Advanced Excel Project Documentation: Sales Dataset Analysis

1. Project Overview & Objectives

The purpose of this project was to analyze a retail sales dataset using advanced Excel techniques. The dataset contained ~10,000 sales transactions across multiple years (2014–2017). Each record included order details, shipping information, customer details, product attributes, and financial metrics (Sales, Quantity, Discount, Profit, Loss).

Objectives achieved:

- Cleaned and structured the raw dataset by adding derived columns such as Day, Month, Year, Delivery Time, Loss, Invalid Sales, Adjusted Sales, and Discount Amount.
- Performed sales analysis by Region, Segment, Category, and Ship Mode.
- Identified most profitable and loss-making products,
- Created PivotTables, PivotCharts, and an interactive Dashboard for insights.
- Applied What-If Analysis, Goal Seek, and Macros to simulate business scenarios and automate tasks.
- Built a Power Pivot Data Model connecting Products and Customers for advanced relational analysis.

2. Data Preparation

The raw dataset was processed with the following steps:

- Applied proper date formatting to Order Date and Ship Date.
- Added new columns: Day, Month, Year, End of Month, Delivery Time.
- Checked for duplicates and missing entries, ensuring consistency.
- Created 'Loss' column for transactions with negative profit values.
- Introduced 'Invalid Sales' column to flag records with erroneous entries.
- Added 'Adjusted Sales' column to account for discounts.
- Created 'dis_amt' column (Discount Amount = Sales × Discount).

3. Key Metrics & Calculations

Key calculations performed:

- Adjusted Sales = Sales – (Sales × Discount).
- Total Revenue = ₹19,74,618.73.
- Total Profit = ₹4,42,528.31.
- Total Loss = ₹1,56,131.29.
- Average Adjusted Sales per Order = ₹197.58.
- Total Orders = 9,994.

4. Sales & Time-Based Analysis

Yearly sales performance:

- 2014: ₹4,06,690.70
- 2015: ₹4,07,671.32
- 2016: ₹5,28,294.03
- 2017: ₹6,31,962.66

Insights:
- Sales grew steadily each.
- Peak sales periods observed in year-end quarters.
- Standard Class shipping dominated order volume with 5,968 orders 59%.

5. Regional & Segment Analysis

Segment Performance:

- Consumer: ₹9,95,133.99 revenue, ₹2,19,064.92 profit.
- Corporate: ₹6,14,756.96 revenue, ₹1,36,766.34 profit.
- Home Office: ₹3,64,727.78 revenue, ₹86,697.05 profit.

Regional Performance:

- West: ₹6,32,051.15 revenue, ₹67,345.96 profit.
- East: ₹5,84,172.61 revenue, ₹69,142.63 profit.
- Central: ₹4,23,452.23 revenue, ₹43,194.50 profit.
- South: ₹3,34,942.74 revenue, ₹39,381.83 profit.

Insights:
- Consumer segment drives highest volume.
- East and West regions lead in revenue; South underperforms.

6. Product & Category Analysis

Most Sold Products:

- Staples: 215 qty (₹755.47 revenue).
- Staple Envelope: 170 qty (₹1,686.81 revenue).
- Easy-staple Paper: 150 qty (₹2,504.19 revenue).

High-Value Products:
- Canon imageCLASS Copier: ₹61,599.82 revenue.
- Cisco TelePresence Unit: ₹22,638.48 revenue.

Category Contribution (Adjusted Sales):
- Technology: ₹7,13,493.38
- Furniture: ₹6,18,483.25
- Office Supplies: ₹5,87,420.76

7. Advanced Excel Features Applied

What-If Analysis: Modeled 10% sales increase and 5% discount reduction.

- Goal Seek: Determined units required to hit ₹5 lakh profit target.
- Macros: Automated formatting, PivotTable refresh, and report generation.
- Power Pivot: Connected Product and Customer tables with Sales table for advanced modeling.
- Calculated additional KPIs like Profit Margin = Profit ÷ Sales.

8. Interactive Dashboard

The dashboard showcased key KPIs:

- Total Adjusted Sales, Average Sales per Order, Total Discounts, and Profit.
- PivotCharts to show yearly growth, product contribution, and segment-wise profits.
- Slicers for dynamic filtering by Region, Category, and Ship Mode.

9. Insights & Recommendations

Key Insights:

- Consumers are the largest customer base; Corporate ensures steady profits.
- South is underperforming both in revenue and profits.
- Staples and consumables drive order count but contribute little to revenue.
- Losses concentrated in 3D Printers and Binding Machines.
- Discounts heavily affect First Class and Same Day deliveries.

    Recommendations:
- Reassess discounting policies for fast shipping.
- Focus on East and West best practices to improve South performance.
- Promote high-margin categories like Accessories and Chairs.
- Limit inventory of risky high-ticket products.

10. Deliverables

Deliverables Completed:

- Cleaned dataset with derived columns.
- Adjusted Sales, Discount Amount, and Profit calculations.
- PivotTables & PivotCharts.
- Interactive Dashboard with KPIs and slicers.
- What-If Analysis, Goal Seek, and Macros.
- Power Pivot model connecting Products and Customers.
- Written documentation and presentation slides.