**Project Documentation: iPhone Analysis on Flipkart**

**1. Project Overview**

This project analyzes Apple iPhone products listed on Flipkart in India. The goal is to examine various attributes such as **ratings, reviews, and product rankings** to identify trends and insights. Using **Python libraries like Pandas, NumPy, Plotly, and StatsModels**, we processed and visualized the data for better decision-making.

**2. Data Collection and Preprocessing**

* **Dataset**: The data was sourced from Flipkart and stored in a CSV file (apple\_products.csv).
* **Libraries Used**:
  + pandas for data manipulation
  + numpy for numerical operations
  + plotly for interactive visualizations
  + statsmodels.api for statistical analysis
* **Data Cleaning**:
  + Checked for missing values (none found).
  + Performed descriptive statistical analysis.

**3. Data Analysis**

**3.1 Top 10 Highest-Rated iPhones**

* The dataset was sorted based on **Star Ratings** in descending order.
* The **top 10 highest-rated iPhones** were extracted.
* Key attributes analyzed:
  + **Product Name**
  + **Star Rating**
  + **Number of Ratings**
  + **Number of Reviews**

**3.2 Ratings & Reviews Analysis**

* **Number of Ratings per Product**:
  + A bar chart was created to show the distribution of ratings.
* **Number of Reviews per Product**:
  + A bar chart was generated to visualize customer engagement through reviews.

**4. Visualizations & Insights**

* Interactive charts were created using **Plotly** to display:
  + Highest-rated iPhones.
  + Number of ratings and reviews per product.
* The highest-rated iPhones tend to have **higher customer engagement** in terms of reviews.
* Products with more reviews typically also have **higher ratings**, indicating customer satisfaction.

**5. Conclusion**

This analysis provides valuable insights into **customer preferences and engagement** with iPhones on Flipkart. Businesses can use these insights to **optimize product listings, pricing strategies, and marketing campaigns**. Future work can include:

* **Sentiment Analysis** of customer reviews.
* **Price-Performance Comparison** of different iPhone models.
* **Competitor Analysis** for similar smartphones.