POWER BI ASSIGNMENT

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UNDERSTANDING THE DATA.

1. **What does each column represent in business terms?**

- **Segment** – Customer category or business segment where the sale occurred.
- **Country** – Country/market in which the product was sold.
- **Product** – Name of the product sold to customers.
- **Discount Band** – Discount category (Low/Medium/High) applied to the sale.
- **Units Sold** – Number of product units sold.
- **MP (Manufacturing Price)** – Cost to manufacture one unit of the product.
- **SP (Selling Price)** – Price at which the product is sold to customers.
- **Gross Sales** – Total sales value before applying any discounts.
- **Discounts** – Total discount amount given on sales.
- **Sales** – Net sales value after deducting discounts.
- **COGS (Cost of Goods Sold)** – Total cost incurred to produce the goods sold.
- **Profit** – Net profit earned after subtracting costs from sales.
- **Date** – Exact date representing the time period of the sale.
- **Month No** – Numeric representation of the month (1–12).
- **Month Name** – Name of the month in which the sale occurred.
- **Year** – Year in which the sale took place.

2. **What is the granularity of the data?**

Ans- The data is recorded at a monthly level, where each row represents sales and profitability information for a specific product, sold in a specific country and segment for a given month and year.

3. **IDENTIFY MEASURES.**

MEASURES ARE :

- Unit sold
- Manufacturing price
- Selling price
- Gross sales
- Discounts
- Sales
- Cogs
- Profit

DIMENSIONS:

- Segments
- Country

- Product
- Discount band
- Date
- Month number
- Month name
- Year

Q- Which columns directly impact profitablity?

Ans- Sales, gross sales, discounts, cogs, manufacturing price, selling price, directly impact profitability as they determine revenue, cost structure and final profit margins.

What issues did you find in the dataset?

During data quality analysis, the following issues were identified:

- Missing values observed in the Discount Band column.
- Duplicate records were checked; no major duplicate rows were found.
- Data type consistency was verified and found to be appropriate for numerical and categorical fields.
- Some values showed high discounts with low profit, which appear unusual and require further business validation.

How would you handle these issues in a real company?

In a real business scenario, missing values and anomalies would be handled carefully to avoid incorrect analysis.

- Missing values would be either imputed, categorized separately, or validated with business teams.
- Duplicate records would be removed after confirming they are not valid transactions.
- Suspicious values would be flagged for review rather than deleted blindly.

Is a Date table required?

Yes, a Date table is required to perform accurate time intelligence calculations such as Year-to-Date (YTD), Year-on-Year (YoY), and running totals.

What relationships were created?

A relationship was created between the Date Table and the Sales (fact) table using the Date column, with a one-to-many relationship from Date Table to Sales table.

Why was the Date table marked as a Date table?

The Date table was marked as a Date table to enable correct time intelligence calculations and ensure Power BI recognizes the table for date-based analysis.

Why does this data model work well?

This model works well because it separates transactional data from descriptive data, ensures correct filtering, and supports efficient and accurate calculations.

What would go wrong with an incorrect relationship?

Incorrect relationships can lead to wrong aggregations, incorrect filtering, and inaccurate KPI results, especially in time-based calculations.

Aptitude Question: Why is a star schema preferred in Power BI?

A star schema is preferred because it simplifies data relationships, improves query performance, and makes dashboards easier to maintain and scale.

Which country is most profitable and why?

The most profitable country is the **FRANCE** with the highest total profit as shown in the "Profit by Country" visual. This indicates that the country generates strong sales while maintaining controlled costs and effective pricing, resulting in higher profitability.

Which product generates high sales but low profit?

Some products generate high sales volume but low profit, as observed in the "Sales by Product" and profit comparison. Through the visual we can see that **Paseo** generates high sales but low on profit.

Is higher discount always leading to higher sales?

No, higher discounts do not always lead to higher sales. The Discount Impact Analysis shows that in many cases, higher discounts reduce profit without significantly increasing sales, indicating diminishing returns from aggressive discounting.

Which segment should the company focus on next year?

The company should focus on the segment that demonstrates consistent sales growth and higher profitability across time. This segment offers better long-term value and sustainable business growth compared to segments with high sales but low margins.

Identify one hidden risk visible in the data.

One hidden risk visible in the data is over-reliance on heavy discounts to drive sales. This can negatively impact profit margins and make the business vulnerable if discount strategies are reduced in the future.

One product that should be protected?

The product that should be protected is VTT.

From the Discount Impact Analysis, VTT shows strong profitability at moderate discount levels, indicating good pricing power. Reducing discounts aggressively on this product could risk losing profitable revenue.

Why did you choose these KPIs?

I chose these KPIs because they provide a clear executive-level view of business performance. Total Sales shows revenue growth, Total Profit reflects profitability, Gross Margin % indicates efficiency, and YoY Growth helps track business progress over time.

Together, these KPIs allow leadership to quickly assess the overall health of the business.

Which metric would you show the CEO first and why?

I would show Total Sales and YoY Growth first because these metrics give the CEO an immediate understanding of overall business performance and growth direction. They help assess whether the company is expanding, stable, or declining.

What insight surprised you the most?

The most surprising insight was that products with the highest sales did not always generate the highest profit. The discount impact analysis showed that heavy discounting increased sales volume but often reduced overall profitability.

How would this dashboard help business decisions?

This dashboard helps business decisions by giving leadership a clear view of revenue, profitability, and growth in one place.

It highlights top-performing countries and products, identifies products with high sales but low profit, and shows the real impact of discounts on profitability.

Using these insights, management can optimize pricing, control discounts, and focus on the most profitable markets and products.

If data size increases 10x, what would you change?

If the data size increases 10x, I would optimize the data model by using a proper star schema, reducing unnecessary columns, and ensuring all calculations are written as measures instead of calculated columns. I would also focus on aggregating data where possible, optimizing DAX measures, and using incremental refresh to improve performance.