

# ShopMart E-Commerce Analysis Report

Prepared by: Ramadan Salman

Date: June 18, 2025

Tools Used: MySQL, Python (pandas, seaborn, matplotlib, statsmodels), Jupyter Notebook

Objective: Segment customers, evaluate product and sales performance, and forecast revenue trends using real-time transaction data.

## Insights Gained Through Analysis

### Customer Segmentation Analysis

- Top 10 Customers by Total Spending
  - Highest spender: Jason Mcdaniel – \$74,243.95
  - Others in the top 10 spent between \$63K-\$72K
  - These customers represent VIP tiers.
- Spending by Region
  - Regional revenue distribution shows the East and North outperforming other zones.
  - High-spending regions offer opportunities for focused marketing.

### Sales Performance Analysis

- Monthly Sales Trend
  - Revenue growth was sharp during July 2024, October 2024, January 2025, and April 2025.
  - Seasonal fluctuations suggest promotional timing and periodic demand.
- Top 5 Product Categories by Total Sales

Category	Total Sales	Units Sold
Electronics	\$4,805,932.57	11,301
Books	\$4,603,876.71	8,567
Home Goods	\$3,315,314.18	8,464
Clothing	\$3,112,868.05	6,191
Toys	\$2,941,258.67	7,150

### Order Status & Value Analysis

- Order Status
  - Orders are split between Completed, Pending, and Canceled.
  - ~65–70% completion rate observed.

- Order Value by Status
  - Completed orders have significantly higher average value compared to canceled or pending orders.
  - Indicates a correlation between successful orders and high spend.

#### Product-Level Performance

- Best-selling products are mostly from Electronics and Books.
- Total revenue from these categories reflects customer preferences and high purchase volume.
- Clothing and Toys are mid-performing and may benefit from bundling or discount strategies.

#### Forecasted Sales for Next 3 Months

The Holt-Winters model (Exponential Smoothing) was used for forecasting.

Trend: Stable, upward growth

Seasonality: Yearly (12-month cycle)

Month	Forecasted Sales
July 2025	\$2,034,500+
August 2025	\$2,124,000+
September 2025	\$2,080,000+

### Summary of Key Recommendations for Stakeholders

#### Customer Strategy

- Launch VIP programs for the top 10 spenders
- Focus marketing efforts in high-yield regions (East, North)

#### Product & Inventory Strategy

- Increase inventory allocation for Electronics and Books
- Bundle slower-moving categories (like Toys) with top performers
- Target promotions around seasonally strong periods

#### Order Fulfillment & Operations

- Analyze reasons behind order cancellations
- Improve fulfillment speed and reduce pending orders
- Optimize average order value through upselling during checkout

#### Strategic Forecasting

- Use the 3-month sales forecast to:
  - Drive inventory planning

- Allocate marketing budgets intelligently
- Prepare for operational scaling during peak months

## Appendix

- top\_10\_customers – Ranked customer spend
- top\_5\_categories – Top-performing product categories
- monthly\_sales – Monthly total revenue
- Order Status & Value – Sales status and performance
- forecasted values for Q3 2025