



## Overview

**Product sentiment analysis is a process of analyzing customer feedback or reviews to determine the overall sentiment (positive, negative, or neutral) towards a product.** <https://www.kaggle.com/datasets/niraliivaghani/flipkart-product-customer-reviews-dataset>



## Problem Statement

**Problem Statement:** This dataset contains information about Product name, Product price, Rate, Reviews, Summary and Sentiment in csv format. There are 104 different types of products of flipkart.com such as electronics items, clothing of men, women and kids, Home decor items, Automated systems, so on. The aim is to gain insights into how customers perceive the product and to identify areas of improvement.

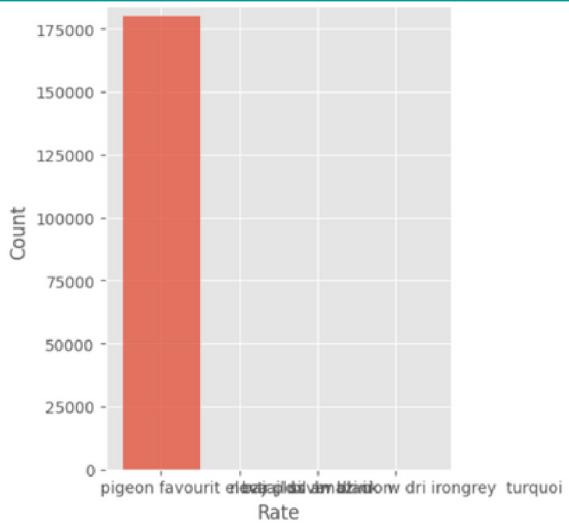
## Business Understanding



1. **Improve product development:** Feedback from customers can help businesses identify the strengths and weaknesses of their products, as well as areas for improvement.
2. **Enhance customer satisfaction:** By identifying areas of customer dissatisfaction, businesses can take steps to improve the customer experience and increase customer satisfaction.
3. **Make data-driven decisions:** By analyzing customer feedback at scale, businesses can identify trends and patterns in customer sentiment that can inform decision-making.
4. **Monitor brand reputation:** By monitoring customer feedback, businesses can quickly identify and address any issues that may arise, such as negative reviews or complaints.

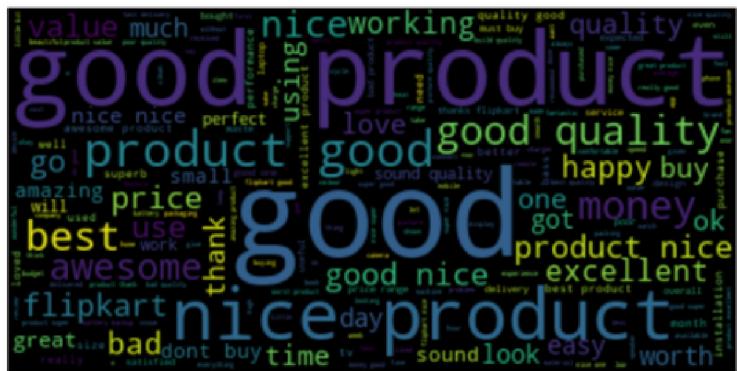
A streamlit app is developed to predict the sentiments based on the review comments.

## EDA



Pigeon reported hoghesr Rate count

EDA



## Word cloud

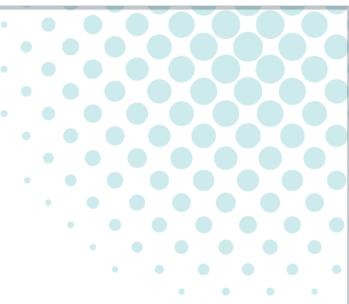
Summary indicates good quality, excellent, nice, working etc

EDA



## Word cloud

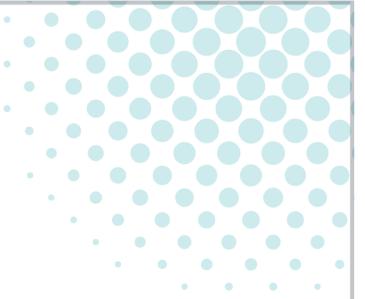
Word cloud indicates that people are satisfied with Flipkart products and services.



### Multinomial Naive Bayes

Multinomial Naive Bayes is useful for determining the emotional tone of a piece of text, such as a tweet, product review, or customer feedbacks. The model works by computing the probability of each possible sentiment label (positive, negative, neutral) given a piece of text.

```
Accuracy: 0.9029163726774855
Confusion Matrix
[[ 5804   511   493]
 [  18     7   93]
 [ 2273  2391  47936]]
```



### RandomForestClassifiers

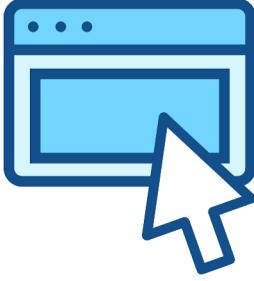
Once we transformed our reviews into vectors using `TfidfVectorizer` and used both `NaiveBayes` and `RandomForestClassifier`, we observed that `RandomForestClassifier` outperformed `MultinomialNB`.

By using `RandomForestClassifier` without any parameter tuning, we attained an accuracy of 90.95%. However, we can still further improve our accuracy by tuning the parameters of our classifier.

```
Accuracy: 0.9096529247723684
```

```
Confusion Matrix
```

```
[[ 6118   524   491]
 [   0     0     1]
 [ 1977  2385  48030]]
```



**Link to webpage**

<https://github.com/engrlakshmi/Sentimental-Analysis/tree/main>

