

E-Commerce Sales Analysis

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Project Type: End-to-End E-Commerce Sales Data Analysis &
Excel Dashboard Project

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1. Introduction

This project focuses on analyzing e-commerce sales data to understand overall business performance and identify meaningful insights that support data-driven decision-making. The analysis covers sales trends, profitability, customer behavior, product category performance, and regional contribution. An interactive Excel dashboard was developed to present insights in a clear, visual, and management-friendly format.

2. Business Objective

The primary business goals of this analysis were:

- To evaluate overall **sales and profit performance** across multiple years
- To identify **high-performing and low-performing product categories and sub-categories**
- To analyse **profitability trends** by time, region, and customer segment
- To understand **geographical sales distribution** and regional contribution
- To design a **management-level Excel dashboard** for quick decision-making

3. Tools, Techniques & Technical Skills Used

- **Tools:** Microsoft Excel, Pivot Tables, Pivot Charts
- **Techniques:** Data Cleaning, KPI Calculation, Trend & Category Analysis
- **Technical Skills:** Advanced Excel formulas, Calculated fields, Slicers & Filters, Dashboard Design

4. Dataset Overview

The dataset represents transactional data from an e-commerce platform and includes information related to:

- Order details (Order ID, Order Date)
- Product hierarchy (Category, Sub-Category)
- Customer segments (Consumer, Corporate, Home Office)
- Sales, Quantity, and Profit metrics
- Geographical attributes (State, Region)

The data spans multiple years and regions, enabling trend-based and comparative analysis.

5. Data Cleaning & Preparation

The following steps were performed to prepare the data for analysis:

- Removed duplicate and blank records
- Standardized column formats (dates, currency values)
- Created calculated fields for
 1. Profit Margin (%)
 2. Year and Month extraction
- Validated data consistency across categories and regions
- Built structured Pivot Tables for scalable analysis

6. Key Performance Indicators (KPIs)

The dashboard tracks the following KPIs:

- **Total Sales:** ₹22,97,200.86
- **Total Profit:** ₹2,86,397.02
- **Total Quantity Sold:** 37,873 units
- **Number of Orders:** 9,994
- **Overall Profit Margin:** 12.47%

These KPIs provide a high-level snapshot of business performance.

7. Dashboard Overview

The Excel dashboard is designed in a **professional, executive-friendly layout** to enable quick interpretation of key business metrics. It consolidates multiple analytical views into a single screen.

Dashboard Components:

- KPI cards displaying Sales, Profit, Quantity, Orders, and Profit Margin
- Monthly Sales vs Profit comparison chart
- Category-wise Profit Waterfall chart
- Top 5 Sub-Categories by Sales bar chart
- Category-wise Sales Share donut chart
- State-wise Sales heat map
- Interactive slicers for Year, Region, and Customer Segment



8. Detailed Analysis & Insights

8.1. Sales & Profit Trend Analysis

- Sales show a **steady upward trend** with peak performance in the later months of the year.
- Profit generally follows sales growth, indicating controlled operational costs.
- Certain months show high sales but relatively lower profit, suggesting discount-driven sales or higher logistics costs.

8.2. Category-Wise Performance

- **Technology** and **Office Supplies** are strong revenue contributors.
- **Furniture** shows comparatively lower profit margins, indicating scope for cost optimization.
- Category-wise profit analysis helps identify where pricing or supply chain improvements are needed.

8.3. Top Sub-Categories

Top revenue-generating sub-categories include:

1. Phones
2. Chairs
3. Storage
4. Tables
5. Binders

Phones and Chairs contribute significantly to overall sales, making them critical focus areas for inventory and marketing strategies.

8.4. Customer Segment Analysis

- **Consumer segment** contributes the highest number of orders.
- **Corporate customers** show relatively higher order values.
- Segment-wise filtering enables targeted marketing and pricing strategies.

8.5. Regional & State-Wise Insights

- Sales distribution varies significantly by state.
- Certain states act as **revenue hubs**, while others show growth potential.
- Regional analysis helps in optimizing warehouse placement and regional promotions.

9. Business Recommendations

Based on the analysis, the following recommendations are suggested:

- Focus marketing efforts on **high-profit sub-categories** like Phones
- Improve margins in Furniture through pricing or supplier negotiations
- Launch region-specific campaigns in underperforming states
- Monitor discount strategies in months with lower profit margins
- Use customer segmentation for personalized offers

10. Skills Demonstrated

This project demonstrates the following data analyst skills:

- Data cleaning and transformation
- Advanced Excel (Pivot Tables, Calculated Fields, Charts)
- KPI design and dashboard development
- Business-oriented data interpretation
- Visual storytelling for decision-making

11. Conclusion

This E-Commerce Sales Analysis project showcases my ability to transform raw business data into **meaningful insights and a professional dashboard**. The project reflects real-world analytical thinking, tool proficiency, and business understanding required for an entry-level **Data Analyst** role.