01.Retail Business Performance & Profitability Analysis

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1. Project Objective

Analyze transactional retail data to uncover profit-draining categories, optimize inventory turnover, and identify seasonal product behavior.
The aim is to provide actionable strategies for boosting profitability and business growth.

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2. Project Steps

a. Data Cleaning:

- Removed duplicates and missing values using Python (Pandas).
- Standardized date and numeric columns for correct analysis.

b. Exploratory Data Analysis:

- Examined sales and profit distribution across categories, sub-categories, regions, and time periods.
- Created correlation matrix to understand relationships between sales, quantity, discount, and profit.

c. Dashboard Building:

- Built an interactive Power BI dashboard featuring:
    - KPI cards (Total Sales, Total Profit, Profit Margin, Orders)
    - Sales and profit analysis by category, sub-category, region, and quarter
    - Slicers for dynamic filtering by year, region, category, sub-category, and time period

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3. Key Insights

- **Most Profitable Category:** Technology leads in profit and margin; key drivers are Copiers and Phones.
- **Loss-Making Categories/Sub-categories:** Furniture has lowest profit, with Tables and Bookcases generating consistent losses.
- **Seasonal Trends:** Q3 and Q4 generally outperform Q1 and Q2 in both sales and profit, indicating seasonal peaks likely related to promotions or holiday periods.
- **Regional Performance:** The West and East regions are top performers, while the Central region lags behind.
- **Discount-Impact:** Higher discounts correlate with reduced profits; aggressive discounting is detrimental to overall margin.

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4. Business Recommendations

- **Focus investment and marketing on Technology (especially Copiers/Phones) and high-performing regions.**
- **Review or discontinue consistently loss-making sub-categories (e.g., Tables, Bookcases).**
- **Limit discounts above 20% to preserve profit margin.**
- **Plan for inventory and promotional strategies aligned with strong Q3/Q4 seasonality.**
- **Investigate underperforming regions for potential operational improvements.**

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5. Tools Used

- Data Cleaning & Analysis: Python (Pandas, Matplotlib, Seaborn)
- Dashboard: Power BI
- Data Source: Superstore retail sales dataset

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6. Deliverables

- **Interactive Power BI Dashboard** (retail_dashboard.pbix)
- **Cleaned Data File** (cleaned_retail_data.csv)
- **Analysis Report (this document)**
- **GitHub Repository** (for full code, files, and documentation)

  https://github.com/karel-jeffrey08/elevate_intern-Project-01

Prepared by: Karel Jeffrey J, Data Analyst Intern
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