Evaluation in public relations – sentiment and social media analysis of Croatia Airlines

HRVOJE JAKOPOVIĆ
Department of Journalism and Public Relations
Faculty of Political Science, University of Zagreb
Lepusiceva 6, 10000 Zagreb
CROATIA

NIVES MIKELIĆ PRERADOVIĆ
Department of Information and Communication Sciences
Faculty of Humanities and Social Sciences, University of Zagreb
I. Lucica 3, 10000 Zagreb
CROATIA
hrvoje.jakopovic@fpzg.hr, nmikelic@ffzg.hr
http://www.ffzg.unizg.hr/

Abstract: - This paper is focused on evaluation in public relations and the use of sentiment analysis tools. The authors define the most important characteristics of contemporary PR and how it closely intervenes with marketing profession in the process of evaluation. Sentiment analysis program SentiStrenght and Social Mention are applied for measurement of perception of Croatia Airlines by passengers. The analysis was conducted on passengers’ reviews and it revealed that this national airline company is perceived more positively than negatively. The authors also examined Croatia Airlines Facebook page and company’s activities of public relations.

Key-Words: - public relations, evaluation, marketing, Croatia Airlines, sentiment analysis, Facebook analysis

1 Introduction

With the growing conscience about the importance of public relations (PR) for organizations, the profession of public relations entered the stage of redefining. The value of PR1 and methods of its measurement became a glowing issue for the further development and credibility of the profession.

In PR, a measurement called Return on Investment (ROI) is defined as “a ratio of how much profit or cost saving is realized from an activity against its total cost, which is often expressed as a percentage. In reality, few PR programs can be measured in such a way, because of the problems involved in putting a realistic and credible financial value to the results achieved [1]. In regard to that, term ROI is very differently interpreted in public relations.

Although effects of PR are evaluated in various ways, there is still lack of applicable evaluation models such as Jim Macnamara's [2] Pyramid Model. This model consists of several stages of research and ends with measuring outcomes, as well as attitudinal and behavioural changes.

In this cumulating evaluating process, the first stage called inputs is provided for measurement of the selected medium, content and format. The second stage called outputs is aimed for program evaluation, and finally evaluation presents the measurement of communication effects. There is also a fourth stage proposed, called out-takes, which is used for measuring parts of messages that audiences take over. For this model Macnamara [2] suggests low cost methods such as secondary data, advisory or consultative groups, unstructured and semi-structured interviews, but also using online space in terms of “chat rooms”.

The awakening about the importance of online techniques in PR also emerged from the 2nd European Summit on Measurement in 2010 that was
held in Barcelona and where evaluation standards were the key topic of the discussion. The standards were adopted and presented in the document called Barcelona Declaration of Measurement Principles (2010).

Along with the Declaration, seven principles for measurement in public relations were presented:
1. Importance of Goal Setting and Measurement
2. Measuring the Effect on Outcomes is Preferred to Measuring Outputs
3. The Effect on Business Results Can and Should Be Measured Where Possible
4. Media Measurement Requires Quantity and Quality
5. AVEs are not the Value of Public Relations
6. Social Media Can and Should be Measured
7. Transparency and Replicability are Paramount to Sound Measurement

The sixth principle clearly states and emphasizes that online evaluation is possible and necessary in public relations.

Compared to the online evaluation, the traditional evaluation is expensive and long lasting. Besides funds needed to conduct research, obstacles for PR practitioners are insufficient knowledge and time. On the other hand, new ways of communication through information and communication technology (ICT) opened numerous opportunities to evaluate PR efforts in short time and with simple tools. As soon as the Web became a place for conversation, information and knowledge exchange PR profession started looking to a new horizon.

2 Sentiment analysis

New ideas in a new time led us to the concept of PR 2.0 which is characterized by the use of different methods than those that were used before.

“PR 2.0 favors engagement more than hits, referrals more than eyeballs, activity more than ad value, sales more than mentions, and market and behavioral influences more than the weight and girth of clip books.” [3]

Today, a great number of analytical tools that are available for measurement can be downloaded from the Web for free. Such tools can give various information on how many visitors have visited a certain page, how much time they have spent there, what were they looking for, as well as demographic data about online users. In this vast area of information it is very important to know what information is relevant for the evaluation in public relations..

For Kunczik [4], the key problem of online interaction is identification of online publics. It is harder to confirm someone’s identity due to the physical distance between users.

The evaluation can be properly conducted using new approaches. For example, as Phillips and Young [5] point out: “Valuing of a blogging campaign might include the value of visitors, the secondary value of comments, and the tertiary value of mentions in other social media (the more valuable ones are those that point back to the organization’s blog or website).”

Jim Sterne [6] emphasizes some business outcomes that are measurable and important for PR:
- awareness - how many people know about your company or offering
- survey completions - how many were willing to answer your questions
- subscriptions – how many signed up for your newsletter, blog, or tweets
- registrations - how many wanted to be a member of your club
- blog comments - how many were engaged in conversation
- blog posts - how many mentioned you to others
- leads - how many are potential customers
- purchases - how many actually bought something from you.

Focusing on keywords in comments can be an effective way to find out what are the dominant attitudes and opinions on a certain issue. It can be useful for measuring perception. Solis and Breakenridge [3] recommend the use of a “suckometer” or “DIEometer” when running a search on a Web browser. They propose a query consisting of words such as “yourcompany+sucks” and “DIE+yourcompany” (Ibid.). In order to use it properly, it is important to think of the words that consumers would use with the organization's name.

In the past few years, the term sentiment analysis or opinion mining marks the use of natural language processing applications to get an insight on users’ attitudes and opinions. Pang and Lee [7] define sentiment analysis as a method that seeks to identify the viewpoint(s) underlying a text span. Other authors see it through the polarity of individual perspectives. “Sentiment analysis is the task of identifying positive and negative opinions, emotions, and evaluations.” [8]

Sentiment analysis is very useful for planning and evaluation in public relations. An important piece of
information during the decision-making process is what other people think.

There are many sentiment analysis tools which can be used for online evaluation in public relations. But, many of them are dealing with the same problems, since “metaphors afford interpretations that clash with the literal and so words must be taken literally lest they lose their meanings.” [9]

Computers still aren’t completely precise in sentiment analysis of content, since for humans even the simplest words have a variety of meanings, which are a complex combination of human emotions, experience and knowledge.

As researchers emphasize [7]: “Some of the most effective machine learning algorithms, e.g., support vector machines and conditional random fields, produce no human understandable results such that although they may achieve improved accuracy, we know little about how and why apart from some superficial knowledge gained in the manual feature engineering process.”

3 Sentiment analyses of Croatia Airlines

Croatia Airlines (CA) is a Croatian national airline company which is confronted with financial problems that began in 2008, after two years of successful and positive financial annual reports. Nowadays CA is trying to obtain the high level of quality of their services despite the negative financial results that track this company from 2008. Croatia Airlines reports that the reasons for poor financial results can be found amongst all in global economic crisis and high prices of fuel.

The situation even got worse in July 2010 when syndicate of Croatia Airlines cabin personnel started a strike with a demand for respecting their work rights. Years which were concluded with poor financial results affected the situation in CA. The company had huge problems with the strike of their employees in May 2013. Dissatisfied employees protested because of new collective contract which implies that they will have to accept lower wages. The loss in millions of euros over the years brought this company to the point where it can only choose between selling the company or starting a new partnership. Although before it was only speculated that CA will enter the process of privatization, according to many recent media reports it became an inevitable fact.

The aim of this research is to evaluate the recent rating of Croatia Airlines, under the consideration that negative financial results over the years and two strikes of CA employees could have influenced the company's image and rating.

Our research question tries to examine whether effects of negative financial situation influenced the image and the rating of Croatian Airlines.

The hypothesis was set that Croatia Airlines still has rather positive image among passengers and in public, despite the negative financial situation in the past few years.

3.1 SentiStrenght analysis of passenger reviews

The research was conducted with sentiment analysis tool SentiStrenght. Since serious financial problems for CA started in a year 2008, we assumed that the negative financial situation could appear and influence company's functioning approximately a year after problems emerged.

For that reason, the analysis with SentiStrenght covered a period of four years (from July 1st 2009 till June 30th 2013). SentiStrenght is a sentiment analysis tool used previously in several research papers [10, 11] where it proved its relevance.

It is an open source application which allows the quick analysis of the input text. The evaluation of the text is represented on the positive scale from 1 to 5 as well as the negative scale from -1 to -5. The ratings 1 and -1 represent neutral and weak negative sentiment, while 5 or -5 represent strong sentiment (extremely positive or extremely negative).

The application can even be used for the analysis of the informal language. SentiStrength can be adjusted for the analysis of languages other than English, but it is necessary to translate the term list. In this research, the application was used for the analysis of passenger reviews on websites which collect the travel ratings and reviews.

The research included analysis of the following websites: Skytrax, Routehappy, Airlikes.com and Review Centre. The analysed sample consisted of 44 passenger reviews from selected websites.


6 Routehappy, https://www.routehappy.com/


The result of the analysis presented in Figure 1 shows that positive sentiment associated with Croatia Airlines mostly obtained level 3 rating (32%) on the scale from 1 to 5 (1 - neutral; 5 - extremely positive). The following most frequent rating was level 2 (30%).

Overall, passengers’ opinions and attitudes towards CA can be described as moderate positive sentiment on the positive sentiment scale. The frequency of the rating level 4 is lower, only 19%. The rating level 1, which implies neutral sentiment, revealed that 19% of passenger reviews were neutral, whilst rating level 5 revealed that none of the passangers expressed an extremely positive sentiment in the review.

Some of the positive feedbacks towards Croatia Airlines were: “nothing very fancy but a pleasant way to travel”, “very clean aircraft in very good condition, friendly personnel, smooth flight”, “generally, good service for 1.5 hour flight”, “I think it is very good value”, “good airline, offering good product”, “very impressed with their service”, “we really enjoyed both flights”, “one of the best flights I’ve had with this airline over the years”.

The word frequency method showed that words “good” (24 occurrences), “like” (13 occurrences), “nice” (9 occurrences), “pleasant” (5 occurrences) and “excellent” (5 occurrences) often occurred in positive sentiment ratings. The specific booster word “very” (42 occurrences) was often used for strengthening the positive or negative sentiment (the examples of two positive phrases are “very good” or “very nice”).

On the other hand, results of negative sentiment ratings (Figure 2) indicate that Croatia Airlines is by majority of passengers not perceived very negatively, obtaining the rating level -2 in 44% of reviews on the scale from -1 to -5 (-1 – neutral; -5 – extremely negative). The next most frequent rating was the rating level -3 in 28% of the reviews. The neutral sentiment was present in 23% of the reviews, while the rating level 4 was found in only 5% of the reviews. The extremely negative sentiment towards this company (the rating level -5) was not found in any of the passengers’ reviews.

Several negative comments were: “the food, for business class, was more than disappointing even at that early hour”; “all together, a very bad experience for a lot of money”; “both flights seemed to be disinterested in servicing customers”, “the worst company ever to fly with”, “grumpy unfriendly crew, food inedible”.

The most frequently used negative words were: “bad” (4 occurrences) and “badly” (2 occurrences), “problem” (4 occurrences) and “problems” (3 occurrences), “worn” (4 occurrences) in noun phrase “worn out seats” and “worse” (3 occurrences). The booster word “very” increased the strength of negative phrases in “very negative” and “very bad”.

The overall ratio of the positive and negative sentiment (Figure 3) indicates that airline company Croatia Airlines succeeded to maintain rather positive than negative image among passengers in the past few years.

The recent study of Mohamed M. Mostafa [12], which included sentiment analysis of tweets for several airline companies in 2013, showed that
Egypt Air had mostly negative sentiment score (70%), as well as Kuwait Airways (71% negative). On the other hand, Fly Dubai had more positive (60%) than negative (40%) overall sentiment score.

The comparison of these results with the overall sentiment score for Croatia Airlines indicates that Croatian national airline company still has potential to be on track for success.

3.2 Social Mention analysis of Croatia Airlines

Social Mention application is used for searching and analyzing information in new media. It includes monitoring of more than a hundred of different sources such as Twitter, Facebook, FriendFeed, YouTube, Digg, Google, Flickr, Delicious, Photobucket, Yahoo News and other. Social Mention provides a real-time analysis and is helpful for tracking and measuring online user generated content on the different topics (companies, people, products).

As part of our research, we examined the overall sentiment towards Croatia Airlines, analysing every mention of CA in a one month period (from August 13th 2013 to September 12th 2013).

The results in Figure 4 revealed that mentions of CA are mostly neutral (89%), followed by positive mentions (11%). In our experiment, we did not find even one negative mention of this company.

Overall, Croatia Airlines company is most frequently mentioned on Twitter (32 occurrences), Flickr (17 occurrences), Ask (7 occurrences) and, finally, Youtube (6 occurrences). It is not unusual that the largest number of mentions was found on Twitter, since Twitter is mostly used for the fast and dynamic information exchange.

Social Mention Analysis - Croatia Airlines (%)

When it comes to positive mentions, we found 4 positive sentiments on Twitter, dealing with the financial situation and the possible takeover of CA. Furthermore, two positive videos were placed on Youtube: one video titled „Croatia Airlines - Epic 15 Minute Full HD Tribute”, dedicated to crews and workers of Croatia Airlines and the other titled “Croatia Airlines A319-112 [9A-CTL] Landing @ Berlin-Tegel 06.07.2013 (HD)”, showing the landing of an aircraft.

Finally, one positive mention on Facebook dealt with the need for the direct flight from Dublin to Zagreb.

The results indicate that Croatia Airlines is perceived more positively than negatively in various new media and that it makes a desirable partner in the market.

4 Croatia Airlines Facebook page

Facebook is the most popular social networking website which counted over 1 billion users in 2013. Companies all around the world use Facebook for promotion of their services, products and corporate identity. As all social networking sites, it is intended for establishing two-way communication.

The study conducted by Socialbakers in 2012 shows that companies mostly ignore questions posted by their Facebook fans and even close their walls on Facebook (25%) to block fans’ questions. Nevertheless, the research on the most socially devoted industries and brands (Socialbakers, 2012) indicated that following industries achieved the best Response Rate on Facebook: Telecom (60.4%), Airlines (55.0%), Finance (46.4%), Retail (43.6%) and Fashion (41.5%).

In July 2013, Croatia Airlines Facebook page reached a number of 60 000 fans (followers) with a trend of growth. Considering results that show a high percentage of social engagement in the airline sector, the analysis of Croatia Airlines Facebook page was conducted with the aim to measure company’s efforts in obtaining good relationships with their publics.

The analyzed period of CA Facebook page dates from June 1st to July 31st 2013. In this analysis we

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9 Social Mention, http://socialmention.com/

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measured public relations activities on Facebook page of CA after the big strike of Croatia Airlines employees that happened in May 2013. CA efforts after the big strikes and bad financial results over the years revealed what happens to online PR activities in times when company faces a process of privatization.

Public relations should also have considerable role in the process of privatization, especially if it comes to partnership between, as Toni Muzi Falconi [13] states, highly diverse organizational cultures. That includes efforts to build relationships with new publics.

Response Rate (RR) is used to measure the number of fans’ posts in relation to a number of replies by the Facebook page administrator. The use of this metric in the case of Croatia Airlines Facebook page showed that in the two month period administrators replied to 20 out of 143 comments of the fans. Response Rate of 14% for CA Facebook page still varies by month, since Response Rate in June was 16%, while in July it was 12%. The page administrators actively responded to fans questions regarding flights information and prices of airline tickets, but they were not engaging in critical discussions about Croatia Airlines.

As for comparison, the research13 provided by Peter Claridge in 2012 indicated that American Airlines responds to 42% of fan posts, which is perceived as an exceptional effort. On the other hand, the results revealed that US Airways did not engage in replying to fans comments on Facebook at all.

Average Response Time (ART) shows how quickly administrators of the Facebook page respond to fans posts. The analysis of Croatia Airlines Facebook page revealed that the ART for CA was 4 hours and 55 minutes; ART for CA in June was 55 minutes, while in July it was 10 hours and 54 minutes.

These results show large oscillations in a two month period and company’s inconsistency in PR activities. For the sake of comparison, the analysis of Facebook use by airlines in United States in 2012 (performed by Peter Claridge) indicated that JetBlue Airways had the best ART of 1 hour and 12 minutes among seven companies. The worst result had airline company Delta with the Average Response Time of 7 hours and 41 minutes. Croatia Airlines has proven that it is possible to obtain the ART of below 1 hour time.

Still, the Average Response Time of 4 hours and 55 minutes for CA can be perceived as an average effort to respond in time in a comparison to the US airline companies, among which United had approximately the same ART of 4 hours and 49 minutes.

Companies should have in mind that promptness and quickness in response make an important part of social networking. The analysis of Croatia Airlines Facebook page indicated that company is using the most popular social networking site mainly for one-way communication to provide information about their flights, game shows and prices of airline tickets.

5 Conclusion

The profession of public relations, same as marketing, is part of the information age. In a contemporary world it seems much easier to gather information, but much harder to decide which information has value. That is why evaluation in PR has been a key issue for years and providing the right answer to what the value of public relations is will lead the profession into the future.

In order to achieve that it is necessary to implement evaluation models in practice. PR and marketing are now cooperating more than ever and are using the same approach to achieve goals. Online tools for evaluation are very effective because they are low cost, can be used for analysis in a short time, and are directly used for the measurement of online user comments (attitudes and opinions). The value of sentiment analysis tools SentiStrength and Social Mention was proved through analysis of the Croatia Airlines image.

The Croatian national airline company CA is at the turning point. Poor financial results over the years brought CA to the list of possible privatization candidates. The evaluation of passengers’ reviews showed that company still has the slightly positive image.

Mentions in social web also revealed that the image of CA in public is more positive than negative. Regardless the financial problems that CA faced, it seems that they did not influence much the quality of their services.

The Facebook analysis showed that administrators of CA Facebook page are not using the potential of social media. The Response Rate and Average Response Time indicate that one-way communication is more of a rule than an exception.

Administrators do not interact with online users when it comes to criticism towards Croatia Airlines. Nevertheless, the company's current image makes CA a desirable partner and indicates that it could have bright future under new conditions.

References: