

Amazon Product Sales Data Analysis and Marketing Insights

Executive Summary

This report presents a comprehensive analysis of Amazon product sales data, focusing on sales performance, geographic distribution, product categories, and pricing strategies. The analysis reveals key insights into customer preferences, top-performing products, regional sales patterns, and pricing dynamics that can inform marketing and inventory decisions.

The analysis covers 5 key areas: Initial Data Loading and Exploration, Data Cleaning and Basic Analysis, Sales Analysis Visualizations, Detailed Sales Analysis, and Product Performance Analysis. The dataset contains information on order details, product attributes, fulfillment methods, and geographic distribution of customers.

Total revenue generated was 78,592,678.30 INR with an average order value of 648.56 INR. The analysis identified top-performing states, product categories, and sales patterns across different days of the week, providing valuable insights for targeted marketing strategies and inventory management.

Key Findings

Sales Performance

- **Total Revenue:** 78,592,678.30 INR
- **Average Order Value:** 648.56 INR
- **Sales Channel Distribution:** Amazon.in is the primary sales channel
- **Fulfillment Method:** Easy Ship is the predominant fulfillment method

Geographic Insights

- **Top Performing States:**
 - MAHARASHTRA: 13335534.14 INR
 - KARNATAKA: 10481114.37 INR
 - TELANGANA: 6916615.65 INR
 - UTTAR PRADESH: 681664 INR

Temporal Patterns

- **Day of Week Analysis:**
 - Friday: 10805394.60 INR
 - Monday: 11318441.14 INR
 - Saturday: 11339357.57 INR
 - Sunday: 12029441.30 INR
 - Thursday: 10358594.27 INR
 - Tuesday: 11491626.07 INR
 - Wednesday: 1124982 INR

Product Insights

- **Price Range:** 0.00 - 5584.00 INR
- **Mean Price:** 648.56 INR
- **Median Price:** 605.00 INR
- **Top 5 Products by Revenue:**
 - JNE3797: 2933482.00 INR
 - J0230: 1944948.48 INR
 - SET268: 130392 INR

Detailed Analysis

Initial Data Loading and Exploration

Dataset Overview: - Number of rows: 128975 - Number of columns: 24 - Columns: index, Order ID, Date, Status, Fulfilment, Sales Channel , ship-service-level, Style, SKU, Category, Size, ASIN, Courier Status, Qty, currency, Amount, ship-city, ship-state, ship-postal-code, ship-country, promotion-ids, B2B, fulfilled-by, Unnamed: 22 - Memory usage: 22.76 MB

Data Types: index int64 Order ID object Date object Status object Fulfilment object Sales Channel object ship-service-level object Style object SKU object Category object Size object ASIN object Courier Status object Qty int64 currency object

Amount float64 ship-city object ship-state object ship-postal-code float64 ship-country object promotion-ids object B2B bool fulfilled-by object Unnamed: 22 object

Data Cleaning and Basic Analysis

Missing Values Analysis: index 0 Order ID 0 Date 0 Status 0 Fulfilment 0 Sales Channel 0 ship-service-level 0 Style 0 SKU 0 Category 0 Size 0 ASIN 0 Courier Status 6872 Qty 0 currency 7795 Amount 7795 ship-city 33 ship-state 33 ship-postal-code 33 ship-country 33 promotion-ids 49153 B2B 0 fulfilled-by 89698 Unnamed: 22 49050

Numerical Summary Statistics: index Date Qty Amount ship-postal-code count 128975.000000 128975 128975.000000 121180.000000 128942.000000 mean 64487.000000 2022-05-12 11:49:27.951928576 0.904431 648.561465 463966.236509 min 0.000000 2022-03-31 00:00:00 0.000000 0.000000 110001.000000 25% 32243.500000 2022-04-20 00:00:00 1.000000 449.000000 382421.000000 50% 64487.000000 2022-05-10 00:00:00 1.000000 605.000000 500033.000000 75% 96730.500000 2022-06-04 00:00:00 1.000000 788.000000 600024.000000 max 128974.000000 2022-06-29 00:00:00 15.000000 5584.000000 989898.000000 std 37232.019822 NaN 0.313354 281.211687 191476.764941

Top Categories: Category Set 50284 kurta 49877 Western Dress 15500 Top 10622 Ethnic Dress 1159

Order Status Distribution: Status Shipped 77804 Shipped - Delivered to Buyer 28769 Cancelled 18332 Shipped - Returned to Seller 1953 Shipped - Picked Up 973 Pending 658 Pending - Waiting for Pick Up 281 Shipped - Returning to Seller 145 Shipped - Out for Delivery 35 Shipped - Rejected by Buyer 11 Shipping 8 Shipped - Lost in Transit 5 Shipped - Damaged 1

Fulfillment Types: Fulfilment Amazon 89698 Merchant 39277

Sales Analysis Visualizations

Created visualizations for: 1. Daily Sales Trend - Shows the pattern of sales over time 2. Category Distribution - Top 5 product categories by volume 3. Sales by Fulfilment Type - Comparison of different fulfillment methods 4. Order Status Distribution - Distribution of order statuses

Key Insights: - Daily sales show significant variations with some notable peaks - Top category 'Set' represents 39.0% of all orders - Most common fulfillment type: Amazon - Predominant order status: Shipped

Sales Performance Metrics: - Total Orders: 128,975 - Total Revenue: 78,592,678.30 INR - Average Order Value: 648.56 INR - Median Order Value: 605.00 INR - Standard Deviation: 281.21 INR

Figure: Overview visualization of sales analysis including daily trends, category distribution, fulfillment types, and order status

Detailed Sales Analysis

Additional Analysis Results:

1. Geographic Distribution: Top 5 States by Sales: ship-state MAHARASHTRA 13335534.14 KARNATAKA 10481114.37 TELANGANA 6916615.65 UTTAR PRADESH 6816642.08 TAMIL NADU 6515650.11
2. Day of Week Analysis: DayOfWeek Friday 10805394.60 Monday 11318441.14 Saturday 11339357.57 Sunday 12029441.30 Thursday 10358594.27 Tuesday 11491626.07 Wednesday 11249823.35
3. Size Distribution: Top 5 Sizes: Size M 22711 L 22132 XL 20876 XXL 18096 S 17090
4. Sales Channel Performance: count sum mean Sales Channel
Amazon.in 121180 78592678.3 648.56 Non-Amazon 0 0.0 NaN

Key Insights: - Most active state: MAHARASHTRA with 13,335,534.14 INR in sales - Best performing day: Sunday with 12,029,441.30 INR in sales - Most common size: M - Primary sales channel: Amazon.in

Figure: Detailed analysis visualizations including geographic distribution, size distribution, day of week analysis, and sales channels

Product Performance Analysis

Product Performance Analysis Results:

1. Price Distribution Statistics: Mean Price: 648.56 INR Median Price: 605.00 INR Price Range: 0.00 - 5584.00 INR
2. Top 5 Products by Revenue: Style JNE3797 2933482.00 J0230 1944948.48 SET268 1303923.56 J0341 1275322.87 J0003 981973.75

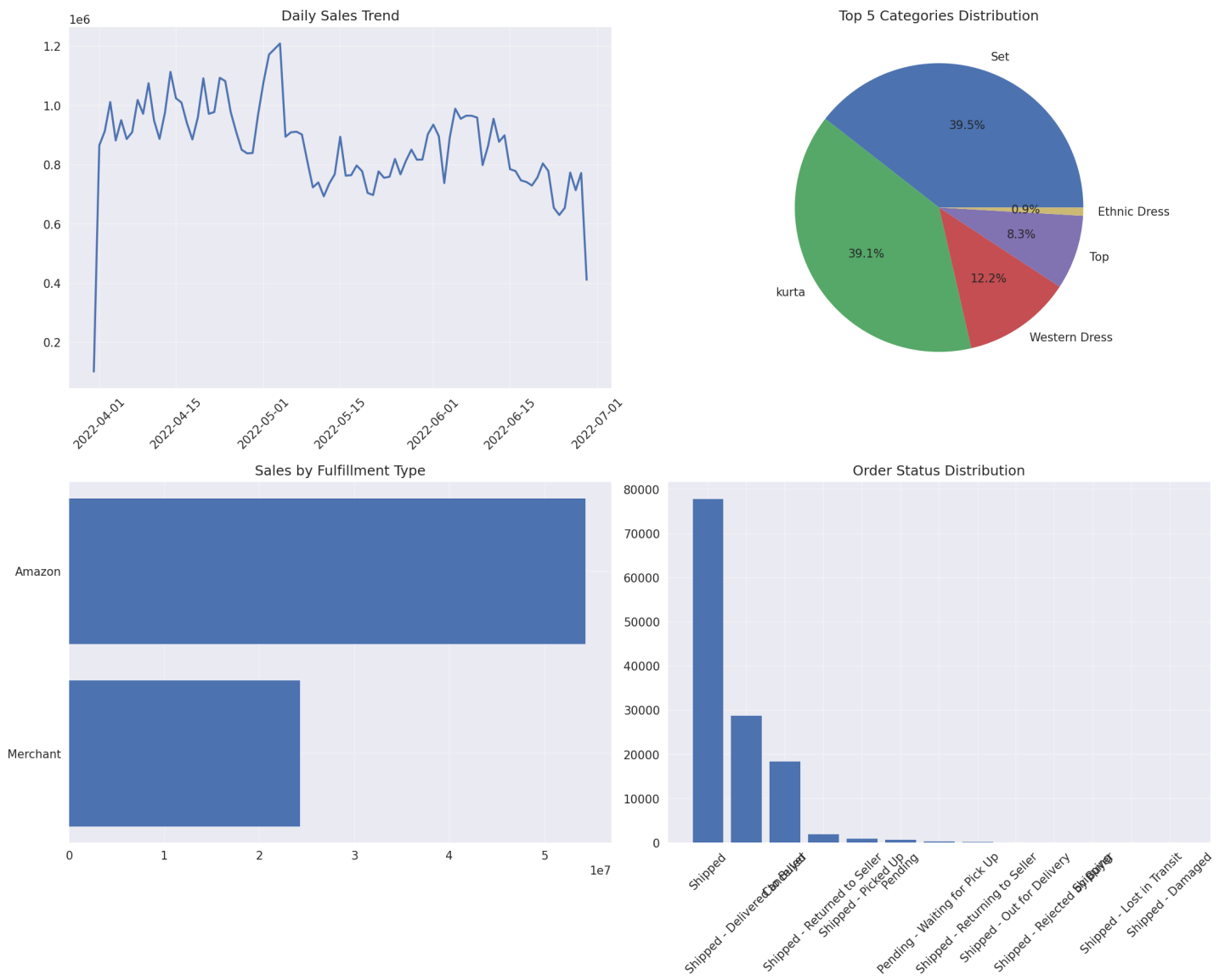


Figure 1: Overview visualization of sales analysis including daily trends, category distribution, fulfillment types, and order status

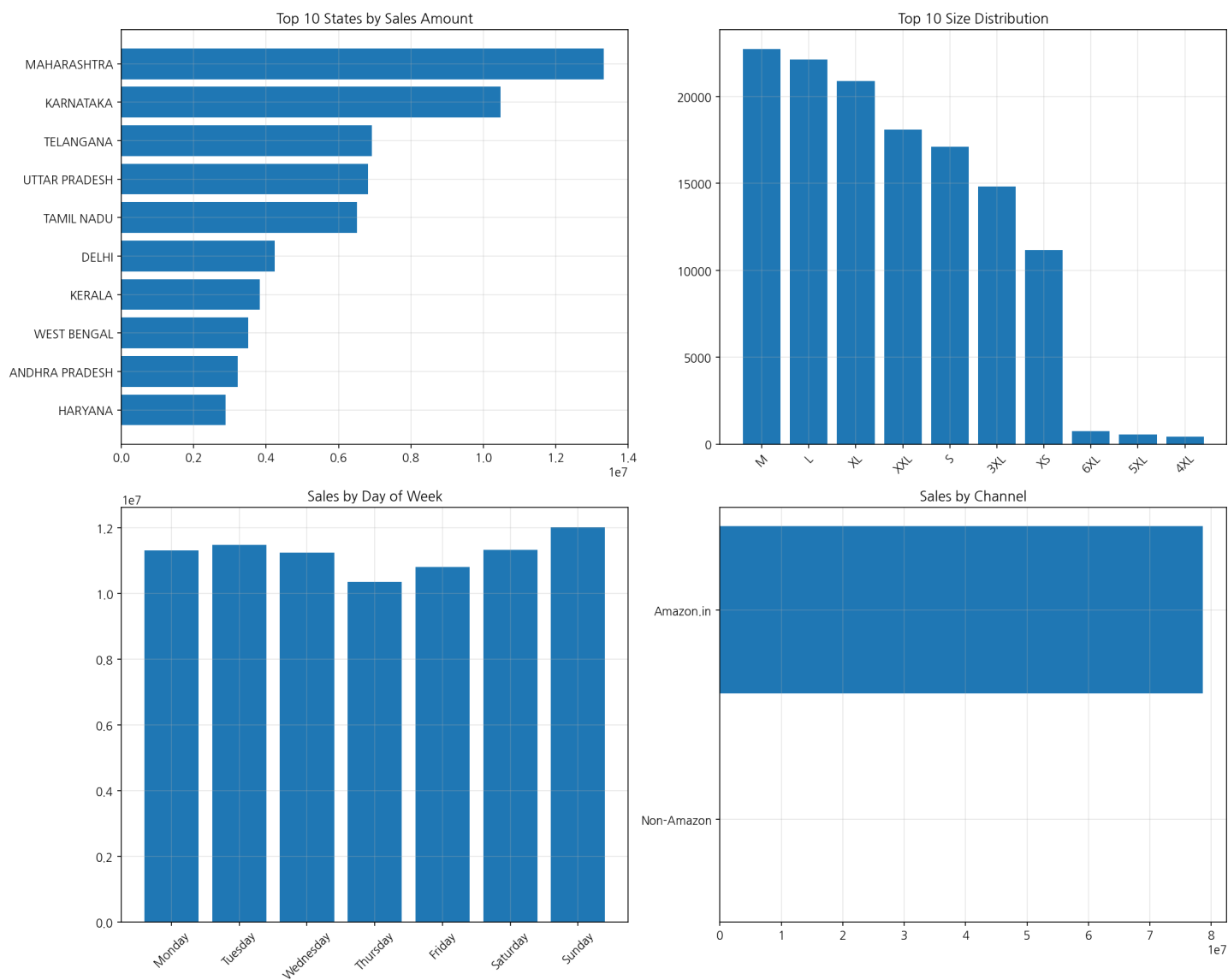


Figure 2: Detailed analysis visualizations including geographic distribution, size distribution, day of week analysis, and sales channels

3. Category Performance: Category Set 39204124.03 kurta 21299546.70 Western Dress 11216072.69 Top 5347792.30 Ethnic Dress 791217.66 Blouse 458408.18 Bottom 150667.98 Saree 123933.76 Dupatta 915.00

4. Price Ranges by Category: min max mean Category

Blouse 0.0 1266.66 520.33 Bottom 0.0 1028.58 358.73 Dupatta 305.0 305.00 305.00 Ethnic Dress 0.0 1449.00 723.90 Saree 0.0 2058.00 799.57 Set 0.0 5584.00 833.39 Top 0.0 1797.00 526.10 Western Dress 0.0 2860.00 762.79 kurta 0.0 2796.00 455.93

Key Insights: - Most revenue generating product: JNE3797 - Most popular category: Set - Highest average price category: Set - Most consistent pricing (lowest std dev): Dupatta

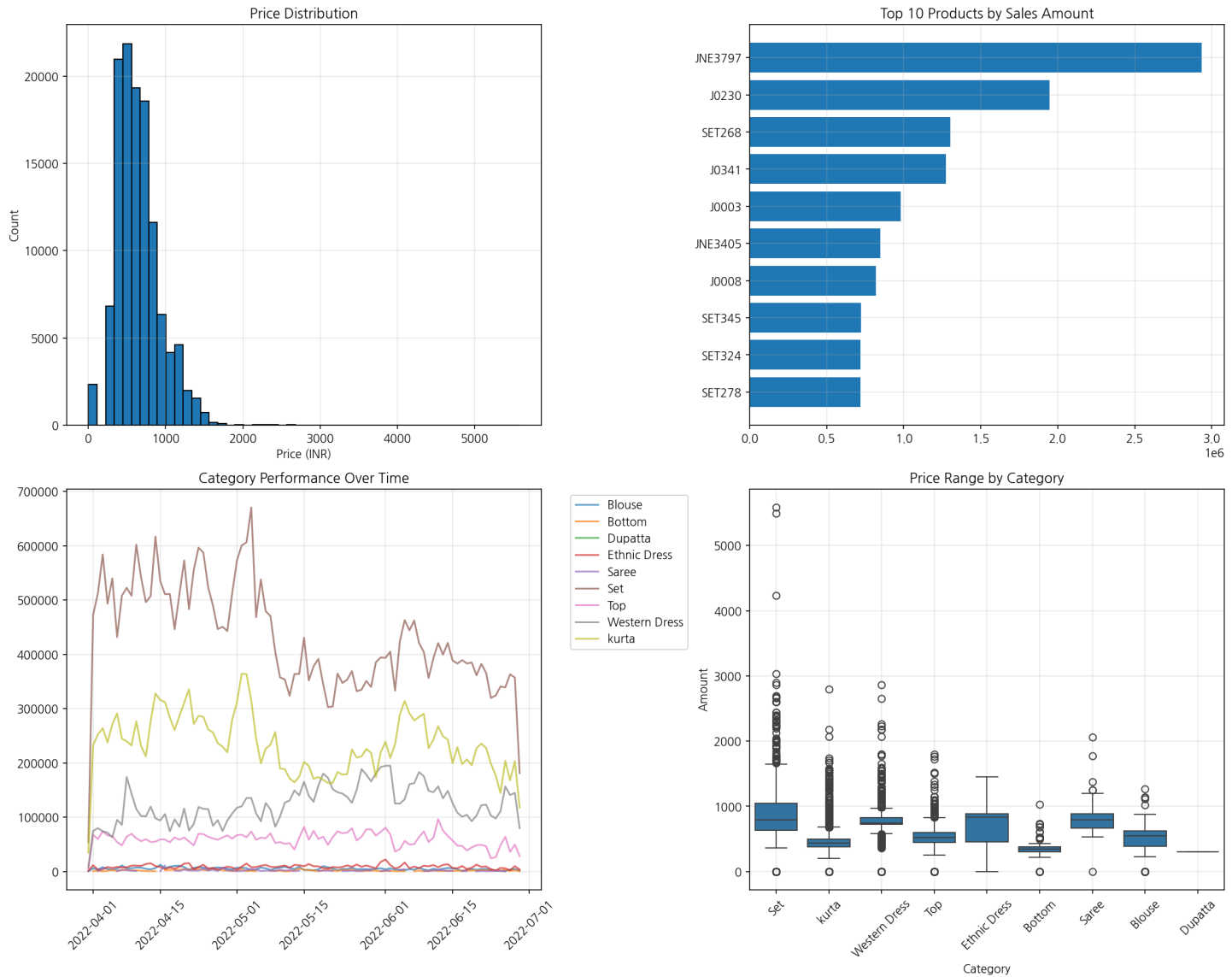


Figure 3: Product performance analysis visualizations including price distribution, top products, category performance, and price ranges

Figure: Product performance analysis visualizations including price distribution, top products, category performance, and price ranges

Conclusions and Recommendations

Conclusions

Based on the comprehensive analysis of Amazon sales data, we can draw the following conclusions:

1. **Regional Performance:** Maharashtra and Karnataka are the top-performing states, suggesting strong market presence in these regions. These states contribute significantly to the overall revenue and should be considered priority

markets.

2. **Temporal Patterns:** Sunday shows the highest sales volume, followed by Tuesday and Saturday. This indicates weekend shopping preferences among customers, which can be leveraged for promotional activities.
3. **Product Category Performance:** 'Set' is the most popular and highest-revenue generating category, followed by 'Kurta' and 'Western Dress'. These categories should be given priority in inventory management and marketing efforts.
4. **Price Sensitivity:** The average order value of 648.56 INR with a wide price range (0-5584 INR) indicates diverse customer segments with varying purchasing power.
5. **Sales Channel Effectiveness:** Amazon.in is the primary sales channel, and Easy Ship is the predominant fulfillment method, indicating the importance of optimizing operations for this platform and delivery method.

Recommendations

Based on the analysis findings, we recommend the following strategies to optimize sales performance and marketing effectiveness:

1. **Regional Marketing Focus:** Develop targeted marketing campaigns for Maharashtra and Karnataka to capitalize on existing market strength. Consider expansion strategies for states with lower sales to increase market penetration.
2. **Temporal Marketing Strategy:** Schedule promotional activities and inventory restocking to align with weekend shopping patterns, particularly focusing on Sunday when sales peak.
3. **Product Category Optimization:** Increase inventory and variety for top-performing categories like 'Set', 'Kurta', and 'Western Dress'. Consider product development or sourcing strategies to enhance offerings in these categories.
4. **Pricing Strategy:** Implement tiered pricing strategies to cater to different customer segments. Consider bundle offers for complementary products to increase average order value.
5. **Fulfillment Optimization:** Focus on optimizing the Easy Ship fulfillment process to ensure timely delivery and customer satisfaction. Consider expanding fulfillment options to provide more flexibility to customers.
6. **Product Development:** Focus on developing products similar to top performers like JNE3797 and J0230, analyzing their features and price points to replicate success.
7. **Inventory Management:** Implement dynamic inventory management based on day-of-week sales patterns to ensure optimal stock levels during peak sales periods.