Amazon Phone Review Analysis

1.BACKGROUND

The mobile phone market is highly competitive, and customers rely on online ratings and reviews before purchasing a device. The Kaggle dataset used in this project contains structured information about mobile phone products—such as **brand, rating, reviews, price, and customer feedback**. it becomes easier to analyze trends, compare brands, and understand customer preferences. This structured dataset enables systematic analysis of product performance, pricing patterns, and customer satisfaction without the complexity of handling unstructured raw text.

2.PROBLEM STATEMENT

Although the dataset is structured, brands lack clear insights into customer satisfaction, rating patterns, sentiment distribution, and price–rating relationships. The challenge is to analyze r**atings, reviews, and brand-wise performance to identify strengths, weaknesses, and improvement areas**. Understanding customer sentiment is essential for making informed business and product decisions.

3.Project Objective

The objective is to perform complete **exploratory data analysis and sentiment analysis** on mobile reviews. This includes understanding **rating distribution, analyzing brand performance, examining price–rating relationships,** identifying customer sentiment, and finding trends over time. The goal is to deliver actionable insights that support business and product decisions.

4.Scope of the Project

The project covers:

- Data cleaning and preprocessing
- Handling missing values
- Merging items and reviews tables using ASIN
- Exploratory Data Analysis (EDA)
- Visualization of key trends
- Sentiment analysis on review text
- Brand-wise insight generation

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5.Methodology

The process includes loading Kaggle data,

Cleaning missing values,

Merging product and

Creating new features like full review text.

EDA is performed using Pandas, Seaborn, and Matplotlib.

Sentiment analysis is done using TextBlob, followed by visualization of brand performance and customer sentiment trends.

6.Dataset Description

Dataset link :- 🌐 **Amazon Cell Phones Reviews**

6.1 Items Table Columns

- ASIN
- Brand
- Title (Mobile Name)
- Image URL
- Rating (Product Rating)
- Review URL
- Total Reviews
- Price
- Original Price

6.2 Reviews Table Columns

- ASIN
- Name
- Rating (Integer)
- Date
- Verified
- Title
- Body
- Helpful Votes

7. Methodology

Task 1.

7.1 Data Loading

Both tables are imported into **Jupyter Notebook** using Pandas.

7.2 Data Cleaning

- Checked missing values
- Filled brand nulls using mode
- Created a copy of the dataset to avoid modifying raw data

7.3 Data Merging

Left join on ASIN to combine product and review data.

data = pd.merge(items, reviews, on='asin', how='left')

7.4 Feature Engineering

Created full_review column combining title and body.

data['full_review'] = data['title_x'] + " " + data['body']

7.5 Sentiment Analysis

Used TextBlob polarity scores.

- Score > 0.1 → Positive
- Score < -0.1 → Negative
- Otherwise Neutral

7.6 Exploratory Data Analysis (EDA)

Performed:

- Rating distribution
- Price distribution
- Brand-wise rating comparison
- Monthly review trends
- Helpful votes pattern

Task 2

7.7 Visualizations

Created charts:

- Rating histogram
- Trend wise rating and review
- Brand-wise average rating, total review, average price bar chart
- Brand wise Sentiment distribution
- Sentiment Distribution

8.Analysis & Insights

8.1 Rating Distribution

The most common rating people gave this phone was 3.5 stars. A lot of people were pretty happy too, giving 4 stars. It seems most customers feel just okay to good .

8.2.Brand wise Average Rating , Total Reviews, Average Price

- **Samsung** leads the market with the highest number of customer reviews, indicating strong sales and brand presence.

- **Xiaomi** provides the **best customer satisfaction at the lowest price**, making it the top value brand.
- **OnePlus** and **Apple** are premium brands with high prices and strong ratings but limited customer volume.
- **Nokia** shows low ratings even at low prices, suggesting quality or feature issues.
- Overall, brands offering high performance at competitive pricing (Xiaomi, OnePlus) receive better ratings, while market leaders like Samsung rely on brand trust and wide availability.

8.3.Price vs Rating

Price does not strongly influence rating.
 Both low-cost and high-cost phones can achieve high ratings. Customer satisfaction depends more on **features, performance, brand trust, and user experience** rather than price.

8.4Trend wise Rating and Total Reviews

- **Both rating & reviews rise sharply in December**, indicating high customer satisfaction and high purchase volume.
- The mid-year period (May–August) is also strong for reviews but shows mixed satisfaction (small rating dip).
- Early-year (Jan–Apr) is the **slowest period** for both customer engagement and satisfaction.

8.5.Votes Rating wise

Helpful votes are highest for **low-rated reviews**, indicating customers trust critical feedback more.

 This means customers pay more attention to **critical or negative feedback** when making purchase decisions. These reviews highlight key areas such as battery issues, device lag, camera quality concerns, or heating problems — making them highly valuable for both buyers and brands.

Task3

9.Sentiment Analysis

Positive sentiment dominates overall, reflecting strong customer satisfaction across brands.

Negative sentiment is relatively small but concentrated in certain brands, highlighting areas for improvement.

Samsung shows the largest number of positive reviews, reinforcing its market trust and widespread adoption.

10.Business Recommendations

Mid-range phones get the best ratings and highest demand. Launch more models in this price segment.

If customers **praise camera, performance, or design, brands** should use these strengths in ads to attract buyers.

Many **negative reviews** come from poor after-sales service. Better service will reduce complaints and increase trust.

Months with **high review activity show high customer interest**. Brands should use these months for promotions or new launches.

Conclusion

This project analyzed smartphone reviews using ratings, prices, sentiments, and brand-level patterns. Insights show that customer satisfaction **does not depend on price**—both **budget and premium** phones receive **high ratings**. Brands with higher review volume maintain stronger visibility. **Sentiment** analysis revealed that m**ost reviews are positive**, reflecting good market acceptance. **Monthly** trends indicate **growing customer engagement**. Overall, product quality, performance, and user experience drive customer satisfaction more than pricing or brand popularity.

Thank You