

# 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**.