

Chapter 12

Sentiment Analysis: An Effective Way of Interpreting Consumer's Inclinations Towards a Brand



Anurag Tiruwa, Rajan Yadav and P. K. Suri

Abstract Sentiment analysis is an analytical technique, which classifies textual data and collates it into clusters of text that contains opinions on a certain topic, post, news, etc. It has been used to find consumer or user sentiments on various platforms, but very few studies have done any such analysis in the context of Facebook Brand Pages (FBPs). This chapter aims to shed light on the usage and applicability of the said technique to understand consumers sentiments through analysis of their comments on Facebook Brand Pages (FBPs) owned and moderated by Pepsi®. The data collected was further analyzed to understand the inclination of the consumer sentiments from two perspectives, i.e., negative and positive. It further discusses the analyses and presents the inference concerning the comments and the sentiments of consumers/users toward the social media engagement of the FBP moderated by Pepsi®. This chapter will help the marketers to understand the customer's emotional engagement and their inclinations toward the promotion/brand.

Keywords Facebook brand page · Online customer engagement · Sentiment analysis · Social media

12.1 Introduction

The role of the social media platform has increased during the past few years as the buying behavior of the consumer has been influenced by online brand communities, reviews about the product on social media platform and word of mouth (Eisenberg and Eisenberg 2007; Cheung and Thadani 2012; Munir et al. 2018). Trust in a company or brand is influenced by a user's peer group or the community with which he/she interacts regularly through various social media platforms. It is no longer

A. Tiruwa (✉) · R. Yadav · P. K. Suri
Delhi School of Management, Delhi Technological University, New Delhi, India
e-mail: anuraag.dsm13@gmail.com

P. K. Suri
e-mail: pksuri@dtu.ac.in

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dependent on the traditional channels of marketing and promotion used by organizations. Therefore, to reach and market products to these customers, brands have to allocate a significant budget to social media marketing promotions and creating digital media strategy for marketing.

Brands and marketers now have access to heaps of data generated by the consumer on a social media platform. This data can be processed to learn and understand deeper insights into consumers psychography. The comments that are posted by consumers on social media platforms generally contains information, which can be processed through qualitative analysis. Sentiment analysis has become a strong device for brands and marketers to assess the inclination of the consumers while they engage with them on social platforms like Facebook. Natural language processing software is available—both open source as well as licensed—which are being used by the marketers to find the sentiment of consumers for the social media engagements posted by them on the social media.

This chapter aims to study the effectiveness of a social media campaign run by companies; it involves the study of various customer engagement practices followed by the company. The chapter focuses on the attitude and behavior of the consumer for evaluating the success and effectiveness of the campaign. The same was measured by using sentiment analysis to assess the opinion of the consumer toward a particular post or the brand. For the purpose of discussing the usage of sentiment analysis, social media activities of the leading beverage player Pepsi® were explored and analyzed.

12.2 Digital Media Landscape

Digital Media is defined as audiovisual media contents and applications that are distributed directly over the Internet. This includes digital video contents (e.g., movies, series, and TV shows), digital music provided as download or Internet stream as well as digital games for different devices and electronically published content such as e-Books, e-Magazines, or e-Paper (Statista 2016). The Indian media and entertainment sector is expected to reach US\$100 billion by 2025, from its estimated size of US\$17.85 billion in 2015, due to its large capacity to consume new products and businesses. ScoopWhoop, an Indian digital media and content start-up, has raised US\$4 million from Kalaari Capital and plans to use the funds for expansion of its video production unit called ScoopWhoop Talkies (Ibef 2016). Revenue in the “Digital Media” market amounted to 2,306.7 million USD in 2016 (Statista 2017).

In India, the Internet is penetrating the masses and is available to the majority of the population through mobile Internet usage (Tiruwa et al. 2016). With the advancement in the high-speed internet connectivity, it is expected that soon the majority of the population will be enabled by this Internet Revolution to enable more and more people to actively participate in the social media and e-commerce platforms and to create a positive network effect for further growth (mmaglobal 2017). Therefore, the expenditure on digital ads, which comprises of social media strategies that range from search and display ads to mobile, email and multimedia ads, sponsored content, etc.,

will increase. Mobile advertisement spends, and social media aided digital video advertisement spends are expected to grow at 50.9% and 40% annually between 2016 and 2021, respectively (Brand Equity 2017). Therefore, marketers need a way to measure the repercussions of these digital ad campaigns on various digital media platforms or to assess the need of deploying any such ad campaign by listening in on what consumers are saying about them they need to make flexible changes in their marketing plans to accommodate any future needs that might arise. Thus, making the strategic management of the marketing plan flexible (Sushil 2016).

12.3 Marketers at Social Media

A few years back, brands were more interested in creating and managing their communities rather than focusing on customer engagement. But currently the marketers and brand have shifted their focus to Building Brand Awareness, Building a Community and Customer Engagement on social media platforms (Anderson 2006; EY 2014). About 81% of the brands considered Facebook to be the most important platform, while almost 48% of surveyed brands think that Twitter is the second-most important platform to be on, closely followed by YouTube (43% surveyed brands considered it to be the third-most important channel) (EY 2014). Marketers also created their own YouTube streaming channels to produce and stream video content to promote, market and showcase any development for the brand. Most of the marketers prefer creating a 360° integrated campaign and then extending the mainline campaign on social media. To add to this change in thinking, media-savvy social brands also prefer campaigns exclusively designed for social media. Designing a campaign just for Facebook and Twitter is on a major decline at just 10.53% (EY 2014).

The popularity of social media as a platform to engage customers is rising, leading to new business models that integrate SNS platforms with a focus to interact and connect with the customer. The prime goal is to influence the potential consumer and keep the current customers engaged through the various capabilities of the social media platforms (Kietzmann et al. 2011; Yadav 2015; Tiruwa et al. 2016). Marketers are now aware of the benefits of integrating social media into their businesses and are currently using social media strategies to reach the masses. Marketers have now understood the role of the brand communities and have started to keep a watch over the user-created Communities. Also, the integration of brand communities owned by marketers on various SNSs has become an integral part of the marketing strategy (Constantinides et al. 2008; Tiruwa et al. 2016). These SNSs provide a number of opportunities to the marketers to collect data and analyze it further to understand the customers' perception and attitudes toward the brand. The inferences from their perceptions can be used by the brand to make plans and promotions to keep the customers engaged with the band and its products.

12.4 Sentiment Analysis

Including Social media platforms as part of the integrative promotional business strategy is not enough, measuring its effects is important too. Social media like Facebook comprises of user data in the forms of comments, likes, and shares. This big data can be utilized to understand whether social media marketing or engagement is having some effect on engaging users or not. Sentiment analysis is one such field that analyses people's opinions, sentiments, evaluations, appraisals, attitudes, and emotions toward entities such as products, services, organizations, individuals, issues, events, topics, and their attributes (Tiruwa and Yadav 2015; Lexlative 2017). It refers to the general method to extract subjectivity and polarity from the text. Sentiment analysis is also known as opinion mining, and it refers to the use of natural language processing, text analysis, and computational linguistics to identify and extract subjective information in source materials. It also encompasses the extraction, identification, or characterization of the sentiment content of a text unit. It is widely applied to reviews and social media for a variety of applications, ranging from marketing to customer service (Mozetič et al. 2016). Opinion mining can be useful in several ways. It provides companies with a means to estimate the extent of product acceptance and to determine strategies to improve product quality. The sentiment found within comments, feedback, or critiques provides useful indicators for many different purposes (Condliffe 2010). It facilitates policy-makers to analyze public sentiments concerning policies or public services (Cambria et al. 2013).

It can be beneficial for marketers to assess the successfulness of a digital media campaign or the launch of a new product. Also, it can be determined, which product or service is most identified by the consumer and more popular among them. For example, a review about a newly launched digital camera might be positive, but if the review focuses on its being heavy, it might weigh on the consumers' perception and decision to purchase. If the marketers can identify such information from the interactions, discussions, and comments on the social media platforms, it would give them an edge to foresee such negative effects. They can get a better understanding of the public opinions as compared to a survey or a focus group as the data is user generated in the form of comments (Ramarjun et al. 2016). Sentiment analysis evaluates statements found across various social platforms to determine whether they are positive or negative with respect to a particular brand. A firm might track sentiment analysis over time to (1) determine whether their actions improve or damage sentiment; (2) track brand reputation; (3) test how marketing efforts affect attitudes toward the brand; (4) attitudes toward new products (Hausman 2013).

12.5 Research Methodology

12.5.1 Significance and Scope

The chapter is to examine the importance of brand sentiment analysis. The focus is to analyze various posts and campaigns initiated by Pepsi® on Social Media Platform Facebook. This chapter aims to understand the sentiment of the population engaging on these posts from the lexicon-based sentiments analysis on the user comments on the different types of posts on the Pepsi® Facebook Brand Page (FBP).

12.5.2 Research Design

Research design specifies a framework for conducting the research work. This study follows a descriptive research design, where secondary data was collected from online posts to analyze the sentiments of the users active on the social media platform (Kozinets and Kedzior 2009). For identifying customer sentiment about the campaign of Pepsi®, a food and beverage company, publicly shared Facebook posts and users comment on the same were collected and processed.

12.5.3 Research Technique

Sentiment analysis was conducted by analyzing the different type of content posted by companies on their Facebook page, and a set of a commonly used set of positive, negative, and neutral words was identified. Collected data is cleaned in excel using Sementria®, a plugin for Microsoft Excel®. Visualization and the analysis of the comment sentiments were done on Tableau®. Further, Word dictionary is created which depicts the words or the phrases used frequently and are categorized as positive and negative words.

12.5.4 Population and Sample Size

The population under study includes all the males and females, who follow the Pepsi® FBP and the entire friend list or followers of these users. The sample size includes the active users who posted content on the various posts of the brands.

12.5.5 Data Collection

Online posts were collected using the online tool provided at www.84code.com and is exported into .csv format. The unstructured data content was cleaned and processed for further analytical purpose. The comments of users who have liked the FBP were captured. Data were collected from September to October 2017. During this period, Pepsi® posted content relating to India Australia Cricket Tournament and encouraged users to post pictures with Pepsi® to win a chance to meet the Indian Cricket Team Captain Virat Kohli. Since the duration of this tournament was overlapping with the festive season of Diwali, the brand page also posted content relating to the festive season.

12.5.6 Research Tools

The Research Tools used for conducting the study include Facepager®, Microsoft Excel®, Sementria® for Excel®, and Tableau®.

- a. **Facepager®**—Facepager® was made for fetching publically available data from Facebook, Twitter, and other JSON-based APIs. All data is stored in an SQLite database and may be exported to .csv format. The data was extracted from Pepsi® by providing the username provided in the URL, which acts as an object for Facepager®.
- b. **Microsoft Excel®**—Microsoft Excel® is a spreadsheet developed by Microsoft for Windows, Mac OS X, Android, and iOS. It features calculation, graphing tools, pivot tables, and a macro programming language called Visual Basic for applications. The data exported to CSV format is cleaned using Microsoft Excel®.
- c. **Semantria® for Excel®**—Sementria® for Excel is developed by Lexalytics®. It provides a fast and accurate categorization of data into the positive, negative, or neutral tones embedded in the content. It attaches sentiment score to each theme, phrase, and entity. Sementria® plugin was installed to analyze the sentiment of consumer towards the social media campaign and the brand.
- d. **Tableau®**—Tableau®, developed by Tableau® Software, is software used for business intelligence and analytics. It produces a family of interactive data visualization based on data. The structured result produced after processing data using Sementria® was analyzed in Tableau®.

12.6 Data Analysis and Findings

Sentiment analysis was incorporated by analyzing posts of various kinds posted by companies on their Facebook page. Content posted by the company on their respective pages can be classified as of type—photo, video, status, link, and event.

Post of each category was selected, and analysis was performed by capturing the comments by the users who have liked the Pepsi® FBPost. Pepsi® was able to grab the attention of its targeted audience by posting the content frequently, and most of the content posted used hashtag and was related to contests. The analysis of various posts shows that customer engagement was done very well and can also gain no of followers and likes in the future.

12.6.1 Post 1

The post analyzed was of the type—photo; it received 73 K no. of likes and was shared by 154 users. Table 12.1 shows the calculated value of sentiment for each comment. Document sentiment indicates the value of the sentiment and document sentiment ± indicates the polarity.

Table 12.1 Sentiment score and polarity for users comment—Pepsi®—Post 1

Document sentiment	Document sentiment ±	User comments
0.51	Positive	#IndVsAusI hope to win. I love Pepsi
0.60	Positive	#WithPepsi I love Pepsi
0.52	Positive	Don't worry be happy, drink Pepsi® and feel good
0.47	Positive	Drink Pepsi feeling happy ndwin d match virat
0.47	Positive	#IndVsAus I HOPE ME WIN AND MEET VIRAT
0.44	Positive	won with Pepsi..hahahaaha
0.60	Positive	#WithPepsi...i love Pepsi
0.44	Positive	won with Pepsi
0.65	Positive	excellent..outstanding...lovely Pepsi
0.60	Positive	love virat
0.51	Positive	best of luck to u and ur team for next match against Aussies
0.49	Positive	Best wishes to one and all #Pepsi
-0.05	Negative	bad for health
0.52	Positive	nice nicely
0.5	Positive	#WithPepsi. feeling happy
0.5	Positive	Nice pic viratkohlisuperrrrrr
0.5	Positive	Good
0.44	Positive	won with Pepsi

(continued)

Table 12.1 (continued)

Document sentiment	Document sentiment ±	User comments
-0.60	Negative	Nonsense
-0.60	Negative	Pepsi is bad

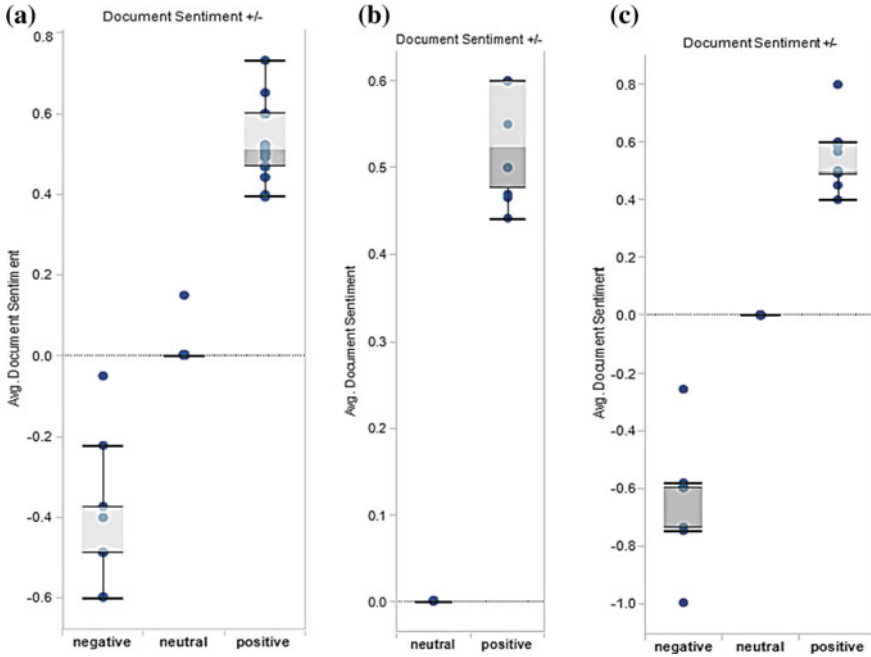


Fig. 12.1 a, b and c Box plot for the analyzed posts—post 1, 2, and 3

Table 12.2 Classification of keywords as positive and negative sentiment

Sentiment	Keywords
Positive	love, win, hope, win, won, best, good, happy, awesome
Negative	Bad, unhealthy, nonsense, damages

Figure 12.1a depicts the average value of the positive and negative value of comments. Tableau® was used to plot the box plot. The plot represents that consumers have a neutral opinion but with alignment toward positivity for the post. The post has an average sentiment value of 0.095.

Frequently used phrases and keywords used in comments were identified and classified as positive and negative based on the opinion of the consumer on the post. Table 12.2 represents the keywords as per the sentiment category.

The consumers had a slightly positive opinion about the campaign and posted their selfies with Pepsi® bottle in the comments. #IndVsAus was used with along with the photos posted. Although few consumers did not find it good, the overall sentiment was positive.

12.6.2 Post 2

The post analyzed was of the type—status; it received only 93 no. of likes and was shared by only three users. Table 12.3 shows the calculated value of sentiment for each comment. Document sentiment indicates the value of the sentiment and document sentiment ± indicates the polarity.

The box plot represented in Fig. 12.1b indicates that consumers had a positive opinion for the post. The sentiment value for the post analyzed was 0.54. No negative keywords were identified. Frequently used phrases and keywords used in comments were identified and classified as positive based on the opinion of the consumer on the post. Table 12.4 represents the keywords as per the sentiment category.

The consumers had a positive opinion about the campaign and posted their selfies with Pepsi® bottle in the comments. Comments showed excitement toward the campaign. It can be inferred that the contest would be able to attract and engage customers.

Table 12.3 Sentiment score and polarity for users comment—Pepsi®—Post 2

Document sentiment	Document sentiment ±	Comments
0.50	Positive	feeling happy with Pepsi
0.60	Positive	#SayItWith #Pepsi love #Pepsi #WithPepsi..
0.55	Positive	Pepsi mojo what a nice game i hope i win a chance and have fun with Virat Kohli
0.60	Positive	#Pepsi I love it #WithPespi. my first selfie
0.60	Positive	#Pepsi love
0.50	Positive	YoPepsi is #feeling_happy
0.44	Positive	#WithPepsi drink Pepsi and win

Table 12.4 Classification of keywords as positive and negative sentiment

Sentiment	Keywords
Positive	love, win, hope, win, won, best, good, happy, awesome

12.6.3 Post 3

The post analyzed was of the type—video; it received 1.9 M likes and was shared by 800 users. It received 439 K views. Table 12.5 shows the calculated value of sentiment for each comment. Document sentiment indicates the value of the sentiment and document sentiment ± indicates the polarity.

Figure 12.1c depicts the average value of the sentiment of comments. Even though positive comments were more as compared to negative in number, the presence of an almost equal number of neutral comments diluted the positive comments. Also, the phrases and the words used in negative comments were more negative as compared to the positive comments. Therefore, consumers have a slightly negative sentiment toward the post as also depicted by box plot. The post has a sentiment value of −0.09.

Table 12.6 represents keywords categorized as per the sentiment category. Frequently used phrases and keywords used in comments were identified and classified as positive and negative based on the opinion of the consumer on the post. The consumers had a slightly negative opinion about the campaign.

Table 12.5 Sentiment score and polarity for users comment—Pepsi®—Post 3

Document sentiment	Document sentiment ±	Comments
0.58	Positive	creative advertisement
0.49	Positive	This always make me smile
0.60	Positive	#HappyPepsi #Pepsi
−0.60	Negative	Nonsense
0.56	Positive	loved it
0.80	Positive	#HappyPepsiToYou #HappyDiwali
−0.75	Negative	Poison is out
0.58	Positive	I liked cool can
−0.60	Negative	Nonsense
0.60	Positive	Nice ad
0.56	Positive	loved it
0.50	Positive	nice song

Table 12.6 Classification of keywords as positive and negative sentiment

Sentiment	Keywords
Positive	love, enjoy, nice, super
Negative	Nonsense, poison, bad, not good, confusing

12.6.4 Overall Analysis

Pepsi® had been able to manage the promotions and campaigns very well; the reason for the same being its association with Indian Cricket team during the India-Australia Series and the number of contests and customer engagement activities (Pepsi® India, 2016). Pepsi® keeps the campaign alive by posting content about the same campaign for a few days continuously in various forms. Introduction of a new product like a mini can, or pet bottle with emoji label was done through various activities and contests. This promotes the sales of the new product; the target audience increases as friends of the followers see the activity in their respective Facebook feeds.

On analysis of 3 posts of Pepsi®, posted during the month of September–October, the overall performance in engaging followers of Pepsi® appears to be good. The attitude of consumer remained positive in maximum cases and negative only in two cases. The comprehensive sentiment calculated comes out to be slightly positive with a value of 0.022. Entities that occurred frequently includes—Pepsi, PepsiCo, #WithPepsi, #IndVsAus, #HappyPepsiToYou (Table 12.7).

Table 12.7 Summary of the analysis of the posts

S. no.	Measure	Pepsi®
1	Polarity	Positive
2	Sentiment	0.022
3	Max liked post	Photo
4	No of likes	73 K
5	Max shared post	Video
6	No of share	800
7	Most positive post	Status
8	Value	0.54
9	Max commented post	Photo
10	No of comments	198
11	Video	−0.09
12	Photo	0.095
13	Status	0.054
14	Link	0.15
15	Frequency of positive keywords	76
16	Frequency of negative keywords	27
17	Top positive keywords	Love, win, hope, nice, loved, awesome, enjoy, happy, best, super
18	Negative keywords	Bad, hate, nonsense, mad, poison, confusing, damages, not good, irritating, unhealthy

(continued)

Table 12.7 (continued)

S. no.	Measure	Pepsi®
19	Entity identified	Pepsi, #Pepsi #WithPepsi, #IndVsAus, #HappyPepsiToYou
20	Entity sentiment	-0.52



Fig. 12.2 Word cloud for the most frequently used words in the Facebook posts

Figure 12.2 represents Word Cloud; the size indicates the average value of phrase sentiment based on the frequency with which it has been used to represent a sentiment in the comments for the selected posts discussed in the previous sections.

As per the analysis of the posts, an observation made indicates that user does not comment on the content related to posts; instead, in most of the cases express an opinion about the product or the theme. Indian Cricket Team or player or a Bollywood actor featuring in the advertisement could be an object for discussion. The attitude toward the post holds valid only in the case where marketers promote the post as a contest. Some people relate the product as an unhealthy drink, which should not be consumed. While some consumers find it as a source of happiness and fun. In the case of Pepsi®, the average value of sentiment for the post is positive. On analyzing, entity sentiment which depicts the true opinion of consumer toward the product, the value comes out to be negative for Pepsi®.

12.7 Discussion

The study indicates the opinion of consumers for the FMCG sector with Facebook Brand Page of Pepsi® as the subject of study. The analysis of the posts indicates that followers’ comment on the content is not directly related to the topic of the content in most of the time, the comments relate to the celebrity featuring in the post or old jingles of the brand were used. Negative attitude mostly concerns with ill-effect of the

product on health and based on that users show displeasure. Similarly, the consumers who find the product tasty indicates the love for the brand. Hence, a positive opinion was observed. Only a few users post content related to the post. The opinion about posts mostly reflected in the case of contests and videos followed by events. Out of all types of post—status, photo, video, link, and event; sentiment related to the content was observed in the case of video. Finally, the majority of the negative comments were related to Pepsi® being unhealthy and not fit for consumption. The brand needs to address the same with better campaigns to restraint customers perceiving their product and brand as harmful to health. Pepsi® could post some content related to the product in the form of infographic educating people about the product and brand. Also, with that, some campaign showing social responsibility toward society.

Social media has made it easy for consumers to directly communicate with brands and marketers. The communication capabilities of the social media platforms have given the brands an opportunity to closely monitor and understand the consumer's attitude toward their brands/products. Consumers attitude and their sentiments toward a brand are important to marketers, and it gives them perspective and understanding to strategize better. Social media provides a plethora of consumer data, and Sentiment Analysis is one of the ways through which marketers get information about the consumers' inclinations toward a brand. As seen from the study, it was concluded that sentiment analysis could be used to understand the consumer's attitude and inclinations through the text analysis of the communication on the social media platforms.

12.8 Managerial Implications and Limitations

The information from sentiment analysis helps to gain useful insights about the product like the product seems to be unhealthy. Therefore, the company should position itself accordingly. The marketers should build content to encourage users to engage and participate. The focus should be on the content and videos, as they attract the audience and the comments made relates to the topic of content. Different types of content for the same campaign should be updated on the page more frequently, as it increases the follower engagement with the brand. Another important understanding from the study is that consumers should be encouraged to use hashtags to be eligible for the contest. This would motivate followers to comment related to the post and not their random thoughts and also create buzz for the brand as a trending topic on the internet.

The study was focused solely on FMCG sector, and only one FMCG brand was considered for data collection and analysis. There are a plethora of social media platforms, where both people and brands are actively participating; this study was limited to SNS Facebook. Software tool Facepacer® has a limitation that it cannot retrieve 500+ comments at a time for a given post; thus we can say that analysis was based on the limited data. The software which analyzed the comments was restricted to analyze only English language so there might have been instances where comments

written other than English were not considered fit for analysis. The demographics of the users cannot be established and taken into consideration while analyzing the data. There is future scope for the study regarding a comparative study between two similar brands in different social media platforms.

12.9 Conclusion

Brands and marketers need to understand the customer's inclination or attitude toward them to strategize accordingly. Social media has provided a platform from where they can get a huge amount of data which can be processed to develop the said understanding. Quantitative methods are undoubtedly useful in finding more about customer's attitude and behavior, but organizations now are moving toward the qualitative analysis of the data in order to understand customers' inclinations. Social Media platforms like Facebook gather data in the forms of comments from the users, which can be processed through language processing tools to find meaningful information. Sentiment analysis can be utilized by the marketers to assess the implied inclinations of the customers about their product/services from their engagements (comments) on FBPs moderated by the marketers. As the study discussed in this chapter depicted, it is quite useful to understand and measure the online engagements from the perspective of customer sentiments. The results of the study indicate the sentiment toward each post and company as an overall entity. It was observed that the Pepsi[®] received positive sentiment in most of the cases. The study was also useful in finding out the keywords, which might give an insight into understanding the reasons for customers' positive/negative sentiments. It was noted that Pepsi[®] posted interrelated content frequently, which continuously engaged the customers. Pepsi[®] also received negative sentiment at the entity level, therefore, as per the recommendations. Pepsi[®] can work on customer interaction more, converting the negative sentiment into a positive one.

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