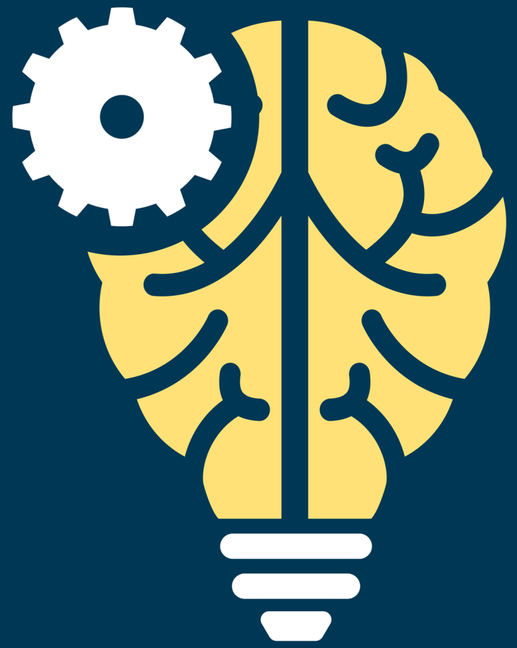
Tweet sentiments about apple products

BY: Group 5

Introduction

Apple's products are some of the most widely used across the world. In order for the company to continue to attract customers and investors for their products, its important for Apple to continously analyze customer sentiments that will inform its marketing strategies, product development, investor relations and provide stocks and financial insights.

Project goals



Customer sentiment is key to business growth and product adoption. Understanding public reactions to Apple's products, brand, and events informs marketing strategies, provides feedback for product improvements, and helps detect shifts in perception that could impact stock performance.

This project creates a model using **Natural Language Processing(NLP)** to determine whether a tweet mentioning an Apple product has a negative, positive, or neutral sentiment.

Tweets

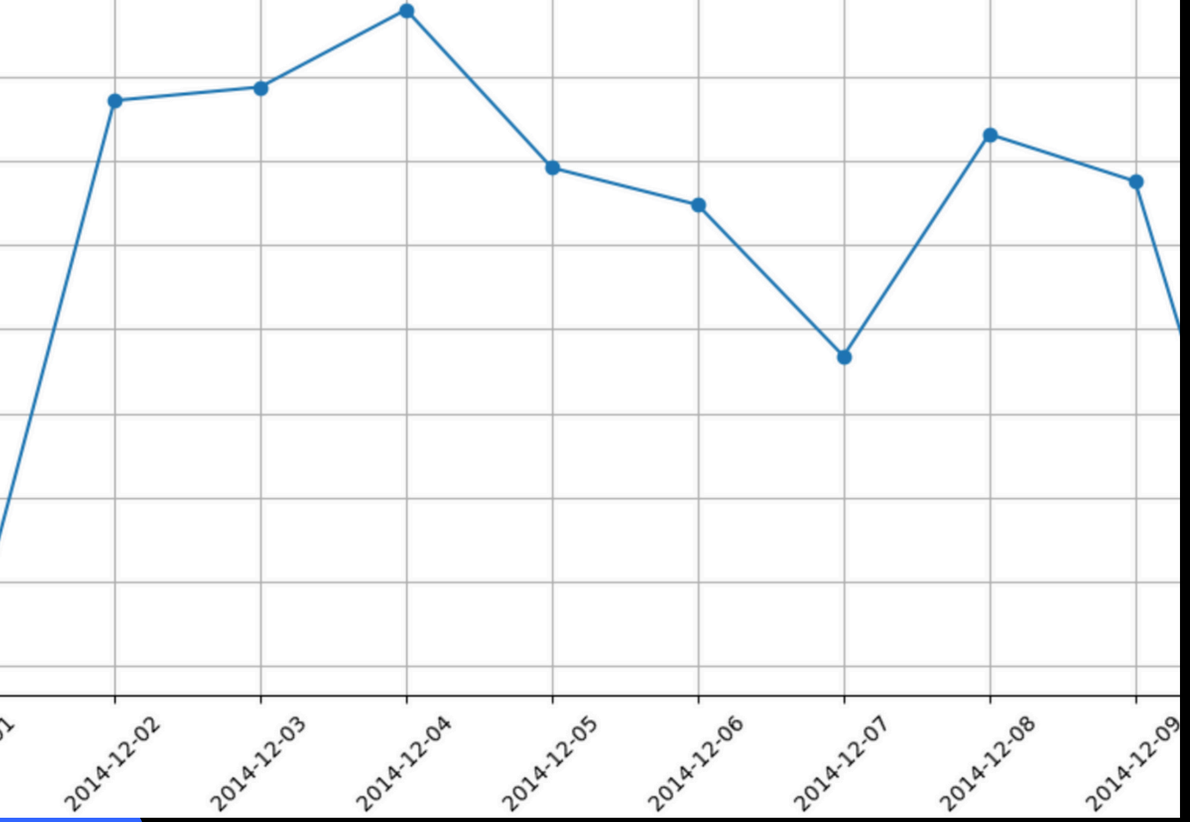
- The user comments are from Twitter, not a platform exclusively for rating or evaluating products. The sentiments are from a more diverse sample of the customer base.

- The data set is from Croudflower. Contributors were asked to surmise the sentiments of the tweets, allowing us to have data we can use to train a model.

Importance of sentiment analysis

How customers receive a product or an idea is invaluable information to a company looking to stay relevant to its consumers. Sentiment analysis would be a powerful tool for any company, especially one as reknown as Apple.

Data on customer sentiment is used to guide marketing strategies, improve product features, and offer insights on the finance. It also has predictive uses such as anticipating new product reception and stock trends

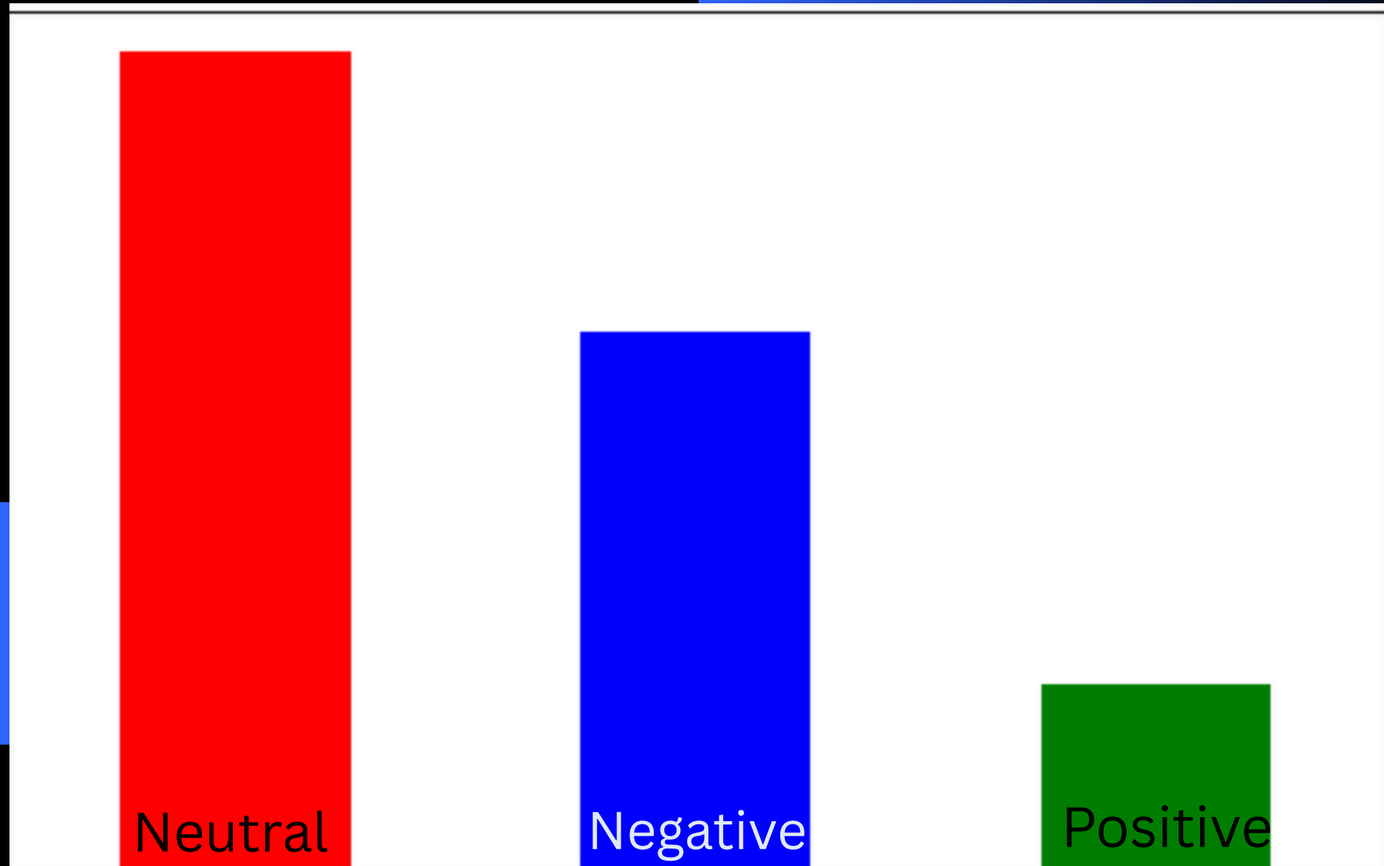


Number of tweets with negative sentiments over the course of a few months

Useful for quickly identifying potential concerns or complications

Distibution of sentiments in current data

The majority of the tweets concerning Apple products are neutral. Changes in these proportions would provide insight into the reception of the brand's activities.



Using NLP

Natural language processing is a field in artificial intelligence that allows machines to understand, translate, and analyze human speech or text.

Linguistics (the study of language) and machine learning (the ability of computers to learn from data) are combined to allow computers to find patterns in data, make predictions, and build models.

Creating our NLP Model

Data Exploration:

Examine the data to to understand its structure, patterns, relationships, and potential issues.

Preprocessing:

Tokenizing and vectorization of the data in order to fit it to a model

Apply models:

Train a linear regression smote model model using the preprocessed data.

Optimization:

Find the best parameters or settings for the model to improve its performance

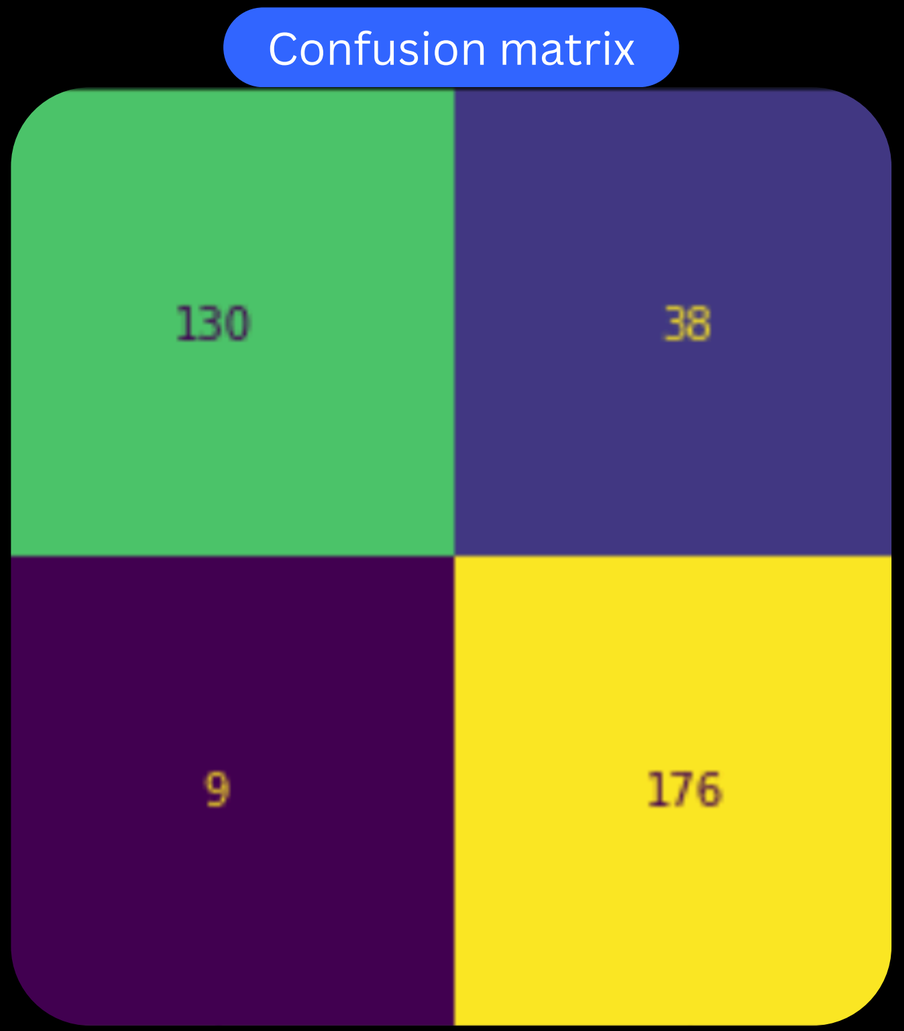
Evaluation:

Use appropriate metrics to determine how well the model can predict the sentiments behind tweets.

Model	Accuracy	F1 weighted	F1 Macro
Logistic Regression (Baseline)	0.784164	0.773309	0.708430
Logistic Regression (SMOTE)	0.867470	0.867211	0.858835
Random Forest	0.762887	0.753630	0.689399
SMOTE Random Forest	0.812430	0.809753	0.786318
Multinomial Naive Bayes	0.843137	0.842885	0.834234
XGBoost	0.801303	0.789508	0.723414

Our Model

The best model for our data is a **linear regression model with SMOTE.** It can perform on the test data with 86% accuracy.



Conclusion

Implementations

- The company can incorporate our model to ascertain customer opinions on social media concerning its brand.
- This model can be used in the wake of the launch of a new feature or product to assess its reception.

Recommendations

- Collecting data from different social media platforms can corroborate findings
- Including product type and information on the user accounts can lead to a better understanding of the market.

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Thank you