1. **The Project**

I created this Power BI report following the Maven Analytics Power BI for Business Intelligence course, in which a database for ‘Maven Market’ was provided.

2. **The Data**

The dataset consisted of the following tables:
Calendar Lookup
Customers Lookup
Products Lookup
Regions Lookup
Stores Lookup
Transactions 1997 Data
Transactions 1998 Data
Returns 1997-1998 Data

3. **Connecting and Shaping the Data**

The first step in creating the Power BI report was to load and transform each of the tables in order to ensure they were formatted correctly for the purposes of the report and analysis.

Examples of the table transformations that took place were:

a. Confirming all column headers were correctly promoted and given the correct data type
b. Adding new columns (such as full name, birth year, discount price), using details from other columns in the table
c. Amending the calendar table to enable later yearly, monthly, weekly and daily analysis
d. Combining the 2 Transactions Data Tables

Profiling tools were used to review the quality, distribution and profile of the various columns in tables, ensuring a higher quality of data before loading it into Power BI front-end.

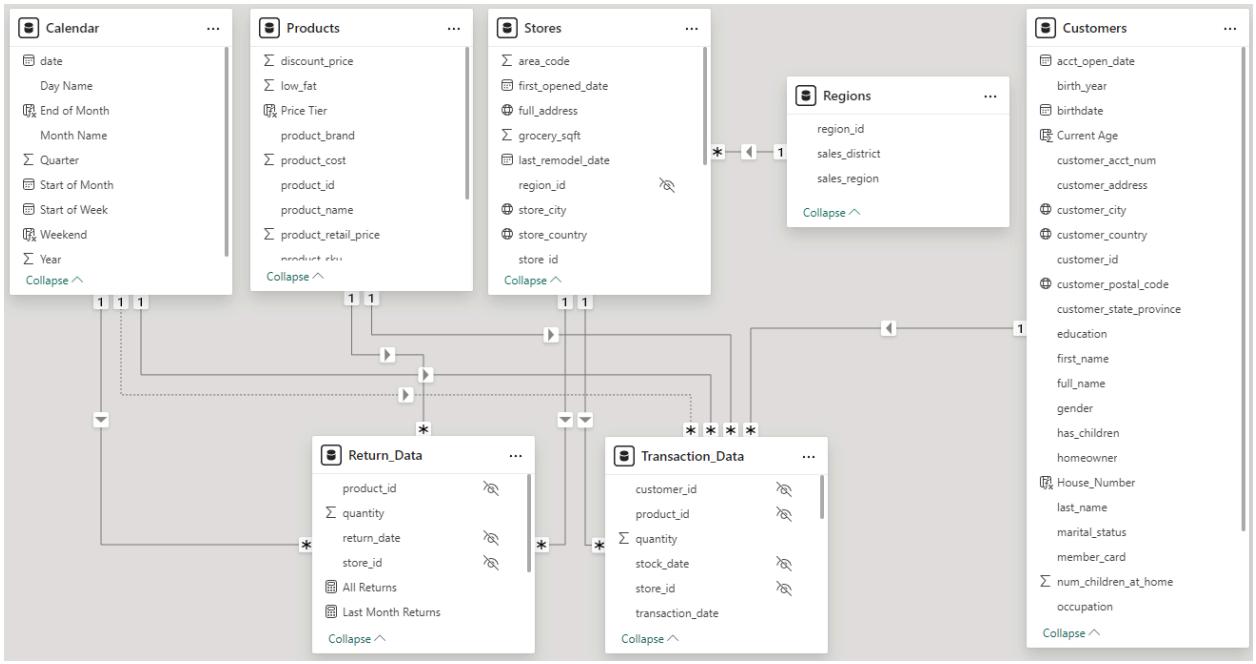
4. **Creating a Data Model**

Once all the data was loaded, the next step was to connect the tables in a meaningful way to create a working data model.

The dataset contained two types of tables; data tables and lookup tables. By considering the primary key in the lookup tables (such the Products having a primary key of product_id), and where this is found as a foreign key in an associated data table (such as in the Returns Data table), it is possible to create connections between the tables to form this data model.

I ensured all connections follow the one-to-many cardinality; with the primary key being on the lookup side and the foreign keys in the data sides on the ‘many’ side of the relationships. Finally,

all foreign keys in the data tables were hidden from the Report View so as not to be used in visualisations.



5. Adding Calculated Columns

Using DAX, additional columns were added to some of the tables.

Examples of the calculated columns created include:

Weekend

```
Weekend =
    IF('Calendar'[Day Name] = "Saturday" || 'Calendar'[Day Name] = "Sunday",
    "Y",
    "N"
)
```

Current Age

```
Current Age =
DATEDIFF(
    Customers[birthdate],
    TODAY(),
    YEAR
    )
```

Price Tier

```
Price Tier =
    IF(Products[product_retail_price] > 3,
    "High",
    IF(Products[product_retail_price] > 1,
        "Mid",
        "Low"
    )
)
```

6. Adding Measures

The final step before beginning the data visualisation was to create the numerical fields that can be later analysed in the report. A number of measures were added in order to easily and repeatedly access the required information for different data points.

Examples of the measures created include:
Quantity Sold
Quantity Returned
Total Transactions
Total Returns
Return Rate
Weekend Transactions
60-Day Revenue
Last Month Revenue
Revenue Target

```
Quantity Returned =
SUM(Return_Data[quantity])

Total Transactions =
COUNT(Transaction_Data[quantity])

Return Rate =
DIVIDE([Quantity Returned], [Quantity Sold])

Weekend Transactions =
CALCULATE([Total Transactions], 'Calendar'[Weekend] = "Y")
```

```
Last Month Revenue =
CALCULATE(
    [Total Revenue],
    DATEADD(
        'Calendar'[date],
        -1,
        MONTH
    ))
```

7. **Visualising the Data**

Two pages were added to the report, with a Topline Performance Dashboard to highlight visualise key aspects and a Key Insights page to draw attention to some of the findings from the data analysis.

Topline Performance:

a. *Transactions, Profit and Returns Matrix*
   This table is filtered to show the Top 30 Product Brands, with filter interactions with the weekly revenue chart, KPI cards and map to enable the user to quickly see which products were sold the most in a given time period or continent.
   Conditional formatting was used to enable users to quickly see which product brands had the highest transactions, profit margin and return rate.

b. *KPI Cards*
   These highlight the current month's transactions, profit and returns, with filter interactions with the weekly revenue chart, product matrix, map and treemap.

c. *Interactive Map*
   The map provides a visual insight on where transactions have taken place. The user can hover over the bubbles to view a tool-tip which details the total orders from the city.

d. *Treemap*
   Like the map, this provides the user with a visual insight on transactions. The treemap allows the user to see the proportion of transactions by continent, and can be drilled down to state and then city.

e. *Weekly Revenue Column Chart*
   This column chart displays the total revenue per week for the year 1998, filter interactions are enabled with the product matrix and maps to allow the user to see each week's revenue based on location and product brand.

f. *Revenue vs. Target Gauge Chart*
   This gauge highlights how well the overall company, location or product brand is doing in terms of monthly revenue based on the monthly target (+10% of the previous month).

Key Insights:

a. *Bookmarks to Key Views*
   Four buttons on this page are used to direct the user to four key insight views on the main dashboard.

8. Key Insights

In December 1998, Portland hit 1,000 total transactions for the first time.

WA was the top performing state in 1998, with a total of 86.955 transactions.

Whilst Canada has the highest Return Rate for 1998 (at 1.07%), the KPI card shows that this is set to reduce by the end of December 1998. Canada is currently 28.81% below the return target for the month.

Plato brand products drove the highest overall profit margin (63.55%) in 1998.