

Final Insights – Superstore Sales & Customer Analytics

I performed a complete analysis of sales, customers, products, and operational metrics using EDA, SQL queries, Power BI dashboards, forecasting, customer segmentation (RFM), Market Basket Analysis (MBA), and inventory optimization. The insights reveal clear sales patterns, customer behavior trends, discount issues, and bundling opportunities

1. Sales & Profit Trends

i) Regional Performance:

- The West region leads in both sales and profit, driven by high-performing cities and product demand.
- The South region underperforms significantly, indicating a need for focused marketing and better discount strategies.

ii) Seasonal Trends (Cyclic Behavior):

- Sales show a repeating cyclic pattern every year: a sharp rise in Q4 (Nov-Dec) due to holidays, followed by a dip in Q1 (Jan-Feb), then steady recovery through Q2 and Q3.
- This seasonal cycle repeats consistently across all years observed, proving sales are predictable and trend-driven.

iii) Product Category Insights:

- Technology products have highest profitability and steady demand across quarters.
- Office Supplies have high sales but low margins, contributing volume but not profit.
- Furniture (e.g., Tables) shows frequent losses due to deep discounting despite strong sales volume.

2. Customer Insights & RFM Segmentation

i) High-Value Customers (≈ 40%):

Purchase frequently, recently, and spend more → retain them with loyalty programs and premium offers.

ii) Mid-Value Customers (≈ 36%):

Moderate spenders → target them with upselling and personalized promotions to shift them upward.

iii) Low-Value Customers (≈ 25%):

Infrequent buyers → reactivation campaigns (e.g., “We miss you” emails, special discounts).

iv) Repeat vs New Sales:

Repeat customers generate ~99% of sales, confirming retention is key to revenue stability.

3. Forecasting (6-Month Projection)

i) Cyclic & Seasonal Pattern:

Prophet model confirms predictable seasonality: Q4 spikes each year, followed by Q1 dips and gradual Q2-Q3 recovery.

ii) Trend Consistency:

Trends remain consistent year-over-year, indicating stable demand cycles across all quarters.

iii) Actionable Use:

Helps in inventory planning: stock up in Q4, reduce surplus during Q1 dips to avoid holding costs.

4. Discount Impact & Profit Optimization

i) High Discounts Hurt Profit:

Products with >30% discount often result in negative profits, particularly in Furniture (Tables, Bookcases).

ii) Profit Recovery Potential:

Reducing discounts on top 10 unprofitable items could recover ₹X in annual profit without harming sales significantly.

iii) Profit Margin by Category:

- Technology: High-margin driver.
- Office Supplies: Low but stable.
- Furniture: Needs pricing correction.

5. Operational Insights

i) Shipping:

Average shipping time is 3.5 days, stable but can be optimized further for high-value customers.

ii) YoY Profit Growth:

It shows consistent growth over the years. It aligns with the seasonal Q4 spikes, identified in the forecasting, showing how each year the profit has increased due to increase in these spikes.