

Role of Sentiment Analysis in consumer research: A case study of Reliance Jio

*Dr. Savitha Nair

ABSTRACT

Sentiment analysis provides insights from social data beyond social KPIs. It is evolving as one of the useful research methods in marketing and involves the processing of natural language and text to understand electronic word-of-mouth (eWOM) that are expressions of consumers' attitudes and feelings towards brands or topics in online conversations. Today, consumers converse online using several social media platforms such as Facebook, Twitter etc. People write, comment and express their emotions on almost everything including brands, movies and other social events and activities in these platforms. The social engagement that happens through these sites is available to the marketer in real time and they act as one of the important sources of marketing intelligence. Marketers and researchers have accepted the fact that social communities have a significant impact on consumer behavior. With a huge amount of user generated content available online at a comparatively cheaper rate, sentiment analysis can be used as an alternative research method to complement the traditional qualitative and quantitative consumer research. This study explores the scope of sentiment analysis based on literature review. Consumer sentiments on Reliance Jio during its pre and post launch phases are analyzed based upon user comments and insights are drawn. The study confirms the application of sentiment analysis in bringing out an integrated perspective in online consumer research.

Introduction

With the emergence of Web 2.0, internet has become an inevitable part of our day to day lives with social networking attracting people across the world. Social networking via social media has changed the way people communicate with each other. Social media involves- blogs and micro-blogs, virtual worlds, collaborative projects, content community sites, feedback related sites and social networking sites. These serve as platforms to engage in conversations, participate in debate, exchange views, build relationships, ask questions, share information and the like in the real time (Chan & Guillet, 2011). Such platforms enables consumers gather unbiased product related information from other consumers and provide them an opportunity to offer their own consumption related experiences and advices to others by engaging in what is known as electronic word-of-mouth or eWOM (Gwinner, Walsh, & Gremler, 2004).

* Associate Professor, GRG School of Management Studies, Peelamedu, Coimbatore- 641 004;
E mail: savithanair@grgsms.ac.in : Mobile no: 93644 23236

Millions of people around the world use social media to share experiences and impressions of various aspects of their daily lives. They express their opinions on almost anything including brands, movies and other activities. From a marketer's perspective, such expressions provide an exceptional opportunity for marketing intelligence. They provide deeper insights on consumer behavior, perception and attitude in real time. The reliability of such user generated data is significantly high as they occur without intrusion or provocation. Sentiment analysis is a tool in data mining that offers a systematic assessment of online expressions. It focuses on the analysis of people's attitudes, opinions and feelings on the topic of interest using machine learning techniques.

Review of literature

Collaboration and communication are the most important aspects of social engagement in social media (Jansen, Zhang, & Sobel, 2009). Marketers and researchers have accepted the fact that social communities have a significant impact on consumer behavior. Word of mouth plays a vital role in affecting consumer decisions, brand choices and building or destroying brand reputations (Karlgrén, Sahlgren, Olsson, Espinoza, & Hamfors, 2012). The purchase funnel model of consumer decision making is losing its relevance in today's socially connected world. Word-of-mouth, the oldest and the most effective referral method is gaining prominence on a massive scale, thanks to social media platforms and other online communities (Sundharam, 2012).

Consumers' sentiments towards brands are a major factor considered by researcher to measure consumer perceptions. Through social media interactions, consumers are playing a major role in influencing other consumers' purchase decisions. Electronic word-of-mouth through social media has a direct positive effect on both consumers' product perceptions and purchase intentions (Hodza, Papadopoulou, & Pavlidou, 2012). Such eWOM is freely available for marketers to research and draw insights about consumer perceptions towards their brands. It provides a window of opportunities for marketers to start, enable, influence and monitor the buzz around their brands and strategize accordingly. There is a lot of research on sentiment analysis of movie reviews, public polls; news articles etc and many sentiment analyzers are available as open source (Pagolu, Challa, Panda, & Majh, 2016).

Scope of sentiment analysis

Sentiment analysis, also known as opinion mining, seeks to understand the opinion or attitude of an individual or group regarding a particular topic or context, from text, video and audio data. Among the data that originates from the customers via email, social chats, posts etc, some are neutral in terms of emotional indication; some have positive connotations, while others have negative connotations. This polarity of sentiments can be captured and analyzed to understand what the customer or other stakeholders think about one's business (Marr, 2016). Sentiment classification involves categorizing the opinions in a piece of text into positive, negative and neutral ones.

Sentiment analysis has its base in psychology, sociology and anthropology with a focus on emotions as shaping cognitions. For a marketer, a customer's emotions indirectly showcase his purchase intentions. Research has proved positive correlations between emotions and consumption and product

evaluations (Mano and Oliver, 1993). While sentiment analysis is not new in consumer research, its methodology has moved away from traditional survey based approach to text based opinion mining.

Sentiment analysis is done through a five stage process that starts with data collection from user generated web content through social media and other online communities/review platforms. This is followed by text preparation that involves the cleaning of data by eliminating non relevant and non textual content. The next stage is sentiment detection through which only those text that contain subjective opinions are retained for further analysis. The fourth stage is polarity classification which involves classification of subjective sentences into groups using lexicon based approach. The final step is presentation of output using graphical displays to convey meaningful insights on the associated sentiments (Rambocas & Gama, 2013). A lot of online and open source tools are available to perform sentiment analysis. This, to a large extent, substantiates the growing preference towards sentiment analysis when compared to costly and time consuming traditional methods of consumer surveys.

Case study of Reliance Jio

Reliance Jio Infocomm Ltd. known as Reliance Jio, is a LTE mobile network operator that provides wireless 4G LTE service network with a coverage across all 22 telecom circles in India. Jio that created a sensation in Indian telecom sector was officially launched on September 5th, 2016. The operator has crossed 50 million subscriber base on November 26th, 2016, and has been adding an average of 6 lakh customers per day. It has been offering free voice services bundled with 4G data usage along with a host of content services free of cost until 31st December, 2016 (Srikapardhi, 2016). This offer is likely to be extended to 31st March, 2017. Being a trend setter with a breakthrough value offer, Jio has been in the limelight for several days. Not just the media, but also the consumers and general public spoke lot about Jio during its pre and post launch phases. Hence the researcher decided to capture the sentiments surrounding Jio in the social media during its pre and post launch phases so as to gather insights on people's reactions to it. The case study has been taken up to showcase how sentiment analysis can be used as an effective tool in consumer research.

Research objective and methodology

The objective of the research is to analyze the sentiments associated with Reliance jio mobile service using sentiment analysis and secure insights on people's reactions toward it. The research is exploratory in nature and it uses qualitative data from social media. The opinions, comments and expectations of people during the pre-launch of Reliance Jio were taken from www.mouthshut.com, a user-generated content and consumer review website. A sample of 50 comments was extracted by manual web scrapping and exporting to MS Excel. Lexical- based approach has been adopted for analysis. Semantria, an Ms Excel plug-in from Lexalytics was used for sentiment classification. The classification was done at the document level as well as at the individual word level.

The opinions, comments and reviews of the people during the post- launch phase were taken from Twitter, the popular micro-blog. Twitter comments were taken as the source due to its advantages such as short, crisp and clean data, to a larger extent, and absence of native language influences. A

sample of 9000 tweets were extracted with Twitter API using 'R' packages twitteR,ROAuth. The data was cleaned and prepared for analysis using tm package. Using the sentiment package in R, the data was analyzed for sentiments and polarity. Naive Bayes Algorithm has been employed for classifying the text. The results after analysis are plotted on graph using 'R' package ggplot2 for visualized output. Using online word cloud generator tagul.com, word cloud has been generated based upon the sentiments detected through analysis. Overall sentiments have been visually represented using SentiMeter for arriving at conclusions.

Data analysis and interpretation

A sample of 50 comments posted by people in the popular review site www.mouthshut.com was extracted to MS Excel and analyzed using Semantria as Ms Excel plug-in. A sample of comments and the associated document sentiments can be observed from the table below:

Table 1: Sample section of the document & associated sentiments rating

Document sentiment	Document sentiment +/-	Data column
0.586090088	positive	Sometimes it used to hanged up and even result in lost of connection .But I am fully satisfied with service of this company.
0.351200014	positive	The 4g of reliance is too fast. I love that speed. It's so fast. When I used you tube I got shocked it was browsing the movie in hd without streaming or buffering and the quality was 1080p. It's so good. I love this. I am so thankful to reliance.
-0.5	negative	Very very weak network and maximum call drop every day I am very tried to use this.
0.083578005	neutral	Just got a new reliance Jio net connection, it seems to be awesome.
0.033752125	mixed	I got new Reliance Jio sim and used in my college. Internet speed is too good compare to other mobile networks. But big problem for me is when I go to home I can't use jio because no tower is available in my area . I ask customer care to that where do I complaint for providing new tower. They didn't respond well. This is so sad from Reliance.

The document sentiment has a range spread from -2 to 2, where -2 is really negative and 2 is really positive. The comments are analyzed and sentiment scores are given.

The phase based sentiments builds on Parts of Speech tagging done by the tool. The parts of speech for words and phrases are evaluated against patterns and compared with pre-scored words and phrases to map sentiments. The phrase based sentiments captured from the comments have been plotted in the graph below:

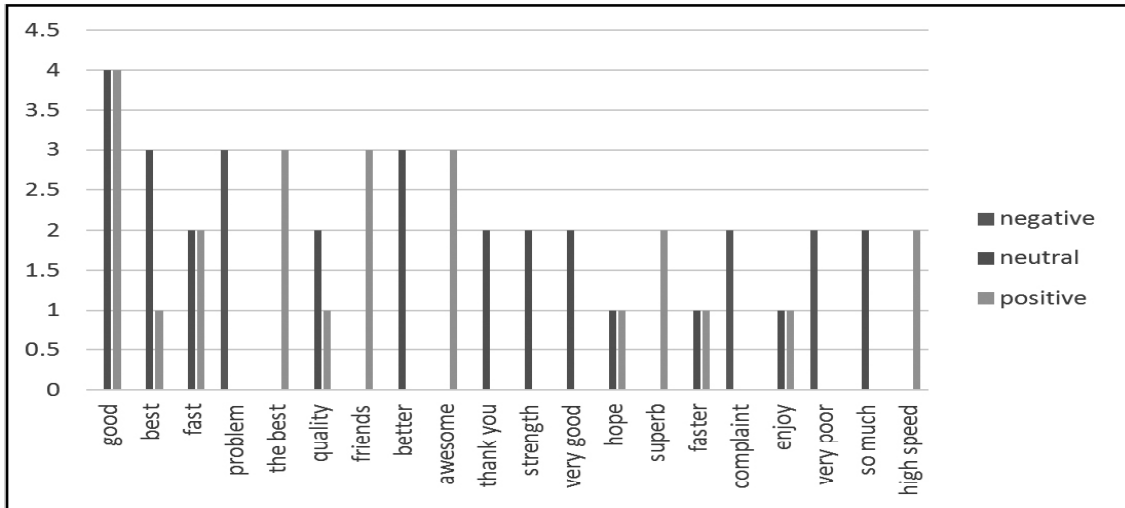


Figure 1: Phrase based sentiments associated with Jio pre-launch

For post-launch sentiment analysis, 9000 tweets were extracted from twitter and analyzed for its polarity. The objective is classifying the expressed opinions in the tweet into positive, negative or neutral and representing the same using 'R' package ggplot2 for visualized output of polarity.

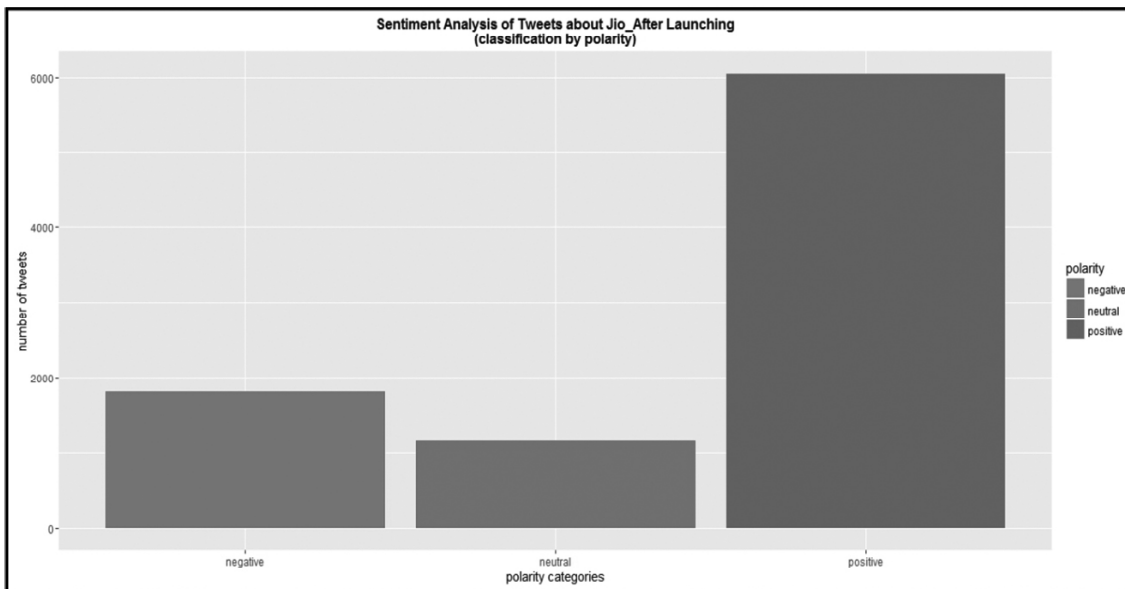


Figure 2: Sentiment polarity associated with Jio post launch

SentiMeter, the social web analytical tool has been employed to visually represent the overall sentiments associated with Reliance Jio.

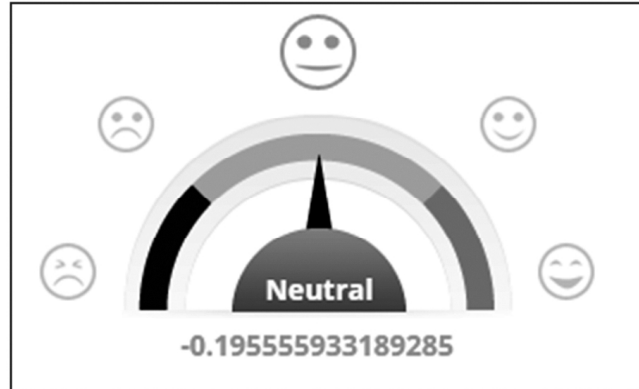


Figure 5: SentiMeter depicting overall pre-launch sentiments



Figure 6: SentiMeter depicting overall post-launch sentiments

Based upon the overall analysis of sentiments towards Reliance Jio captured from social media, it can be concluded that there was a neutral sentiment towards Jio during its pre-launch phase and an overall positive and favourable sentiment towards it during its post launch phase.

Conclusion

The study attempts to showcase sentiment analysis as a useful research tool in consumer research by conducting an exploratory study on the sentiments associated with Reliance Jio during its pre and post launch phases. Using lexicon based approach and polarity detection modules, neutral sentiments have been observed during the pre-launch phase and positive sentiments have been observed during the post-launch phase. The study proves that sentiment analysis using user generated content in various social media platforms is a very useful tool in consumer research, especially in today's time when consumers spend lot of time in social media expressing their opinions, posting their views, commenting on others views and sharing information. The information can be gathered without disturbing the consumers and the reliability of such information is very high. While

many organizations conduct consumer surveys to understand consumers' perception and preference towards their products, true opinions of consumers are very hard to collect. Sentiment analysis is an alternative tool to analyze consumer opinions and can be used as a complementary tool in qualitative consumer research.

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