



**SCHOOL OF COMPUTER SCIENCES**

**ACADEMIC SESSION: 2025/2026**

**CMT426 BUSINESS INTELLIGENCE AND ANALYTICS**

**INDIVIDUAL LAB REPORT 1**

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## 1. Dashboard and charts visualizations:

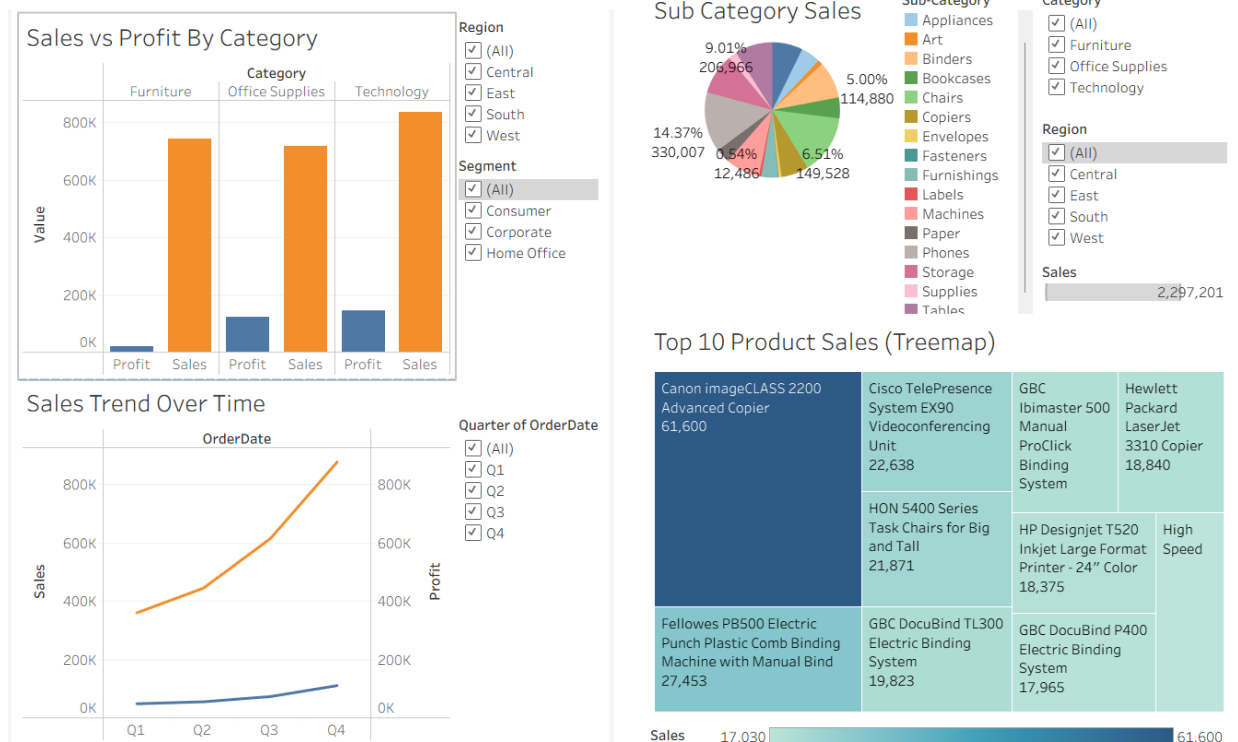
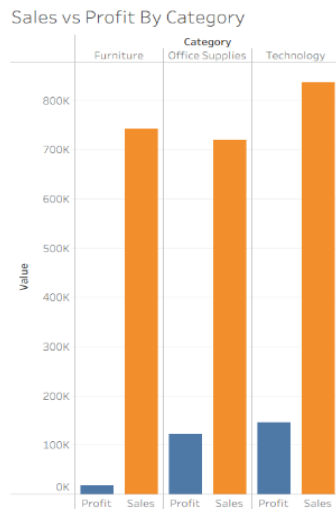


Figure 1.1 : Screenshot of dashboard visualization.

## 2. Description of business problem visualized:

The above dashboard (Figure 1.1) was created using the Superstore dataset, which helps solve some business challenges in regard to analyzing sales, profitability, and product demand. The first challenge many businesses face is knowing how to recognize which product categories and subcategories actually provide profit because having high sales does not necessarily mean that the company makes a high profit. In addition to these issues, there could also be an inability to monitor sales trends. This poses additional risks for forecasting and strategic planning, as well as potential dependence on just a few products with good sales records. By using the sales data and profits for different product categories, the dashboard will help identify inefficiencies such as ineffective pricing policies and high costs. In addition, sales trends will be revealed, helping with forecasting, while providing information about product performance.

### 3. Types of charts used:

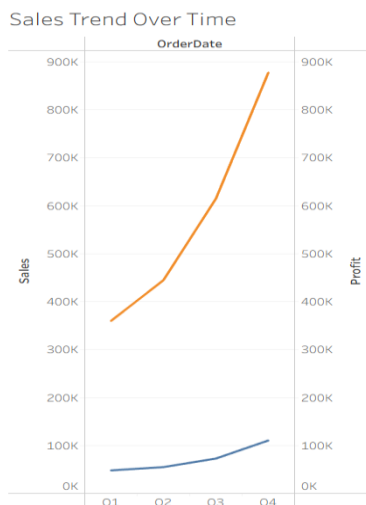


#### a) Bar Chart

The bar chart is used to compare Sales and Profit across product categories. This visualization is effective for categorical comparison as it allows clear identification of performance differences.

The side-by-side representation highlights discrepancies between revenue and profitability, making it easier to detect categories with high sales but low profit margins, indicating potential inefficiencies.

*Figure 3.1 : Diagram of Sales vs Profit By Category Bar Chart.*



#### b) Dual-Line Chart

The dual-line chart visualizes Sales and Profit trends over time (quarterly). This is particularly useful for identifying correlations and divergences between revenue and profitability. For example, an increase in sales without a corresponding rise in profit may indicate rising costs or discounting strategies. This chart supports trend analysis and forecasting, which are critical for strategic planning.

*Figure 3.2 : Diagram Of Sales Trend Over Time Line Chart.*

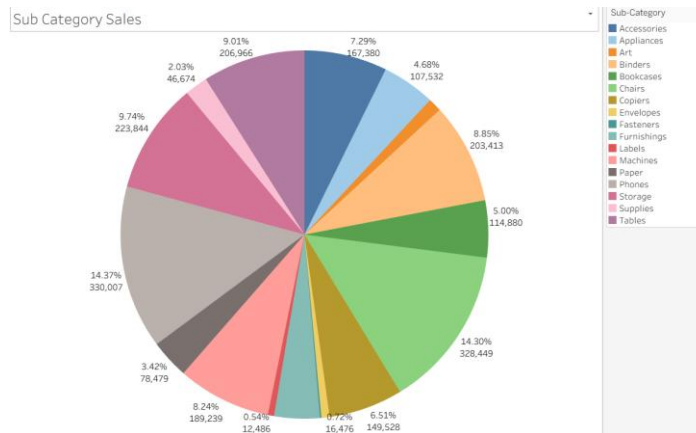


Figure 3.3 : Diagram Of Subcategory Sales Pie Chart.

### c) Pie Chart

The pie chart represents the proportion of total sales contributed by each sub-category. It is useful for quickly identifying dominant segments within the business. However, its use is limited to high-level distribution insights, making it most effective when the number of categories is controlled and differences are significant.

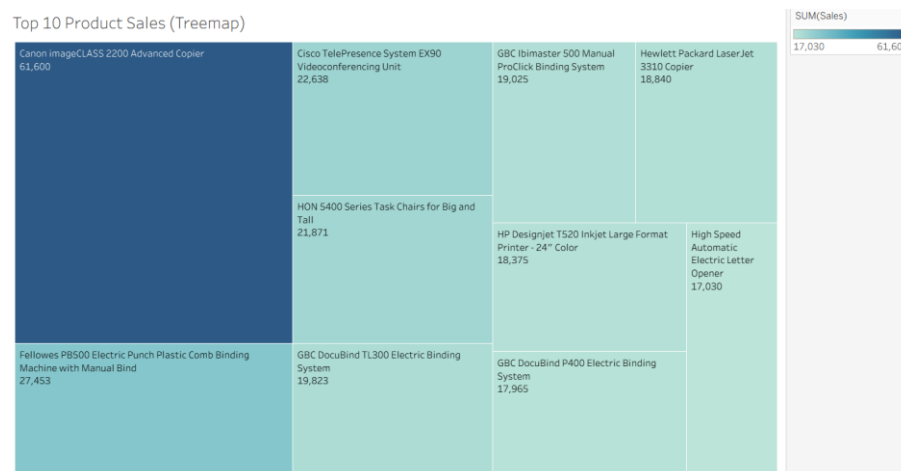


Figure 3.4: Diagram Of Top 10 Product Sales Treemap.

### d) Treemap

The treemap is used to display the Top 10 Products by Sales, providing a hierarchical and space-efficient visualization. The size of each rectangle represents sales contribution, allowing quick identification of key revenue drivers. This visualization is particularly useful for detecting sales concentration risk, where a small number of products dominate total revenue.

#### 4. Key findings and business recommendations:

##### Key Findings:

**a) Imbalance in Sales Distribution Among Product Categories**

There is an imbalance in the distribution of sales among various product categories, showing that sales depend on some particular categories.

**b) Gap Between Sales and Profits**

While some product categories have high sales, their profits remain low compared to their sales volumes, pointing out the inefficiency in pricing and cost control.

**c) Sales Dependence on Few Product Categories**

Few product categories account for a significant amount of total sales, making the business vulnerable to sales loss when sales of such products fall.

**d) Different Sales Patterns Over Time**

There are fluctuations in sales patterns over time, showing that there may be seasonality in the market.

##### Business Recommendations:

**a) Enhance Superior Performing Categories.**

Provide additional investments and marketing to superior performing categories without losing their competitive edge.

**b) Optimize Cost Structures and Pricing Models**

Ensure that low profitability categories have optimal cost structures and pricing models that convert sales into profits.

**c) Broaden Product Range**

Minimize dependency on a handful of products that are highly profitable and instead promote mid-level performing products.

**d) Conduct Sales Data Analysis**

Take advantage of past sales records to forecast future sales effectively.