INTI JOURNAL | eISSN:2600-7320
Vol.2020:21

Sentiment Analytics for Monitoring and Analyzing Fan Page Posts

Harprith Kaur[1*], Deshinta Arrova Dewi[2], Lee Wen Yi[1]

[1]Faculty of Information Technology (FIT), INTI International University
[2]Centre for Emerging Technologies in Computing (CETC), INTI International University

[*]**Email:** harprith.randhawa@newinti.edu.my

Abstract

One of the most significant ways to increase brand awareness or brand popularity in digital marketing is by connecting them directly with consumers via social media using fan pages. Fan pages allow consumers or users to interact with each other, discuss opinions, and create interactive dialogue engagement among the virtual community. This kind of active communication is preferred compared to websites that tend to do passive viewing of brand content. Public figures or personal brands use fan pages too to increase their popularity. Through fan pages, public figures establish an enduring and strong connection based on ongoing efforts to activate mutual interactions, shared values, rewards, experimental contents, positive actions, and others. An active and well-organized fan page will attract new visitors or new fans each day. This implies the extensive awareness of branding popularity and competitiveness which are driven by fan page and consumers. This paper studies the usage of sentiment analysis techniques to understand consumers' preferences for different types of posts on a fan page. The sentiment analysis measures fan page's effectiveness and analyzes metrics like calculate engagement rate, number of comments or shares, or likings in fan pages and others. The results of sentiment analysis are visualized and expected to advice on the next strategy or moves to increase the fans' responsiveness. In this paper, the authors have analyzed data collection from Sina Weibo by scrapping data from webpages using URL, cookies, and user-agent based data. Webpage inspection and crawling were performed using mobile view and program implementation using Python, R languages and Tableau.

Keywords

Semantic Analytics, Fan Pages, Data Mining, Dashboard

International Conference on Innovation and Technopreneurship 2020
Submission: 4 September 2020; Acceptance: 7 October 2020

Introduction

Nowadays, numerous companies and personnel present themselves on social networking sites by establishing brand communities or populations to maintain continuous interaction with existing and potential customers (Luarn, P., Lin, Y. F., & Chiu, Y. P., 2015). Through this approach, the company/personnel may influence customers to use their brand choices, promote products and services, and cultivate brand loyalty. In modern businesses, utilizing social media has been known as an essential component to increase brand exposure, enhance brand attractiveness, reduce marketing expenses, improve sales, and develop loyal fans (Rahman, Z., et.al, .2018). The challenge of this approach is to attract people's attention to the brand posts, persuade them to view the content, click on posts, etc. and perform data mining analysis.

Previous studies reported that many companies or personnel are not familiar with data mining processes in social media (Greve, G., 2014). This creates difficulties for a fan page to process all available information such as consumers' opinion, consumers' like, dislike, want, and even their deepest feelings. Understanding fans behavior will provide an insight to the page owner on how to attract new fans and retain current fans. Hence, this paper focuses on the usage of sentiment analysis as part of the data mining process to understand consumers' preferences through a variety of posts on a fan page. The measurement using relevant metrics such as metrics to calculate engagement rate, number of comments, and others are presented in the results and discussion section.

Methodology

There are five steps adopted in this paper to analyze sentiment data. The graphical representation of the five steps is depicted in figure 1 below. Generally, these five steps are our research methodology.

Figure 1. Research Methodology

The first step i.e. data collection refers to the collection of numerous posts on a public forum in social media. In this paper, data collection was conducted towards posts about C-Pop Star on Sina Weibo fan page. The second step i.e. text preparation refers to the filtering process and extracts the important data before sentiment analysis. It includes identifying, checking, and eliminating irrelevant data. The third step i.e. sentiment detection refers to steps to retain subjective expressions using common computational techniques like lemmas, unigram, negation, etc. The fourth step i.e. sentiment classification indicates classification processes of sentiment data into the positive-negative-neutral group, like-dislike-neutral groups, good-bad-neutral groups, etc. And lastly, the output presentation refers to construct meaningful information in the form of a graph, charts, etc. In this paper, the interactive sentiment analysis dashboard is presented with the various

analytic possibilities available and how text analysis can lead to a sophisticated analysis of consumer sentiments (Saragih, M. H., & Girsang, A. S. , 2017).

Results and Discussion

After all steps in the research methodology are completed using Python and R language, the outcome of this paper is presented using data visualization called a dashboard. The dashboard is generated using Tableau and it includes consumers' or fans' comments, the gender of the fans, emotion, fans' comment against time (in minutes), and the comments listed with the emotion, polarity as well as the gender and the number of the comment occurrence. Dashboard's users can click on one of the segments of polarity, then the whole graphs and charts in the dashboard will change accordingly following result analysis. From this dashboard, users know and understand the polarity and emotions of each comment, the gender of fans who actively comments on that text and others.

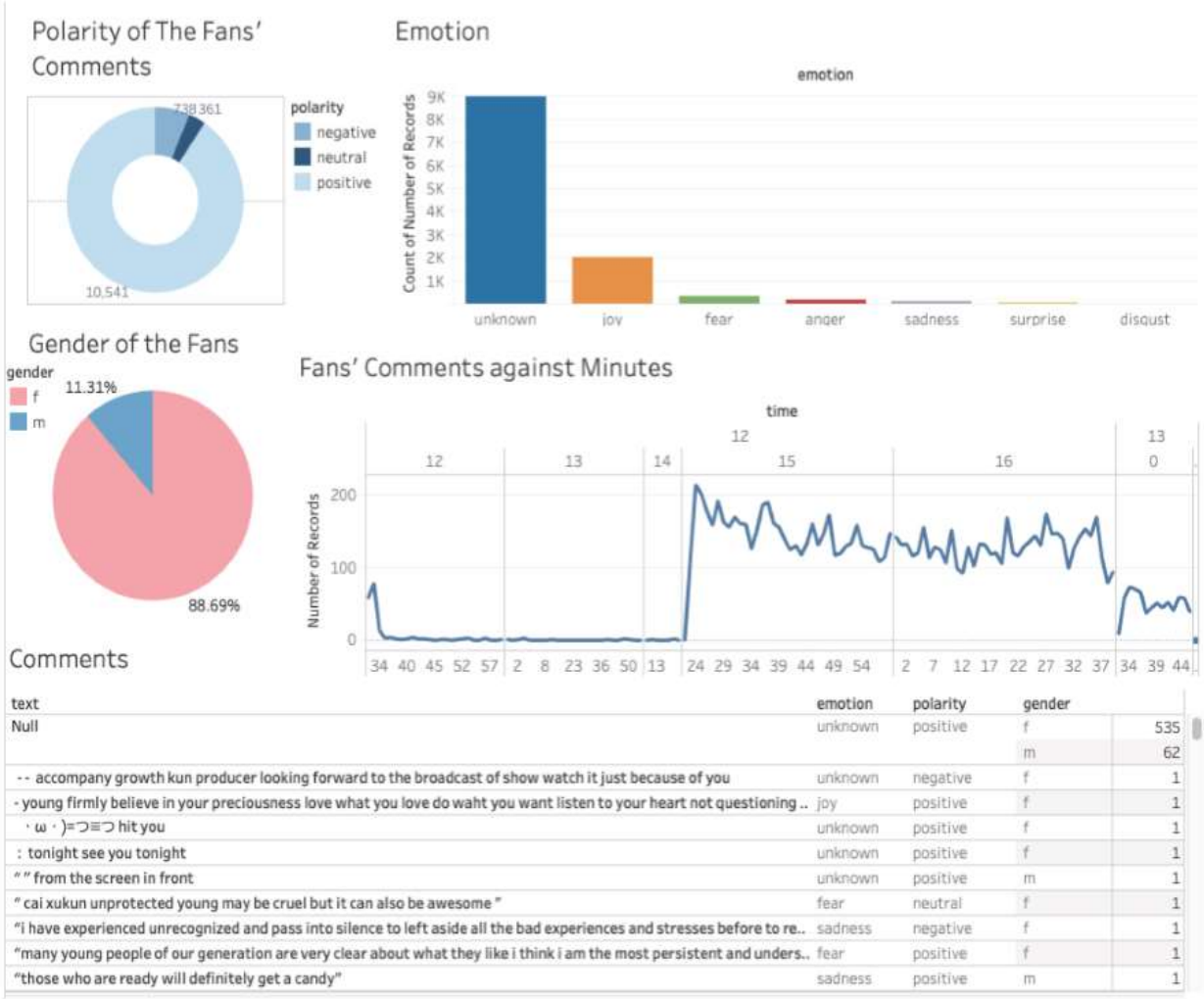

Figure 2. Dashboard of Sentiment Analysis

There are three polarities showed in the dashboard above which including a positive, negative, and neutral perspective. There are 10.541 positive comments generated, 738 negative comments, and 361 comments are neutral. The dashboard also shows that 88.69% out of 11.640 fans are female whereas 11.31% is male. The emotions of the fans are detected as well, it consists of joy, fear, anger, sadness, surprise, disgust, and unknown which is not definable. Unfortunately, the unknown emotion is in the highest number, it contains approximately 9000 comments. This happens due to the inability to suggest the emotion from the fan posts. Apart from that, the number of fans along with minute's line graph is shown in the dashboard. This indicates a number of the fans that provide comments every minute of a few hours in a day. Since the data collected in real-time data, hence the fans against time is only in certain hours of a day.

In addition to the dashboard, our results also include the word cloud illustration that denotes word frequency count reflecting the number of words appear in the texts. Word cloud is a collection, of words portrayed in different sizes. The bigger and bolder the word appears, the more often it's mentioned within a given text and the more important it is. By having this kind of visualization, users know the exact words that contribute to emotion detection in the analysis. In the word frequency count, all the words are being plotted according to their emotions with different colors. The figure suggests words which occur frequently in the emotion, for example, fantastic for "surprise", young for "unknown", bro for "anger", weight for "sadness", can and tired for "disgust", stage for "fear" and brother for "joy", etc. (Figure 3).

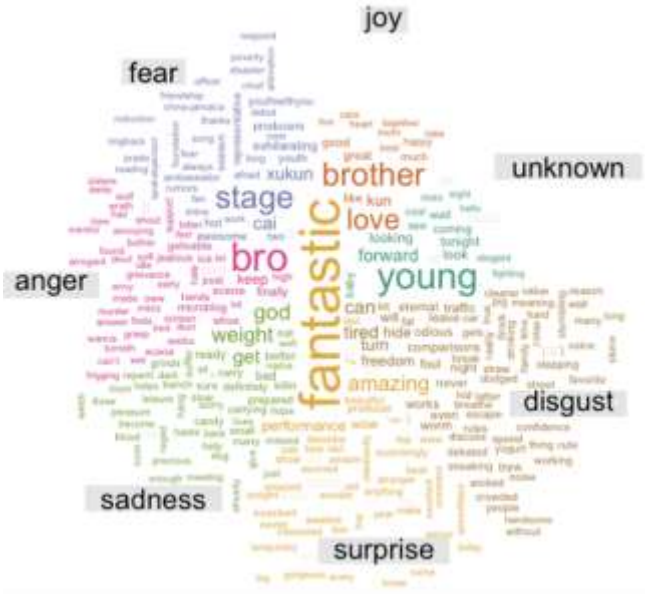

Figure 3. Word Cloud Analysis

Another important dashboard is to capture the behavioral engagement that show the most likely activity that triggers idea of participation from the fans. In this paper, we produce dashboard list of fan activities and popular fan activities. These two features benefit the company or personnel brand to strategize on what to post in near future. The list of fan activities in figure 4 suggests content and tagging as fans' most interested things to do. Means, they most likely are waiting for new contents with proper tagging posted by the brand. This kind of analysis helps the company or

personnel to create useful engagement activity and expand it accordingly. For example, activity that involve membership continuance, giving and receiving advises or recommendations within the community, etc. Level of engagement is crucial in achieving positive brand outcomes where consumers aspire to obtain value from the organization or personnel (Chen, M. H., & Tsai, K. M. 2020). Hence, sentiment analytic is able to give useful feedback in this area.

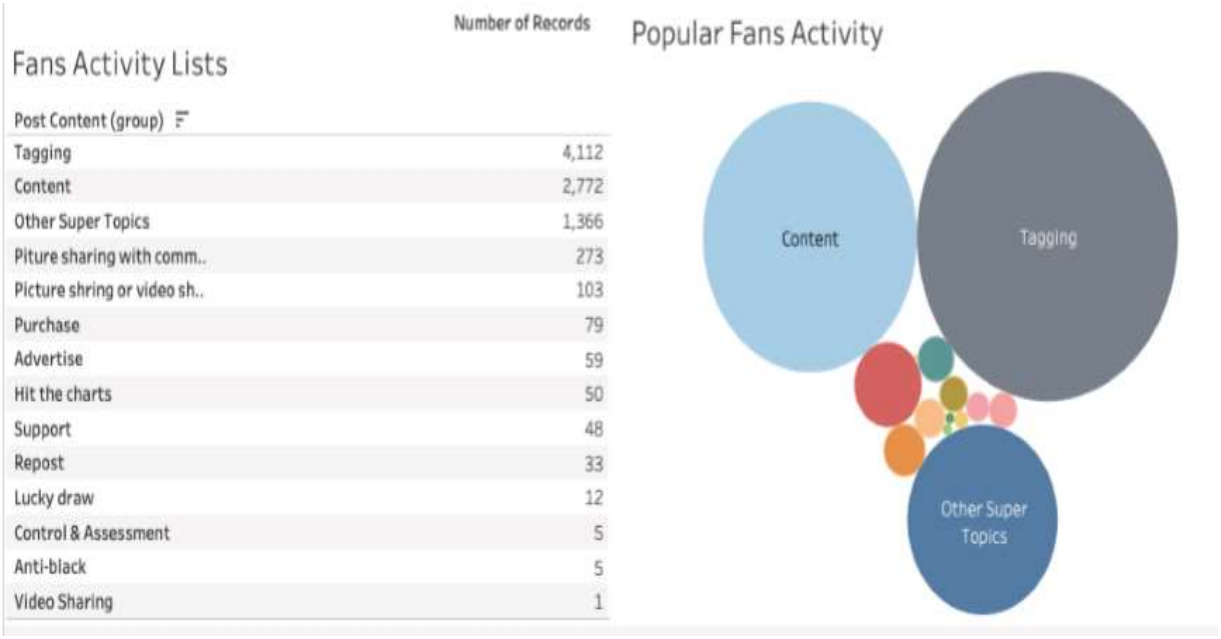

Figure 3. Capturing behavioral engagement

Conclusion

Despite the growing interests in online branding communities like a fan page, most studies are focused on investigating brand communities and utilizing the platforms but relatively lacking in using data mining analytics. The study in this paper has adopted and presented sentiment analysis techniques in helping the company or personnel to study more about their consumers and how to market products or services using the right posts on social media. Our results show that sentiment analytics are capable of providing much information underlying posts and comments by the consumers whereby the company or personnel can utilize this data to improve the level of engagement in the future.

Acknowledgments

The authors would like to thank the Faculty of Information Technology (FIT) INTI International University in providing support and guidance toward this paper.

References

Chen, M. H., & Tsai, K. M. (2020). An empirical study of brand fan page engagement behaviors. *Sustainability*, *12*(1), 434.

Luarn, P., Lin, Y. F., & Chiu, Y. P. (2015). Influence of Facebook brand-page posts on online engagement. *Online Information Review*.

Greve, G. (2014). The moderating effect of customer engagement on the brand image–brand loyalty relationship. *Procedia-Social and Behavioral Sciences*, *148*, 203-210.

Rahman, Z., Moghavvemmi, S., Suberamanaian, K., Zanuddin, H., & Nasir, H. N. B. M. (2018). Mediating impact of fan-page engagement on social media connectedness and followers purchase intention. *Online Information Review*.

Saragih, M. H., & Girsang, A. S. (2017, November). Sentiment analysis of customer engagement on social media in transport online. In *2017 International Conference on Sustainable Information Engineering and Technology (SIET)* (pp. 24-29). IEEE.