### **Executive Summary**

This analysis provides a comprehensive exploration of Amazon product reviews and related attributes, uncovering insights into product performance, customer preferences, and the impact of pricing and discounts.

### **Key Insights:**

#### **1. Product Categories:**

* Amazon's most abundant product categories (as a percentage of the dataset):
  + **Electronics**: 525 products (**35.9%** of total).
  + **Computers & Accessories**: 453 products (**30.9%** of total).
  + **Home & Kitchen**: 448 products (**30.6%** of total).

#### **2. Impact of Discounts on Ratings:**

* **Customer Ratings**: Regardless of discount percentage, most ratings fall between **3.5 and 4.5**.
* **Discount Analysis**: No strong trend suggests that higher discounts consistently improve ratings. This could imply other factors (e.g., product quality or brand reputation) significantly influence customer satisfaction.

#### **3. Top-Rated Categories:**

* **Office Products**: Highest average rating at **4.31**, followed by **Toys & Games** with **4.30**.
* These categories collectively make up less than **10%** of the dataset but have the most satisfied customer base.

#### **4. Correlation Between Price and Ratings:**

* A weak positive correlation (**0.11**) exists between the **actual price** and the **rating**.
  + Interpretation: Higher-priced products may slightly trend toward higher ratings, but this relationship is not strong enough to make broad generalizations.

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#### **5. Rating Distribution:**

* **Majority of Ratings**:
  + Ratings of **4 or higher** account for approximately **70%** of all ratings, reflecting generally positive customer feedback.
  + Only **5% of products** received ratings below **2.5**, indicating a relatively small pool of poorly rated products.

### **Methods and Analysis:**

#### **Data Cleaning:**

* **Format Adjustments**:
  + Removed non-numeric characters (₹, commas) from pricing data.
  + Converted relevant columns to numeric data types to enable computations and statistical analysis.

#### **Statistical and Visual Analysis:**

* **Correlations**:
  + Studied relationships between key variables (e.g., price, discount percentage, and rating).
* **Visualization**:
  + Used bar charts, scatter plots, and heatmaps to interpret and display patterns effectively.

### **Key Outputs:**

* **Dataset Overview**:
  + **Total Products**: 1,465.
  + **Attributes Analyzed**: 16 (e.g., category, pricing, discounts, ratings, reviews).
* **Category Contribution**:
  + **Top 3 Categories**: Electronics (35.9%), Computers & Accessories (30.9%), Home & Kitchen (30.6%).

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### **Actionable Insights:**

1. **Category Focus**:
   * Focus marketing efforts on high-performing categories such as "Office Products" and "Toys & Games," where average ratings are notably high.
2. **Price Optimization**:
   * Pricing strategies should consider that discounts alone do not guarantee higher ratings; quality and value remain critical factors.
3. **Improving Ratings**:
   * Products with lower ratings (5% of the dataset) could benefit from targeted quality improvements or enhanced customer support.

This analysis highlights critical drivers of customer satisfaction and provides actionable insights for improving product performance and marketing strategies on Amazon.