

Case Study: Amazon Kindle Reviews Sentiment Analysis

Overview

This project performs Sentiment Analysis on Amazon Kindle product reviews using Natural Language Processing (NLP). The goal is to classify reviews into Positive, Negative, and Neutral categories, derive insights from customer feedback, and present findings through a professional Power BI dashboard. **Objectives**

- Classify customer reviews using sentiment scores.
- Apply NLP lexicon-based methods (VADER) to detect emotions.
- Visualize sentiment distribution, trends, and rating relationships.
- Extract insights for marketing and product development teams.

Data Source

Amazon Kindle device review dataset containing review text, numeric star ratings, and review timestamps. **NLP Approach**

The analysis uses the VADER SentimentIntensityAnalyzer to classify reviews into:

- Positive
- Neutral
- Negative

Key Findings

- Over 86% of reviews are Positive, indicating strong customer satisfaction.
- Negative reviews represent only ~9%, mostly mentioning device defects or software issues.
- Trend analysis shows sentiments remain positive over multiple years.
- Star ratings correlate strongly with sentiment categories.

Business Insights

- Customers consistently praise screen quality, battery life, and reading comfort.
- Product teams should address issues related to device malfunction and software updates.
- Marketing teams can highlight top strengths: easy readability, portability, and long battery life.

Tools Used

- Python (NLP, VADER)
- Power BI (Dashboard & Visualizations)
- Pandas for data cleaning

Dashboard Summary

The Power BI dashboard includes:

- KPI Cards for total reviews and sentiment percentages
- Donut chart for overall sentiment distribution
- Stacked bar chart for sentiment by rating
- Line chart for sentiment trend over time
- Word cloud for top keywords

Conclusion

The project provides clear insights into customer satisfaction and areas of improvement. The dashboard offers a comprehensive view of public opinion and can help guide business decisions.