Business Intelligence

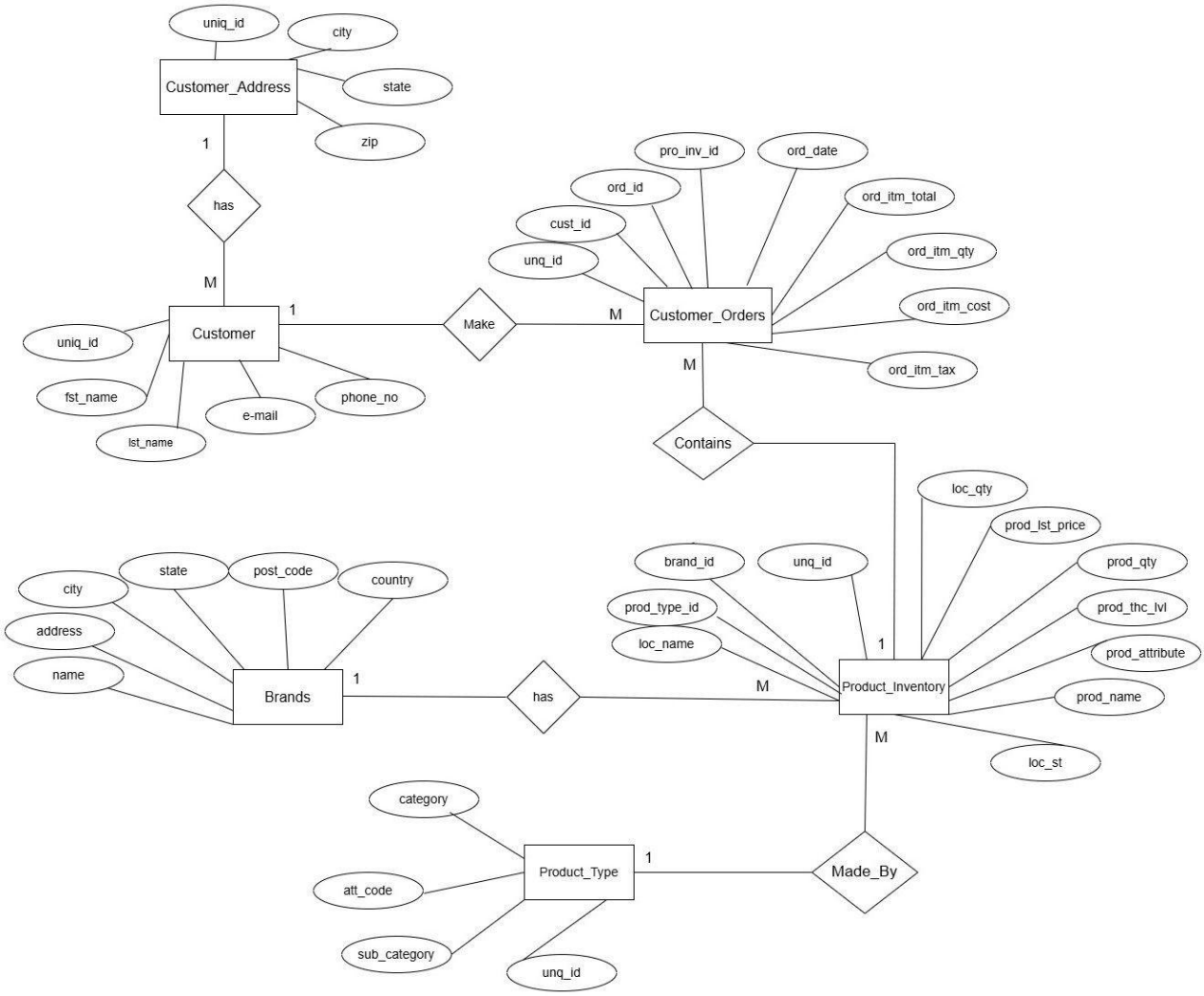
Contents

1.DATA SOURCE

- Data Warehouse implemented in the previous assignment was used as the source to complete Assignment 2. As described in the Assignment 1, the selected data set consisted of transactional data. Customer Order specific details involved with customers, brands, product Types, and product inventory details.

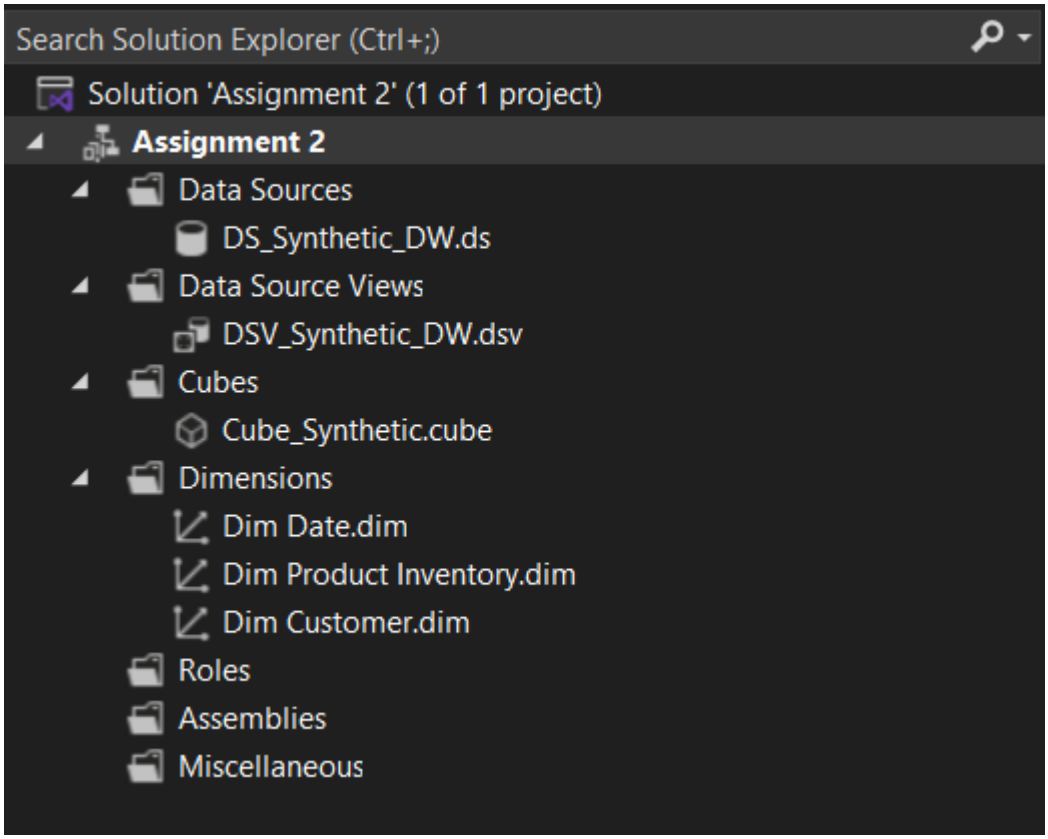
ER-Diagram

The below ER- diagram shows the connection between the entities in the data set and the attributes.

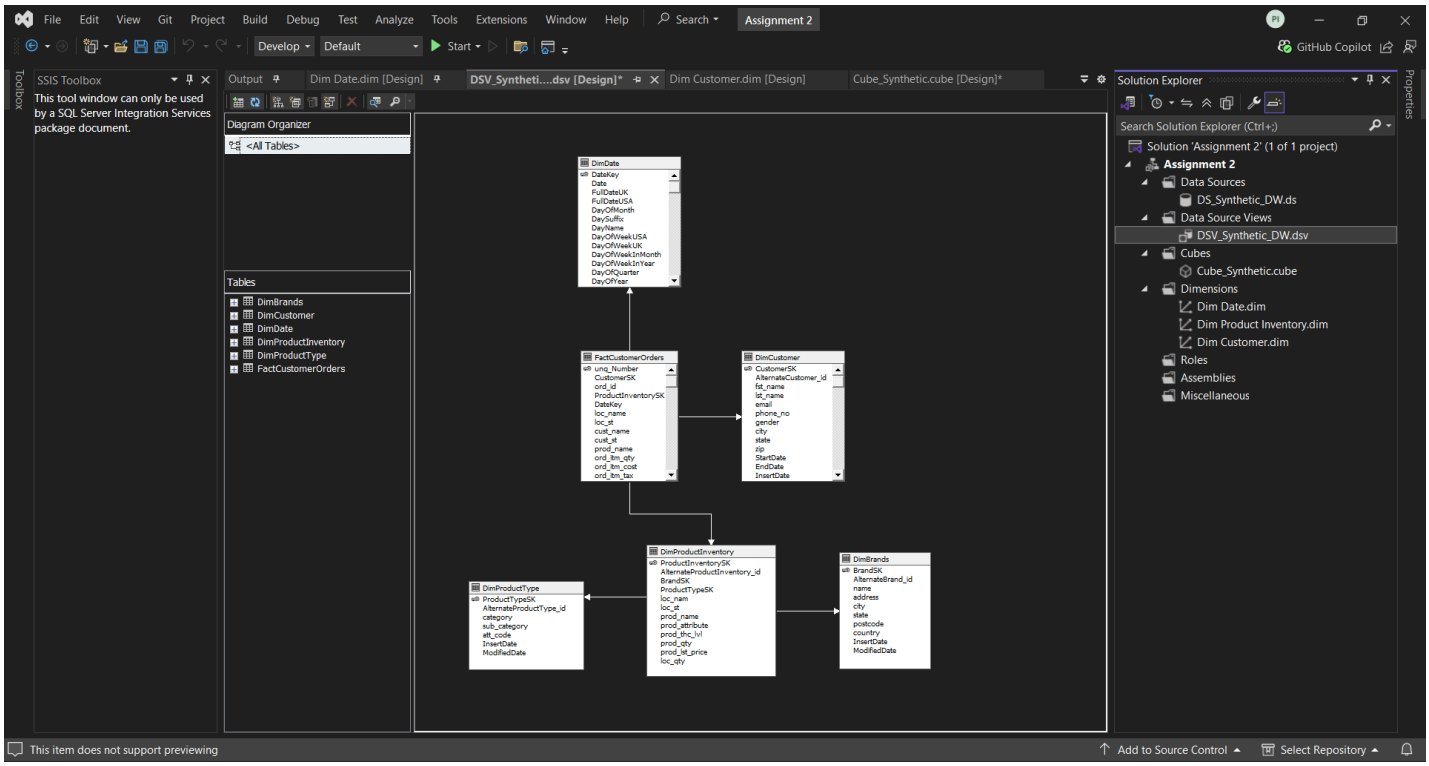


2.SSAS CUBE IMPLEMENTATION

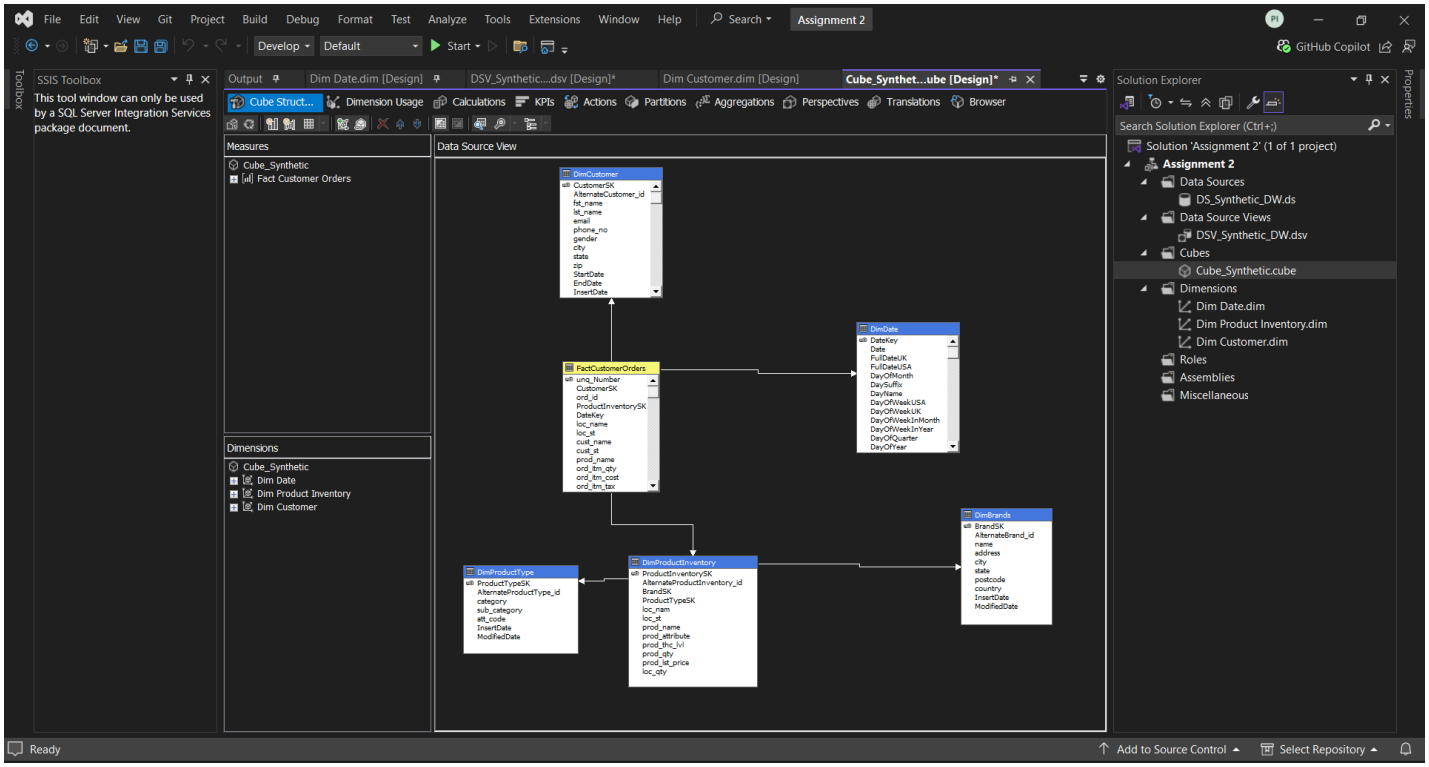
1) A new SSAS project was created and named as 'DWBI_SSAS', to begin the SSAS cube implementation. First the created Data warehouse was added as a new Data source and configured.



2) Next a new Data Source view was added after adding the same warehouse. The created data source view is attached below.

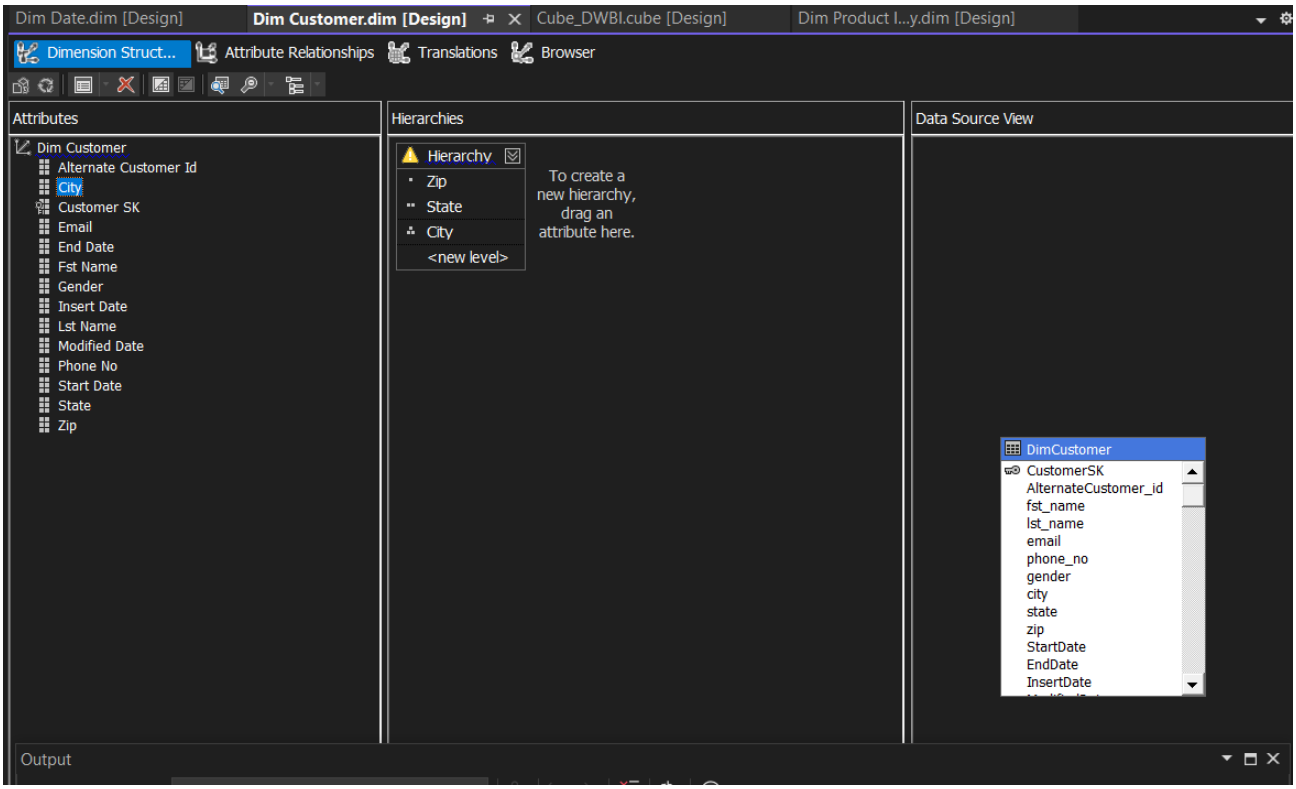


3) Next a cube was created by adding a new cube and selecting the fact table, measures, dimensions appropriately. The created cube is demonstrated below.

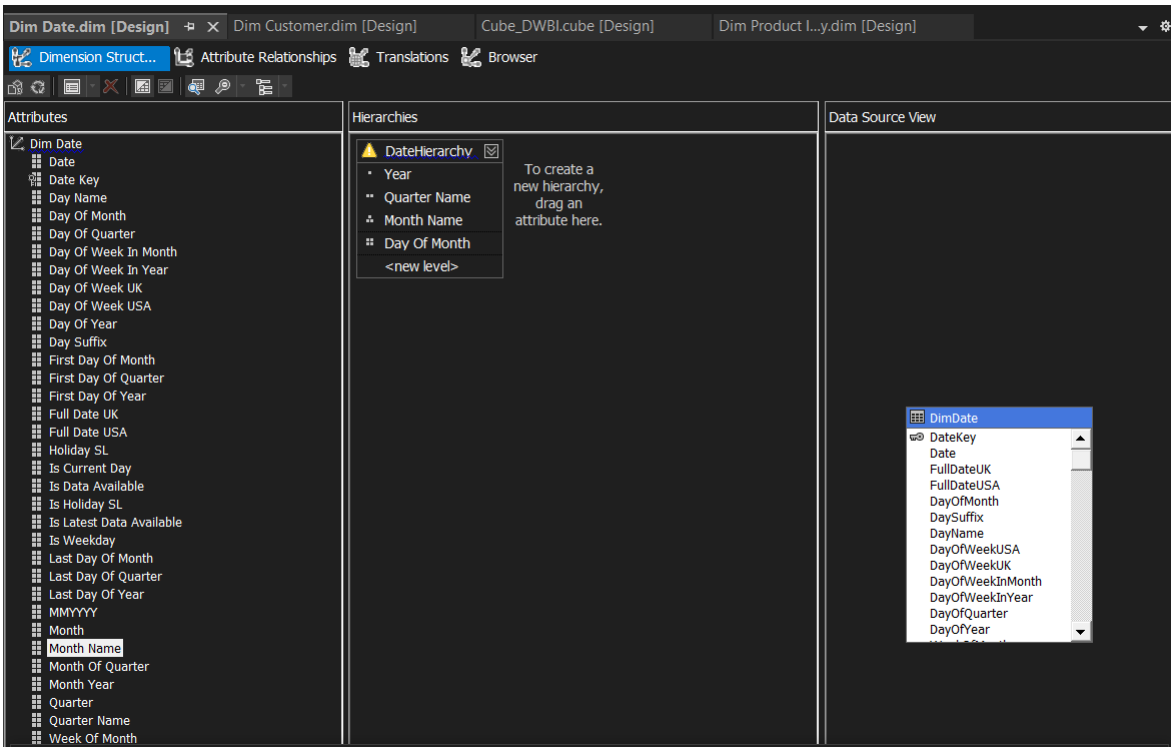


4) Next attributes were added to the relevant dimensions.

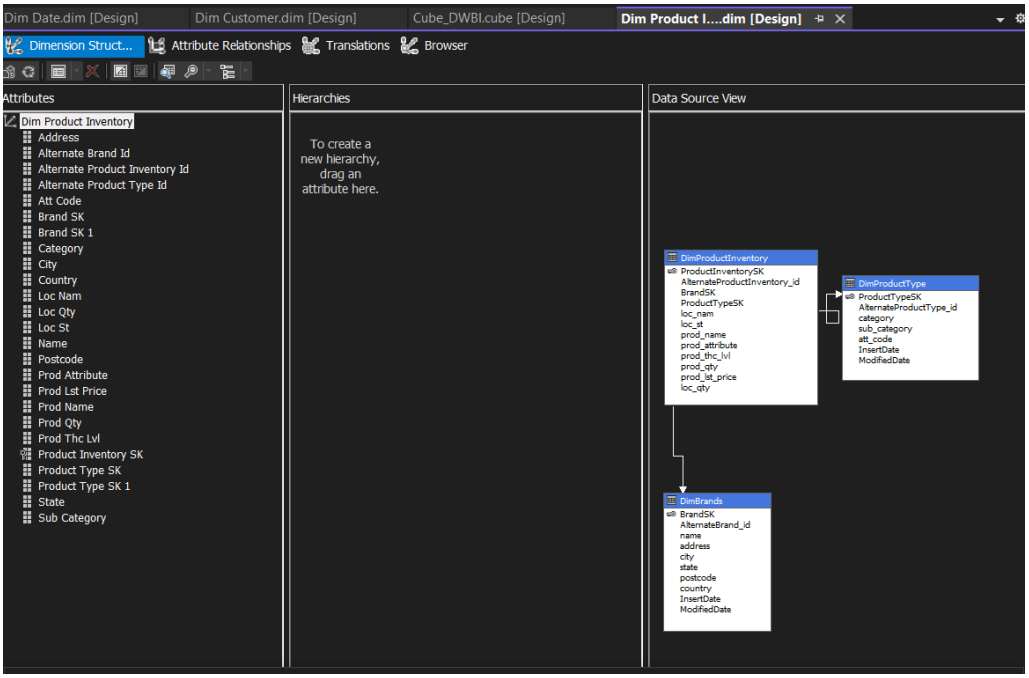
   a. **Customer dimension –** When creating Customer dimension, not only the attributes were added but also a hierarchy was created to ease the process of analyzing data. Customer Hierarchy includes Zipcode, State and City.



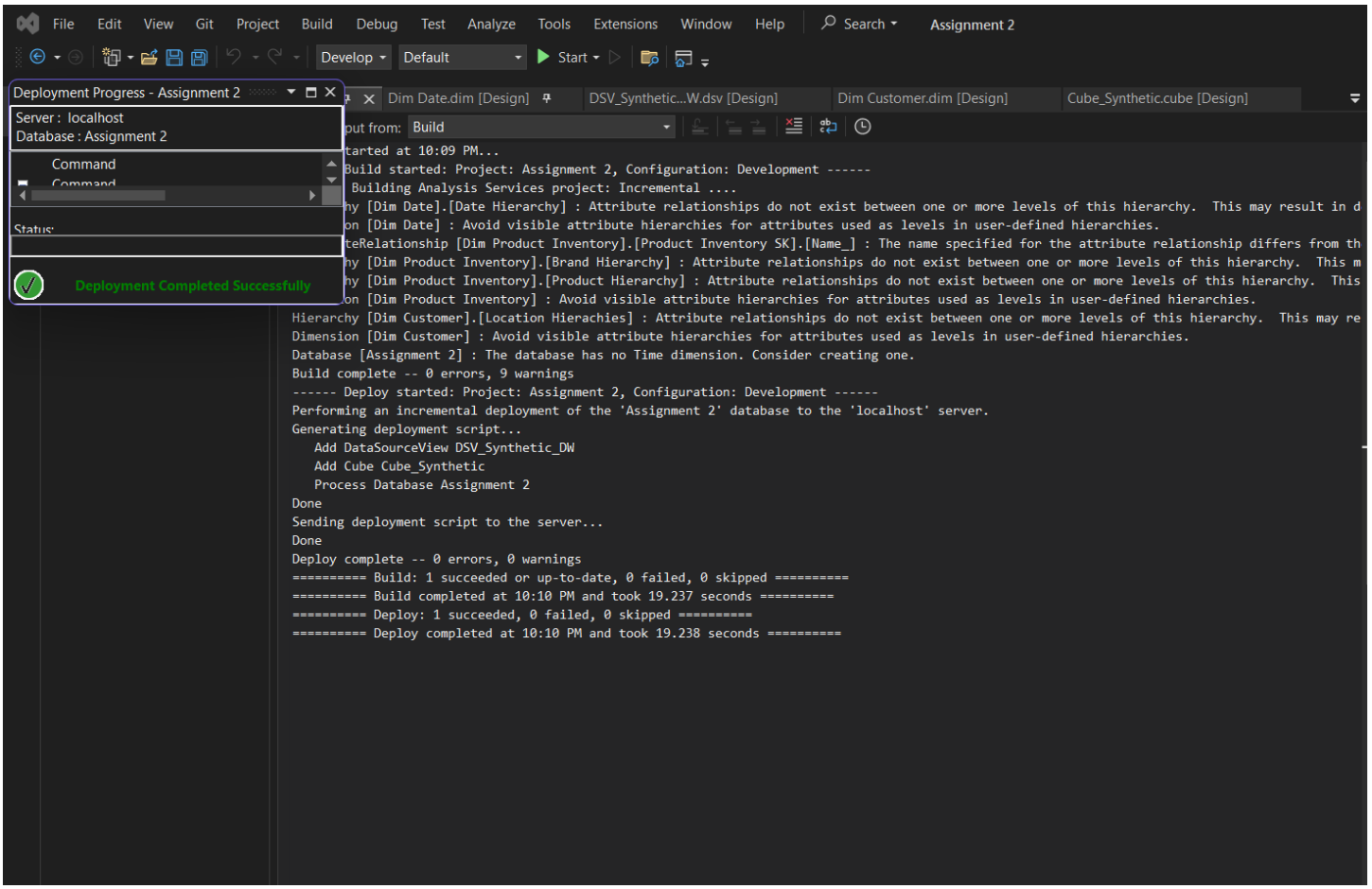
b. Date dimension -In the Date dimension, not only the attributes were added but also a hierarchy was created to ease the process of analyzing data. Date Hierarchy includes Year, Quarter name, Month name and Day of month.



c. **ProductInventory dimension –** Product Inventory dimension is connected with DimBrands and DimProductType through suggorate keys.

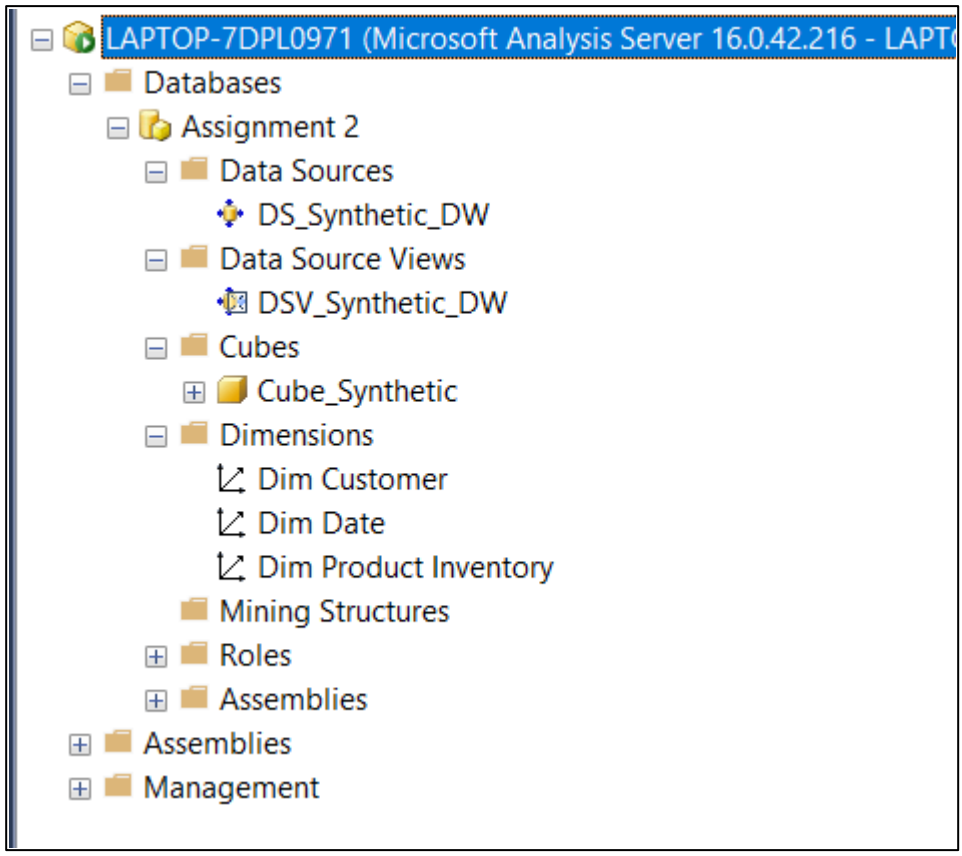


5). As the last step of cube implementation, the cube was deployed.



3.DEMONSTRATION OF OLAP OPERATIONS

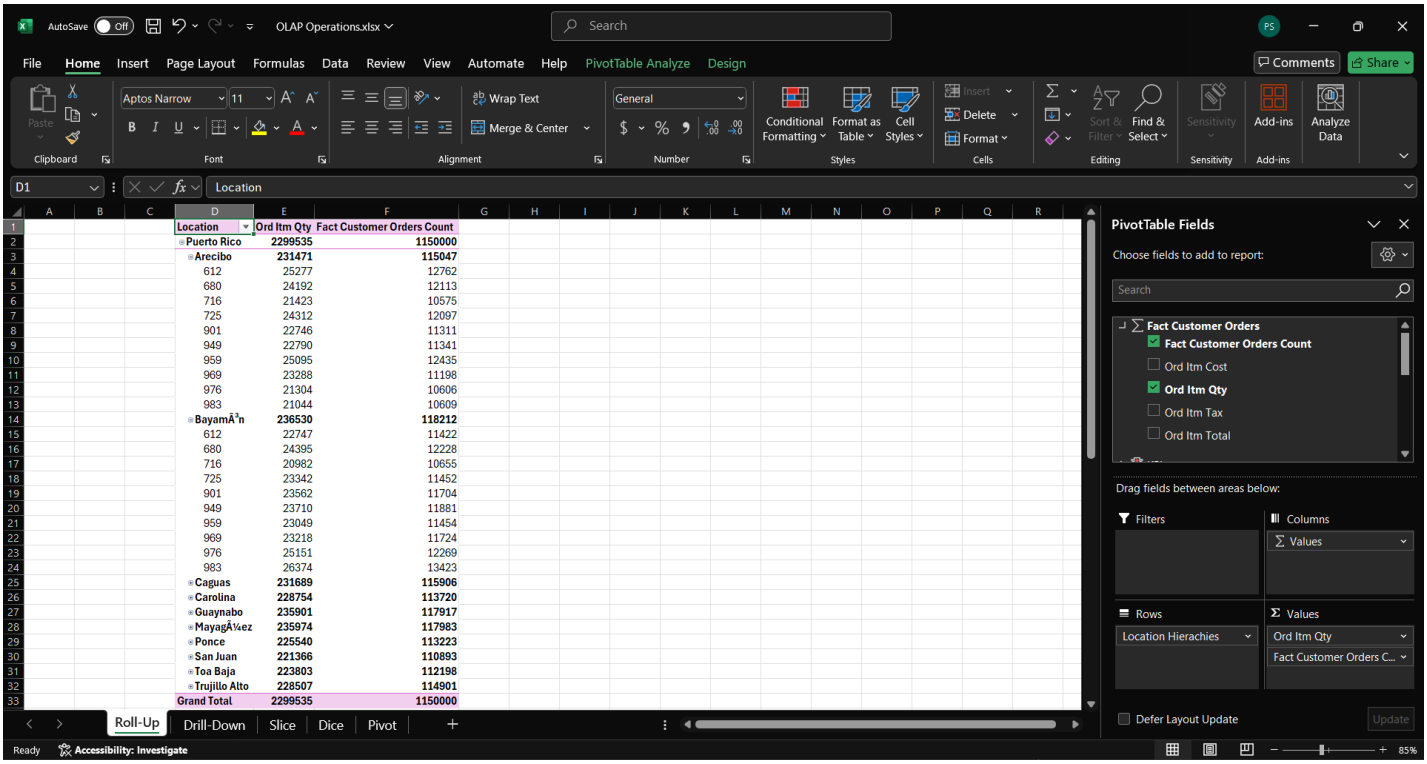
After deployment of the created cube is shown in the SQL Server Management Studio the cube was loaded to Excel by following the necessary process. After connecting to the Excel Workbook, the reports and graphs were generated via the available features.

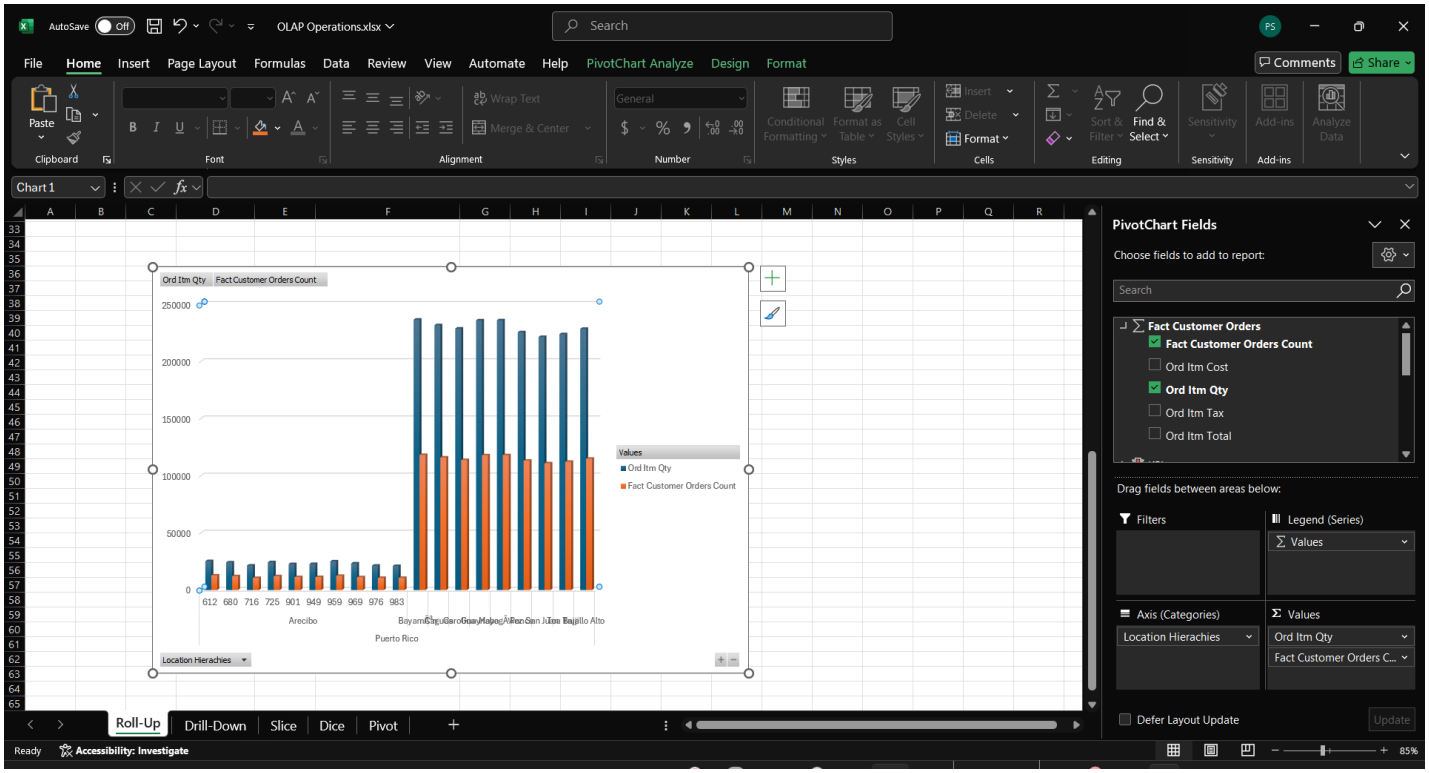


Roll-Up

- In here, climbing up the hierarchy of the dimension to aggregate the data. For that, Location hierarchy has been used. Order_item_Qty and customer_order_count has been taken as values. This analysis shows how the item quantity and customer order count is distributed among different locations of customers.

- The following figures show the rows, column and the fact table measure values that have been used to demonstrate this operation.

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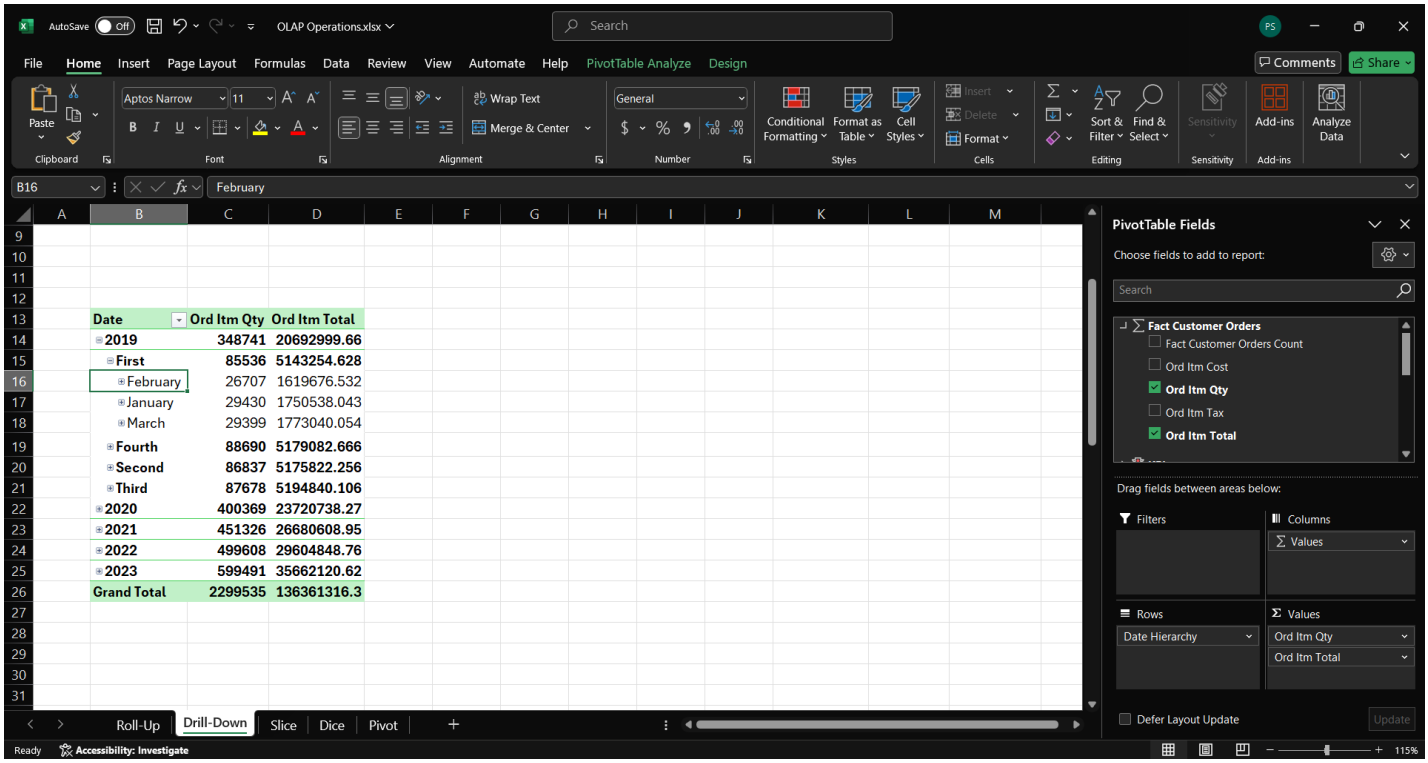
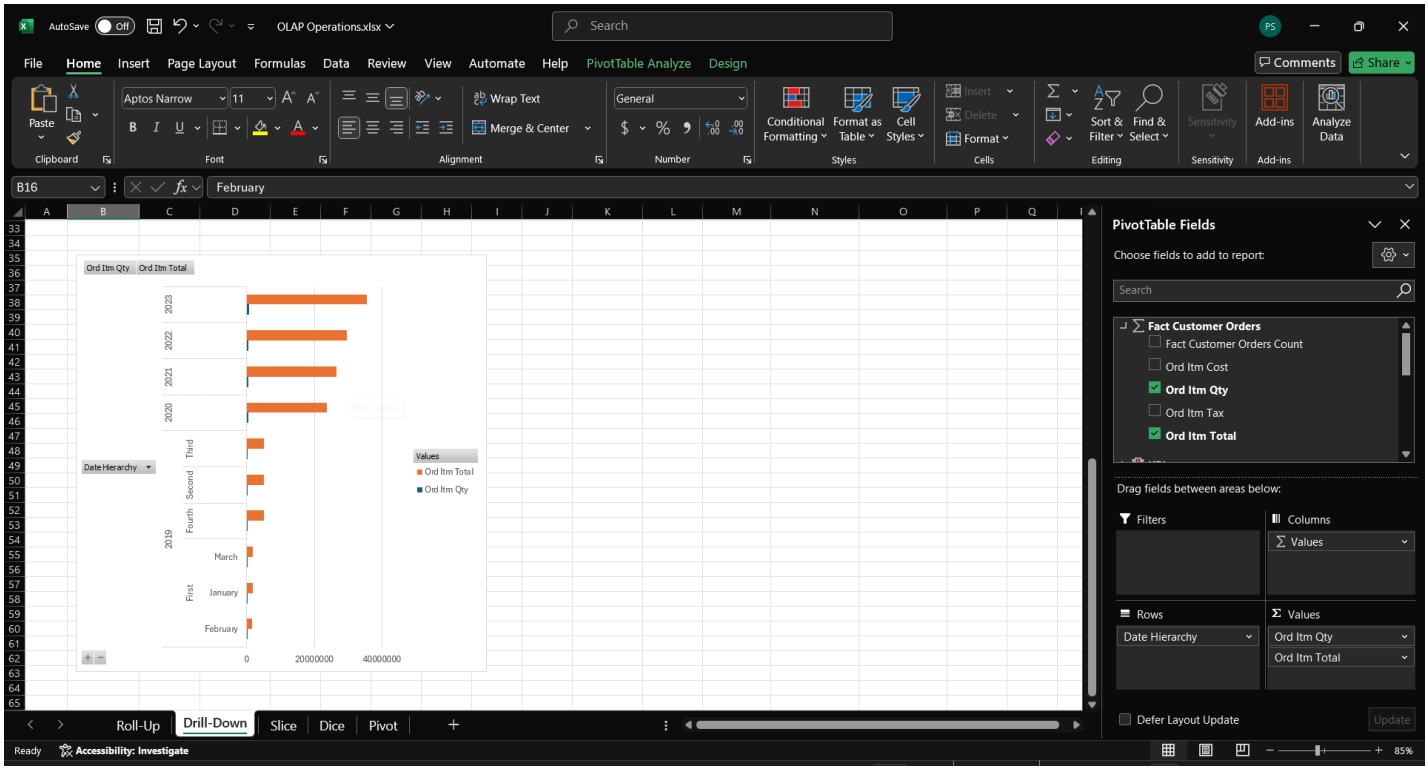
- **Drill-Down**
  - In here, stepping down the date hierarchy of the Date Dimension and it allows the multiple navigation through details in the Dataset and get the data as a small part from it. Date hierarchy consists with year, quarter, name of the month and day of the month attributes in here.

  - The following figures show the row, columns and fact table measure values that have been used to demonstrate this operation.

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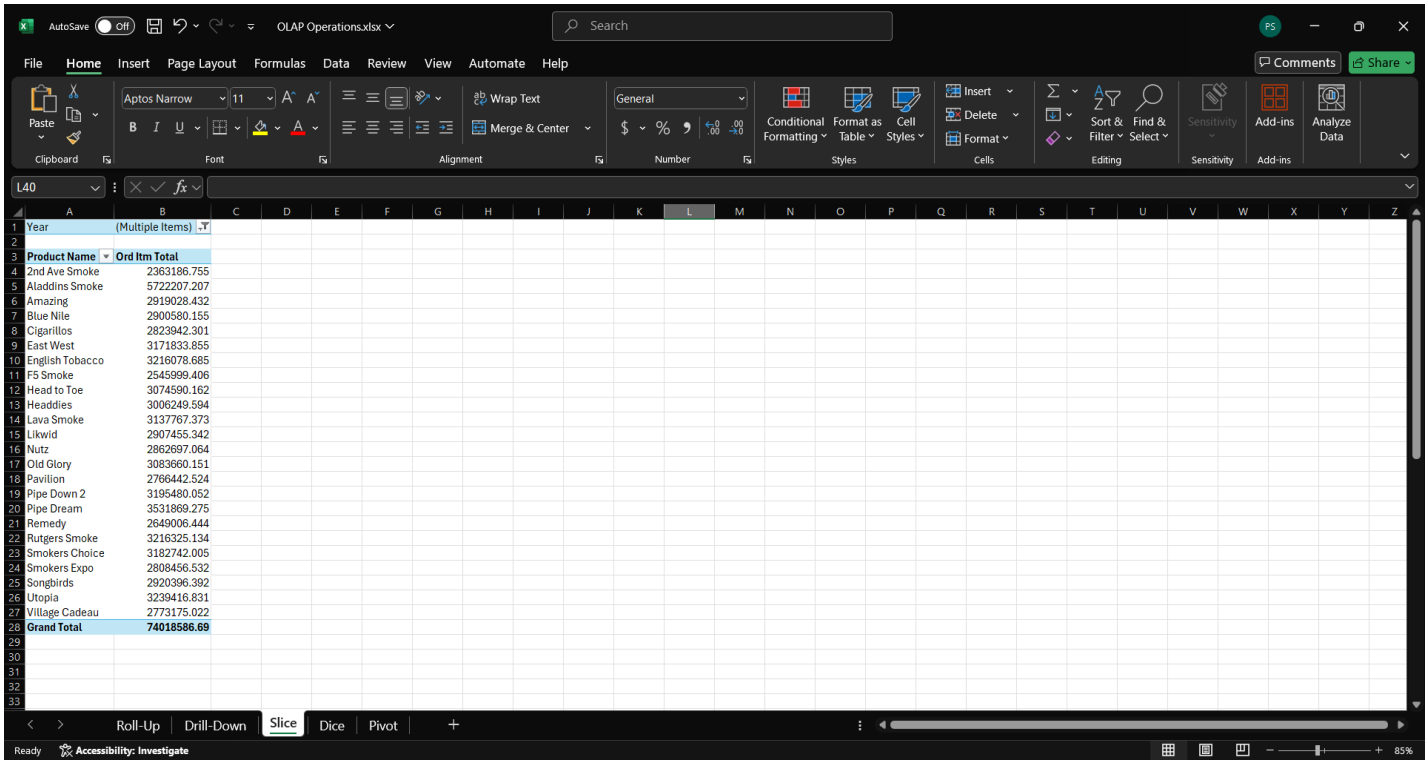
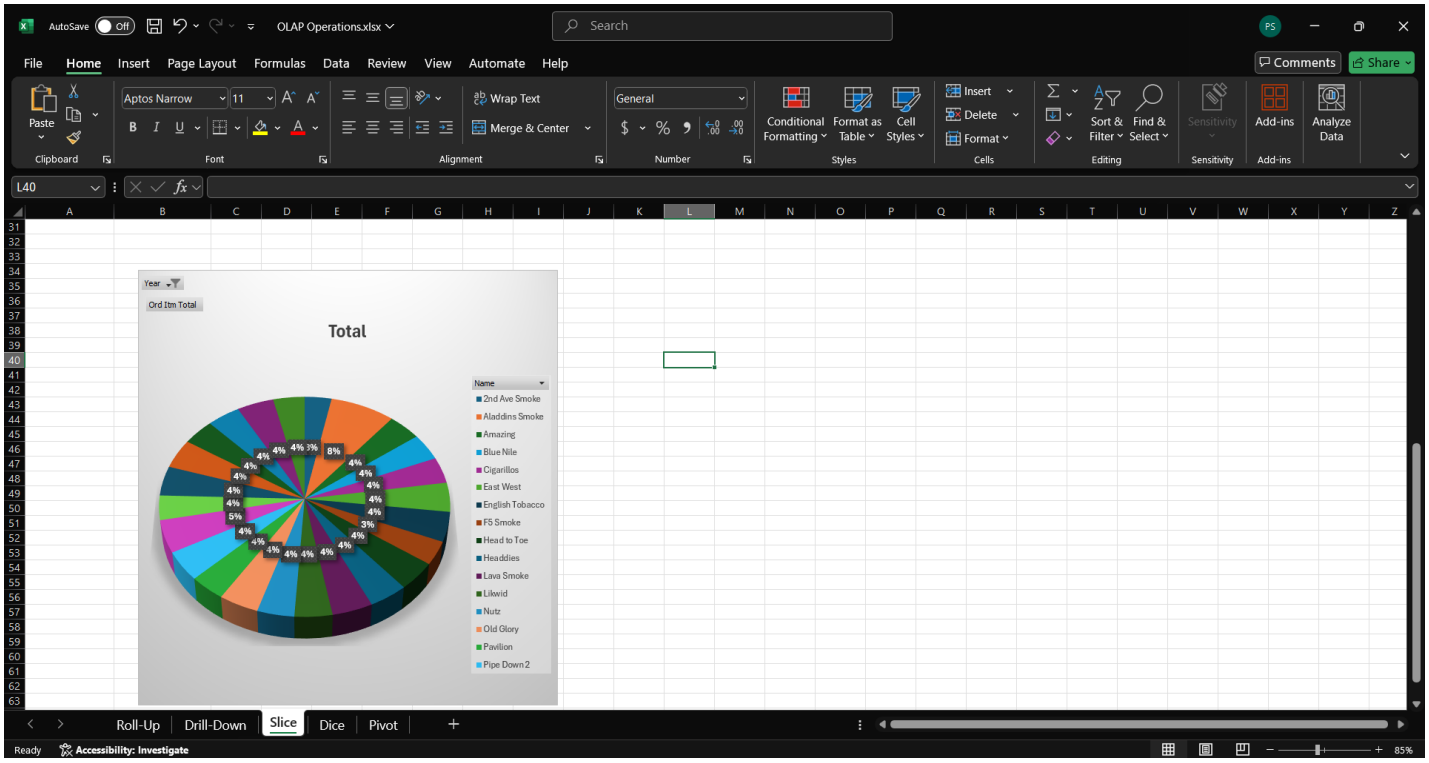
Slice

- In here, Product Inventory Dimension has been selected to demonstrate the Slice operation. By using that dimension, retrieve a new slice by selecting the specific values from the dimension and for that I have used Yearas the filter.

- The following figure shows the row, fact table measure value and the filter that have been used to demonstrate this operation.

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Cigarillos
East West
English Tobacco
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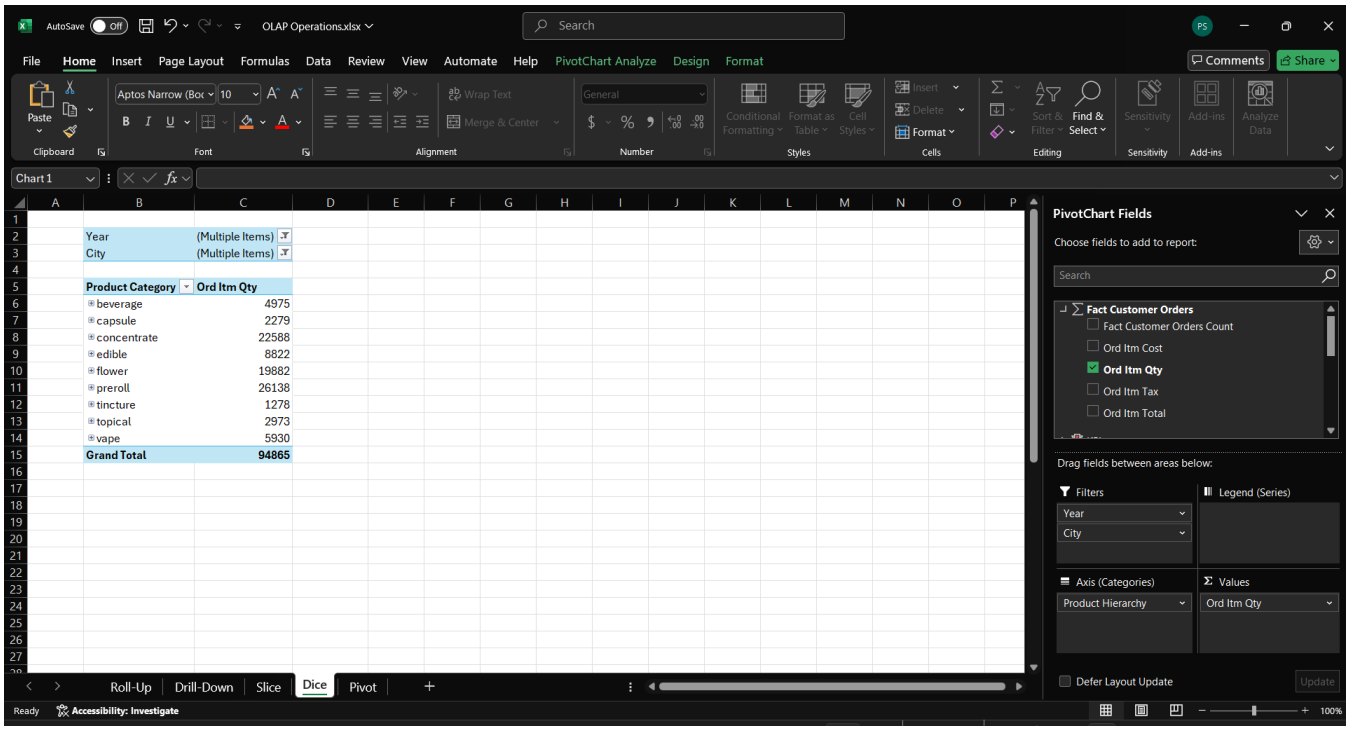
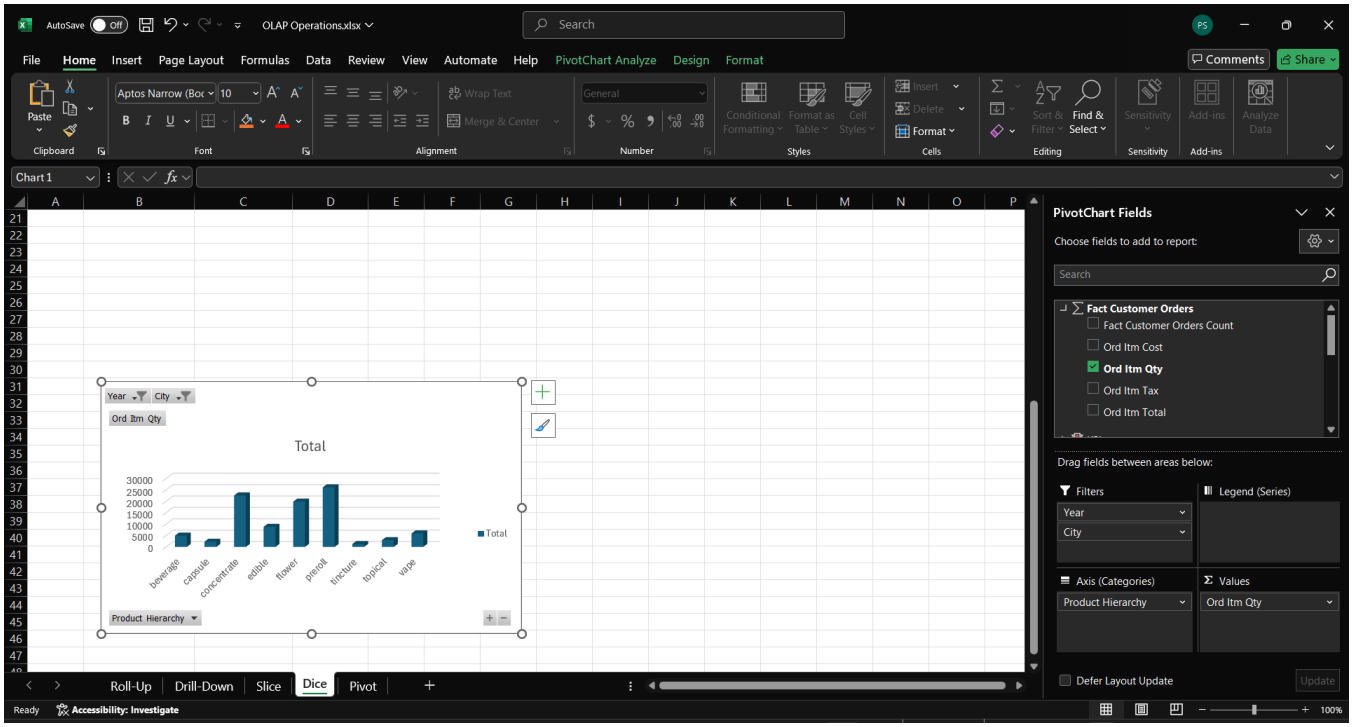
Dice

- In here, Product Inventory Dimension and Date Dimension have been selected to demonstrate the Dice operation. By using those two dimensions, retrieve a new sub-cube by selecting the specific values from the dimension and for that I have used two filters which are from Product Inventory and Date Dimensions.

- The following figure shows the rows, fact table measure value and the filters that have been used to demonstrate this operation.

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PivotChart Fields
Choose fields to add to report:
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Product Hierarchy
Values
Ord Itm Qty
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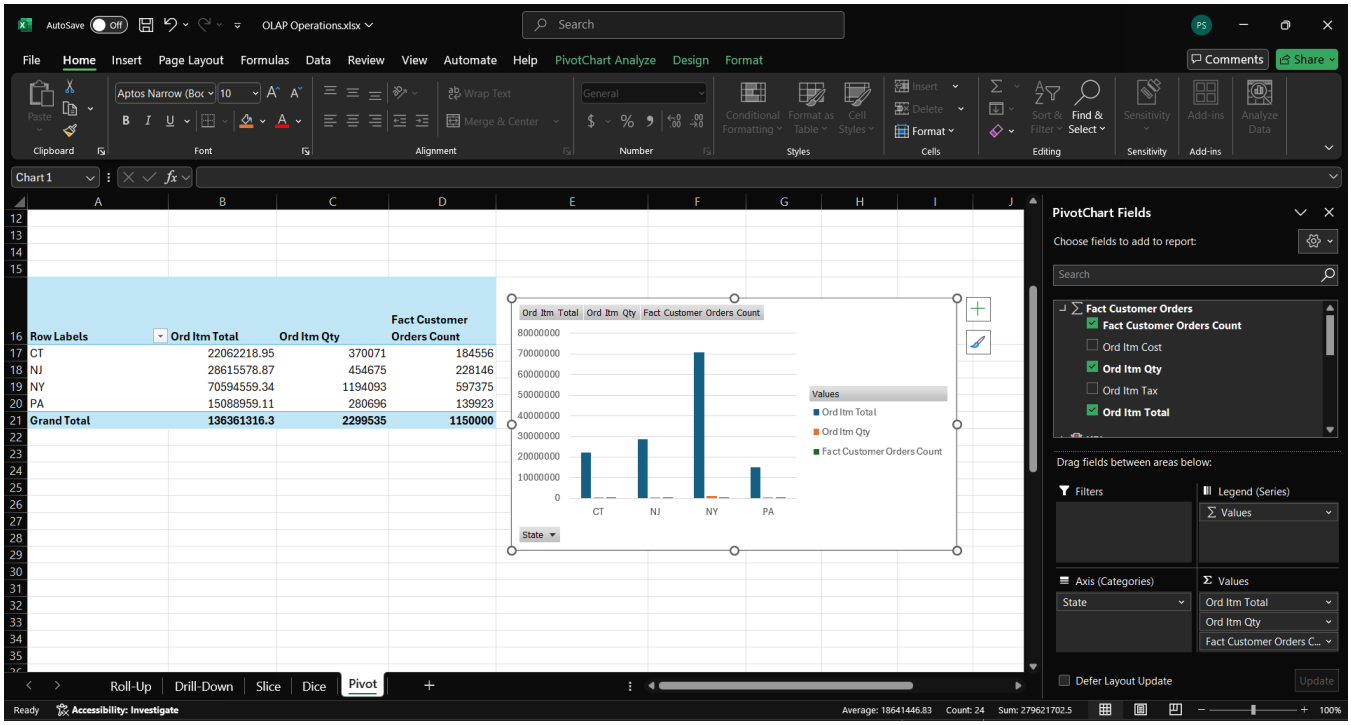
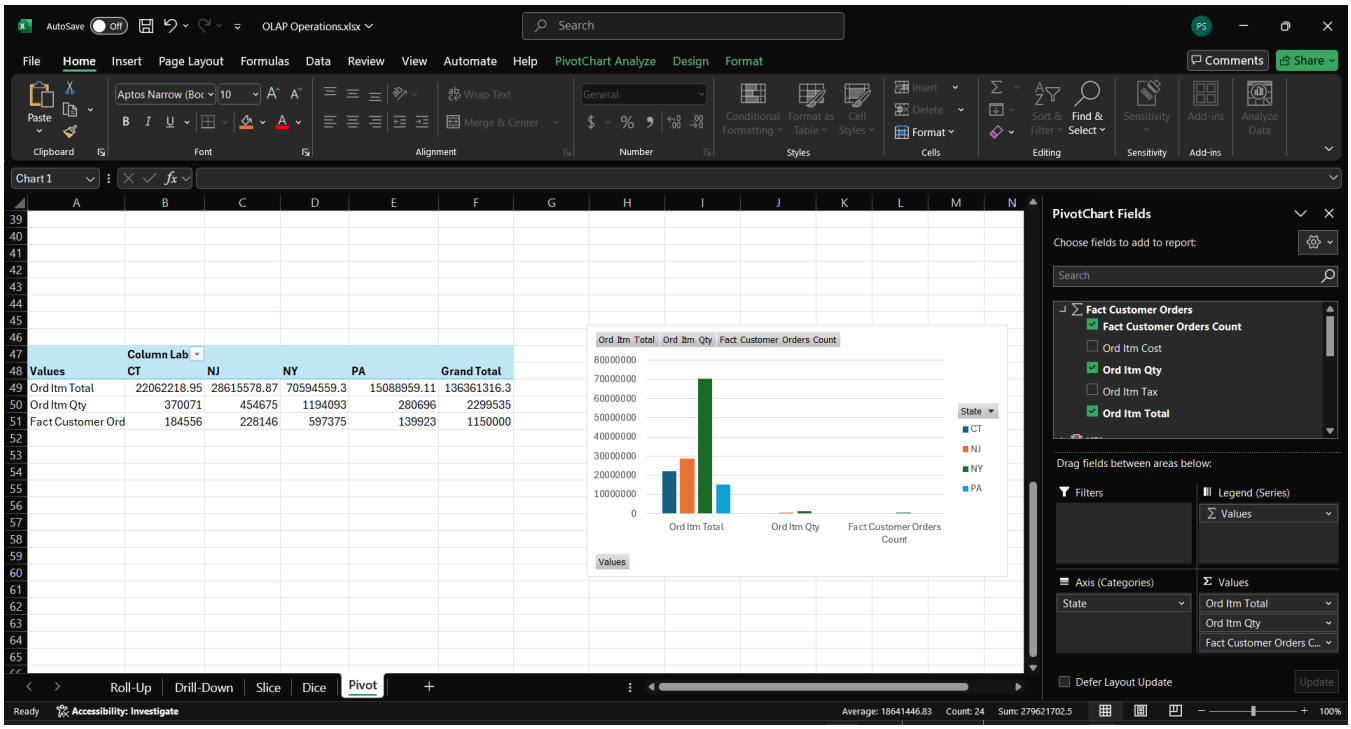
Pivot

- To represent the pivot, Product Inventory Dimension and the Fact Table measure values have been used. In here visualize the State with Fact table measure values, using those values rotate those two axes to provide an alternative presentation of the data. I used that two dimensions and get various visualization for Dataset.

- The following figures show the row/columns with fact tables measures that have been used to demonstrate this operation.



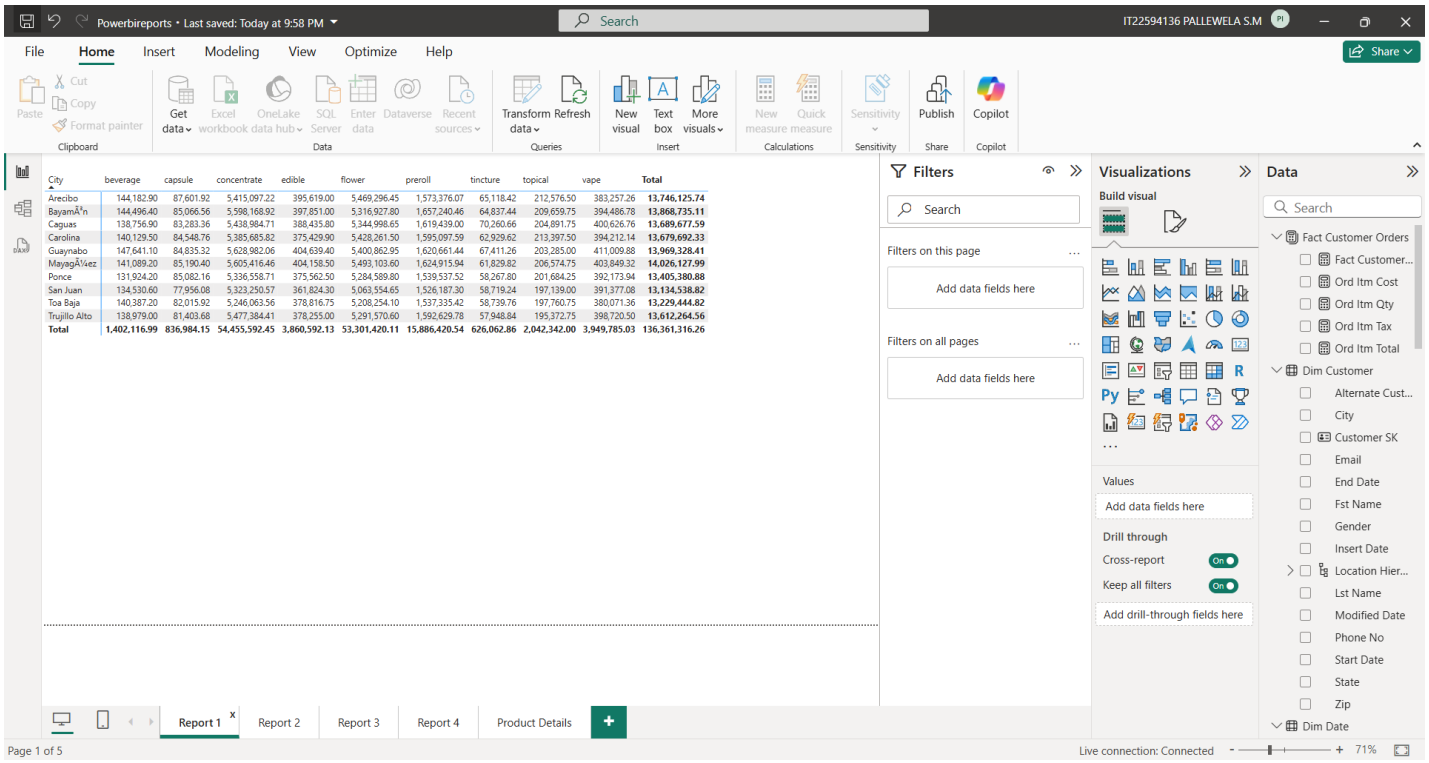
- These two figures also display the same operation after the rotation of row and column data.



4. PowerBI REPORTS

Report 1- Report With Matrix

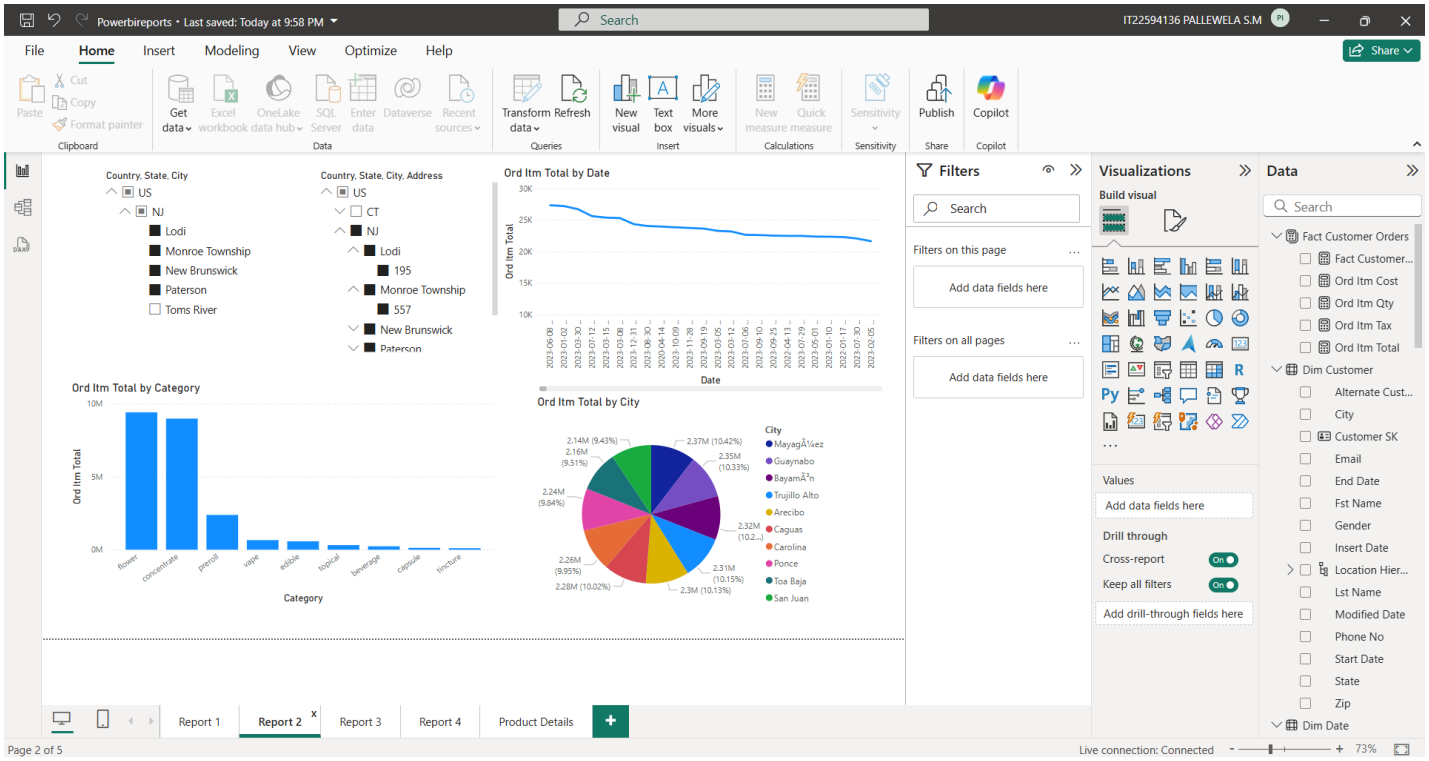
- This report features a Matrix visual that displays tabular data with both row and column groupings. It's ideal for showing multi-level categorized data, such as city and category. Users can expand or collapse groups to view aggregated or detailed



data.

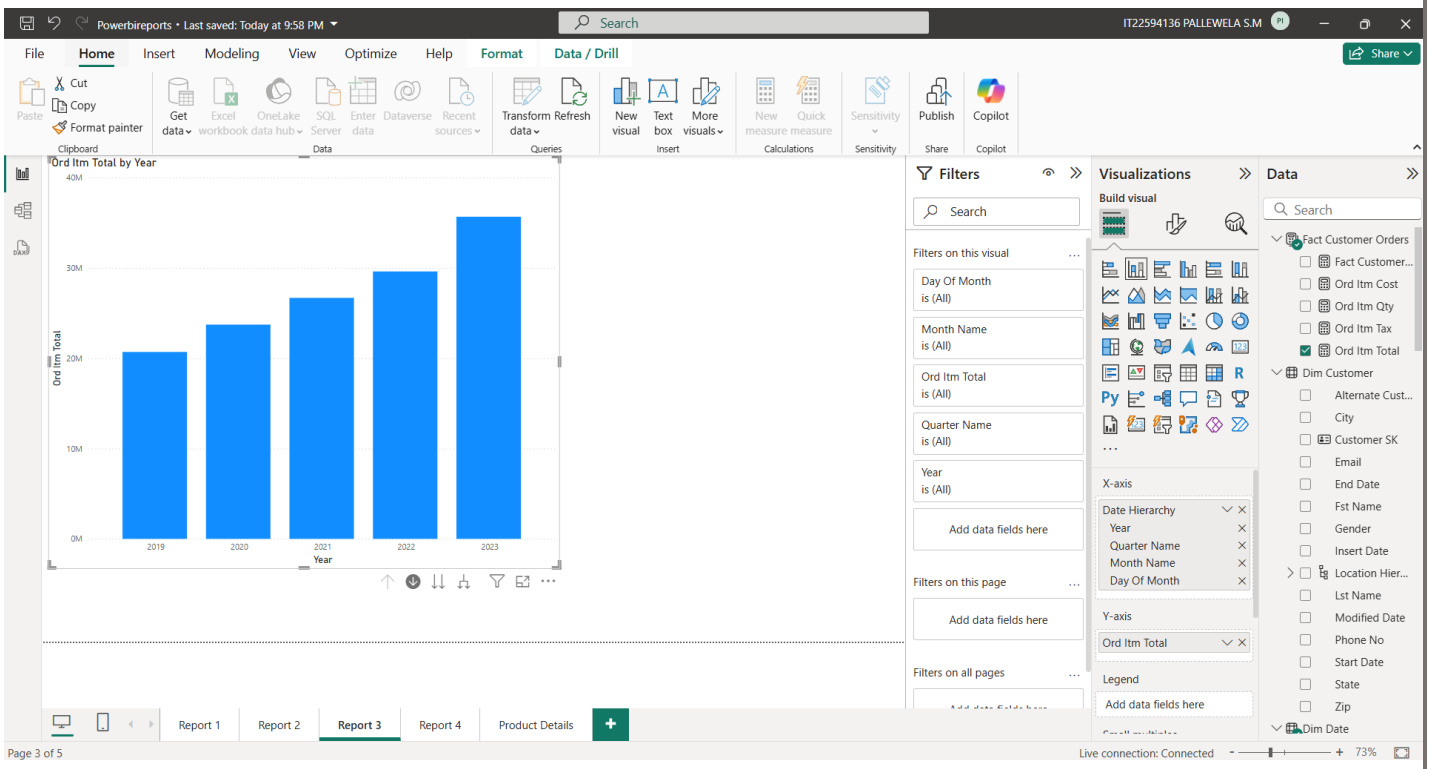
Report 2- Report With Multiple Slicers

- This interactive report includes cascading slicers—selecting a value in the first slicer dynamically filters the options in the second. The report uses multiple visualizations (e.g., bar charts, pie charts) to provide comprehensive insights, helping users drill into segmented data quickly.



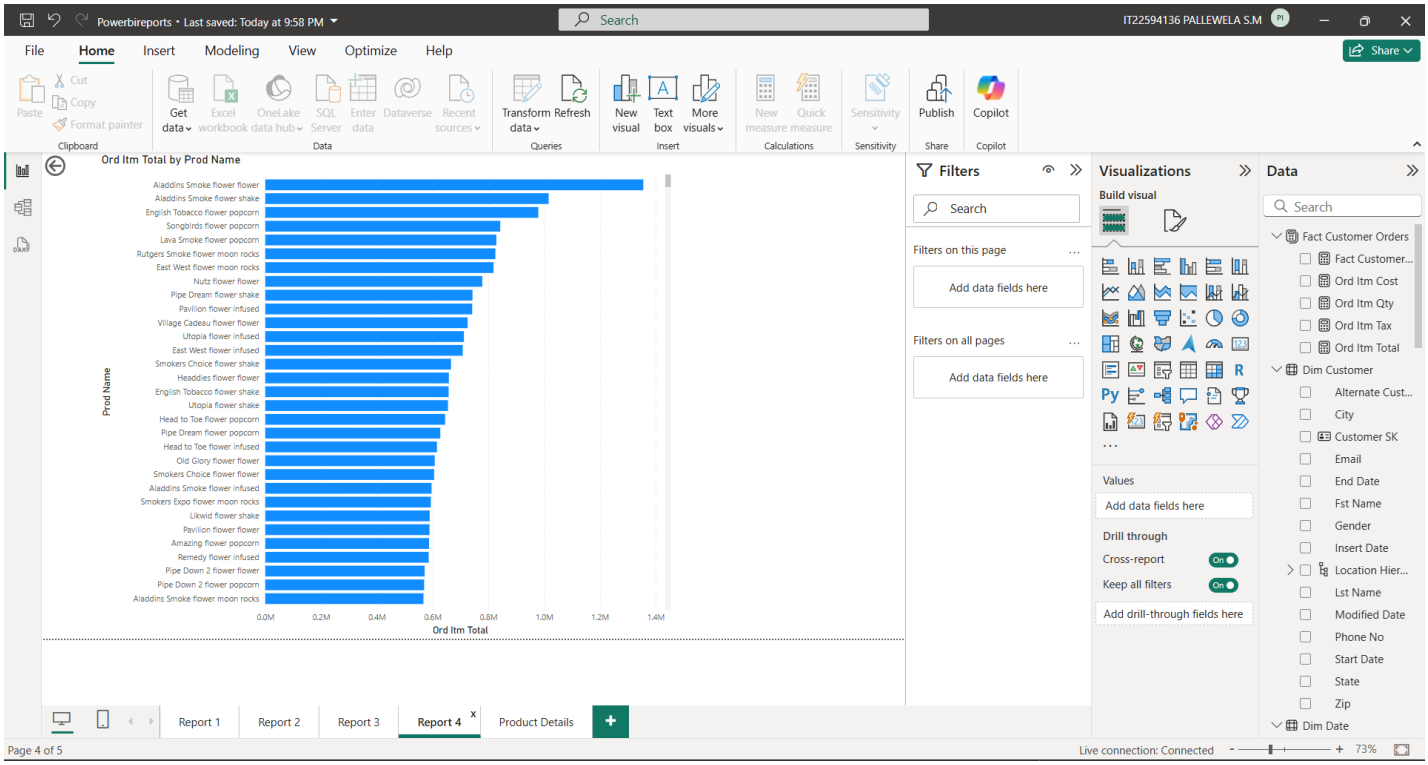
Report 3- Drill-Down Report

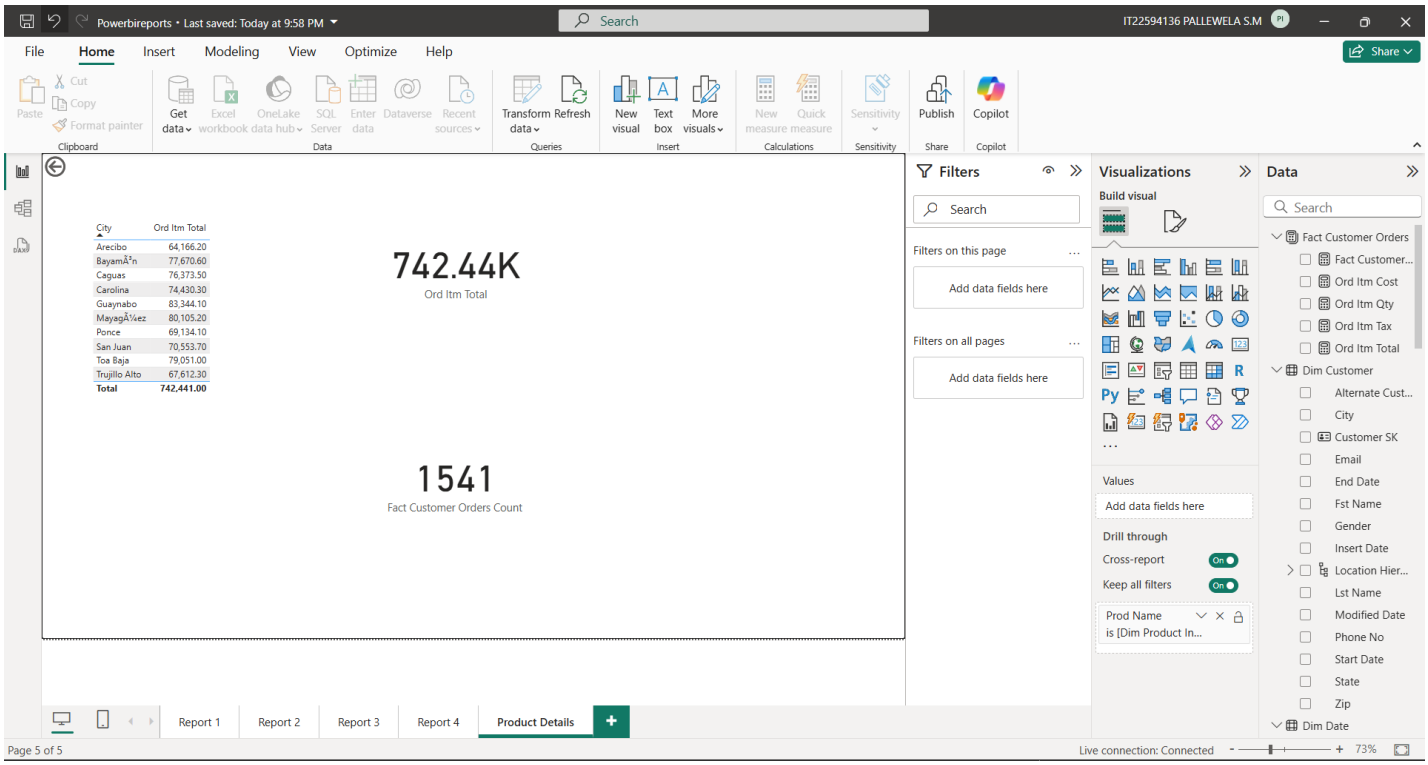
- Users can explore data hierarchically in this report. Starting from a high-level view (e.g., Year), they can drill down into finer details like Quarter and Month, providing a clear path through time-based trends and patterns.



Report 4 - Drill-through Report

- This report supports drill-through functionality. By right-clicking a visual (like a summary chart), users can navigate to a detailed page with more granular information related to the selected item.

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Ponce 69,134.10
San Juan 70,553.70
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