**Sales Data Modeling and Analysis Report – 2023**

**Introduction & Objective**

The objective of this task is to develop strong data modeling and transformation skills using Power BI tools such as Power Query and DAX. This project involves designing a robust data model, performing necessary transformations, and creating calculated measures to support business intelligence requirements. The dataset used consists of sales transactions from the year 2023.

**Dataset Description**

The dataset used for this task contains transactional-level data for the year 2023, including fields such as Unit\_Price, Unit\_Cost, Quantity\_Sold, Discount, Sale\_Date, Product\_ID, Region, Customer\_Type, Payment\_Method, and Product\_Category. The goal is to analyze profitability, sales performance, and month-on-month trends.

**Data Modeling Overview**

A screenshot of a computer

AI-generated content may be incorrect.The data model follows a star schema design, with sales\_data as the central fact table linked to several dimension tables:

* unique\_prod\_id (Product\_ID)
* prod\_cat (Product\_Category)
* customer\_type (Customer\_Type)
* Region\_data (Region)
* Sales\_rep\_table (Sales\_Rep)
* unique\_payment (Payment\_Method)
* Date table (Date)

Each dimension table has a one-to-many relationship with the sales\_data table. This structure allows efficient querying and simplifies DAX measure creation.

**Data Transformation Process (Power Query)**

The following transformations were applied in Power Query:

1. **Data Type Conversion:** Ensured correct data types for all columns.
2. **Removed Null Values:** Removed null values from key fields.
3. **Renamed Columns:** Renamed columns for clarity.
4. **Created a Date Table:** Used Power BI's “New Table” functionality for time intelligence.
5. **Merged Lookup Tables:** Enriched the dataset where necessary.
6. **Created Calculated Columns:** Added profit-related calculations for deeper analysis.

**Calculated Columns & Measures (DAX)**

**Calculated Column - Profit:**

Profit = (sales\_data[Unit\_Price] - sales\_data[Unit\_Cost]) \* sales\_data[Quantity\_Sold]

**Key Measures:**

Total Profit = SUM (sales\_data [Profit])

Revenue = SUMX (sales\_data, sales\_data [Quantity\_Sold] \* sales\_data [Unit\_Price])

Total Units Sold = SUM (sales\_data [Quantity\_Sold])

A graph showing a graph

AI-generated content may be incorrect.Avg Profit per Unit = DIVIDE([Profit], [Total Units Sold], 0)

Average Discount % = AVERAGE (sales\_data [Discount])

MoM Profit Growth % =

VAR CurrentMonthProfit = CALCULATE (SUM (sales\_data [Profit]))

VAR PrevMonthProfit = CALCULATE (SUM (sales\_data [Profit]), DATEADD (sales\_data

[Sale\_Date], -1, MONTH))

A graph of a graph

AI-generated content may be incorrect. RETURN DIVIDE (CurrentMonthProfit - PrevMonthProfit, PrevMonthProfit, 0)

MoM Sales Growth % =

VAR Current Month Sales = CALCULATE (SUM (sales\_data [Sales\_Amount]))

VAR PrevMonthSales = CALCULATE (SUM (sales\_data [Sales\_Amount]), DATEADD (sales\_data

[Sale\_Date], -1, MONTH))

A blue graph with white text

AI-generated content may be incorrect. RETURN DIVIDE (CurrentMonthSales - PrevMonthSales, PrevMonthSales, 0)

A graph of a graph

AI-generated content may be incorrect.Profit Margin % = DIVIDE ([Profit], [Revenue], 0)

**A screenshot of a graph

AI-generated content may be incorrect.Key Insights:**

* Profit Margin % peaked three times in December.
* Revenue reached 7.4M in January and 6.7M in August.
* Furniture category generated the highest revenue compared to other categories.
* Total Profit by Sales Representative: David – 1.5M, Eve – 1.4M.

**Recommendations**

* **Leverage December Peaks**
  + Introduce targeted marketing campaigns and stock preparation in late November to maximize December’s high-profit opportunities.
* **Capitalize on High-Revenue Months**
  + Replicate successful sales and promotional strategies from January and August in other months to balance revenue distribution.
* **Expand Furniture Category**
  + Increase inventory, launch bundled offers, and promote premium furniture items to further drive revenue.
* **Empower Top Sales Reps**
  + Provide David and Eve with more high-value leads, exclusive deals, and mentorship roles to uplift overall team performance.