**Lab 9 Submittal**

**Step 1: Reviewing the dataset.**

In the Quarterly Sales Report, sales information for each division in 2024 and 2025 is broken down. Sales for Division I in 2024 were $33,759, with $8,734, $9,112, $8,973, and $8,117 for Quarters 1 through 4. Division I, in contrast, reported $8,365, $8,628, $8,661, and $9,234 for the same quarters in 2025, totaling $34,888. Comparably, sales for other divisions varied from quarter to quarter. Notably, Division II showed a growing tendency with $33,610 in 2025 as opposed to $32,274 in 2024. Overall, Division I showed a little gain in sales from 2024 to 2025, despite the fact that various divisions had fluctuating sales statistics over time.

**Step 2: Modifying the given dataset.**

A table with numbers and a few quarter

Description automatically generated with medium confidence

**Step 3: Loading SQL Statements.**

With the given script we can see that we created 2 tables and populated them respectively.

For 2024 sales

A screenshot of a computer

Description automatically generated

For 2025 sales

A screenshot of a computer

Description automatically generated

**Step 4: Performing BI procedures.**

**Row Totals for 2024**

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Description automatically generated

**Column Totals for 2025**

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Description automatically generated

**Drill-Down for 2024:**

For Div 1

A screenshot of a computer

Description automatically generated

For Div 1 – a

A screenshot of a computer

Description automatically generated

For Div 1 – b

A screenshot of a computer

Description automatically generated

Hence, we can confirm that the quarterly sales are equal to that of sum of regional sales.

**Roll-up for 2024**

For total sales of Div 1 a and b

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Description automatically generated

For total sales of Div 1 overall

A screenshot of a computer

Description automatically generated

**Slicing on Q1:**

For 2024

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Description automatically generated

For 2025

A screenshot of a computer

Description automatically generated

**Dicing:**

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Description automatically generated

**Step 5: Q and A**

**1)**

One effective way to represent sales data across divisions, regions, districts, and offices is to use a multi-dimensional strategy, such as an OLAP cube or dimensional model. By storing pre-calculated aggregations and facilitating simple navigation across various hierarchy levels—from broad summaries to in-depth specifics—this structure guarantees quicker query performance. Users benefit from more flexibility in precisely generating hierarchical aggregations, comparing performance across several aspects at once, and assessing sales patterns. But careful preparation is necessary for the execution, taking into account things like business requirements and the complexity of the data. Nevertheless, a multi-dimensional design greatly improves analytical insights by offering effective access to data at several levels, permitting smooth comparisons, and speeding up the examination of sales performance across several hierarchical categories.

**2)**

There are several benefits to arranging data in a cube inside an OLAP application:

**Enhanced Query Processing**: Cubes accelerate query replies, especially for complicated analytical questions, by precalculating and storing aggregated data. The computation time is greatly decreased by this pre-aggregation.

**Multidimensional Analysis:** Cubes let users work with data in several dimensions and hierarchies, making analysis more flexible. Without complex SQL queries, users may examine data from various perspectives, facilitating the effective extraction of insights.

**Hierarchical Exploration**: Cubes' hierarchical nature makes it easy to navigate between various data granularity levels. Users may easily explore more or enlarge across dimensions, examining information ranging from high-level overviews to detailed information.

**Better Data Comprehension**: Users can more easily understand data relationships since cubes graphically display the links between the data. Business users may more easily understand data trends and patterns by utilizing an intuitive interface that is created by grouping measurements and dimensions into cubes.

**Scalability and Adaptability**: Cubes can effectively manage massive amounts of data and change to meet evolving business requirements. Flexibility is ensured by adding new dimensions or metrics without affecting already-existing data.

**Advanced calculations**: Complex computations like as market share calculations and year-over-year comparisons are supported by OLAP cubes. End users' jobs might be made simpler by presetting these computations within the cube.

All things considered, cubes simplify data exploration, improve analytical capabilities, expedite query processing, and enable users to get valuable insights from intricate datasets in a framework that is both flexible and easy to use.

**3)**

The following actions would be performed in MS Excel to create the chart that is displayed, it is pretty easy:

-Decide which data, including the column headings, will be plotted.

-Next, choose the preferred chart type from the Charts group by clicking the Insert tab.

-Click Next, choose the Data Range tab, and confirm that the right data range is selected in the Chart Wizard dialog box.

-To adjust the chart as desired, select the Chart Options tab and click Finish.

-The necessary chart is prepared.

**4)**

The picture shows a chart that was made using data from sales reports by following a few steps:

1. Using Microsoft Excel to import data from a sales report into a spreadsheet.

2. Removing duplicates, fixing mistakes, and guaranteeing uniform formatting are all part of cleaning and formatting the data.

3. Creating a pivot table to compile and examine the sales information by quarter and division.

4. Creating a chart and choosing a column chart type for display using the data from the pivot table.

5. Adding axis labels for the divisions and quarters and personalizing the chart with a title ("Division Totals").

6. Improving the layout of the chart by adjusting the font size, colors, and decorative components.

Sales information is captured by division and quarter in the pivot table, with the overall sales shown in the "Values" column.

With the y-axis showing sales in dollars and the x-axis indicating quarters, the customizable chart shows total sales by division over the course of several quarters. "Division Totals" is the title of the chart, and "Quarter" and "Sales" are the labels on the axis.

**5)**

The following actions would be performed in MS Excel in order to create the chart in the image using the data from the sales report:

1. Import the data from the sales report into Excel.

2. To summarize the data by month and product, create a pivot table.

3. From the pivot table, insert a line chart.

4. Tailor the diagram.

**Step 1**: Open Excel and import the sales report data

You may use the Data > Get Data > From File > From Text/CSV command or copy and paste the data from the source file to import the sales report data into Excel.

**Step 2**: To summarize the data by month and product, use a pivot table.

Choose the data from the sales report, then click the Insert > Table > PivotTable button to create a pivot table. After choosing the Existing Worksheet option in the Create PivotTable dialog box, click the OK button.

Drag the Month field to the Rows area and the Product field to the Columns area of the PivotTable Fields window. Move the Values field over to the Sales field.

**Step 3**: From the pivot table, insert a line chart.

After choosing the pivot table data, click the Insert > Chart option to insert a line chart from the table. Choose the Line chart type from the Insert Chart dialog box and click OK.

**Step 4**: Make the chart unique

The chart title, axis labels, and other formatting choices can be changed once the line chart has been added.

**For instance**:

This is an illustration of a pivot table that was made to compile sales report data according to month and product:

Here is an illustration of a line chart made using the pivot table:

The graph displays the monthly totals for all of the products. Months are displayed on the x-axis, and sales in dollars are displayed on the y-axis. "Month" and "Sales" are the labels on the axis, while the title of the chart is "Product Sales by Month."