POWER BI ASSIGNMENT

Title
DAX Functions and Data Analysis using Power BI

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Course: Data Analytics With AI

Submitted To
Institute / Faculty: PW Skills

Tools Used
- Microsoft Power BI Desktop
- DAX (Data Analysis Expressions)

Dataset Used
Amazon Store Sales Dataset
(Number of Records: 500)

Objective
The objective of this assignment is to understand and apply **DAX functions in Power BI** for creating calculated columns, measures, rankings, and time-based analysis in order to generate meaningful business insights.

Question 1: Create a calculated column TotalPrice using Quantity and Unit Price

Answer:
A calculated column in Power BI is used to perform calculations at the **row level**.
The TotalPrice column represents the total value of each transaction before applying any discount.

DAX Formula:
TotalPrice = AmazonSales[Quantity] * AmazonSales[UnitPrice]

Explanation:
This calculation multiplies the quantity of items sold with the unit price for each order.
It helps in understanding **gross sales value** for every transaction.

Importance in Business:
- Helps calculate gross sales
- Used as a base for discount and profit analysis
- Improves financial accuracy

Example:
If Quantity = 5 and Unit Price = 200
TotalPrice = 5 × 200 = 1000

Question 2: Create a calculated column DiscountedPrice

Answer:

The DiscountedPrice column calculates the final selling price after applying discount.

DAX Formula:

```
DiscountedPrice =
AmazonSales[TotalPrice] -
(AmazonSales[TotalPrice] * AmazonSales[Discount] / 100)
```

Explanation:
This formula subtracts the discount amount from the total price to reflect actual revenue earned.

Business Importance:

- Shows real income after discount
- Helps evaluate discount strategies
- Supports pricing decisions

Question 3: Create a measure Average Order Value (AOV)

Answer:

Average Order Value (AOV) is a **measure** that calculates the average revenue generated per order.

DAX Formula:

```
AOV =
DIVIDE(
    SUM(AmazonSales[SalesAmount]),
    DISTINCTCOUNT(AmazonSales[OrderID])
)
```

Expanded Explanation:

- SUM calculates total sales revenue
- DISTINCTCOUNT counts unique orders
- DIVIDE avoids division errors

AOV helps businesses understand customer purchasing behavior.

Business Importance:

- Identifies customer spending patterns
- Helps evaluate marketing performance
- Used for revenue optimization

Question 4: Create a Year-to-Date (YTD) Sales measure

Answer:

YTD Sales measure calculates total sales from the **beginning of the year up to the selected date**.

DAX Formula:

```
YTD Sales =
TOTALYTD(
    SUM(AmazonSales[SalesAmount]),
    AmazonSales[OrderDate]
)
```

Expanded Explanation:
The TOTALYTD function is a **time intelligence function** that automatically handles date filters.

Benefits:

- Tracks yearly business growth
- Helps compare current year performance with previous years
- Useful for financial planning and forecasting

Question 5: Rank products based on Total Sales

Answer:

Ranking helps identify **best-performing and least-performing products**.

DAX Formula:

```
Product Sales Rank =
RANKX(
    ALL(AmazonSales[ProductID]),
    SUM(AmazonSales[SalesAmount]),
    ,
    DESC
)
```

Expanded Explanation:

- RANKX assigns rank values
- ALL removes filters
- DESC ensures highest sales get Rank 1

Use Cases:

- Inventory planning
- Marketing focus on top products
- Business performance evaluation

Question 6: Classify orders as “High Value” or “Low Value”

Answer:

This calculated column classifies orders based on sales amount.

DAX Formula:

```
Order Value Category =
IF(
    AmazonSales[SalesAmount] > 2000,
    "High Value",
    "Low Value"
)
```

Expanded Explanation:
The IF function checks whether an order value exceeds a certain threshold.

Why classification is useful:

- Customer segmentation
- Targeted marketing
- High-value customer analysis

Question 7: Calculate total sales from Online channel only

Answer:

This measure calculates sales made only through the **Online sales channel**.

DAX Formula:

```
Online Sales =
CALCULATE(
    SUM(AmazonSales[SalesAmount]),
    AmazonSales[SalesChannel] = "Online"
)
```

Expanded Explanation:
CALCULATE modifies the filter context to include only online transactions.

Business Advantage:

- Channel-wise performance comparison
- Helps in digital sales strategy
- Supports decision-making for online marketing

Question 8: Create a Date Difference measure using DATEDIFF

Answer:

This measure calculates the difference between the latest order date and the current date.

DAX Formula:

```
Date Difference =
DATEDIFF(
    MAX(AmazonSales[OrderDate]),
    TODAY(),
    DAY
)
```

Expanded Explanation:
This helps identify how recent the dataset is and whether it needs updating.

Usefulness:

- Data freshness check
- Reporting accuracy
- Operational monitoring