TWITTER SENTIMENT ANALYSIS :

An NLP and Machine Learning Study of Public Opinion

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Akademi – Data Science - Cohort 2025

Outline

Beginning

Overview

Business Understanding

Middle

Data Understanding

Model Performance & Results

End

Recommendations

Next Steps

Overview

➢ Description

- This project focus on analyzing public sentiment about Apple and Google products

- The analysis combines NLP techniques with ML models to detect sentiment in social media post

Overview

➢ Goals

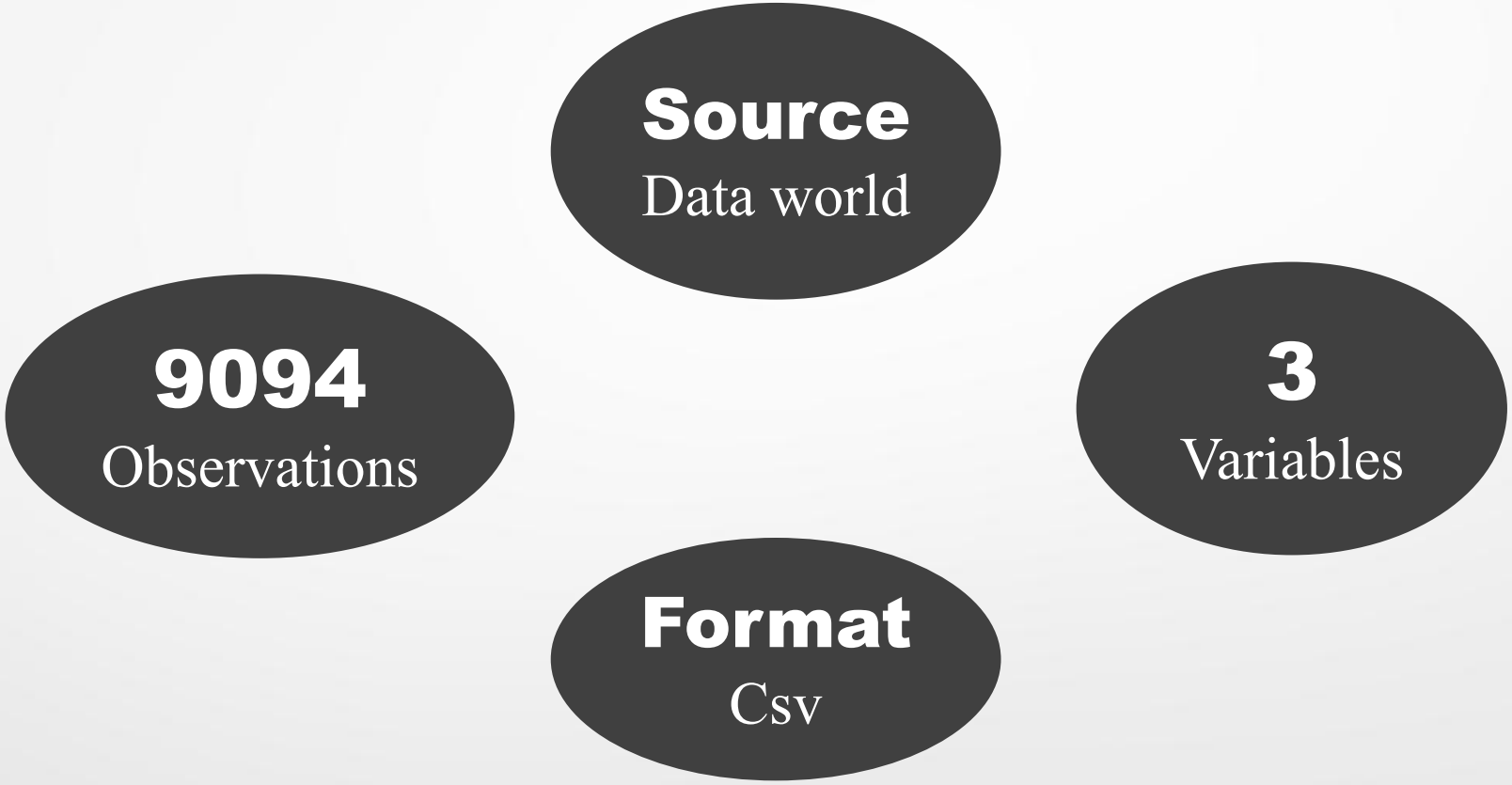
- Analyze public sentiment on Appple and Google products through Twitter
- Help Apple and Google understand public sentiment on Twitter.
- Provide insights into customer opinions
- Help companies understand how their products received in the market

Business Problem

- Apple and Google need clear clarifications of how their products perceived on social medial
- How opinions on Twitter can influence brand reputation and customer behavior ?
- Monitor and interpret thousands of tweets manually is impratical

Data understanding

- **The Data**



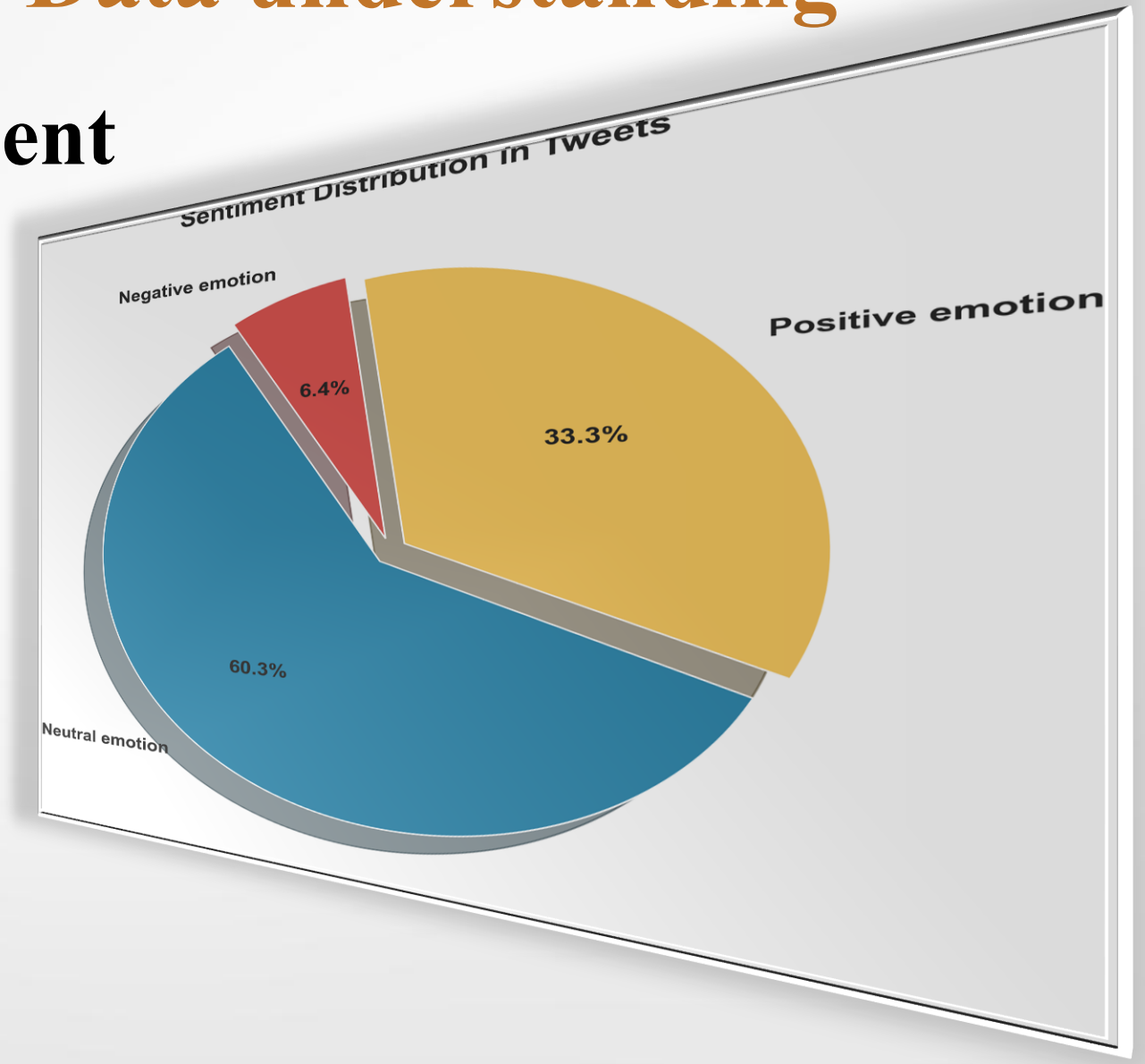
Data understanding

➢ Methods

- ➢Data Preprocessing
- ➢Exploritary Data Analysis (EDA)
- ➢Text Processing and Feature Engineering
- ➢Model Building
- ➢Model Evaluation

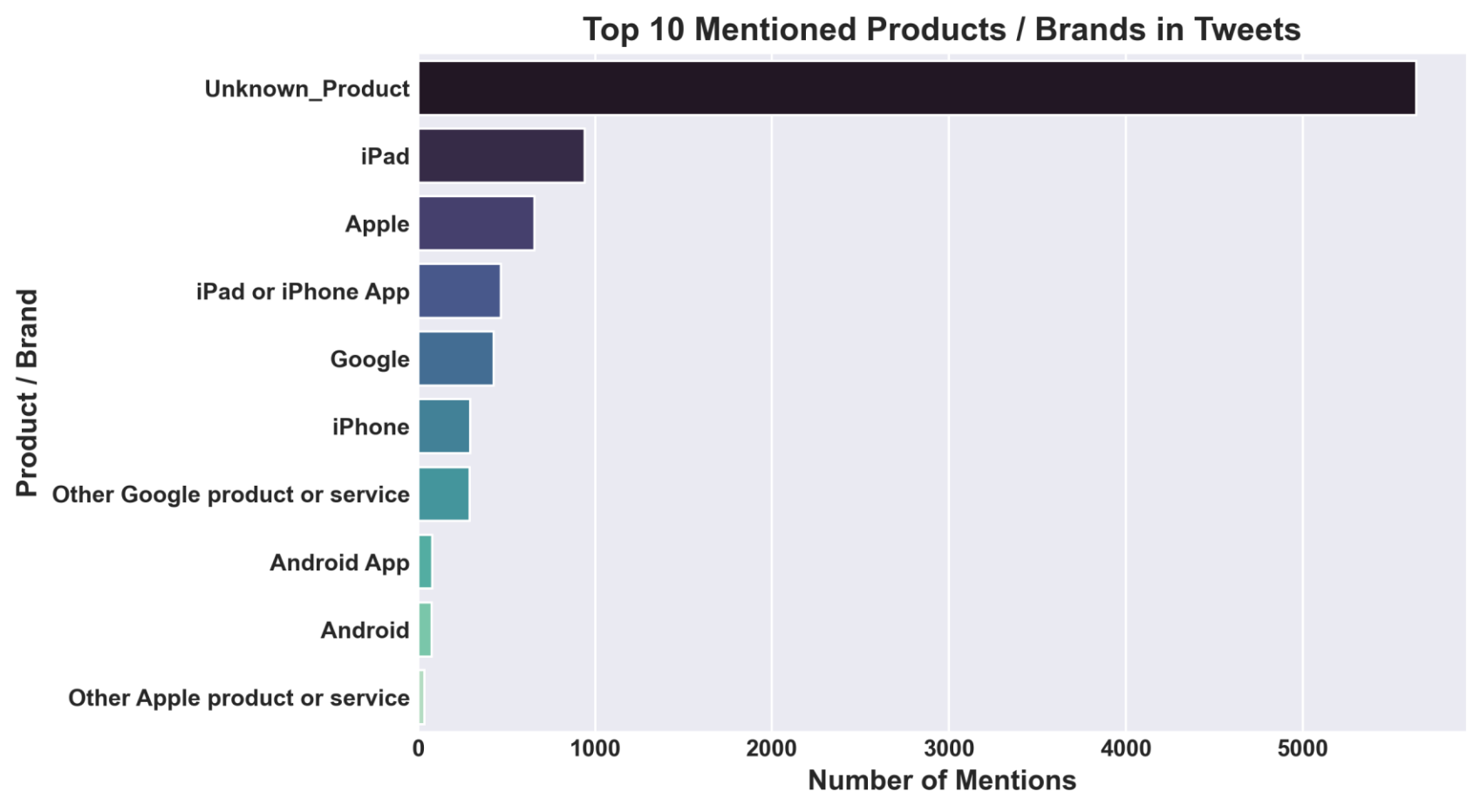
Data understanding

- **Sentiment**



Data understanding

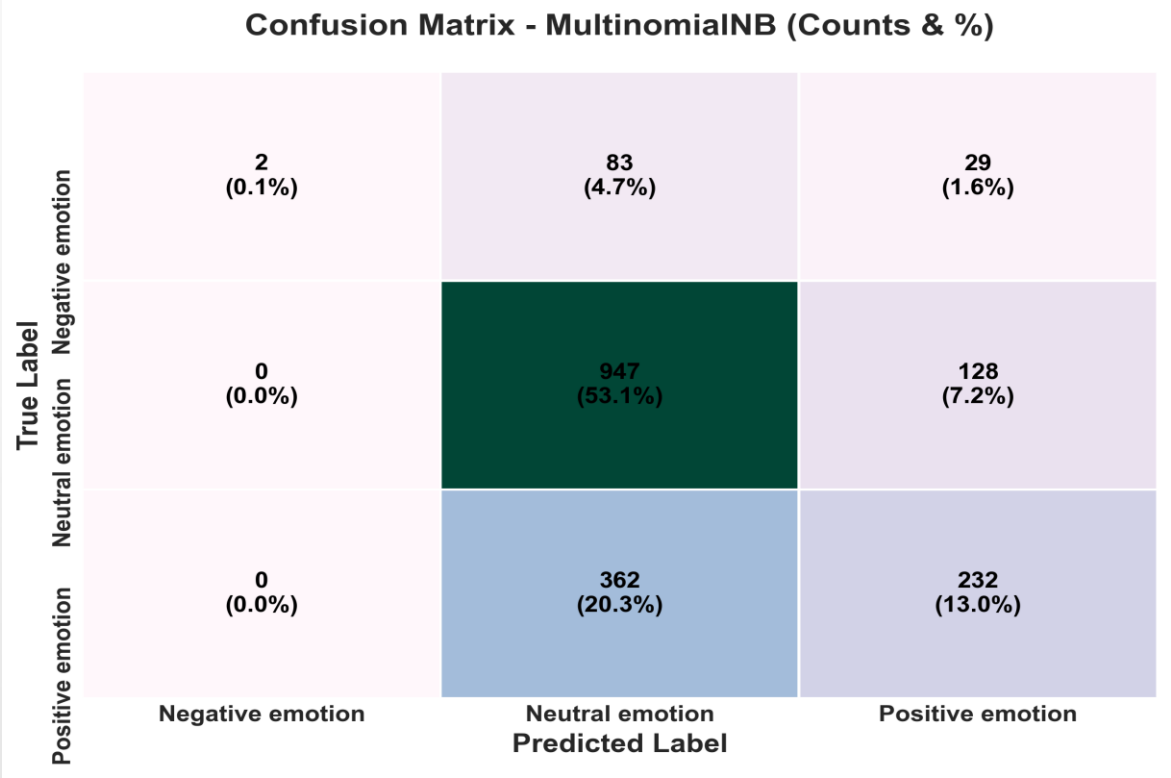
- **Product mentioned in Tweets**



Model Performance & Results

➢ Confusion Matrix

1. Most neutral tweets correctly classified
2. Negative tweets mostly misclassified



Model Performance & Results

- **Key metrics**

1. Moderate accuracy (66%)
2. Low recal (43%) and F1 indicate it struggles with positive and negative tweets

Recommendations

1. **Monitor and respond to negative sentiment :**
   customer complaints and prioritize High-Impact issues
2. **Leverage positive sentiment insights :**
   Detect pain early and enhance product and service quality
3. **Personalize marketing and Engagement strategies :**
   Tailor communication to customer mood and increase marketing efficiently amd loyaty

Next steps

- Continuously monitor customer sentiment
- Refine predictive models
- Evaluate business impact
- Integrate insights into operational systems

END !

- **Question ?**