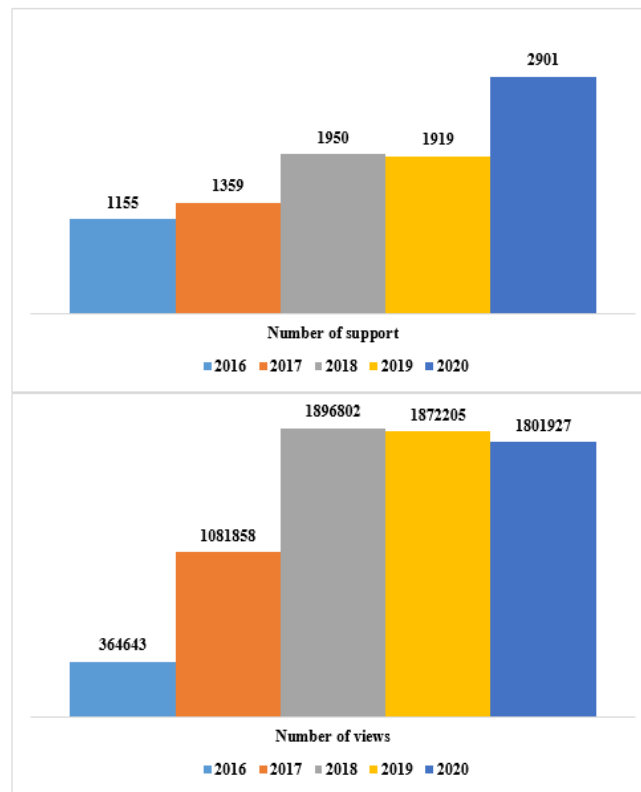


Figure 6. Visibility parameters of resolved complaints

Although the number of consumers stating that their complaints have been resolved is low, the visibility of these contents by other consumers is quite high. Of course, although the number of complaints draws a low level when compared to the visibility figures, they are of considerable importance. 2878 people stated that their complaints were resolved in 2020, while these contents were viewed by 1 million 800 thousand people. 2900 people supported these contents.

3.1.4. Outputs of the communication activity

In this context, the outputs of the communication contents on social media are presented in Table 2 by considering all the years together. Complaint amounts and visibility parameters are not included in the table.

Table 2. Outputs of the communication activity of the institution/brand

Parameters	N
The amount of social media content for the institution/brand	22924
Number of views-shares	7020783
Number of likes and support	60969
Number of followers of users who like and share content	43777830

When Table 2 is examined, there are 22924 contents on social media for the institution/brand in 5 years. These contents were liked by 60969 users, viewed, and shared by 7020783 people. The message was received by 7 million people. In addition, users who perform these actions have a large follower network of 43777830. This means that the multiplier effect of the visibility of the communication content on social media is quite high. The rate of support likes is 265% higher than the shared content. Likewise, when compared to the rate of sharing and viewing, the content corresponds to 0.3 %.

3.2. Measuring Results

“Can data mining be used as an alternative method of measuring the results of public relations activities based on corporate social media data?” the effort to measure the results performed within the scope of the research question; focuses on the change in emotion, thought, and behavior in target groups. In this context, Sentiment Analysis is the most appropriate among text mining applications. With sentiment analysis, changes in feelings towards the institution/brand can be obtained. As a matter of fact, in the analysis process, it acted according to the stages of text mining.

3.2.1. Sentiment Analysis

From the 5-year data covering the years 2016-2020, the emotions of the users towards the institution/brand were tried to be extracted as positive, negative, and neutral. As a result of data analysis, positive, negative, and neutral emotion scores for the institution/brand emerge. As a result of the algorithms processing the data, emotion scores are given gradually. This situation can be expressed as ...-1, 0, +1.... As the values continue to decrease from -1, it means that the degree of negative emotions increases. Likewise, as it continues to increase from +1, the degree of positive emotions increases. Within the scope of the study, grading was done to interpret the findings more clearly. According to this;

- Values 1-3 are positive/negative
- Values 4-6 are strong
- 7 and above are very strong

The findings obtained at this stage, where each year’s data are analyzed separately, are as follows:

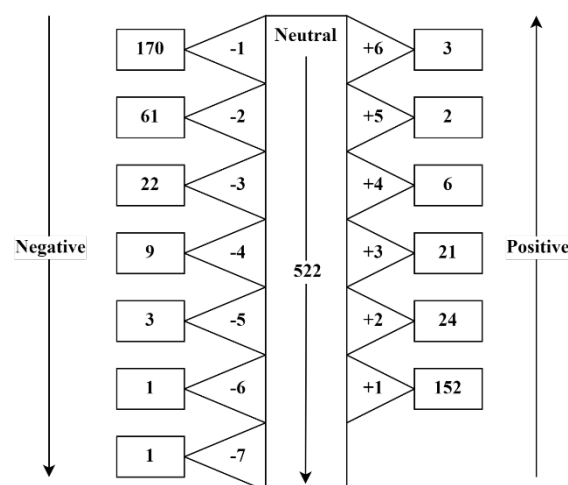


Figure 7. Sentiment scores of 2016

When the emotion scores of 2016 are examined, it is seen that negative emotions are more dominant than positive emotions. According to this; the rate of negative emotions is 26.78%, the rate of positive emotions is 20.86 and the rate of neutral emotions is 52.35%. 5.3% of users who have positive and negative feelings towards the institution/brand have stronger feelings.

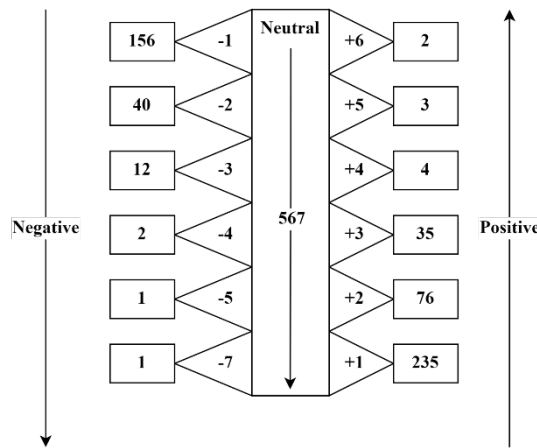


Figure 8. Sentiment scores of 2017

When Figure 8 is examined, positive feelings towards the institution/brand increased considerably in 2017. While the rate of positive emotions is 31.30%, the rate of negative emotions is 18.69%. 50% of 2017 data do not contain emotions. While the emotions of 2.3 % of users who have positive emotions are stronger; For users with negative emotions, this rate is 2%.

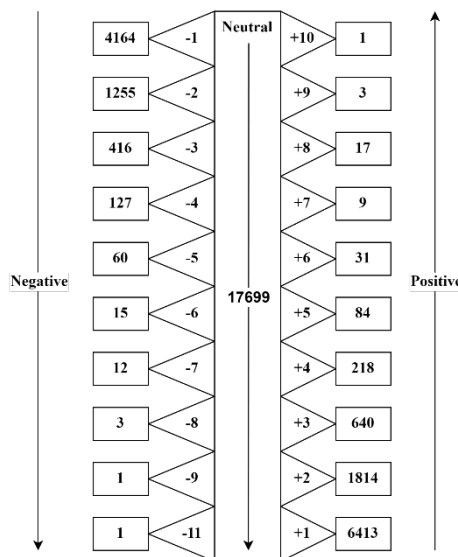


Figure 9. Sentiment scores of 2018

Looking at the emotion scores of 2018, positive emotions towards the institution/brand are dominant. While the rate of positive feelings towards the institution/brand is 27.98 %, the rate of negative feelings is 18.35%. The remaining 53.66 % do not contain emotions. While 3.6% of users with positive emotions have strong emotions, 0.4% of them have stronger emotions. On the other hand, while 3.3% of users with negative emotions have strong negative emotions, 0.3% have even stronger negative emotions.

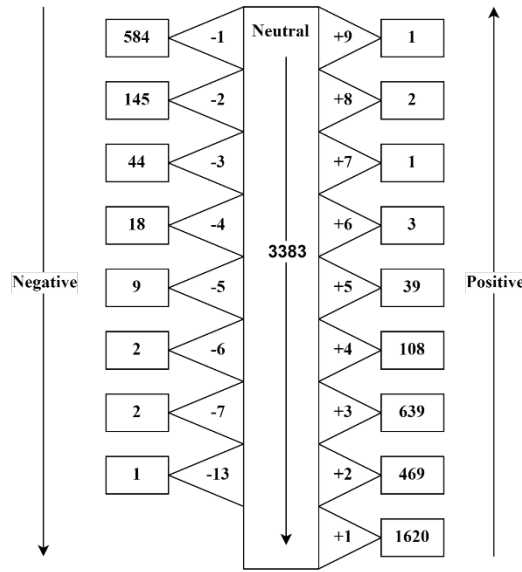


Figure 10. Sentiment scores of 2019

In 2019, the majority of users (47.85%) do not have positive or negative feelings towards the institution/brand in their content. However, the rate of users with positive emotions is considerably higher than the rate of users with negative emotions. While the rate of positive emotion was 40.76 % in 2019, the rate of negative emotion was 11.36%. 5.2% of users with positive emotions have stronger emotions. While the emotions of 3.6% of the users with negative emotions are stronger, the emotions of 0.4% are much stronger.

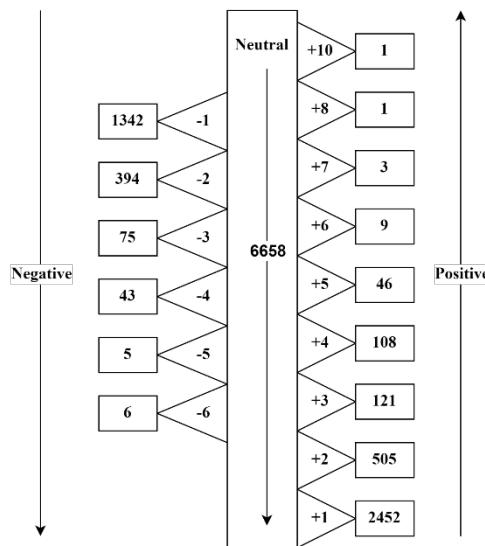


Figure 11. Sentiment scores of 2020

According to the table emerging in the data of 2020, positive emotions are stronger than negatAccess emotions. While the rate of positive feelings towards the institution/brand is 27.56%, this figure is 15.85% for negative feelings. At the same time, 5% of users with positive emotions have stronger emotions. 3% of users with negative emotions have stronger negative emotions.

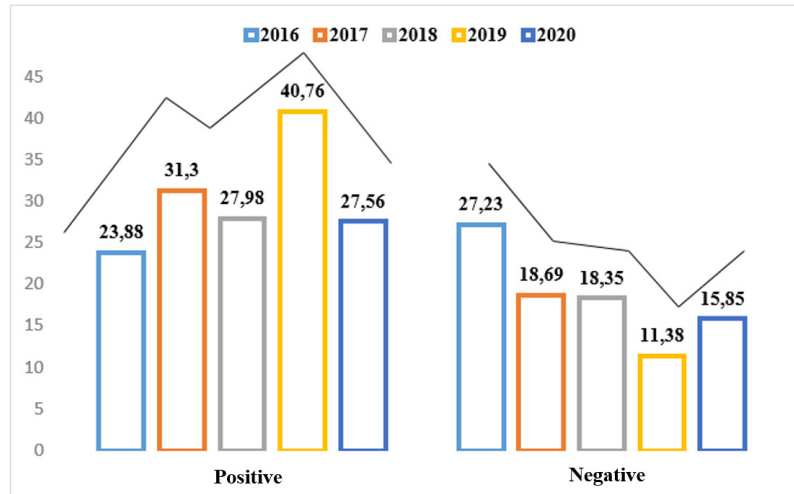


Figure 12. Comparison of sentiment scores by years

Presenting the emotion scores of all years on a single plane reveals the change in emotion more clearly. When Figure 12 is examined, positive emotions are dominant in social media in other years, except for 2016. There is no linear increase or decrease in the distribution of positive emotion over the years. On the contrary, it draws a trending graph. The period in which positive emotions are most intense is the year 2019. Negative emotions show a decreasing trend compared to positive emotions, except for 2020. However, it has increased considerably in 2020 compared to the previous year.

3.3. Measuring Potential Impact

The emphasis on “results must be measured” in Barcelona Principles 2.0 has been extended under Barcelona Principles 3.0, with an emphasis on measuring potential impact. Therefore, within the scope of the study, “Can the potential impact be determined based on the institution’s social media data and result in measurement findings?” a research question is included. In line with the research question, the effect of sentiment data obtained as a result of sentiment analysis on the performance of the institution/brand was investigated. The performance data of the institution/brand are disclosed in the annual reports, revenue, market share, number of mobile customers, and number of fixed customers. Simple correlation and linear regression analyzes were performed for the relationship.

Pearson Correlation Coefficient, there is a high level of positive ($r = .0876$) relationship between the positive emotion obtained in the text mining process and the number of corporate/brand mobile customers. As the positive emotion value increases, the number of mobile customers also increases. There is a moderately positive ($r = .407$) relationship between the positive effect value and the fixed customer numbers of the institution/brand. In addition, it is seen that positive emotion value is also related to market share ($r = .126$) and income ($r = .181$). On the other hand, the positive emotion value has a moderate negative ($r = -.509$) relationship with the number of mobile subscriber losses of the institution/brand. In other words, as the positive mood increases, the number of mobile customer losses decreases.

The fit of the model to the observed values is high. According to the coefficient of determination (r^2) obtained from the regression analysis, the rate of positive emotion is a significant predictor of the number of mobile customers. The results show that 77% of

the total change in the number of mobile customers ($r = .876$, $r^2 = .767$) can be explained by positive emotion.

Likewise, the positive emotion value predicts the change in the fixed number of customers. Accordingly, it can be said that 16% ($r = .407$, $r^2 = .165$) of the change in the number of fixed customers is due to the positive effect value.

On the other hand, it is seen that positive values explain 25% ($r = .509$, $r^2 = .259$) of the changes in mobile subscriber loss numbers. Therefore, positive sentiment values predict the number of mobile subscriber losses.

In the correlation analysis, it is seen that negative emotions are associated with the number of mobile customers, the number of fixed customers, the number of lost mobile subscribers, and revenue among the corporate/brand parameters. There is a high negative correlation ($r = -.787$) between negative emotion values and the number of mobile customers. In other words, as negative emotions increase, the number of mobile customers decreases. There is a moderate, negative relationship between negative sentiment values and fixed customer numbers ($r = -.512$), mobile subscriber loss numbers ($r = -.462$). It can be said that as negative emotions increase, the number of fixed customers and mobile subscriber losses decrease.

In the correlation analysis, one of the parameters that negative affect values are associated with is the number of mobile customers. According to the regression analysis, negative emotion values predict the changes in the number of mobile customers. According to the coefficient of determination obtained, 61% of the variation in the number of mobile customers ($r = .782$, $r^2 = .612$) is explained by negative affect values.

Similarly, negative sentiment values predict fixed customer numbers and mobile subscriber churn numbers. Accordingly, 26% ($r = .512$, $r^2 = .263$) of the change in fixed customer numbers is explained by negative sentiment values; 21% ($r = .462$, $r^2 = .214$) of the change in the number of mobile subscriber losses is explained by negative sentiment values.

4. Discussion and Conclusions

There is a consensus in the PR industry over the importance of social media measurement. However, the main problem is the uncertainty about how this measurement will be made (Chung & Taneja, 2016). Wright and Hinson's 2012 research on corporate practitioners reveals that 54% of practitioners use social media for output measurements. Macnamara (2011) states that 80% of practitioners still rely on the metrics they use in output measurements. Metrics change when it comes to social media. In measuring outputs in social media; reach, impressions, visits, views, likes, followers, downloads, clicks, comments, etc. comes to the fore (Macnamara, 2014). Within the scope of this study, metrics such as likes, views, number of followers, number of comments, amount of shares, response, and support were used in the output measurements of the institution/brand whose data set is owned.

The results obtained are that social media facilitates the process of measuring the outputs of communication activity. With the findings obtained, both complaint management can be made for the institution/brand and the media visibility of the institution/brand contents can be measured. E.g; from the data set obtained on the Twitter platform in one month (December 2020), it was obtained that 3075 people commented on the contents

of the institution/brand. The most important thing here is to measure the visibility of this figure. Users who comment; Considering the number of followers, the number of users followed, and the tweet potential that shows its effectiveness on the Twitter platform, it shows important findings that reveal its visibility on social media. Every comment shared here is also visible to the followers. Therefore, 3075 comments were viewed by 8 million users. At the same time, these comments were retweeted by 52 people. This means that the visibility of the comment increases in proportion to the number of followers of 52 people.

Measuring public relations results is even more important than measuring its output. Measures that deal with whether the messages sent within the framework of public relations programs and activities cause certain changes in emotions, thoughts, and behaviors in target audiences (IPR, 2003) include outcome measures for communication effectiveness in public relations. With the effect of social media, there has been a shift from outputs to results in measuring communication effectiveness (Chung & Taneja, 2016). Online platforms and social media also offer new tools to measure the results of public relations activities (Jakus, 2018). The increasing importance of social media in public relations makes it difficult to use traditional measurement techniques. Therefore, it reveals an effort to discover new tools and techniques (Chung & Taneja, 2016). However, it is seen that traditional measurement techniques are still used on data in social media. Perception is formed as a kind of main measurement method (Watson, 2012). Wright and Hinson's 2012 research results confirm this. The survey showed that only 43% of organizations measure what strategic stakeholders communicate about the organization through blogs and social media. He argues that only one-third of this figure measures the reinforcement and change of attitude, thought, and behavior changes. Tam and Kim (2019) state that institutions should apply social media analytics to reach emotional and behavioral patterns for their target groups. He says that social media data is needed for this. It is underlined that social media has the power to gain a competitive advantage and strengthen the reputation of institutions. Social media is one of the important sources of big data. Data mining techniques have an important place in the analysis of big data. In the context of text mining, which is one of the types of data mining, the emotional changes of the target groups of the institution are revealed when the results of the sentiment analysis are carried out within the scope of the social media data of the institution/brand. Figure 12 provides a summary of the emotional changes of corporate stakeholders over the years. Therefore, it is seen that a successful measurement has been made regarding the results of the communication activity. It is seen that data mining can be used as an effective tool for measuring the effectiveness of public relations.

The most critical aspect within the scope of public relations objectives is that the objectives are linked to business objectives. It is very important to reveal the effects or effects of the results (targets) obtained in measuring the effectiveness of public relations on organizational goals (Macnamara, 2011). Identifying the impact of results on business results allows for a more accurate assessment. The relationship between results and business results defines the value of public relations (Jakus, 2018). What is mentioned here is the association of public relations results with business results such as market share, market penetration (includes the use of products and services by customers), sales, and profitability (Lindenmann, 2002).

From this point of view, at this stage of the study, the effects of positive and negative emotions on the business results of the emotional states of the corporate/brand

stakeholders within the scope of text mining were tested. The relationship between business results (market share, revenue, number of mobile customers, number of fixed customers, and number of lost mobile subscribers) obtained from the annual reports of the institution/brand with a simple correlation and regression analysis without a detailed analysis was tested. According to the results of the analysis, positive and negative emotions have positive and negative relationships with business results. As a result, the null hypotheses of the two main hypotheses included in this research question were rejected and the alternative hypotheses were confirmed. In short, the relationship between the measurement results obtained by the data mining technique and the business results has been successfully revealed.

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Halkla İlişkilerde Ölçme Sorununa Dijitalleşme ve Standartlar Bağlamında Bir Bakış: Bir Veri Madenciliği Uygulaması

Hıdır POLAT (Asst. Prof. Dr.)

Derya ÖCAL (Prof. Dr.)

Genişletilmiş Özet

Dijital dünyanın getirdiği değişim ve dönüşümler, halkla ilişkileri kökten bir değişime uğratmaktadır. Küreselleşen halkla ilişkiler, dijital dünyaya hızlıca adapte olmak zorundadır. Özellikle kurumların stratejik paydaşlarının dijital dünyadaki aktifliği, halkla ilişkiler mesleği ve profesyonellerinin de iletişim sürecinde dijital platformlara ağırlık vermelerine yönelik güçlü sinyaller taşımaktadır. Öyle ki akademik platformlarda araştırmacılar sıklıkla dijital dünyanın halkla ilişkilere katkılarına değinirken; profesyonel yaşantıda da uzmanlardan dijital becerilere sahip olmaları beklenmektedir. Ne yazık ki yapılan araştırmalar, halkla ilişkiler profesyonellerinin dijital platformları etkin bir şekilde kullanmadıkları ve hatta ölçümleme sürecinde geleneksel ölçümleme tekniklerine bağlı kaldıklarına işaret etmektedir. İletişim etkinliğinin somut çıktılarla ölçülebilmesi ve hesap verilebilirlik tartışmalarının gerçekleştirildiği bir süreçte dijital platformların daha etkin kullanılması ve farklı tekniklerle ölçülmesi beklenmektedir. Buradan hareketle halkla ilişkiler açısından iletişim etkinliklerinin somut çıktılarla ölçülebilmesi büyük önem taşımaktadır.

Halkla ilişkiler alanında ölçme ve değerlendirme tartışmalarının tarihi oldukça eskidir. Profesyonel iş yaşantısı içerisinde hesap verilebilirlik tartışmalarının yoğun olduğu bir süreçte, halkla ilişkiler profesyonellerinden temel beklenti katkılarını somut çıktılarla ortaya koymalarıdır. Lakin yapılan araştırmalarda halkla ilişkilerde iletişim etkinliğinin ölçülebilmesinin zor hatta imkansız olduğuna ilişkin bir algının olduğu görülmektedir. Bu tablo işletmelerin gözünde halkla ilişkiler mesleğini kolay vazgeçilebilir bir fonksiyon haline getirmektedir. Halbuki stratejik iletişim sürecinin olmazsa olmaz bir fonksiyonu olarak konumlandırılması gereken halkla ilişkiler profesyonelleri, iletişim etkinliğinin sonuçlarına ilişkin somut çıktılar üretmediklerinden, hak ettikleri saygıyı ve prestiji elde edememektedir. Bu durumun ortaya çıkmasında temel eksiklik halkla ilişkilerde uluslararası uygulama standartlarının bulunmamasıdır.

Halkla ilişkilerde küresel standartların eksikliğinin farkına varan halkla ilişkiler araştırmacıları ve profesyonelleri uluslararası standartların oluşturulması için büyük bir çaba içerisinde. 2012’de Halkla İlişkiler Araştırma Standartları Koalisyonu’nun (Coalition for Public Relations Research Standards) kurulması; Barselona Prensipleri’nin (2010-2015-2020) belirlenmesi ve geliştirilmesi, 2016’da Entegre Değerlendirme Çerçevesi’nin (Integrated Evaluation Framework) oluşturulması bu çabanın somut örnekleridir. Özellikle 2010 yılında Uluslararası İletişim Ölçme ve Değerlendirme Derneği (AMEC) tarafından İspanya’da düzenlenen, 33 ülkeden PR uygulayıcıları tarafından kabul edilen Barselona Prensipleri halkla ilişkilerde iletişim etkinliğinin ölçülmesine yönelik 7 ilkedden oluşan bir yol haritası sunmaktadır. Her 5 yılda bir araya gelen araştırmacılar ve sektör temsilcileri, değişimlere bağlı olarak ilkeleri güncellemektedir. En son 2020 yılında bir araya gelerek standartları güncellemişlerdir. İlkeler kapsamında halkla ilişkilerde iletişim etkinliğinin ölçülmesine yönelik ileri sürülen temel madde şu şekildedir: “Ölçme ve değerlendirme; çıktıları, sonuçları ve potansiyel etkiyi belirlemelidir”.

İşletmelerin halkla ilişkiler profesyonellerinden beklentileri sadece etkiyi ölçmeleri değil, aynı zamanda iletişim faaliyetlerinin iş çıktılarına yönelik potansiyel etkiyi de tespit etmeleridir. İşletmelerin paydaşlarının büyük kısmı dijital dünyaya bu denli adapte olmuşken, işletmelerin bunun dışında kalması mümkün değildir. Bu sebeple halkla ilişkiler profesyonelleri için yeni bir mücadele alanı ve yeni teknikler gündeme gelmektedir. Halkla ilişkiler profesyonelleri dijital dünyada iletişim faaliyetlerini yürütürken aynı zamanda iletişim faaliyetlerinin sonuçlarını da ölçebilmelidir. Akademik alanyazında halkla ilişkilerde ölçme-değerlendirme sürecinde; eksikliklerin tespit edilmesi (Baskin, vd., 2010), standartlaşma çabaları (Michaelson ve Stacks, 2011; Macnamara, 2014; Volk, 2016; Buhmann, vd., 2019), sosyal medyanın etkinliği (Wright ve Hinson, 2012; Chung ve Taneja, 2016), modeller ve yeni model geliştirme (Noble ve Watson, 1999; Gregory, 2001; Macnamara, 2011; Macnamara, 2015; Thurlow, vd., 2017), hedef belirleme süreci, önemi gerekliliği ve hedeflerin yönü (Gregory ve Macnamara, 2019) ve ölçme-değerlendirmenin önemi, gerekliliği, (Anderson, vd. 1997; Hon, 1998; Gray, 1998; Hon ve Grunig, 1999; Lindenmann, 2001; Xavier, vd. 2005; Laborde ve Pompper, 2006; Watson, 2012; Watson, 2013; Macnamara ve Likely, 2017; Jakus, 2018) üzerine birçok çalışma görülmektedir. Her biri değerli olan bu araştırmalardaki temel eksiklik dijital ortamlarda faaliyet yürüten halkla ilişkiler profesyonellerinin iletişim etkinliklerinin sonuç ölçümlerini nasıl yapmaları gerektiği ve ölçümleme sürecinde hangi teknikleri kullanılabileceğine dair çalışmalardır.

Buradan hareketle bu çalışmanın temel amacı, Barselona Prensipleri 3.0'da dile getirilen "ölçme ve değerlendirme; çıktıları, sonuçları ve potansiyel etkiyi belirlemelidir" ilkesini temel alarak, dijital veriler üzerinde alternatif bir yöntem kullanarak, iletişim faaliyetlerinin sonuçlarına yönelik bir ölçme gerçekleştirmektir. Dolayısıyla iletişim faaliyetlerinde sonuçların ölçülmesine yönelik temel sorunsalın aşılmasına katkı sunmak amaçlanmaktadır. Bu sebeple araştırma kapsamında aşağıdaki araştırma soruları ve hipotezlere cevap üretilmeye çalışılmıştır:

A.S. 1: Kurum sosyal medya verilerinden hareketle halkla ilişkiler etkinliklerinin çıktıları ölçülebilir mi?

A.S. 2: Kurum sosyal medya verilerinden hareketle halkla ilişkiler etkinliklerinin sonuçlarına yönelik ölçümlemede veri madenciliği alternatif bir yöntem olarak kullanılabilir mi?

A.S. 3: Kurum sosyal medya verileri ve sonuç ölçüm bulgularından hareketle potansiyel etkisi belirlenebilir mi?

Hipotez 1

H_0 : Pozitif duygular ile kurumun mevcut parametreleri arasında ilişki yoktur.

H_1 : Pozitif duygular ile kurumun mevcut parametreleri arasında ilişki vardır.

Hipotez 2

H_0 : Negatif duygular ile kurumun mevcut parametreleri arasında ilişki yoktur.

H_1 : Negatif duygular ile kurumun mevcut parametreleri arasında ilişki vardır.

Amaç doğrultusunda çalışmada karma yöntem benimsenmiştir. Çalışmanın araştırma bölümü üç aşamadan oluşmaktadır. Birinci kısım çıktı ölçümlerini, ikinci kısım sonuç ölçümlerini ve son kısım ise potansiyel etkinin ölçülmesini içermektedir. Çıktı ölçümlerinde nitel yöntem benimsenirken, sonuç ve potansiyel etkinin ölçülmesinde nicel yöntemden yararlanılmıştır. Araştırma verileri, Türkiye İtibar Akademisi'nin her yıl düzenli olarak gerçekleştirdiği Türkiye İtibar Endeksi Raporu'nda belirtilen 44 farklı

sektör ve 440 kurum/marka arasından sosyal medyadaki etkileşim oranı en yüksek olan bir kuruma yönelik dijital platformlardan elde edilmiştir. Veriler; kurumun sosyal medya hesaplarındaki (Twitter, Youtube) kullanıcı yorumlarından, dijital platformlarda kurumlara, markalara yönelik şahsi düşüncelerin paylaşıldığı eksisozluk.com adresindeki kullanıcı yorumlarından ve kurum/markalara yönelik şikayetlerin dile getirildiği sikayetvar.com adreslerinden web kazıma tekniğiyle elde edilmiştir. Verilerin analiz edilmesi sürecinde; çıktı ölçümlerinin analiz sürecinde MAXQDA 2020 paket programı kullanılarak içerik analizi yapılmıştır. Sonuç ölçümleri bölümünde dijital platformlardaki kullanıcı yorumları veri madenciliği yöntemlerinden biri olan metin madenciliğinde duygu analizi tekniğine göre analiz edilmiştir. Duygu analizi sürecinde açık kaynak kodlu R İstatistik Programlamadan yararlanılmıştır. Potansiyel etkinin ölçülmesine yönelik ise duygu analizinde elde edilen bulgularla örgütsel iş çıktıları arasındaki ilişkiye IBM SPSS Statistics 20 paket programı kullanılarak betimsel istatistik tekniğiyle analiz edilmiştir.

Araştırma neticesinde, dijital platformlar üzerinde bulunan verilerden hareketle iletişim etkinliğinin çıktı analizlerinin gerçekleştirilebileceği görülmüştür. Bunun yanı sıra iletişim faaliyetlerinin sonuç ölçümlerinde kullanıcı yorumlarındaki duygusal durumların yıllara göre değişiminin elde edilmesi, veri madenciliğinin iletişim etkinliğinin sonuçlarına yönelik başarılı ve somut sonuçlar ürettiğini göstermektedir. Çalışmanın son aşamasında veri madenciliği uygulaması neticesinde elde edilen verilerin, örgütsel iş çıktılarına etkisi analiz edilmiştir. Elde edilen sonuçlar, kullanıcı yorumlarının duygusal değişimleri ile örgütsel iş çıktıları (müşteri sayısı, pazar payı vb.) arasında pozitif ve negatif yönlü bir ilişkinin var olduğunu göstermektedir. Bu sonuç araştırmada ileri sürülen sıfır hipotezlerin reddedildiğini, alternatif hipotezlerin doğrulandığını göstermektedir. Özetle halkla ilişkilerde iletişim etkinliğinin ölçülmesinde sosyal medya önemli bir yere sahiptir. Ve bu süreçte veri madenciliği alternatif bir teknik olarak kullanılabilir.

Anahtar kelimeler: Halkla ilişkiler, Sosyal medya, Veri madenciliği, Ölçme ve değerlendirme, Barselona Prensipleri.

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