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# Decoding Customer Opinion for Products or Brands Using Social Media Analytics:
## A Case Study on Indian Brand Patanjali

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### ABSTRACT

This study uses aspect-level sentiment analysis using lexicon-based approach to analyse online reviews of an Indian brand called Patanjali, which sells many FMCG products under its name. These reviews have been collected from the microblogging site Twitter from where a total of 4961 tweets about 10 Patanjali branded products have been extracted and analysed. Along with the aspect-level sentiment analysis, an opinion-tagged corpora has also been developed. Machine learning approaches—support vector machine (SVM), decision tree, and naïve bayes—have also been used to perform the sentiment analysis and to figure out the appropriate classifiers suitable for such product reviews analysis. The authors first identify customer preferences and/or opinions about a product or brand by analyisng online customer reviews as they express them on the social media platform Twitter by using aspect-level sentiment analysis. The authors also address the limitations of scarcity of opinion tagged data required to train supervised classifiers to perform sentiment analysis by developing tagged corpora.

### KEYWORDS

Decision Tree (DT), Naïve Bayes(NB), Product Reviews, Sentiment Analysis, Support Vector Machine (SVM)

### 1. INTRODUCTION

Social media is described as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content" (Power et al., 2011; Kaplan and Haenlein, 2010; Berthon et al., 2012; Mirzaalian & Halpenny, 2019). Examples of social media include Weblogs, file sharing sites, social networking sites, and wikis are some examples of social media (Mukherjee et al., 2021). It has now been recognised as a preferred communication medium to share and exchange information among its users (Stieglitz and Dang-Xuan, 2013; Louati et al., 2021). Users of social media use this platform frequently to express and discuss their opinions on various topics of their interest, like politics, products, weather, finance, sports, and hospitality etc. (Mirzaalian & Halpenny, 2019; Asamoah & Sharda, 2019). The popularity of social media has led to the creation of massive unstructured data in terms of blogs, posts, tweets, images, videos, messages, and reviews etc. (Mukherjee et al., 2021; Arora et al., 2021).

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This information is a gold mine which can be utilized for decision-making (Montoyo et al., 2012; Lee et al., 2015; Xie and Lee, 2015; Peláez et al., 2019). In certain areas, this can be even better than conventional market research because the discussion that takes place over social media is largely informal and rightly convey the mood and feelings / sentiments of the people (Yi and Liu, 2020; Alamoudi and Alghamdi, 2021; Li & Huang, 2020).

This study attempts to identify customer preferences and / or opinions about a brand from what they express on the social media platform, Twitter by using aspect level sentiment analysis. Secondly, it contributes by means of addressing the problems /limitations of supervised machine learning approach in performing sentiment analysis by creating opinion tagged corpus and finally, the aim is to recommend the best-suited machine learning classifier to perform such aspect level sentiment analysis.

The brand chosen for this study is 'Patanjali', which essentially deals in fast-moving consumer goods and is owned by Patanjali Ayurveda Limited, an Indian company that competes with and has shaken the likes of global multinationals like HUL (Hindustan Unilever Limited) and Colgate etc. It has forced them to redesign their product portfolio and introduce brands and products that offer a value proposition and positioning which is similar to Patanjali. The rationale behind choosing Patanjali was to decode what consumers think about and expect from a late entrant brand that has earned the status of a challenger in a market where the global giants have ruled for decades.

Sentiment analysis is an essential and prevalent technique amongst tech-savvy marketers as they know that experiences and opinions of users affect the other customers' purchasing decisions (Khan and Rahman, 2015; Liébana-Cabanillas et al., 2018; Elgendy et al., 2021).It uses NLP (Natural Language Processing), predictive analytics, psychology, text analytics, and computational linguistics to identify subjective information from the source, which is the social media platform Twitter, in this case (Ibrahim & Wang, 2019). It is the method of finding whether a particular sentence, paragraph or document have a positive, neutral, or negative opinion (Birjali et al., 2021). Sentiment Analysis can be carried out at three stages – at the document-level, at sentence-level, and at aspect, entity or feature level. Document-level analysisidentifies the opinion of the whole document to figure out whether a document has positive, negative or neutral sentiment orientation. Generally, during document-level sentiment analysis, it is assumed that the document under consideration has opinion about a single entity. Similarly, sentence-level analysis focuses on determining the opinion of each sentence (Mukherjee et al., 2021; Ray et al., 2020; Peláez et al., 2019). The limitation of document level and sentence level analysis is that they do not specify which entity, or its features are being liked or hated by the opinion writers. This limitation is taken care in aspect level sentiment analysis where the focus is on which entity or its aspects / features are liked or hated by the writer (Mowlaei et al., 2020).

This study uses aspect-level sentiment analysis on reviews given by customers of Patanjali branded products in the form of tweets to find out the most liked and disliked Patanjali products. Here Authors first used lexicon to perform sentiment analysis. And results have been used to develop a tagged corpus as a major problem in using machine learning (ML) approach to perform sentiment analysis is the unavailability of tagged corpora. In this study three different machine learning classifiers, namely - SVM, Naïve Bayes, and Decision Tree are used to perform sentiment analysis using machine learning approach.

Results of this study can not only be beneficial to marketers who can fine-tune their marketing strategies based on the customers' likings and disliking but these results can also be helpful for other customers by giving them information about what other customers feel positive or negative about the product / brand. Rest of the paper is organized as: Second section includes literature review. Third section elaborates on the data collection and the methodology used for analysis. The fourth section explains the results, followed by discussion. The fifth section presents key observations and findings. The sixth section is the conclusion which also talks about the limitations and the future research agenda of the study.

# Recognizing Multiple Ingredients in Food Images Using a Single-Ingredient Classification Model

Kun Fuand Ying Dai (2024). *International Journal of Intelligent Information Technologies (pp. 1-21).*

www.irma-international.org/article/recognizing-multiple-ingredients-in-food-images-using-a-single-ingredient-classification-model/360782