Apple Sentiment Analysis

Business Understanding

Introduction

Consumer sentiment is key in shaping brand reputation, influencing purchases, and guiding business strategies. As a top technology company, Apple is frequently analyzed across social media, news, reviews, and financial reports.

Our company has been contracted to conduct a sentiment analysis with data collected from Twitter to assess public perception, detect trends, and deliver actionable insights.

Objectives

Our objectives are to:

- Assess customer sentiment toward Apple's products and services.

- Pinpoint crucial factors affecting sentiment.

- Provide insights for marketing, product development, and customer engagement.

Key stakeholders

- Apple Marketing and Public Relations Teams may well find insights that could inform future campaigns.

- Product Development Teams could analyze customer sentiment to refine and improve Apple products based on feedback.

- Apple Support may leverage sentiment insights to enhance customer satisfaction by addressing concerns proactively.

Data Understanding

Data Collection

The dataset was sourced from data.world and contains comments from Twitter with the tag @Apple or the hashtag #AAPL.

These user comments were collected in December 2014 pertaining to Apple Inc., it's products, customer interactions with Apple support, as well as, tweets in which users had mentioned Apple but have no bearing on their sentiments.

Data Exploration

The dataset is a csv file that has 3,886 entries and 12 columns. The most important columns are:

- sentiment: The sentiment classification numerical values allow for inference on the trend of customers feelings toward Apple.

- text: The actual tweet content for processing with our sentiment analysis model.

- date: Timestamp of the tweet provides context on when the statements were made.

- query: The search term that was used to filter in all comments that contain @Apple or #AAPL in the text.

Word Cloud of Tweets

Word Cloud

The themes discussed in the tweets are represented here as the word and size for frequency.

"Iphone and phone" are common words in tweets.

"Store" seems to be a recurring theme.

"New" also appears frequently in the tweets.

Less commonly are words like love or hate used.

Data Preparation

Preprocessing for the dataset included deletion of columns with a significant number missing values as well as duplicate entries.

URLs, tags/mentions, and Retweet indicators are removed from the text

Most of the elements of the tweets are maintained for context; the model chosen works well with text sourced from social media.

Each sentence striped to individual words and the text is formatted.

This pipeline reduces the complexity of the input data while maintaining context and allows for more accurate classification with new data.

Sentiment Analysis

VADER a Natural Language Toolkit lexicon commonly used for short-form content, was used to pre-train our model with sentiment scores for the terms, including phrases that are common in social media.

TextBlob was also implemented, correcting spelling errors and any translation that may need to be done. The average gave the final sentiment score.

Sentiment Intensity Analyzer was employed to evaluate sentiment scores for the tweets. This gives a range of scores between extremely positive at 1 , extremely negative at -1, and neutral sentiments at 0.

Distribution of Sentiment Scores
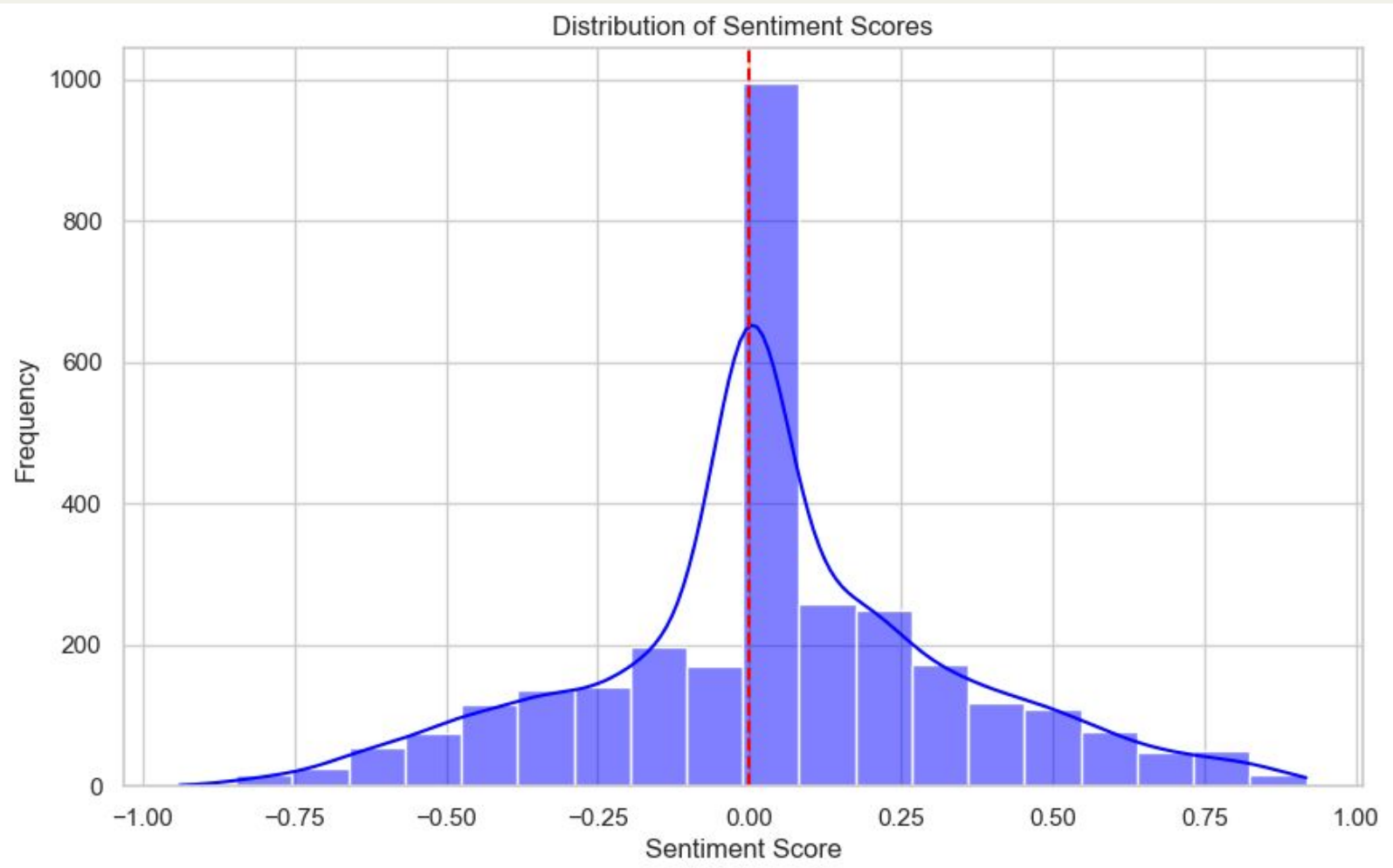
Distribution of Sentiment Scores Histogram

This left skewed graph shows majority of the Sentiment Scores were positive with a fair amount of scores being negative. Neutral scores close to 1000.

High frequency of the scores closer to neutral.

The histogram shows the trend in most tweets about Apple.

Mostly positive sentiment, with comments tending toward neutrality rather than extreme opinions.

Sentiment Categories
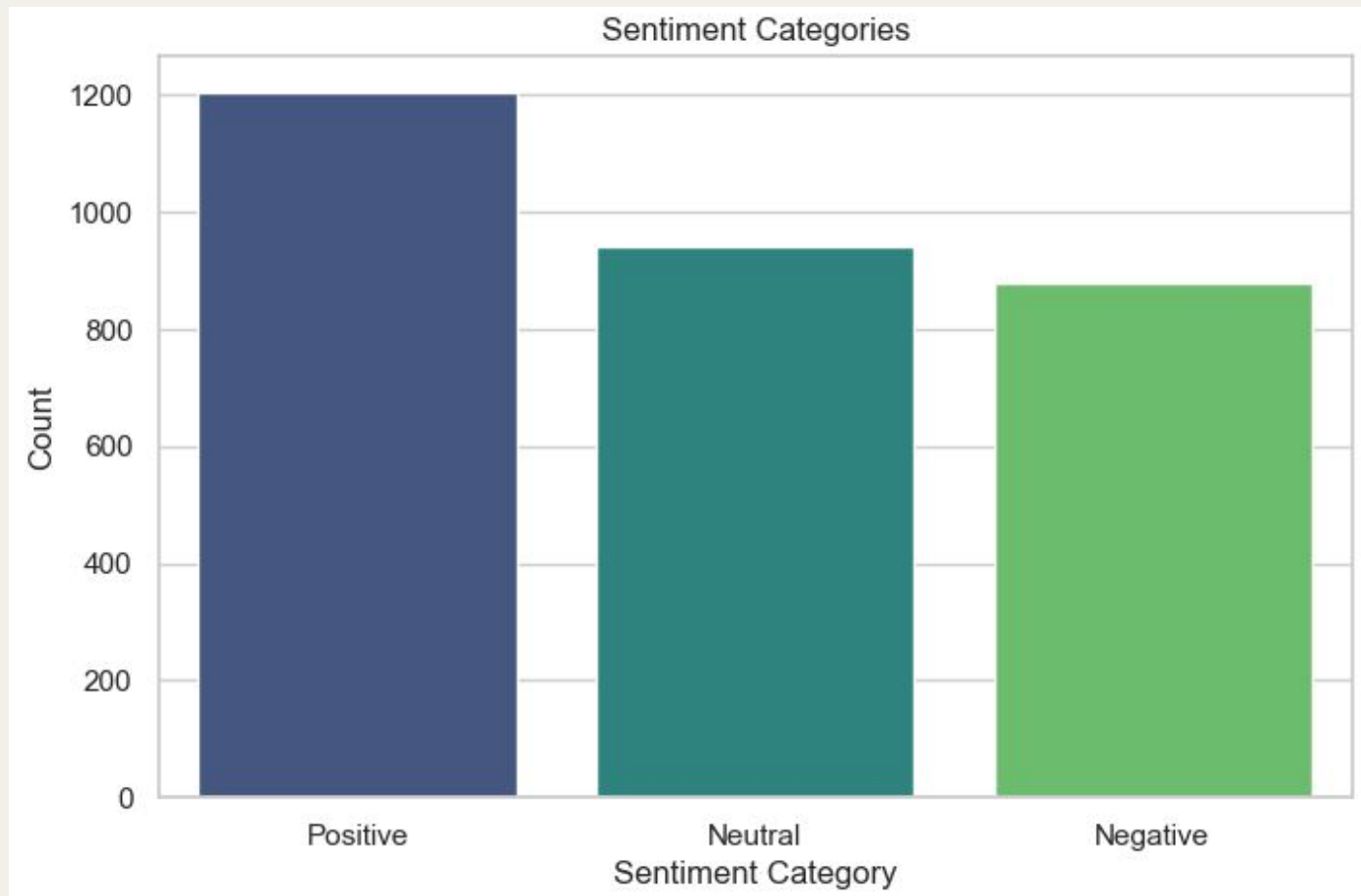
Sentiment Categories

Here, we clearly see the majority of tweets were positive (at 1206), with negative tweets the least frequent (at 879). Neutral tweets accounted for 942 tweets in our dataset.

The ratio between positive and negative tweets could serve as a benchmark and subsequently would inform more on the direction Apple customers on Twitter lean and by how much.

Conclusion

The Sentiment Analysis shows that the majority of Apple customers were generally satisfied in their experience. More customers were pleased rather than frustrated, although, the margin is not large.

Addressing potentially growing frustrations may serve to alleviate some of the tension in an already extremely loyal customer base.

Next Steps

■ Consumer sentiment that may be negative where public relations and optics are concerned, could be addressed with further public outreach. Words like "Hate" and "suck" appear frequently as well as some colourful language.

Reaching out to the customer base across nations may improve the relationship potential customers and investors have with the brand.

■ "charger" and "fix" are common terms in the negative tweets. Further research and development by Product Development teams could help alleviate customer concerns.

- "Iphone" appears frequently in tweets although this may be balanced across positive and negative sentiments, over the last 10 years concerns have been raised over the increasing price and the lack of significant innovations. Such issues could be addressed by product development and/or marketing.

- Monitoring common issues and reaching out before customers complain, could aid in improving customer satisfaction. Apple Support would benefit from anticipating grievances before they escalate. With strong words like "Need" being used as well as the frequency of profanity. Managing expectations may well be within their purview.

Implementing these strategies alongside Apple's established and highly successful business practices would further strengthen its relationship with the public.

Thank You!

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