Lexicon-based sentiment analysis of tweets on food delivery services

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Abstract

People often check online reviews before deciding on a product, restaurant, movie, hotel, itinerary, etc. Therefore, sentiment or opinion analysis is often required for practical use. Information gathered through Tweets is helpful for getting opinions on many issues, and Twitter is the most popular platform among various resources. Therefore, in this work, a sentiment analysis approach is used to collect data from participants. Apps used by food delivery businesses like Swiggy and Zomato are the primary emphasis as a means to construct a sentiment analysis approach. R is fed with Twitter data in order to do analysis. The next step is to clean up the data by removing any instances of stop words. The R language has built-in pre-processing, which makes use of the standard library files. This process is also used to sanitize the data. Next, the lexicon method is used to classify the emotions, collecting terms like "positive," "expectation," "negative," "trust," "joy," "fear," "sorrow," "anger," "surprise," and "disgust."The analysis showed that this study was superior than others using z scores and s scores. According to the statistics, Swiggy's platform receives more positive tweets than Zomato's does. According to the study, this means that a greater number of people may take advantage of the convenience of regular meal delivery via the Swiggy platform.

Keywords: Sentiment Analysis; Food Delivery Companies; Swiggy; Zomato; Twitter; Lexicon-based analysis;

1. Introduction

Sentiment analysis is now used to collect and analyze data with the individual's thoughts, opinions, and feelings included in. This technique is also referred to as "opinion mining" because of its focus on gleaning useful information from user reviews. Sentiment analysis is carried out with the use of intelligent methods, natural language processing, and statistical models for recognizing traits from vast volumes of data. Sentiment analysis sees widespread use in the business sector, where it is used to collect consumer feedback on products and services and then analyze it for insights into market trends and future revenue projections. Tweets, short communications sent to Twitter, may be written or viewed by anybody who has an account. More unstructured, in-the-wild language data is being gathered on Twitter. In addition to determining if tweets regarding a certain subject are positive, negative, or neutral, Twitter sentiment analysis may also be used to delve deeper into underlying emotions via the use of lexical technique.

The main focus of this research is an analysis of Zomato and Swiggy, two major food delivery services. Zomato is a large and well-known food delivery business that primarily targets young adults (those between the ages of 18 and 35). Customers who are used to using apps on their smartphones are likewise catered to. Zomato often incorporates the suggestions of its 1.42 million Twitter followers into the restaurant's operations. Swiggy, on the other hand, is India's most popular and widely used online food delivery business. Numerous individuals find it helpful in gauging the attitudes of others. Therefore, these corporations' official Twitter accounts include tweets.

As a result, several studies use lexicon-based methodologies for sentiment analysis. The manner that the acquired tweets' sentiment values are aggregated into positive and negative words is where it diverges from more conventional approaches. When computing emotions, the semantic orientation of words and sentences in a text is taken into account. It's more useful if you can accomplish it without setting aside a specific training batch of data. Therefore, the purpose of this research is to explore a sentiment analysis strategy for collecting consumer feedback on food delivery service apps like Swiggy and Zomato.

2. Proposed system

This research looks at the feasibility of using a sentiment analysis model to collect user feedback on food delivery apps like Swiggy and Zomato. This research uses the Twitter platform to get data on user opinions of the Swiggy and Zomato food delivery applications. The R programming language receives its data from Twitter as its input. After collecting data, stop words are removed. In addition, R's inbuilt pre-processing makes use of library files. The data is also cleaned up. Then, the fundamental emotions like happiness, sadness, anger, surprise, and disgust are identified by using the lexical method to the feelings.The results of the analysis, which included the z score and the s score, demonstrated that this research was superior to others. In Figure 1, we see a schematic of the proposed sentiment analysis methodology.
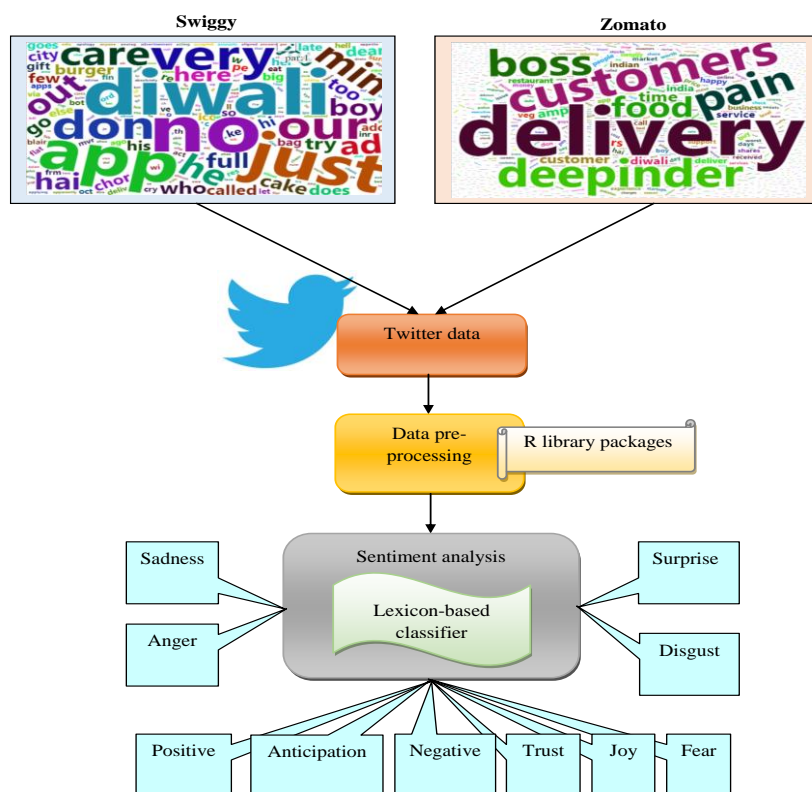

Figure 1: Architectural view of the designed sentiment analysis model

Sequential processes are listed here.

1: Data collection

This research uses the Twitter platform to get data on user opinions of the Swiggy and Zomato food delivery applications. In India, the use of apps that allow users to buy food online is growing in popularity. So, the Twitter app is used to glean messages mentioning meal delivery services. Information was gathered using the "TwitterR" library. There is a wide spectrum of sentiments represented in the 5000 tweets collected. The text data had some unnecessary pieces that had to be removed in the next processing phase. The collected tweet samples for sentiment analysis are shown in Table 1.Table 1: Collected Tweets for Research Purposes

2: Data pre-processing

The R programming language receives its data from Twitter as its input. After collecting data, stop words are removed. In addition, R's inbuilt pre-processing makes use of library files. The data is also cleaned up. The text analysis uses clean text for sentiment analysis. In addition, data cleanliness principles were used. The collected tweets are loaded into a data frame, where the words are then extracted and capitalized. Extraneous codes like numbers, symbols, URL links, punctuation, and retweets have been obtained along with the tweets and phrases. A corpus is created out of the data frame. There are also some stop words among these words. It must be eliminated.After collecting data, estimations are made according to tidy data principles, and the data is preprocessed.

3: Sentimental analysis

Emotions including happiness, sadness, anger, surprise, and disgust may be extracted using the lexical method to categorizing attitudes. Estimating sentiments is the most crucial task in analyzing and understanding user emotions. Many studies use lexicon-based methodologies for sentiment analysis because of this. The manner that the acquired tweets' sentiment values are aggregated into positive and negative words is where it diverges from more conventional approaches. When computing emotions, the semantic orientation of words and sentences in a text is taken into account. Doing so without first establishing a specific training set is preferable.

3. Result and analysis

The proposed model was implemented using the R programming language. The results of a z-score and an s-score analysis, with a focus on sentiment, are shown for two restaurants. Table 2 displays the z-score and s-score estimates produced for the Twitter data.

Table 2: Z-score on the recommended sentiment analysis

Swiggy		Zomato	
sentiment	Score	sentiment	Z_score
positive	1.0478469	positive	0.8591549
anticipation	0.3923445	anticipation	0.4971831
negative	0.7033493	negative	0.4183099
trust	0.4688995	trust	0.4943662
joy	0.3827751	joy	0.3633803
fear	0.3373206	fear	0.2309859
sadness	0.3325359	sadness	0.2098592
anger	0.3133971	anger	0.2028169
surprise	0.1148325	surprise	0.1281690
disgust	0.1124402	disgust	0.0971831

The graphical view of analyzed sentiments is illustrated in Fig. 2.

(a)

(b)

Figure 2: Sentiment analysis regarding (a)Swiggy data and (b) Zomato data
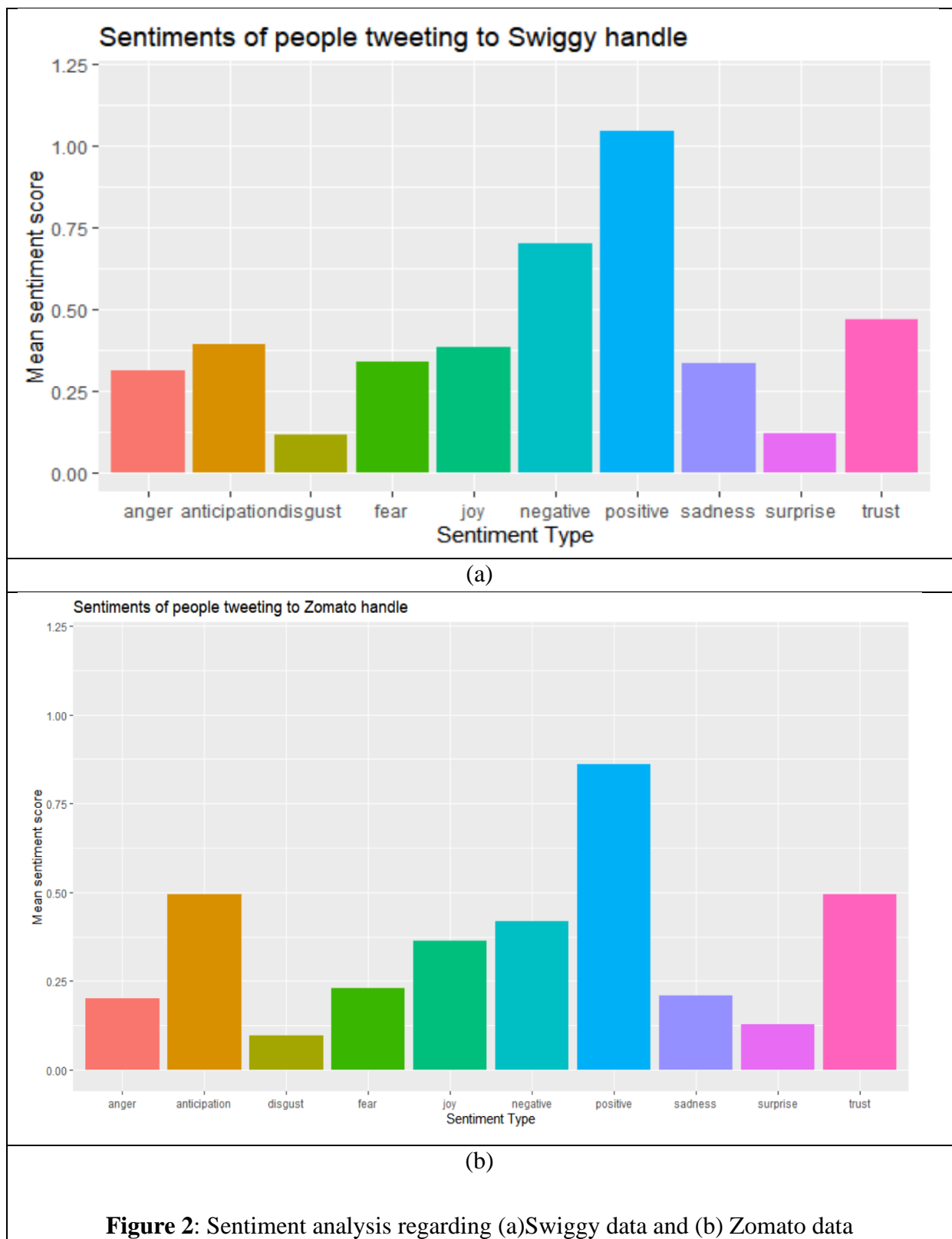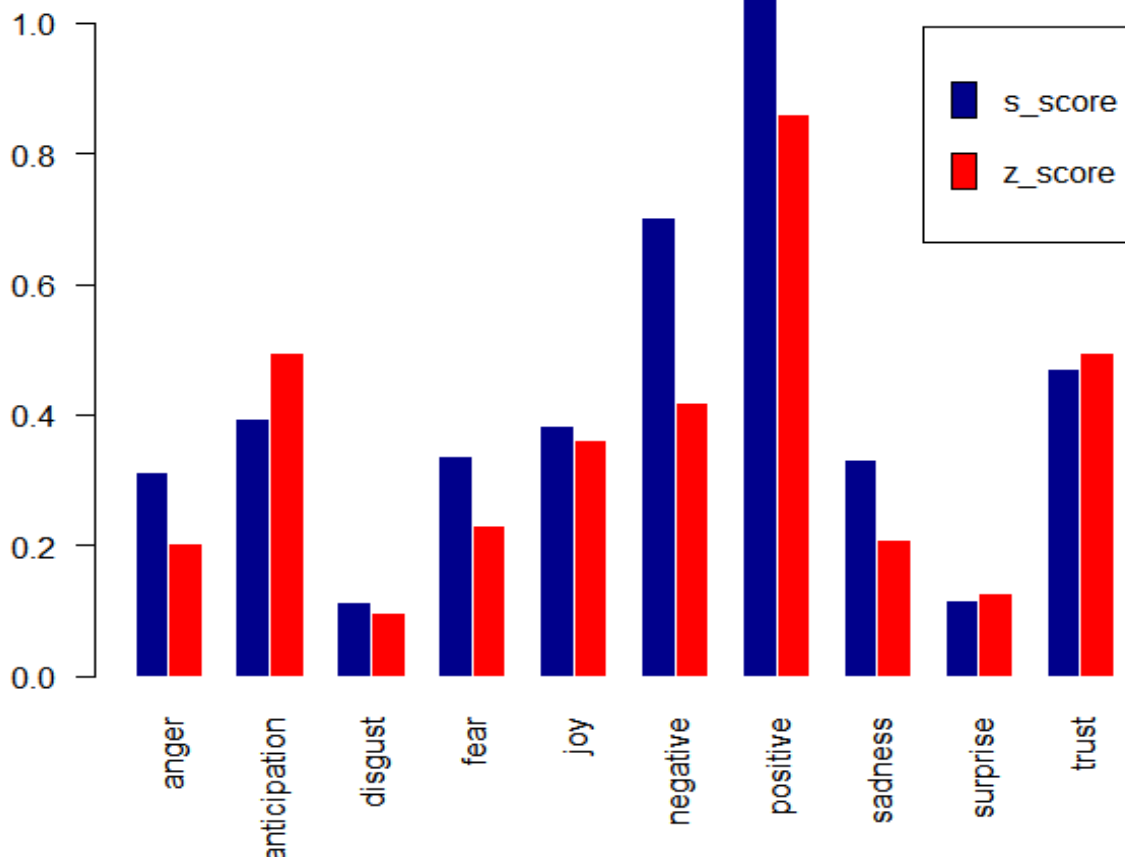
Figure 3: Sentiment analysis regarding Swiggydata and Zomato data

4. Conclusion

The tweets from food delivery services like Swiggy and Zomato were analyzed using a sentiment analysis model in this research. According to the statistics, Swiggy's platform receives more positive tweets than Zomato's does. According to the study, this means that a greater number of people may take advantage of the convenience of regular meal delivery via the Swiggy platform.

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