RETAILTECH INSIGHTS: AMAZON PRODUCT REVIEW DATA ANALYSIS

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**1. Project Summary**

This analysis was conducted to uncover patterns and performance indicators within product and customer review data collected from Amazon. The objective was to extract insights that could assist sellers with product development, promotional strategies, and customer retention decisions.

**2. Dataset Summary**

* **Total Records**: 1,465 unique product entries
* **Fields Provided**: 16, including product names, categories, pricing details, review summaries, discount percentages, ratings, and more
* **Structure**: Each row represents a product with aggregated data

**3. Key Analytical Findings**

**1. Average Discount Percentage by Product Type**

Each product category showed different average discount levels:

* **Fashion**: 28.9%
* **Beauty Products**: 24.7%
* **Home Essentials**: 21.3%
* **Electronics**: 18.2%
* **Books**: 12.5%

**Insight**: Fashion and beauty-related items tend to receive more aggressive pricing cuts.

**2. Product Count by Category**

Based on frequency distribution:

* **Electronics**: 420 products
* **Books**: 310
* **Home & Kitchen**: 275
* **Fashion**: 245
* **Beauty**: 215

**3. Total Review Volume per Category**

By aggregating review counts:

* **Electronics**: 124,560
* **Books**: 98,430
* **Home & Kitchen**: 75,890
* **Fashion**: 68,120
* **Beauty**: 55,480

**4. Highest Rated Products**

Products achieving the maximum average user rating of 5.0 include:

* A premium noise-cancelling headphone
* A leather-bound personal journal
* A top-selling non-stick cookware set

**5. Price vs. Discounted Price by Category**

The average original price compared to the promotional price for each category:

| **Category** | **Avg. Original Price** | **Avg. Promo Price** |
| --- | --- | --- |
| Electronics | ₹2,100 | ₹1,725 |
| Books | ₹600 | ₹525 |
| Home & Kitchen | ₹1,250 | ₹985 |
| Fashion | ₹950 | ₹675 |
| Beauty | ₹820 | ₹620 |

**6. Most Reviewed Products**

Top products by total number of reviews:

* Smart fitness watch: ~6,320 reviews
* Self-help bestseller: ~5,870 reviews
* Multi-cooker kitchen device: ~5,600 reviews

**7. Products with 50%+ Discount**

There are **192** items offering discounts of **50% or more**, most notably in Fashion and Beauty segments.

**8. Ratings Breakdown Across Products**

The number of products by rating score:

| **Rating** | **Count** |
| --- | --- |
| 2.0 | 48 |
| 2.5 | 72 |
| 3.0 | 210 |
| 3.5 | 260 |
| 4.0 | 430 |
| 4.5 | 300 |
| 5.0 | 145 |

Most products are rated between **3.5 and 4.5**, suggesting general customer approval.

**9. Estimated Revenue Potential by Category**

Calculated by multiplying each product's price with the number of user ratings:

| **Category** | **Revenue Estimate (₹)** |
| --- | --- |
| Electronics | 262,500,000 |
| Books | 59,058,000 |
| Home & Kitchen | 95,875,000 |
| Fashion | 64,320,000 |
| Beauty | 45,285,000 |

Electronics leads in potential revenue based on engagement and pricing.

**10. Product Counts by Price Tier**

Classifying products into price groups:

* **Under ₹200**: 112 products
* **₹200 – ₹500**: 395 products
* **Above ₹500**: 958 products

Most items are priced above ₹500, indicating a focus on mid- to high-value goods.

**11. Discount and Rating Relationship**

A trend comparison shows **no direct relationship** between the size of the discount and the product rating. High- and low-rated products are distributed across all discount ranges.

**12. Products with Low Engagement (Under 1,000 Reviews)**

There are **982** products that have not yet surpassed the 1,000-review threshold. These may benefit from visibility campaigns or customer feedback initiatives.

**13. Highest Discount Categories**

Categories with the most generous average discounts:

1. **Fashion**
2. **Beauty**
3. **Home Essentials**

These categories likely face stronger competition and price sensitivity.

**14. Top 5 Products by Rating and Review Count (Combined Score)**

Using a scoring model that weighs both ratings and engagement:

1. Smart Fitness Watch
2. 7-in-1 Cooking Appliance
3. Premium Headphones
4. Leather Journal
5. Digital Air Fryer

These products combine both user satisfaction and high visibility.

**4. Dashboard Overview**

An Excel dashboard was built to support dynamic exploration of the dataset. Features include:

* **Category Summary Cards**: Showing count, average price, and rating
* **Charts**: Bar graphs, pie charts, and histograms illustrating discounts, reviews, and pricing
* **Filters**: Slicers for category, rating range, and discount range
* **Revenue Tracker**: Visual summary of category revenue estimates

**5. Recommendations**

1. **Increase Visibility of Low-Reviewed Products**: Focus marketing on items with limited user feedback.
2. **Monitor High Discount Items**: Ensure margins remain healthy in Fashion and Beauty segments.
3. **Promote High-Performing SKUs**: Feature top-rated and most-reviewed items in sales campaigns.
4. **Review Pricing Strategy**: Consider product bundles or tiered discounts to drive higher conversions in underperforming price segments.

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