Sum of Avg_Profit_Margin by Sub_Category and Category

Category ● Furniture ● Office Supplies ● Technology

Avg_Profit_Margin
1.92

Sub_Category
> ○ Appliances
> ○ Art
> ○ Binders
> ○ Bookcases
> ○ Chairs
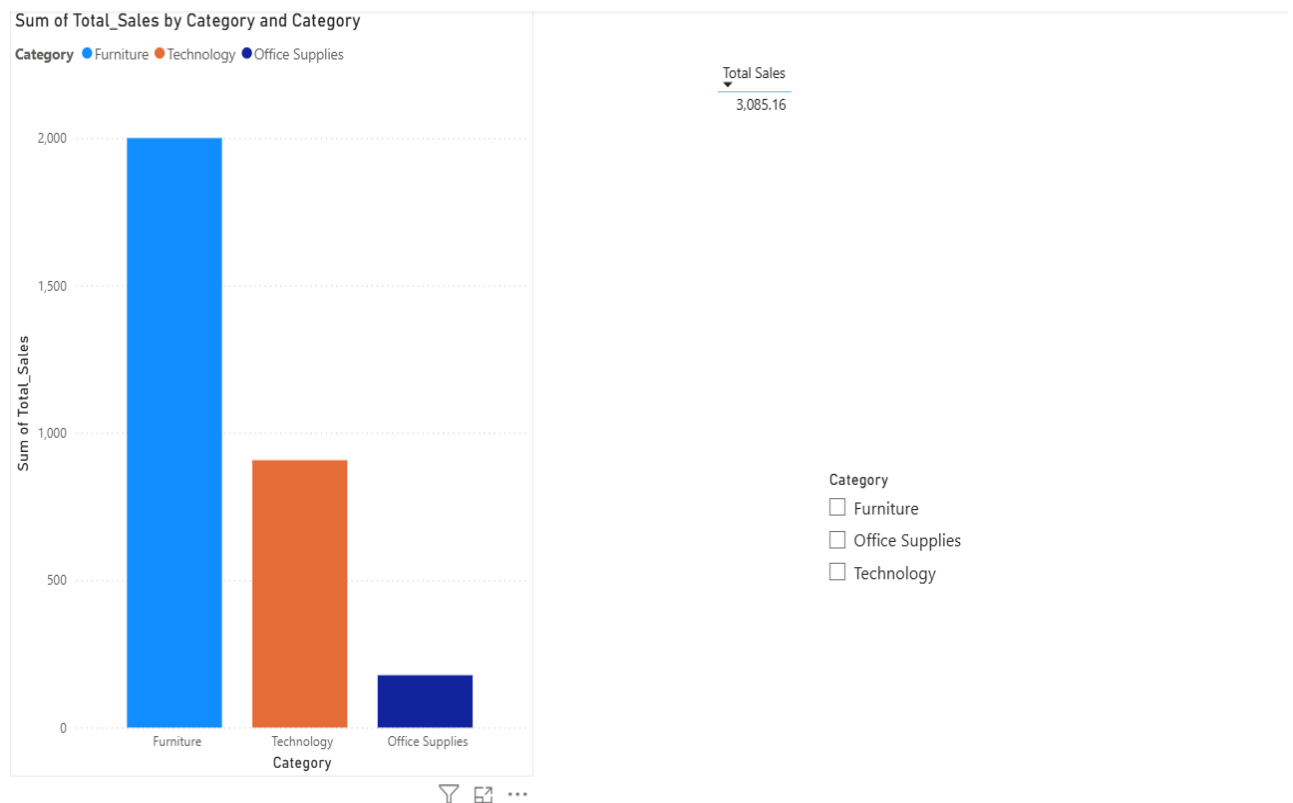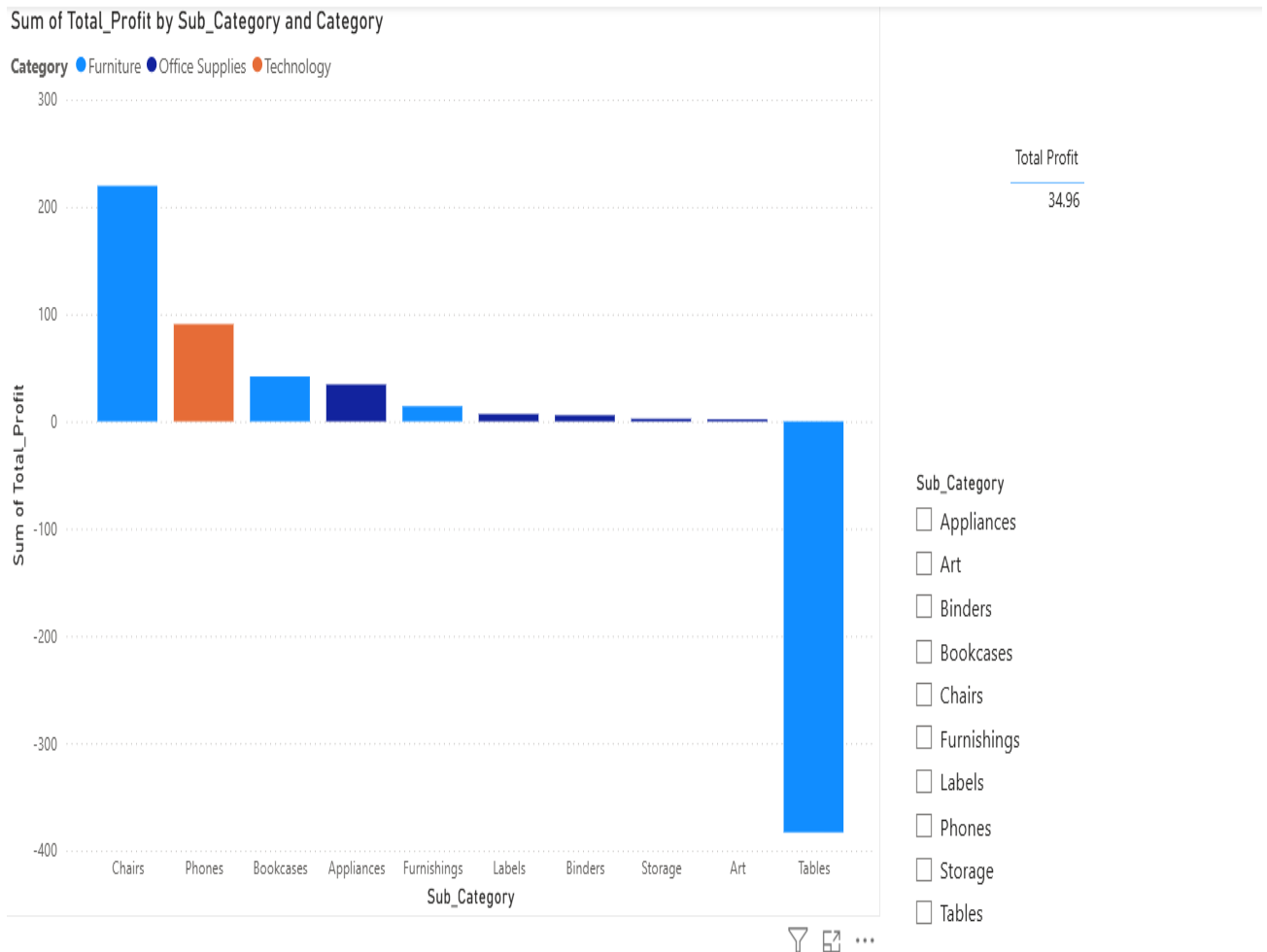> ○ Furnishings
> ○ Labels
> ○ Phones

Profit Margin by Sub-Category

- Visualization reveals that sub-categories such as Tables and Storage are loss-makers, signalling need for strategic action.
- Sub-categories like Labels and Binders achieve high profit margins, demonstrating efficiency or strong market demand.

Sum of Total_Sales by Category and Category

Category ● Furniture ● Technology ● Office Supplies

Total Sales
3,085.16

Category
☐ Furniture
☐ Office Supplies
☐ Technology

Sales Analysis

- Furniture leads in total sales but fails to convert sales into profit, suggesting high costs or aggressive discounting.
- Top-selling sub-categories (e.g., Chairs, Appliances, Labels) provide revenue growth opportunities and should be prioritized for inventory and marketing focus.

Sum of Total_Profit by Sub_Category and Category

Category ● Furniture ● Office Supplies ● Technology

Total Profit

34.96

Sub_Category

☐ Appliances
☐ Art
☐ Binders
☐ Bookcases
☐ Chairs
☐ Furnishings
☐ Labels
☐ Phones
☐ Storage
☐ Tables

Profitability Analysis

- Furniture is the main profit-draining category with overall negative profit figures. This highlights the need for immediate review of pricing, cost structures, or discontinuation of low-performing sub-categories (example: Tables).
- Technology category stands out as the top performer with consistently positive profit margins and sales, indicating strong product-market fit.
- Office Supplies display moderate profits, requiring monitoring and optimization.

Summary

1.Dataset Import & Preparation

- Loaded the provided retail transactional dataset (CSV) into Jupyter Notebook using pandas.

- Explored data columns and performed initial cleaning (removing invalid and zero values).

- Calculated aggregated metrics in Python:

    - Avg_Profit_Margin per sub-category

    - Total_Profit per sub-category and category

    - Total_Sales per sub-category and category

- Exported the processed summary table as CSV (profit_margin_by_subcategory.csv).

2. Data Loading in Power BI

- Opened Power BI Desktop, imported the clean summary CSV file.

- Verified all columns
(Category, Sub_Category, Total_Profit, Total_Sales, Avg_Profit_Margin) loaded correctly for analysis.

3. Dashboard Building in Power BI

- Created multiple visualizations (dashboards/pages):

    - Profit Margin by Sub-Category:

        - Bar chart, X-axis: Sub_Category, Y-axis: Avg_Profit_Margin, Legend: Category

    - Total Profit by Category:

        - Bar chart, X-axis: Category, Y-axis: Total_Profit

    - Total Sales by Category:

        - Bar chart, X-axis: Category, Y-axis: Total_Sales

- Added interactive slicers for Category and Sub_Category so users can filter charts dynamically.

- Included KPI Cards for overall metrics:

- Sum of Total_Profit

- Sum of Total_Sales

- Average Profit Margin

4. Analysis & Insights

- Profitability Analysis:

  - Identified Furniture as a significant profit-draining category (deep negative profit), signalling urgent review of pricing or cost structures.

  - Technology products emerged as high-margin, high-profit focus area.

  - Detected efficient, high-margin sub-categories (Labels, Binders); loss-makers (Tables, Storage).

- Sales Analysis:

  - Furniture had highest sales volume but low/no profit, indicating inefficiency.

  - Chairs, Appliances, Labels were top-selling products—should be prioritized for promotion and inventory.

- Slicer and KPI Cards Usage:

  - Slicers enabled drilling down by segment for focused decision-making.

  - KPI cards provided instant visualization of core metrics.

5. Dashboard Export

- Formatted visuals (no overlaps, consistent titles, clear layout).

- Exported cleaned, formatted dashboards to PDF/PowerPoint for sharing.

6. Conclusions & Recommendations

- Urgently address negative profit in Furniture via cost reductions or product rationalization.

- Invest in and grow high-margin, well-performing Technology sub-categories.

- Monitor Office Supplies for improvement opportunities.

- Use dashboard for ongoing business review—expand data cleanup to enable time-based, seasonal, and regional trend analysis in future projects.