Retail Business Performance & Profitability Analysis

1. Project Overview

This project analyzes retail transactional data to evaluate business performance, identify profit-draining product categories, understand sales seasonality, and support data-driven decision-making. The analysis combines **SQL**, **Python** and **Tableau** to deliver actionable insights through queries, statistical analysis, and interactive dashboards.

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2. Dataset Description

- **Dataset Name:** Sample Superstore
- **Source:** Public retail dataset
- **Format:** CSV and Excel
- **Records:** ~9,994 orders

Key Fields Used:

- Order Date, Ship Date
- Category, Sub-Category
- Region
- Sales, Profit, Quantity

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3. Tools & Technologies Used

- **SQL (SQLite):** Data exploration, aggregation, profitability analysis
- **Python:** Correlation analysis and visualization
- **Tableau Public:** Interactive dashboards and KPIs
- **Pandas & Seaborn:** Statistical analysis and plotting

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4. SQL Analysis Summary

SQL was used to:

- Validate data completeness
- Calculate total sales, profit, and order counts
- Analyze profit margins by category and sub-category
- Estimate inventory turnover using shipping lead time

Sample Insights:

- **The technology** category shows the highest average profit
- **The furniture** category contributes low profit margins
- Some sub-categories consistently generate losses

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5. Python Analysis

Python was used to study the relationship between sales and profitability.

Key Analysis:

- Correlation between **Sales** and **Profit**
- Scatter plot to visualize profitability spread

Observation:

- Higher sales do not always guarantee higher profit
- Discounts and operational costs impact margins significantly

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6. Tableau Dashboard Overview

An interactive Tableau dashboard was created with the following components:

KPI Cards:

- **Total Sales:** ₹2,297,200.86
- **Total Profit:** ₹286,397.02
- **Total Orders:** 9,994

- **Average Order Value:** ₹458.61

Visualizations:

- Sales & Profit by Category
- Profit by Sub-Category
- Monthly Sales Trend (Seasonality)
- Region-wise Profit Comparison

Filters (Interactivity):

- Region
- Category
- Order Date (Time Range)

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7. Key Insights

- **The technology** category is the most profitable
- **Bookcases and Tables** generate consistent losses
- Sales peak during specific months, indicating seasonal demand
- Certain regions outperform others in profitability
- Average order value remains stable across regions