

# E-Commerce Sales Analysis for Data-Driven Decision Making

## Internship Project Report

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## Executive Summary

This report analyzes Amazon India sales data to uncover actionable insights for business strategy. Using a dataset of 1,465 products, the analysis reveals that **moderate discounts drive the highest popularity**, the **Electronics category dominates revenue**, and the most **detailed customer feedback comes from moderately satisfied users (3.8–4.4 stars)**. Key recommendations include optimizing discount strategies, focusing inventory on top-performing categories, and leveraging mid-range reviews for product improvement.

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## 1. Sales Trends Analysis: Understanding Product Popularity

### 1.1 Methodology

- **Data Used:** discount\_percentage (grouped into ranges) and rating\_count (proxy for sales popularity).
- **Approach:** Grouped products by discount range (e.g., 0–10%, 10–20%) and calculated the average number of reviews (rating\_count) per group to identify popularity trends.

### 1.2 Key Finding

**Products with smaller discounts (0–30%) attract significantly more customer engagement than deeply discounted items.**

- **Peak Performance: 0–10% discount range** – products here have the highest average review count (~27,500 reviews).
- **Low Performance: 80–100% discount range** – products here have the lowest average review count (~10,000 reviews).

*Trend Observation:* As discounts increase beyond 30%, average popularity steadily decreases.

### 1.3 Business Insight & Recommendation

- **Insight:** Customers may perceive moderate discounts as a sign of **quality and value**, while extreme discounts could signal **overstock, outdated models, or lower quality**.
  - **Recommendation:**
    1. **Focus promotions** in the **10–30% discount range** to maximize appeal and perceived value.
    2. **Review inventory** with discounts **exceeding 70%** – consider bundling, improved marketing, or discontinuation if these products consistently underperform.
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## 2. Best-Selling Products & Categories Analysis

### 2.1 Methodology

- **Data Used:** product\_name, main\_category, rating\_count, discounted\_price.
- **Approach:** Calculated an **Estimated Revenue** (discounted\_price × rating\_count) as a proxy for sales performance. Ranked products and categories by this metric.

### 2.2 Key Findings

#### A. Top 3 Best-Selling Products (by Estimated Revenue)

All top products are from the **Electronics** category, specifically smartphones and TVs.

Rank	Product Name	Main Category	Review Count	Estimated Revenue (₹)
1	Redmi 9 Activ (Carbon Black, 4GB RAM, 64GB Storage)	Electronics	313,836	~2.67 Billion
2	Redmi 9A Sport (Coral Green, 3GB RAM, 32GB Storage)	Electronics	313,832	~2.35 Billion
3	Redmi 9A Sport (Coral Green, 2GB RAM, 32GB Storage)	Electronics	313,836	~2.04 Billion

#### B. Top 3 Categories (by Total Estimated Revenue)

Rank	Main Category	Total Estimated Revenue ₹	Average Rating
1	<b>Electronics</b>	<b>59.18 Billion</b>	4.08
2	Computers & Accessories	6.35 Billion	4.15
3	Home & Kitchen	6.26 Billion	4.04

### 2.3 Business Insights & Recommendations

- **Insight 1:** Electronics is the undisputed revenue driver, contributing over 10 times more estimated revenue than the next category. Within Electronics, smartphones are the top performers.
- **Insight 2:** Despite its high sales, Electronics has a slightly lower average rating (4.08) compared to other top categories. This warrants investigation into common complaints.
- **Recommendations:**
  1. **Inventory & Marketing Priority:** Allocate more inventory and marketing budget to the Electronics category, especially smartphone segments.
  2. **Bundling Strategy:** Create bundles pairing top-selling phones with accessories from the "Computers & Accessories" category to increase average order value.
  3. **Quality Review:** Analyze review content for top Electronics products to understand the factors pulling the average rating down and address them.

### 3. Customer Sentiment & Engagement Analysis

#### 3.1 Methodology

- **Data Used:** rating and review\_content.
- **Approach:** Created a review\_length (character count) metric. Grouped data by rating to analyze the relationship between rating score and depth of feedback.

#### 3.2 Key Finding

**The most detailed and actionable customer feedback comes from moderately satisfied users (3.8–4.4 stars), not from extremely satisfied (5-star) users.**

- **Peak Engagement:** Ratings of **4.1 stars** have the longest average review length (**1,839 characters**).
- **Lowest Engagement:** **5-star ratings** have very short average review length (**564 characters**).

### **3.3 Business Insight & Recommendation**

- **Insight:** Extremely happy customers often leave brief praise (e.g., "Great product!"), while **moderately satisfied customers take time to detail specific pros, cons, and suggestions for improvement**. This makes their feedback incredibly valuable for product development.
- **Recommendation:**
  1. **Mine Mid-Range Reviews:** Systematically analyze review text for products with **average ratings between 3.8 and 4.4** to identify common themes for product improvement.
  2. **Leverage Authentic Feedback:** Use detailed, balanced quotes from 4-star reviews in marketing materials to build **authentic trust** with potential customers.
  3. **Refine Review Prompts:** Adjust post-purchase email prompts to encourage detailed feedback from highly satisfied customers, asking specific questions about usage.

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## **4. Conclusion & Strategic Recommendations Summary**

This analysis of Amazon India data provides a clear roadmap for data-driven decision-making:

1. **Optimize Pricing & Promotions:**  
*Avoid the deep discount trap.* Focus on **10–30% discounts** to maintain quality perception and maximize customer interest.
2. **Focus Inventory & Assortment:**  
*Double down on what works.* Make **Electronics, particularly smartphones**, your inventory and marketing priority. Investigate the minor rating gap in this category.

### **3. Improve Products Strategically:**

*Listen to the right voices.* Use detailed feedback from **3.8–4.4 star reviews** as a primary source for actionable product improvement ideas.

### **4. Build Authentic Marketing:**

*Show, don't just tell.* Incorporate detailed mid-range reviews into product pages to provide a **trustworthy and balanced perspective** that helps customers make informed decisions.

By implementing these recommendations, the business can enhance its product strategy, marketing effectiveness, and customer satisfaction, leading to sustained growth in the competitive Indian e-commerce market.