Part 1: Profits & Losses

1. Identifying the Two Biggest Profit Centers and Two Biggest Loss-Makers

To identify the biggest profit and loss centers, we examined profitability by sub-category and region. A bar chart was created, where:

- X-axis: Sub-category + Region
- Y-axis: Total Profit
- Color: Green for profit, red for losses

Findings

Biggest Profit Centers:

1. Copiers in the West Region: This combination generated the highest profits, showing strong demand and profitability.
2. Phones in the East Region: This category also performed exceptionally well, contributing significantly to total revenue.

Biggest Loss-Makers:

1. Tables in the South Region: This sub-category had the largest negative profit, indicating it is a consistent loss-maker.
2. Bookcases in the Central Region: Another high-loss sub-category, potentially due to high storage or shipping costs.

Recommended Actions

Expand profitable categories while phasing out low-performing categories.

Visualization: See worksheet titled: "Profit & Loss Analysis"

2. Identifying Products to Stop Selling

A scatter plot was created to analyze the relationship between Sales (X-axis) and Profit (Y-axis) for individual products. Loss-making products with high sales were highlighted.

Findings

The following products have high sales but negative profits, making them prime candidates for discontinuation:

- GBC DocuBind P400 Electric Binding System
- Cubify CubeX 3D Printer (Double & Triple Head Print)
- Bush Advantage Collection Racetrack Conference Table

Recommended Actions

These products consistently fail to generate profit, and we should consider removing them from inventory.

Visualization: See worksheet titled: "Unprofitable Products"

3. Recommended Sub-Categories to Focus On and Discontinue

A bar chart was used to assess sub-category profitability, ranking them from highest to lowest.

Findings

Top 3 sub-categories to focus on:

1. Copiers – Highest profit contributor.
2. Phones – Steady growth and strong revenue generation.
3. Accessories – Consistent profitability with market demand.

Top 3 sub-categories to discontinue:

1. Tables – Continues to incur losses across multiple regions.
2. Bookcases – Consistently unprofitable.
3. Supplies – Low profitability with high costs.

Visualization: See worksheet titled: "Subcategory Performance"

Part 2: Advertising Analysis

1. Identifying the Best State-Month Combinations for Advertising

A profit heatmap was created to visualize average monthly profits per state.
Green-colored values represent high-profit periods, while red values indicate losses.
The three highest profit state-month pairs were selected for targeted advertising.

Findings

The top three state-month combinations for advertising are:

1. Indiana - October - $643.10 in profit.
2. Vermont - November - $596.00 in profit.
3. Washington - March - $521.30 in profit.

These states showed consistent and strong profitability, making them the best candidates for advertising investments.

2. Calculating the Advertising Budget

Since the company should allocate 1/5 of the profit for advertising in each of these cases, the advertising budget is:

State	Month	Profit	Advertising Budget (⅕ of Profit)
Indiana	October	$643.10	$128.62
Vermont	November	$596.00	$119.20
Washington	March	$521.30	$104.26

These values represent the optimal ad budget allocation for each of these state-month combinations.

Visualization: See worksheets titled: "Best States for Ads" and "Top 3 States for Ads"

Part 3: Returned Items Analysis

1. Identifying Products with the Highest Return Rates

A bar chart was created showing the average return rate per product.
The X-axis represents product names, while the Y-axis shows the average return rate.
A calculated field (Return Status) was used, where:

- 1 = Returned
- 0 = Not Returned

Findings

1. The Cisco SPA 501G IP Phone has a 100% return rate, meaning every unit sold was returned.
2. Other products also have exceptionally high return rates, signifying poor customer satisfaction.

Implications

- High return rates drive up costs (restocking fees, lost sales, logistics).
- Customer dissatisfaction may indicate quality issues with specific products.

Visualization: See worksheet titled: "Product Return Rates"

2. Identifying Customers with the Highest Return Rates

A bar chart was generated showing the average return rate per customer.
The X-axis represents customer names, the Y-axis shows their return rates and labels indicate the return count.

Findings

1. Certain customers have extremely high return rates, up to and including 100%.
2. For example, Seth Vernon has a return rate of 92.6% with a total of 196 returned items.
3. Hilary Holden and Roland Murray both have 100% return rates.

Implications

Frequent returners create operational inefficiencies and increased costs.

Recommended Actions

The store should consider:

- Reviewing return policies to prevent abuse.
- Monitoring high-return customers and possibly restricting returns for frequent offenders.

Visualization: See worksheets titled: "Customer Return Rates"

3. Profitability vs. Return Rates (by State)

A scatter plot was created to compare average profit vs. average return rate by state.

- X-axis: Average Profit
- Y-axis: Average Return Rate
- Each data point represents a state.

Findings

1. Utah and California have high return rates (above 0.5) and moderate profits, indicating potential quality or customer dissatisfaction issues in these states.
2. Oregon, Tennessee, and Colorado also have higher-than-average return rates while maintaining low profitability, making them possible problem areas.
3. Vermont, Minnesota, and District of Columbia show high profitability and low return rates, making them ideal business locations.

Implications

States with high returns and low profits may indicate logistics, shipping, or quality control issues.

Recommended Actions

- Investigate high-return states (Utah, California, Oregon) by analyzing:
    - Customer complaints and feedback.
    - Logistics and shipping inefficiencies.
    - Product defects and supplier issues.
- Adjust marketing strategy by:
    - Focusing on high-profit, low-return states (Vermont, Minnesota, D.C.).
    - Testing stricter return policies in high-return states.

Visualization: See worksheets titled: "Profits vs. Returns"