

# E-commerce Sales Analysis Report

## 1. Project Overview

This project analyzes sales data from an e-commerce platform to understand sales trends, top-selling products, and regional performance. The analysis includes data cleaning, exploration, visualization, and insights.

**Dataset used:** `sales_data.csv`

**Columns in dataset:**

- `Date` → Date of sale
- `Product` → Name of the product sold
- `Quantity` → Number of items sold
- `Price` → Price per item
- `Customer_ID` → Unique identifier for customer
- `Region` → Sales region
- `Total_Sales` → Total sales amount (Quantity × Price)

## 2. Data Cleaning and Preparation

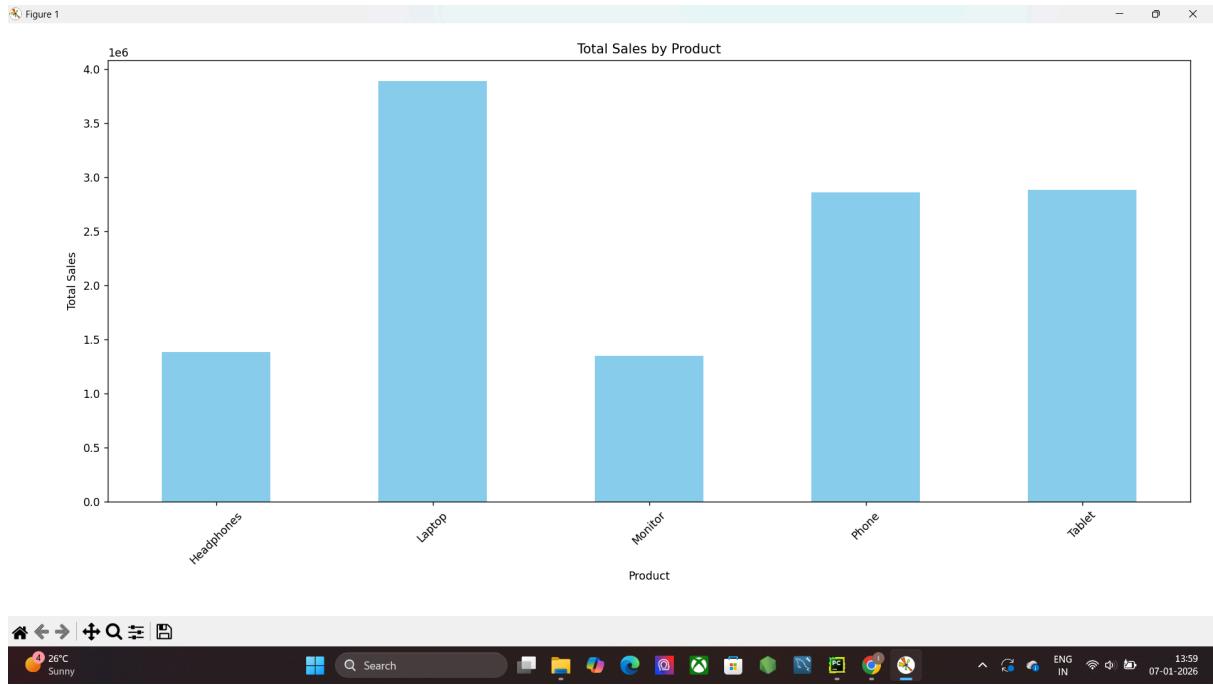
- **Duplicates:** Checked and removed, if any. ✓
- **Missing values:** None found. ✓
- **Date column:** Converted to `datetime` format for easy analysis.
- **Month column:** Extracted month-year from Date for monthly trend analysis.

### 3. Basic Metrics

Metric	Value
Total Sales	₹12,365,048
Total Quantity Sold	478
Top-selling Product	Laptop
Product Sales (Top)	₹3,889,210
Region Contributing Most	North
Sales from Top Region	₹3,983,635
Month with Highest Sales	2024-03
Sales in Peak Month	₹4,485,006

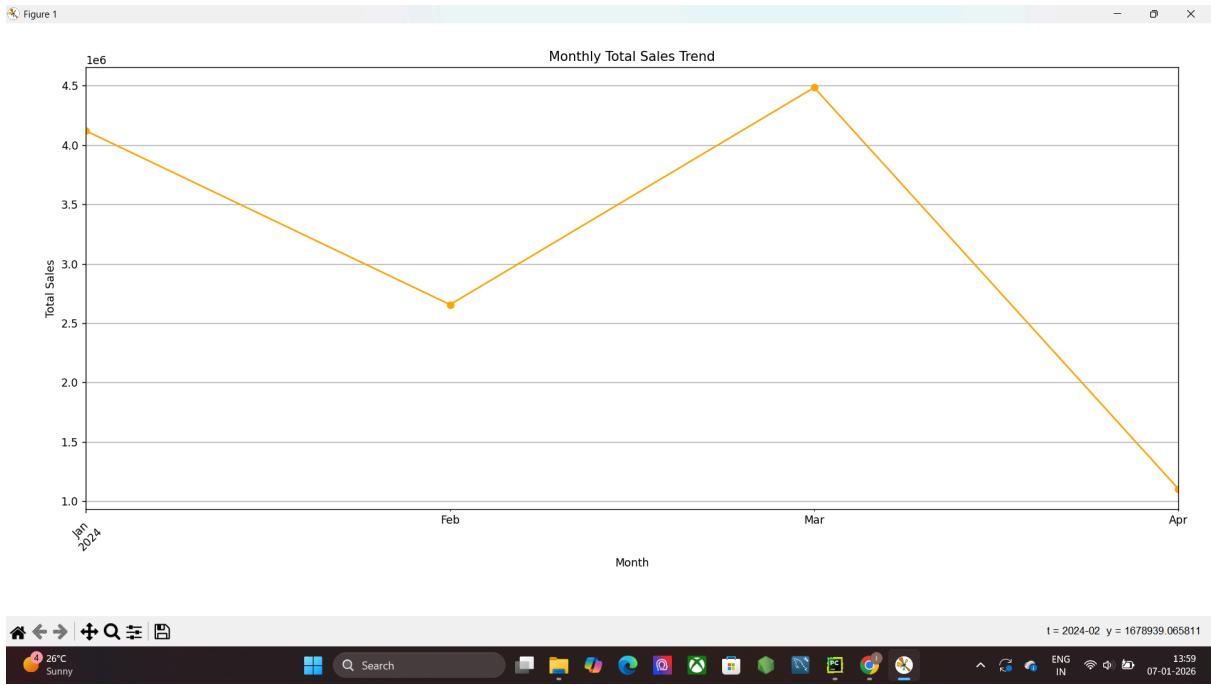
## 4. Visualizations

### 1. Bar Chart: Total Sales by Product



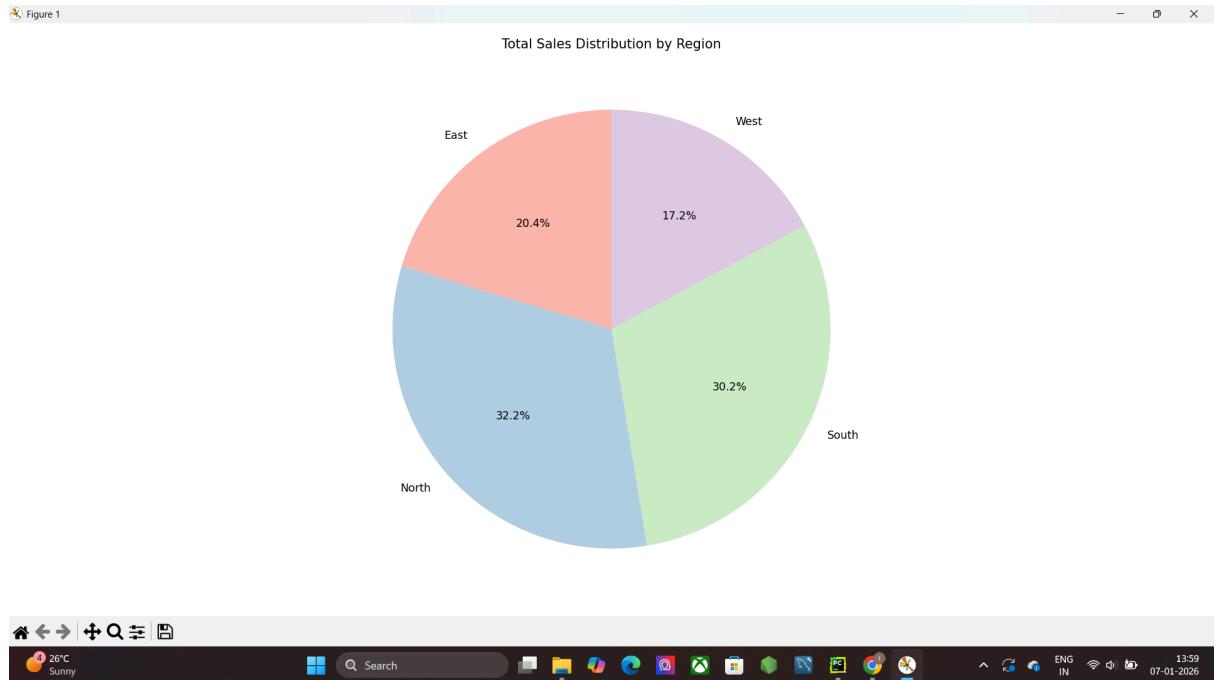
- Shows total sales for each product.
- Helps identify which products contribute the most revenue.

## 2. Line Chart: Monthly Total Sales Trend



- Shows how total sales change month to month.
- Highlights peak and low sales months.

### 3. Pie Chart: Total Sales Distribution by Region



- Shows percentage contribution of each region to total sales.
- Helps identify strongest and weakest sales regions.

## 5. Insights and Observations

1. Top-selling Product:
  - The product contributing most to revenue is Laptop (₹3,889,210).
  - Strategy: Focus marketing and inventory on this product for maximum revenue.
2. Best Performing Region:
  - North (₹3,983,635) generated the highest sales.
  - Strategy: Explore why this region performs better and replicate in other regions.
3. Sales Trend Over Time:
  - Peak sales occurred in March 2024 (₹4,485,006).
  - There is a visible trend in sales across months — can plan promotions in low-sales months.
4. Overall Business Performance:
  - Total sales of ₹12,365,048 show the overall revenue generated.
  - Total quantity sold: 478, giving insight into product demand.

## 6. Conclusion

This analysis provides a clear understanding of product performance, regional contribution, and sales trends.

- Businesses can make data-driven decisions to improve sales and optimize marketing.
- Charts and metrics offer a visual and numerical summary of performance, making strategy planning easier.