Project Documentation: Budget vs Actual Analysis Dashboard

1. Objective

The goal of this project is to build a strategic Power BI dashboard that compares Budget vs Actual Sales, calculates variances, and provides insights by time and product.

2. Data Sources

- Budget Table (Excel sheet) – monthly budgeted sales by product.

- Actual Table (Excel sheet) – actual sales by product and date.

3. Power Query (ETL) Steps

Budget Table

- Removed unnecessary columns.
- Unpivoted product columns (kept EOMonth fixed).
- Renamed: Attribute → Product, Value → Budget.
- Handled data types: EOMonth → Date, Product → Text, Budget → Currency.

Actual Table

- Removed unnecessary columns.
- Handled data types: Date → Date, Product → Text, Sales → Currency.

4. Data Model

A Star Schema was designed for best practices.

Fact Tables

- Budget: Date, Product, Budget
- Actual: Date, Product, Sales

Dimension Tables (Created with DAX)

Calendar Table

```
Calendar =
ADDCOLUMNS (
   CALENDAR (DATE(2019,1,1), DATE(2025,12,31)),
   "Year", YEAR([Date]),
   "Month Number", MONTH([Date]),
   "Month Name", FORMAT([Date], "MMM"),
   "Quarter", "Q" & FORMAT([Date], "Q")
)
```

Products Table

```
Products =
DISTINCT (
   UNION (
      SELECTCOLUMNS ( Actual, "Product", Actual[Product] ),
      SELECTCOLUMNS ( Budget, "Product", Budget[Product] )
   )
)
```

Relationships

- Actual[Product] → Products[Product]
- Budget[Product] → Products[Product]
- Actual[Date] → Calendar[Date]
- Budget[EOMonth] → Calendar[Date]

5. DAX Measures

Actual Sales

```
Actual Sales = SUM ( Actual[Sales] )
```

Budget Sales

```
Budget Sales = SUM ( Budget[Budget] )
```

Variance ($)

```
Variance($) = [Actual Sales] - [Budget Sales]
```

Variance (%)

```
Variance(%) = DIVIDE ( [Variance($)], [Budget Sales], 0 )
```

6. Dashboard Visuals

KPIs

- Actual Sales Card → [Actual Sales]
- Budget Sales Card → [Budget Sales]
- Variance ($) Card → [Variance($)]
- Variance (%) Card → [Variance(%)]

Charts

1. Budget vs Actual by Product (Clustered Column Chart)
   - X-axis → Products [Product]
   - Y-axis → [Budget Sales], [Actual Sales]

2. Variance Contribution by Product (Waterfall Chart)
- Category → Products [Product]
- Y-axis→ [Variance ($)]

3. Sales Trend Over Time (Line Chart)
- X-axis → Calendar [Year], Calendar [Month], Calendar [Quarter]
- Y-axis → [Budget Sales], [Actual Sales]

4. Performance Matrix (Table/Matrix)
- Rows → Products [Product], Calendar [Year], Calendar [Month]
- Values → [Budget Sales], [Actual Sales], [Variance ($)], [Variance (%)]
- Conditional formatting on variance columns.

Slicers
- Date Slicer → Calendar[Date]
- Product Slicer → Products[Product]

7. Insights from Dashboard
- Total Actual Sales: $45.72M vs Budget: $45.91M.
- Negative total variance of -$193K (-0.42%).
- Some products (e.g., Aspen) underperformed, while others (e.g., Carlota) overperformed.
- Trend analysis shows divergence between actual and budget across time.

8. Conclusion
This project successfully delivered a Budget vs Actual Dashboard with:
- KPIs for monitoring overall performance.
- Variance analysis by product.
- Sales trends over time.
- Interactive filters for deeper insights.