Exercise: Design and develop the data model

Introduction

As you've worked with Power BI, you've seen first-hand how data can tell stories to inform insights. In this exercise, you'll put this knowledge into practice by working with sales data from around the globe to prepare a report.

By completing this exercise, you'll demonstrate your ability to:

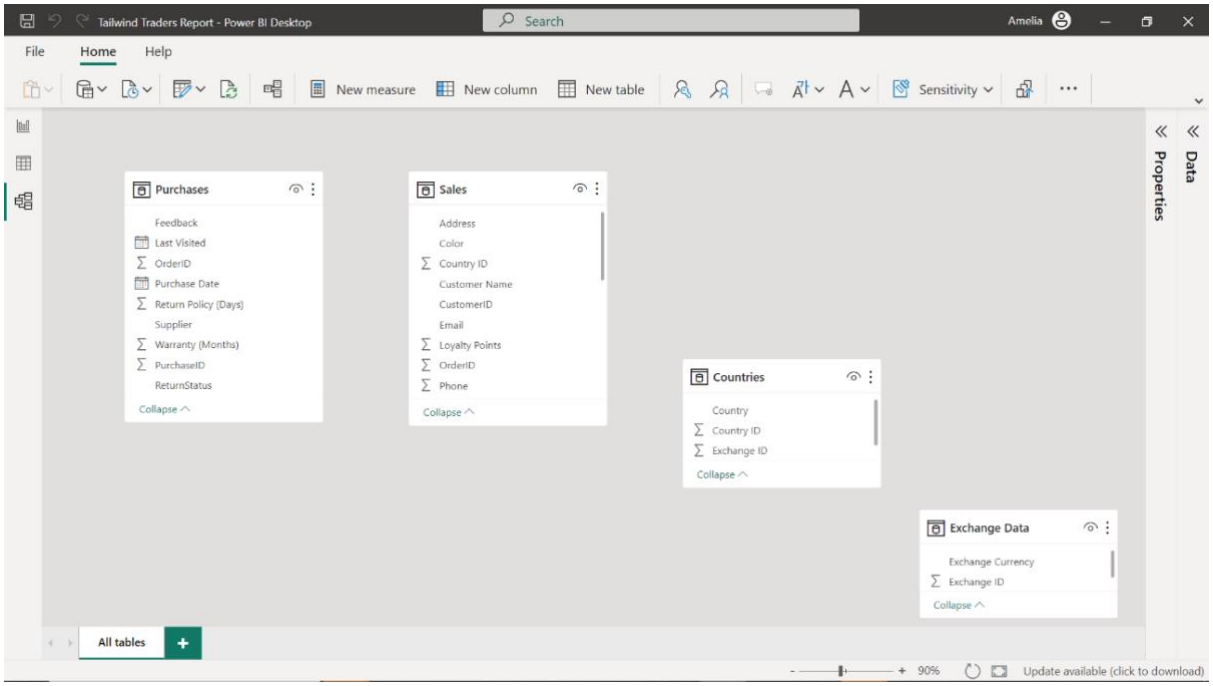
- Construct a snowflake schema tailored for the data model.
- Establish and specify the relationships between various tables in the data model.
- Define a dedicated calendar table for temporal data analysis and reporting.
- Synthesize DAX data into a consolidated **US Dollar** table encompassing sales and profit metrics.

Case study

Tailwind Traders needs a report that shows the company's worldwide sales and profits. However, the sales and profit data must be displayed in US dollars. Let's help Tailwind Traders create this report so that it can generate insights into its global sales.

Instructions

Open the **Tailwind Traders Report.pbix** Power BI file you have created in the previous exercise. Access **Model View** in Power BI to view the report's tables. Your Power BI environment should resemble the screenshot below. Follow the prompts to design and develop a data model from these tables.



Step 1: Create a relationship between the Countries and Exchange Data tables

1. Create a relationship between the **Countries** and **Exchange Data** tables on the **Exchange ID** field.

2. Set the **Cardinality** to **One to One (1:1)**

3. Set the **Cross filter direction** to **Both** to be bi-directional.

4. Ensure the **Make this relationship active** checkbox is selected.

5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a **1:1** symbol on either end of the connector.

Step 2: Create a relationship between the Sales and Countries tables

1. Create a relationship on the **Country ID** field between the **Sales** and **Countries** tables.

2. Set the **Cardinality** to **Many to One (1:1)**.

3. Set the **Cross-filter direction** to **Both** so that it's bi-directional.

4. Ensuring the **Make this relationship active** checkbox is selected.

5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a ***:1** symbol on either end of the connector.

Step 3: Create a relationship between the Purchases and Sales tables

1. Create a relationship on the **OrderID** field between the **Purchases** and **Sales** tables.

2. Set the **Cardinality** to **One to One (1:1)**.

3. Set the **Cross filter direction** to **Both** to be bi-directional.

4. Ensure the **Make this relationship active** checkbox is selected.

5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a **1:1** symbol on either end of the connector.

Step 4: Configure the Calendar table

- Select **New Table** and add the following DAX code to create a new **Calendar** table:

```
CalendarTable =

ADDCOLUMNS(

CALENDAR(DATE(2020, 1, 1), DATE(2023, 12, 31)),

"Year", YEAR([Date]),

"Month Number", MONTH([Date]),

"Month", FORMAT([Date], "MMMM"),

"Quarter", QUARTER([Date]),

"Weekday", WEEKDAY([Date]),

"Day", DAY([Date])

)
```

Step 5: Create a relationship between the Calendar and Purchases tables

1. Create a relationship on the **Date** field between the **Calendar** and on **Purchase Date** in the **Purchases** table.

2. Set the **Cardinality** to **Many to One (1:1)**.

3. Ensure the **Make this relationship active** checkbox is selected.

4. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a ***:1** symbol on either end of the connector.

Step 6: Create a Sales in USD calculated table

1. Select **New Table** and add the following DAX code to create a new calculated table:

```
Sales in USD =
ADDCOLUMNS(
    Sales,
    "Country Name", RELATED(Countries[Country]),
    "Exchange Rate", RELATED('Exchange Data'[ExchangeRate]),
    "Exchange Currency", RELATED('Exchange Data'[Exchange Currency]),
    "Gross Revenue USD", [Gross Revenue] * RELATED('Exchange
Data'[ExchangeRate]),
    "Net Revenue USD", [Net Revenue] * RELATED('Exchange
Data'[ExchangeRate]),
    "Total Tax USD", [Total Tax] * RELATED('Exchange Data'[ExchangeRate])
)
```

2. Note the **Gross Revenue USD**, **Net Revenue USD**, and **Total Tax USD** for the **Order ID= 1035** on the **Sales in USD** table.

Step 7: Create a relationship between the Sales in USD and Sales tables

1. Create a relationship between the **Sales in USD** and **Sales** tables on the **Order ID** field.

2. Set the **Cardinality** to **Many to One (1:1)**.

3. Ensuring the **Make this relationship active** checkbox is selected.

4. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a **1:1** symbol on either end of the connector.

Conclusion

Having completed the assigned tasks, you have demonstrated the skills to design and develop a data model!