# Coffee Product Analysis: Tableau Dashboards for Marketing, Expenses, and Sales

### Name: Siddhant Sarnobat Mail ID: siddhantsarnobat20@gmail.com

# Index

1. **Introduction**
   * Objective
   * Scope
2. **Data Overview**
   * Dataset Description
   * Data Preparation
3. **Dashboard Summaries**
   * Marketing Performance Dashboard
     + Description and Purpose
     + Key Visualizations
   * Expense Management & Efficiency Dashboard
     + Description and Purpose
     + Key Visualizations
   * COGS & Inventory Performance Dashboard
     + Description and Purpose
     + Key Visualizations
   * Product Profitability & ROI Analysis Dashboard
     + Description and Purpose
     + Key Visualizations
   * Profit Analysis & Regional Insights Dashboard
     + Description and Purpose
     + Key Visualizations
   * Sales Performance & Regional Distribution Dashboard
     + Description and Purpose
     + Key Visualizations
4. **New Measures and Parameters**
   * COGS Ratio
   * Inventory Turnover Ratio
   * Marketing ROI
   * Operating Expenses
   * Operating Ratio
   * Profit to Sales Ratio
   * ROI on Products
   * Parameters Created
5. **Column Modifications**
   * Renamed Columns
6. **Insights and Analysis**
   * Key Findings
   * Trends and Patterns
   * Regional and Product-Based Insights
7. **Recommendations**
   * Marketing Strategies
   * Expense Management
   * Product Focus
   * Regional Strategies
8. **Conclusion**
   * Summary of Key Takeaways
   * Future Work
9. **Appendices**
   * Tables and Charts
   * Definitions and Calculations

# Introduction

## Objective

This project aims to deliver a comprehensive analysis of coffee and tea products sold by the company, focusing on several key performance areas. The primary goals include:

1. **Analyzing Marketing Performance:** Evaluating the effectiveness of marketing efforts by examining marketing expenses, return on investment (ROI), and expense shares. This helps in understanding the impact of marketing activities on overall sales and profitability.
2. **Expense Management:** Assessing the management of expenses by comparing total expenses to marketing expenses, analyzing budget versus actual expenses, and evaluating the operating ratio. This provides insights into how well the company controls its costs relative to its sales and overall budget.
3. **COGS & Inventory Analysis:** Examining the cost of goods sold (COGS) and inventory turnover ratios to understand the efficiency of inventory management and its impact on profitability. This includes comparing budgeted versus actual COGS and analyzing inventory turnover rates.
4. **Product Profitability:** Analyzing the profitability of different products by evaluating profit margins, profit shares, and ROI on products. This helps identify the most and least profitable products and informs strategic decisions on product focus and pricing.
5. **Sales Performance:** Reviewing sales performance across different products and regions, including a comparison of budgeted versus actual sales, and assessing sales distribution by state and area code. This provides insights into sales effectiveness and regional performance.

## Scope

The dataset utilized in this analysis includes various metrics related to coffee and tea products, encompassing both budgeted and actual figures. The key areas of focus within this dataset are:

* **Product Data:** Information on different coffee and tea products, including product types and market segments.
* **Financial Metrics:** Detailed figures on budgeted and actual COGS, expenses, profits, and sales, providing a basis for financial performance analysis.
* **Marketing Data:** Insights into marketing expenses and ROI, helping to gauge the effectiveness of marketing campaigns.
* **Inventory Data:** Data on inventory levels and turnover, which is crucial for understanding inventory management efficiency.
* **Regional Data:** Sales and profitability data segmented by state and area code, allowing for regional performance analysis.

This comprehensive dataset enables a thorough examination of various aspects of the company's product performance, from marketing and expense management to profitability and sales effectiveness. The analysis aims to provide actionable insights that can guide strategic decisions and enhance overall business performance.

# Data Overview

## Dataset Description

The dataset used for this analysis provides a detailed account of coffee and tea products sold by the company. It includes a range of metrics that offer insights into various aspects of product performance. The key columns and metrics in the dataset are as follows:

* **Market:** The market segment (e.g., Central, Small Market) where the products are sold.
* **Market Size:** Classification of the market size (e.g., Major Market, Small Market).
* **Product:** The name of the coffee or tea product.
* **Product Type:** The type of product (e.g., Coffee, Tea, Espresso, Herbal Tea).
* **State:** The state where the products are sold.
* **Type:** Indicates whether the product is regular or decaf.
* **Budget COGS:** Budgeted cost of goods sold.
* **Budget Margin:** Budgeted profit margin.
* **Budget Profit:** Budgeted profit.
* **Budget Expenses:** Budgeted total expenses.
* **Budget Sales:** Budgeted sales figures.
* **COGS:** Actual cost of goods sold.
* **Inventory:** Inventory levels.
* **Margin:** Actual profit margin.
* **Marketing:** Marketing expenses.
* **Profit:** Actual profit.
* **Sales:** Actual sales figures.
* **Total Expenses:** Total actual expenses incurred.

These columns collectively provide a comprehensive view of the financial performance and operational efficiency of the company’s coffee and tea products.

## Data Preparation

To ensure the dataset's accuracy and usability for analysis, several data cleaning, transformation, and preparation steps were undertaken:

1. **Data Cleaning:**
   * **Missing Values:** Identified and addressed any missing values in critical columns, such as COGS, Sales, and Profit, to prevent inaccuracies in the analysis.
   * **Outlier Detection:** Analyzed data for outliers and anomalies that could skew results, such as unusually high or low values in Marketing Expenses or Total Expenses.
2. **Data Transformation:**
   * **Column Renaming:** Renamed columns for clarity and consistency, such as changing Marketing to Marketing Expenses and Budget Expenses to Budget Total Expenses, to better reflect their content.
   * **New Measures:** Created new calculated fields to enhance the analysis, including:
     + **COGS Ratio** to compare budgeted versus actual COGS.
     + **Inventory Turnover Ratio** to assess inventory management efficiency.
     + **Marketing ROI** to measure the return on marketing investments.
     + **Operating Expenses** and **Operating Ratio** to evaluate expense management efficiency.
     + **Profit to Sales Ratio** and **ROI on Products** to analyze product profitability.
   * **Parameter Creation:** Developed a Budgeted/Actual parameter to toggle between budgeted and actual figures, facilitating comparative analysis.
3. **Data Aggregation:**
   * **Summarization:** Aggregated data where necessary, such as summing Sales, Profit, and Expenses at the product and regional levels to facilitate dashboard visualizations.
   * **Data Structuring:** Structured data into a format suitable for Tableau dashboards, ensuring that all key metrics were properly represented and accessible for analysis.

These preparation steps ensured that the dataset was clean, accurate, and formatted for effective analysis, allowing for meaningful insights to be drawn from the visualizations and metrics created.

# Dashboard Summaries

## 1.Marketing Performance Dashboard

**Description and Purpose:** The Marketing Performance Dashboard provides a comprehensive view of the effectiveness of marketing efforts. Its purpose is to evaluate how marketing expenses impact overall performance and identify areas for optimization. By analyzing marketing-related metrics, the dashboard helps in assessing the return on marketing investments and understanding the distribution of marketing expenses across different products.

**Key Visualizations:**

1. **Marketing Expenses by Product:** A horizontal bar chart displaying the marketing expenses associated with each product. This visualization helps in identifying which products incur the highest marketing costs.
2. **Marketing ROI:** A horizontal bar chart that measures the return on investment for marketing expenditures. This metric shows the effectiveness of marketing campaigns by comparing the profit generated to the marketing expenses incurred.
3. **Marketing Expense Share:** A pie chart illustrating the proportion of total marketing expenses attributed to each product. This chart highlights the distribution of marketing spending across different products, making it easier to see which products receive the most attention.

## 2.Expense Management & Efficiency Dashboard

**Description and Purpose:** The Expense Management & Efficiency Dashboard focuses on the efficiency of expense management and the relationship between budgeted and actual expenses. It aims to provide insights into how well the company adheres to its budget and where improvements can be made in expense management.

**Key Visualizations:**

1. **Total vs Marketing Expenses:** A horizontal bar chart that compares total expenses with marketing expenses, using different colors to represent each. This visualization helps in understanding the proportion of marketing expenses relative to total expenses.
2. **Budget vs Actual Total Expenses:** A bullet chart that contrasts budgeted expenses with actual expenses. It shows whether the actual spending is within the budget and highlights any discrepancies.
3. **Operating Ratio:** A horizontal bar chart that calculates the ratio of operating expenses to sales. This metric provides insight into the efficiency of managing operating costs in relation to revenue.

## 3.COGS & Inventory Performance Dashboard

**Description and Purpose:** The COGS & Inventory Performance Dashboard assesses the cost of goods sold (COGS) and inventory management efficiency. It aims to track how COGS and inventory levels affect overall performance and identify areas for cost reduction and better inventory management.

**Key Visualizations:**

1. **COGS by Product:** A horizontal bar chart displaying COGS for each product. This visualization helps in identifying which products have the highest cost of goods sold.
2. **Budget vs Actual COGS:** A bullet chart that compares budgeted COGS with actual COGS. This chart highlights any variances between budgeted and actual costs, providing insights into cost management.
3. **COGS Ratio:** A horizontal bar chart that shows the COGS ratio, comparing budgeted versus actual COGS. This metric provides a percentage view of how well the company manages its cost of goods sold relative to sales.
4. **Inventory Turnover:** A horizontal bar chart that measures the inventory turnover ratio. It evaluates how efficiently inventory is sold and replaced over a period.

## 4.Product Profitability & ROI Analysis Dashboard

**Description and Purpose:** The Product Profitability & ROI Analysis Dashboard evaluates the profitability of different products and their return on investment. It helps in understanding which products are the most profitable and how effectively resources are used to generate profit.

**Key Visualizations:**

1. **Profit by Product:** A horizontal bar chart that displays the profit generated by each product. This chart helps in identifying the most and least profitable products.
2. **Profit Share:** A pie chart showing the share of total profit contributed by each product. This visualization highlights the relative profitability of different products.
3. **Profit to Sales Ratio:** A horizontal bar chart that calculates the ratio of profit to sales for each product. This metric shows how much profit is generated for each dollar of sales.
4. **ROI on Products:** A horizontal bar chart that measures the return on investment for each product. It compares the profit generated to the cost of goods sold, providing insights into the efficiency of each product’s profitability.

## 5.Profit Analysis & Regional Insights Dashboard

**Description and Purpose:** The Profit Analysis & Regional Insights Dashboard provides insights into profit performance across different regions and states. It aims to highlight regional variations in profitability and help in identifying high and low-performing areas.

**Key Visualizations:**

1. **Profit by Product:** A horizontal bar chart that shows profit for each product. This visualization is similar to the one in the Product Profitability Dashboard, focusing on overall profit performance.
2. **Budget vs Actual Profit:** A bullet chart comparing budgeted profit with actual profit. It highlights variances and helps assess whether profit goals are being met.
3. **Profit by State:** A map of the USA that visualizes profit distribution across states. This map provides a geographical perspective on where profits are highest and lowest.
4. **Profit by Area Code:** A map of the USA that shows profit by area code, representing different store locations. This visualization helps in understanding the performance at a more granular level.

## 6.Sales Performance & Regional Distribution Dashboard

**Description and Purpose:** The Sales Performance & Regional Distribution Dashboard focuses on sales metrics and their distribution across different regions. Its purpose is to evaluate sales performance and identify regional trends and opportunities for growth.

**Key Visualizations:**

1. **Sales by Product:** A horizontal bar chart displaying sales figures for each product. This chart helps in identifying which products drive the most sales.
2. **Budget vs Actual Sales:** A bullet chart that compares budgeted sales with actual sales. It highlights discrepancies and provides insights into sales performance relative to targets.
3. **Sales by State:** A map of the USA visualizing sales distribution across states. This map helps in understanding regional sales performance.
4. **Sales by Area Code:** A map of the USA showing sales by area code, offering insights into sales performance at the store location level.

## New Measures and Parameters

**COGS Ratio:**

* **Calculation:** CASE [Budgeted/Actual] WHEN "Budgeted" THEN ((SUM([Budget COGS])/SUM([Budget Sales]))\*100) WHEN "Actual" THEN ((SUM([COGS])/SUM([Sales]))\*100) END
* **Significance:** This measure evaluates the proportion of COGS relative to sales, comparing budgeted versus actual figures. It helps in understanding cost management efficiency.

**Inventory Turnover Ratio:**

* **Calculation:** SUM([COGS]) / ((SUM([Inventory]) + LOOKUP(SUM([Inventory]), -1)) / 2)
* **Significance:** This ratio measures how effectively inventory is used and replaced. A higher turnover ratio indicates efficient inventory management.

**Marketing ROI:**

* **Calculation:** ((SUM([Sales])- SUM([Marketing Expenses]))/ SUM([Marketing Expenses]))\*100
* **Significance:** This measure assesses the return on marketing investments, showing how much profit is generated for each dollar spent on marketing.

**Operating Expenses:**

* **Calculation:** SUM([Total Expenses])-SUM([Marketing Expenses])
* **Significance:** This measure identifies the total operating expenses excluding marketing costs, providing insight into overall expense management.

**Operating Ratio:**

* **Calculation:** ((SUM([Total Expenses])-SUM([Marketing Expenses]))/SUM([Sales]))\*100
* **Significance:** This ratio evaluates the efficiency of managing operating expenses in relation to sales revenue.

**Profit to Sales Ratio:**

* **Calculation:** CASE [Budgeted/Actual] WHEN "Budgeted" THEN ((SUM([Budget Profit])/SUM([Budget Sales]))\*100) WHEN "Actual" THEN ((SUM([Profit])/SUM([Sales]))\*100) END
* **Significance:** This ratio measures the profit generated for each dollar of sales, comparing budgeted versus actual figures to assess profitability.

**ROI on Products:**

* **Calculation:** CASE [Budgeted/Actual] WHEN "Budgeted" THEN ((SUM([Budget Profit])/SUM([Budget COGS]))\*100) WHEN "Actual" THEN ((SUM([Profit])/(SUM([COGS])+ SUM([Total Expenses])))\*100) END
* **Significance:** This measure evaluates the return on investment for each product, comparing profit to the cost of goods sold and total expenses.

**Parameters Created:**

* **Budgeted/Actual:** This parameter allows users to toggle between budgeted and actual figures, facilitating comparative analysis and helping to evaluate performance against targets.

# Column Modifications

## Renamed Columns:

1. **Marketing → Marketing Expenses**
   * **Explanation:** The column name "Marketing" was changed to "Marketing Expenses" to provide greater clarity and specify that the values represent costs related to marketing activities. This change ensures that the column's purpose is immediately understood as related to expenditures rather than other marketing metrics.
2. **Budget Expenses → Budget Total Expenses**
   * **Explanation:** The original column name "Budget Expenses" was updated to "Budget Total Expenses" to better describe the column's content. This renaming clarifies that the column reflects the total budgeted expenses, distinguishing it from other types of expenses and aligning it with the terminology used in the dataset.

# Insights and Analysis

## Key Findings:

1. **Marketing Performance:**
   * The dashboards reveal that certain products, such as “Caffe Mocha” and “Lemon,” incur high marketing expenses but do not always achieve a proportionate increase in sales or ROI. This discrepancy between budgeted and actual ROI highlights the need for optimizing marketing strategies and reassessing how marketing resources are allocated.
2. **Expense Management:**
   * The total expenses for the company are significantly influenced by marketing expenditures. The ratio of marketing expenses to total expenses varies, with some products bearing a disproportionate share of these costs. This variation impacts overall profitability, underscoring the importance of efficient budget management to enhance expense efficiency and financial performance.
3. **COGS and Inventory:**
   * Products with higher COGS, such as “Lemon” and “Columbian,” show diverse inventory turnover rates. This variation suggests differences in product movement and inventory management efficiency, indicating a need for improved inventory control to optimize the cost-to-sales ratio and reduce holding costs.
4. **Profitability and ROI:**
   * Analysis reveals that high-sales-volume products like “Columbian Coffee” and “Lemon” are among the most profitable. However, the ROI on these products varies, showing that high profit does not always align with high ROI. This suggests a need to review cost structures and pricing strategies to better align profitability with ROI.
5. **Sales Performance:**
   * Sales data indicates that regions with larger markets, such as California, consistently achieve higher sales figures compared to smaller markets like Missouri. This pattern highlights the significance of regional market analysis and the need to tailor sales strategies to capitalize on high-performing regions.

## Trends and Patterns:

1. **Marketing Trends:**
   * A trend emerges where higher marketing expenses do not always translate into increased sales. This suggests potential inefficiencies in marketing strategies and emphasizes the importance of adopting a data-driven approach to allocate marketing budgets more effectively.
2. **Expense Trends:**
   * Marketing expenses constitute a significant portion of the total budget, impacting the operating ratio. Managing these expenses is crucial for improving financial health and ensuring that marketing investments yield optimal returns. The trend underscores the need for a balanced approach to expense management.
3. **COGS and Inventory Patterns:**
   * Products with higher COGS demonstrate varying inventory turnover rates, with high turnover products like “Caffe Mocha” managed more efficiently than those with lower turnover rates. This pattern suggests a need for better inventory management practices to improve efficiency and reduce costs.
4. **Profitability Patterns:**
   * High-margin products like “Columbian” and “Lemon” significantly contribute to overall profits. However, the ROI on these products shows variability, indicating that high profitability does not always correlate with high ROI. This pattern points to the need for reviewing cost structures to ensure alignment between profitability and ROI.
5. **Sales Patterns:**
   * Larger markets contribute more to total sales, highlighting the importance of focusing sales efforts on high-potential regions. Adjusting sales strategies based on regional performance metrics can enhance overall sales performance and profitability.

## Regional and Product-Based Insights:

1. **Regional Insights:**
   * Analysis of sales and profit by state and area code shows that states with larger populations and higher market sizes, such as California, perform better in terms of sales and profitability. This suggests that the company should prioritize resource allocation and marketing efforts in these high-performing regions to maximize impact.
2. **Product-Based Insights:**
   * Insights into specific products reveal that premium items with higher COGS and marketing expenses, such as “Caffe Mocha” and “Lemon,” often generate higher profits. However, these products require careful cost management to maintain profitability. Conversely, budget-friendly products like “Amaretto” exhibit steady performance but may benefit from enhanced marketing strategies to improve ROI.

## Recommendations

**Marketing Strategies:**

* **Optimize Marketing Spend:** Given the discrepancies between budgeted and actual ROI for certain products, such as “Caffe Mocha” and “Lemon,” consider reallocating marketing resources to high-performing products or channels. Implement data-driven marketing strategies that focus on measurable outcomes and adjust campaigns based on performance metrics.
* **Enhance Targeting:** Use insights from marketing performance data to refine targeting strategies. Develop targeted campaigns for products with high marketing expenses but lower ROI to improve their performance and ensure better alignment between marketing spend and sales results.
* **Regular ROI Reviews:** Establish a routine for evaluating marketing ROI and making adjustments as needed. Utilize advanced analytics and A/B testing to continuously optimize marketing strategies and improve overall ROI.

**Expense Management:**

* **Review Expense Allocation:** Analyze the proportion of marketing expenses relative to total expenses. Identify areas where marketing expenditures are disproportionately high and consider optimizing or redistributing these budgets to enhance overall expense efficiency.
* **Implement Budget Controls:** Strengthen budget management practices by setting clear expense thresholds and regularly monitoring budget adherence. Employ financial controls to ensure that expenses align with budgetary goals and minimize unexpected overspending.
* **Cost Management Strategies:** Develop cost management strategies to address high-cost products and improve expense efficiency. Explore opportunities for cost reduction in areas where expenses are higher than expected, and implement measures to control and reduce operational costs.

## Product Focus:

* **Optimize High-Cost Products:** For products with high COGS and significant marketing expenses, such as “Lemon” and “Columbian,” conduct a detailed cost-benefit analysis. Review pricing strategies, cost structures, and inventory management practices to enhance profitability while maintaining product quality.
* **Increase Marketing for Budget-Friendly Products:** Allocate additional marketing resources to budget-friendly products like “Amaretto” to boost their visibility and sales performance. Enhance marketing strategies to target potential customers effectively and increase the ROI for these products.
* **Improve Inventory Management:** Address inventory turnover issues by refining inventory management practices for products with varying turnover rates. Implement inventory control measures to optimize stock levels, reduce holding costs, and improve overall inventory efficiency.

## Regional Strategies:

* **Focus on High-Performing Regions:** Prioritize marketing and sales efforts in high-performing regions such as California, where market size and profitability are higher. Tailor strategies to leverage regional strengths and maximize sales potential in these areas.
* **Develop Regional-Specific Campaigns:** Create targeted marketing campaigns and promotions for regions with varying performance levels. Customize strategies based on regional sales data and market characteristics to drive growth and address specific regional needs.
* **Allocate Resources Based on Regional Performance:** Use insights from sales and profitability data to allocate resources more effectively across regions. Invest in regions with higher potential for growth and profitability, while optimizing strategies for regions with lower performance to improve overall results.

# Conclusion

**Summary of Key Takeaways:** The analysis provided valuable insights into various aspects of the business, including marketing performance, expense management, COGS & inventory, product profitability, and sales performance. Key findings include:

* **Marketing Performance:** Some products with high marketing expenses did not achieve corresponding improvements in sales or ROI, suggesting a need for optimized marketing strategies and better alignment between spend and outcomes.
* **Expense Management:** Marketing expenditures significantly impact total expenses, highlighting the importance of efficient budget management and cost control to enhance overall financial health.
* **COGS and Inventory:** Products with high COGS exhibited varied inventory turnover rates, indicating differences in product management and a need for improved inventory control.
* **Profitability and ROI:** High-sales-volume products are often the most profitable, but their ROI can vary, suggesting that profitability does not always correlate with high ROI. Reevaluation of cost structures and pricing strategies may be necessary.
* **Sales Performance:** Larger markets consistently report higher sales, emphasizing the importance of focusing sales efforts on high-potential regions and adapting strategies based on regional performance metrics.

**Future Work:** To build on the current findings and further enhance business strategies, the following steps are recommended:

* **Deeper Marketing Analysis:** Conduct more granular analyses of marketing campaigns to identify specific factors contributing to ROI discrepancies. Implement advanced analytics to optimize marketing spend and effectiveness.
* **Enhanced Expense Tracking:** Develop more detailed tracking and reporting mechanisms for expenses to gain better insights into spending patterns and identify additional opportunities for cost reduction.
* **Inventory Optimization:** Explore advanced inventory management techniques, such as predictive analytics, to further refine inventory control and turnover strategies.
* **Extended Profitability Studies:** Perform in-depth analyses of profitability across different product categories and sales channels to identify additional opportunities for margin improvement and cost optimization.
* **Regional Analysis Expansion:** Extend regional performance analysis to include additional market segments and factors influencing sales. Develop more targeted regional strategies based on a comprehensive understanding of regional dynamics.

These actions will provide a more detailed understanding of business performance and enable more informed decision-making to drive growth and profitability.

# Appendices

## Tables and Charts:

* **Marketing Performance Dashboard Visualizations:**
  + **Marketing Expenses by Product:** A horizontal bar chart displaying the marketing expenses for each product, highlighting significant spend variations.
  + **Marketing ROI:** A horizontal bar chart showing the return on investment for different products, illustrating the efficiency of marketing spend.
  + **Marketing Expense Share:** A pie chart representing the proportion of total marketing expenses attributed to each product.
* **Expense Management & Efficiency Dashboard Visualizations:**
  + **Total vs Marketing Expenses:** A horizontal bar chart comparing total expenses and marketing expenses, with marketing expenses displayed as a percentage of total expenses.
  + **Budget vs Actual Total Expenses:** A bullet chart showing budgeted versus actual total expenses, highlighting variances and budget adherence.
  + **Operating Ratio:** A horizontal bar chart depicting the operating ratio for different products or time periods, reflecting expense efficiency.
* **COGS & Inventory Performance Dashboard Visualizations:**
  + **COGS by Product:** A horizontal bar chart showing the cost of goods sold for each product, emphasizing cost variations.
  + **Budget vs Actual COGS:** A bullet chart comparing budgeted and actual COGS, revealing discrepancies and cost management effectiveness.
  + **COGS Ratio:** A horizontal bar chart illustrating the COGS ratio for each product or period, indicating cost-to-sales efficiency.
  + **Inventory Turnover:** A horizontal bar chart displaying inventory turnover ratios for different products, highlighting inventory management performance.
* **Product Profitability & ROI Analysis Dashboard Visualizations:**
  + **Profit by Product:** A horizontal bar chart showing profits generated by each product, highlighting the most and least profitable items.
  + **Profit Share:** A pie chart representing the distribution of total profit among different products.
  + **Profit to Sales Ratio:** A horizontal bar chart illustrating the profit-to-sales ratio for each product, reflecting profitability efficiency.
  + **ROI on Products:** A horizontal bar chart showing the return on investment for each product, indicating financial performance relative to cost.
* **Profit Analysis & Regional Insights Dashboard Visualizations:**
  + **Profit by Product:** A horizontal bar chart depicting profit levels for various products.
  + **Budget vs Actual Profit:** A bullet chart comparing budgeted and actual profits, revealing performance against financial goals.
  + **Profit by State:** A map of the USA showing profit distribution across states, highlighting regional performance.
  + **Profit by Area Code:** A map of the USA showing profit distribution by area code, providing insights into local performance.
* **Sales Performance & Regional Distribution Dashboard Visualizations:**
  + **Sales by Product:** A horizontal bar chart showing sales figures for each product, emphasizing sales performance.
  + **Budget vs Actual Sales:** A bullet chart comparing budgeted and actual sales figures, revealing adherence to sales targets.
  + **Sales by State:** A map of the USA displaying sales distribution across states, illustrating regional sales performance.
  + **Sales by Area Code:** A map of the USA showing sales performance by area code, highlighting local sales variations.

## Definitions and Calculations:

* **COGS Ratio:**

COGS Ratio= (SUM([COGS]) / SUM([Sales]))×100

Measures the percentage of sales revenue consumed by the cost of goods sold, reflecting cost management efficiency.

* **Inventory Turnover Ratio:**

Inventory Turnover Ratio= SUM([COGS])(SUM([Inventory])+LOOKUP(SUM([Inventory]), -1)2)

Indicates how efficiently inventory is converted into sales, with higher ratios signifying better inventory management.

* **Marketing ROI:**

Marketing ROI=(SUM([Sales])−SUM([Marketing Expenses]) / SUM([Marketing Expenses])) × 100

Represents the return on marketing investments, evaluating the effectiveness of marketing expenditures in generating sales.

* **Operating Expenses:**

Operating Expenses=SUM([Total Expenses])−SUM([Marketing Expenses])

Represents total expenses excluding marketing costs, providing insight into operational cost management.

* **Operating Ratio:**

Operating Ratio=((SUM([Total Expenses])−SUM([Marketing Expenses])) / SUM([Sales])) × 100

Measures the proportion of sales revenue consumed by operating expenses, indicating operational efficiency.

* **Profit to Sales Ratio:**

Profit to Sales Ratio= (SUM([Budget Profit]) / SUM([Budget Sales])) × 100

Reflects the percentage of sales revenue that translates into profit, indicating overall profitability efficiency.

* **ROI on Products:**

ROI on Products= (SUM([Budget Profit]) / SUM([Budget COGS])) × 100

Measures the return on investment for products, evaluating how well products generate profit relative to their cost.

* **Parameters Created:**
  + **Budgeted/Actual Parameter:** Allows users to toggle between viewing data based on budgeted values or actual values, enabling flexible analysis of performance against planned goals and actual outcomes.