Amazon Sales Analytics for Product Profitability Optimization

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January 4, 2026

Abstract

This project analyzes Amazon sales data to understand product performance and sales trends. The results show that the Set category and sizes M, L, and XL generate most of the revenue and sales quantity. A small number of SKUs and styles contribute significantly to total sales. The analysis also identifies issues such as order cancellations, unshipped orders, and limited B2B sales. Overall, the study highlights how basic data analysis can help improve product focus, inventory planning, and operational efficiency in e-commerce.

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1 Introduction

This paper analyzes sales data from an Amazon Marketplace seller to identify factors affecting product profitability. By examining SKUs, categories, sizes, fulfillment methods, and B2B/B2C performance, the study provides insights to optimize pricing, inventory management, and fulfillment strategies.

2 Industry and Organizational Context

Industry: E-commerce / Retail (Amazon Marketplace) The e-commerce sector, particularly marketplaces like Amazon, is highly competitive and driven by consumer demand, rapid product turnover, and data-driven decision-making. Success depends on effectively managing inventory, pricing strategies, and fulfillment operations to maximize profitability.

Organization Description: The organization is a consumer products seller operating on Amazon, offering a range of products across multiple categories, sizes, and styles. The company tracks detailed sales records, inventory levels, fulfillment methods, courier performance, and B2B/B2C transactions.

3 Problem Statement and Research Objectives

Problem Statement The organization faces challenges in managing sales and profitability across its diverse product portfolio on Amazon. Uneven demand across categories, sizes, and styles, coupled with stock imbalances, makes it difficult to identify high-performing SKUs and optimize inventory. Additionally, variations in fulfillment methods and differences between B2B and B2C sales create further uncertainty in revenue generation. Inefficient courier performance and international sales currency fluctuations also impact profitability. These challenges hinder data-driven decision-making and the organization's ability to maximize overall business performance.

Research Objectives The primary objective of this study is to leverage sales and inventory data to optimize product profitability on Amazon. Specifically, the research aims to:

Identify product categories, SKUs, sizes, and styles that generate the highest revenue.
Evaluate the impact of fulfillment methods (FBA vs. FBM) on profitability.
Analyze sales trends over time to inform inventory and pricing strategies.
Compare B2B and B2C sales performance in terms of revenue and quantity.
Detect stock imbalances, frequent backorders, and courier-related issues.
Assess revenue distribution and profitability across SKUs and categories.

4 Exploratory Data Analysis

5 Key Findings

5.1 Category-Level Revenue Performance

- **Set** category dominates revenue ($41.3M), followed by **Kurta** ($23.3M) and **Western Dress** ($11.7M).

- Top three categories generate nearly 90% of total revenue, highlighting dependency on a narrow product mix.

- Lower-performing categories (Dupatta, Saree, Bottom, Blouse) contribute less than 2% of revenue.

5.2 SKU-Level Insights

- High-performing SKUs include **JNE3797-KR-L**, **J0230-SKD-M**, and **J0230-SKD-S**.

5.3 Size and Style Performance

- Core demand sizes: M, L, XL; extended sizes (4XL-6XL) have low sales.

- Top-selling styles: **JNE3797** (3,691 units), **JNE3405**, **SET268**, **J0230**.

- SKU fragmentation increases operational complexity without proportional revenue benefit.

5.4 Pricing and Revenue Quality

- Average Order Value (AOV) is approximately 695.

- Revenue leakage due to cancellations ($3.9M) and unshipped/unknown courier status ($8.7M).

5.5 Fulfillment and Courier Performance

- Shipped orders generate the majority of revenue.

- Fulfillment efficiency is currently 0%, highlighting poor delivery tracking and SLA measurement.

5.6 B2B vs B2C Revenue

- B2C revenue: ¿99% of total.

- B2B revenue: ¡1%, suggesting untapped bulk sales opportunities.

6 Business Recommendations

1. **Portfolio Optimization:** Focus on high-revenue categories (Set, Kurta, Western Dress) and top-selling SKUs; bundle or phase out low-performing SKUs.

2. **Inventory Rationalization:** Prioritize M-L-XL sizes and popular styles to reduce holding costs and increase stock turnover.

3. **Data Governance:** Standardize courier status, track cancellations, and ensure accurate revenue reporting per SKU.

4. **Fulfillment Performance:** Implement SLA tracking and monitor shipment completion to improve delivery reliability.

5. **B2B Channel Development:** Launch bulk pricing models and target institutional/wholesale buyers to diversify revenue streams.

6. **Pricing Strategy:** Explore promotional bundling for slow-moving SKUs and leverage high AOV products to improve margins.

7. **SKU Rationalization:** Reduce the number of low-demand SKUs that distort KPI calculations.

8. **Seasonal Sales Planning:** Prepare for seasonality and post-promotion normalization to stabilize revenue trends.

7 Limitations

- Data contains SKUs with zero revenue, potentially skewing KPI calculations.

- Fulfillment efficiency metric is unreliable due to missing courier timestamps.

- Historical sales data may have gaps or partial reporting affecting trend analysis.

- B2B segment is underrepresented, limiting insights into bulk sales potential.

8 Future Improvements

- Integrate more complete and accurate B2B and fulfillment datasets.

- Enhance SKU-level pricing and revenue validation.

- Include customer segmentation and behavioral data to support marketing and assortment decisions.

- Automate KPI tracking for fulfillment and operational metrics.

- Introduce predictive analytics for demand forecasting and inventory optimization.

9 Conclusion

The analysis confirms that the business has a strong demand foundation and proven product winners, but long-term profitability is limited by portfolio sprawl, weak operational visibility, and underutilized growth channels. By shifting from a volume-driven approach to a precision-driven commercial strategy, the organization can significantly enhance profitability, resilience, and scalability on the Amazon platform.

10 Appendix: Selected Tables

10.1 Top 10 Revenue SKUs

SKU	Category	Fulfillment	Amount ($)
J0230-SKD-M	Set	Amazon	482460.55
J0230-SKD-S	Set	Amazon	409032.06
JNE3797-KR-L	Western Dress	Merchant	399500.22
JNE3797-KR-M	Western Dress	Merchant	366278.12
SET268-KR-NP-S	Set	Amazon	287819.67
SET268-KR-NP-XL	Set	Amazon	287065.15
J0230-SKD-L	Set	Amazon	275498.40
JNE3797-KR-S	Western Dress	Merchant	272103.84
SET268-KR-NP-L	Set	Amazon	263036.71
SET183-KR-DH-M	Set	Merchant	255261.01

10.2 Revenue per Category

Category	Revenue ($)
Set	41301120
Kurta	23344200
Western Dress	11732560
Top	5643762
Ethnic Dress	834103
Blouse	487648
Bottom	163664
Saree	129782
Dupatta	915

Acknowledgment / Note on Methodology