Online Product Reviews and Their Impact on Third Party Sellers Using Natural Language Processing

Akash Phaniteja Nellutla, Symbiosis Centre For Management and HRD, Symbiosis International University (Deemed), India

Manoj Hudnurkar, Symbiosis Centre For Management and HRD, Symbiosis International University (Deemed), India

Suhas Suresh Ambekar, Symbiosis Centre For Management and HRD, Symbiosis International University (Deemed), India

Abhay D. Lidbe, Alabama Transportation Institute, University of Alabama, USA

https://orcid.org/0000-0001-7791-129X

ABSTRACT

The purpose of this paper is to gain insights from the online product reviews of e-commerce sites such as Flipkart and Amazon and analyze its impact on third party sellers. To judge the authenticity of a product, reviews are more useful than ratings, since ratings do not give a complete picture. It is always preferred to consider both the product and seller reviews to have a seamless delivery and defect less product. In this paper, natural processing methods are used to gain insights by considering online reviews of a product. Methods such as sentiment analysis, bag of words model help to understand the impact of online product reviews on the seller's ratings and their performance over some time. The reviews are categorized into positive, negative, and neutral using sentiment analysis. Further, topic modeling is done to find out the topic reviews are majorly referring to. The seller reviews for a specific product after analysis are compared with the overall seller reviews to judge the authenticity. The results of this paper would be beneficial to both the consumers and sellers.

KEYWORDS

Bag of Words, Natural Language Processing, Online Product Reviews, Sentiment Analysis, Topic Modeling

INTRODUCTION

Online shopping has completely changed the way of shopping. In India alone, e-commerce growth is expected to be $120 billion, growing at an annual rate of 51 percent, by 2020 (IBEF Report, 2020). Online shoppers stand at 25 million in India. These days, it needs just one click and we are just one day away from the product arriving at the doorstep. With technology changing day by day and more options coming in, people prefershopping online than visiting stores (Xiong et al., 2020). Online giant retailers like Amazon, Flipkart, and Myntra are making it easier by providing various products in various categories throughout the year. Sometimes, the products that are not available in the offline

stores can be bought online. Also, the price tends to be on the lower side when compared to the store price. These are some of the reasons why people now prefer to purchase online.

Online retailers have a lot of advantages when compared to traditional brick-and-mortar stores. Online retailers can sell as many products as they want. They have no constraints with respect to inventory or space management. These giant retailers have also gained the trust of the consumers by providing them with one-day delivery options, lower prices, trusted sellers, product reviews, seller reviews, and ratings. So a normal customer visits the website, chooses the product, looks at the price and ratings, reads the reviews, and then checks out (Vineet et al., 2020). The most important factors that he/she usually considers are the ratings and the reviews of the product. These two factors play a crucial role while a consumer selects a product. But online shopping has its own problems. There is a chance of users receiving a faulty or another product instead of the one they ordered. Also, the ratings sometimes do not give a complete picture of the value of the product. For example, a consumer purchasing a mobile phone solely based on ratings might have a problem with the battery life of the mobile. The reviews help to sort out such problems. Online reviews are a great source of information and play a crucial role when a consumer purchases a product. The consumer decides whether to go ahead or back down based on the reviews (Wang and Chen, 2020). Reviews are written by the consumers after purchasing a product and using it for a short/long duration. These reviews are written for both the product and the seller. The product reviews majorly define the different aspects of the product and the experience of the customer after using it. The seller reviews talk about the delivery, service provided, and sometimes the behavior of the seller (Xiaolin et al., 2019).

Majority of the past studies talk about online product reviews, their importance, sentiment analysis being used to analyze the reviews, and the impact of these reviews on sales (Ali et al., 2020). These studies have considered customer reviews at a high level or were limited to only product reviews. An analysis has been done on those reviews using different techniques (sentiment analysis, ML algorithms) in order to provide product recommendations and find out the opinion of the customer regarding the product. But the seller reviews are completely ignored. This study considers both the product and seller reviews for further analysis in order to simplify the existing process.

In light of the above aspects, this paper aims to study and analyze the online reviews (both of the product and the seller) using Natural Language Processing (NLP) techniques. NLP was used in this study because it helps in understanding the data, even if it is unstructured, and then takes decisions based on the insights gathered. Also, sentiment analysis,which is one of the most important fields of NLP, was used in this study. Sentiment analysis not only helps in understanding the current and historic context of text but also guides in predicting the future (Shobana and Murali, 2020). Additionally, the information stored in the text can be used as an indicator such as positive, negative, and neutral (Al-Sharuee et al., 2020). This aspect of sentiment analysis is very helpful in this study, which can be used as a signal for decisionmakers. Relating the same to this study, NLP helps to understand the impact the reviews create on the seller and also compare them with the seller reviews in general to judge their authenticity. Finally, the consumers can decide on purchasing the product from a particular seller based on the above analysis and also the seller can improve their functioning based on the customer feedback (Caitlin et al., 2019).

The further sections of this paper such as the Literature Review section discuss the various studies where similar analysis has been done and the gap this study is going to fill. The other sections, namely Research Methodology and Analysis and Results, discuss the methodology used in order to obtain the insights, the analysis done, and the results. The discussion section discusses the results in comparison with other studies in this field. Finally, certain recommendations and limitations have also been included.

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