Project Statement:

E-commerce Sales Data Analysis for Performance Optimization

DATASET OVERVIEW:

The provided dataset contains essential e-commerce transactional data with the following features:

- CID : Customer ID
- TID : Transaction ID
- Gender
- Age Group
- Purchase Date
- Product Category
- Discount Availed
- Discount Name
- Discount Amount (INR)
- Gross Amount
- Net Amount
- Purchase Method
- Location

INDUSTRY CONTEXT:

In the rapidly growing e-commerce industry, understanding customer purchase behaviors is critical to optimizing sales and improving marketing campaigns.

This dataset helps track essential details such as customer demographics, product performance, and discount effectiveness. Businesses need to analyze these metrics to reduce costs, increase revenue, and refine customer retention strategies.

As an e-commerce business owner, my challenges include:

- Identifying which customer segments (gender, age group) drive the most revenue.

- Understanding the effectiveness of discounts and their impact on sales.

- Optimizing inventory based on product category performance and purchasing patterns

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- Improving regional sales strategies by analyzing geographic trends.

Key Performance Indicators (KPIs):

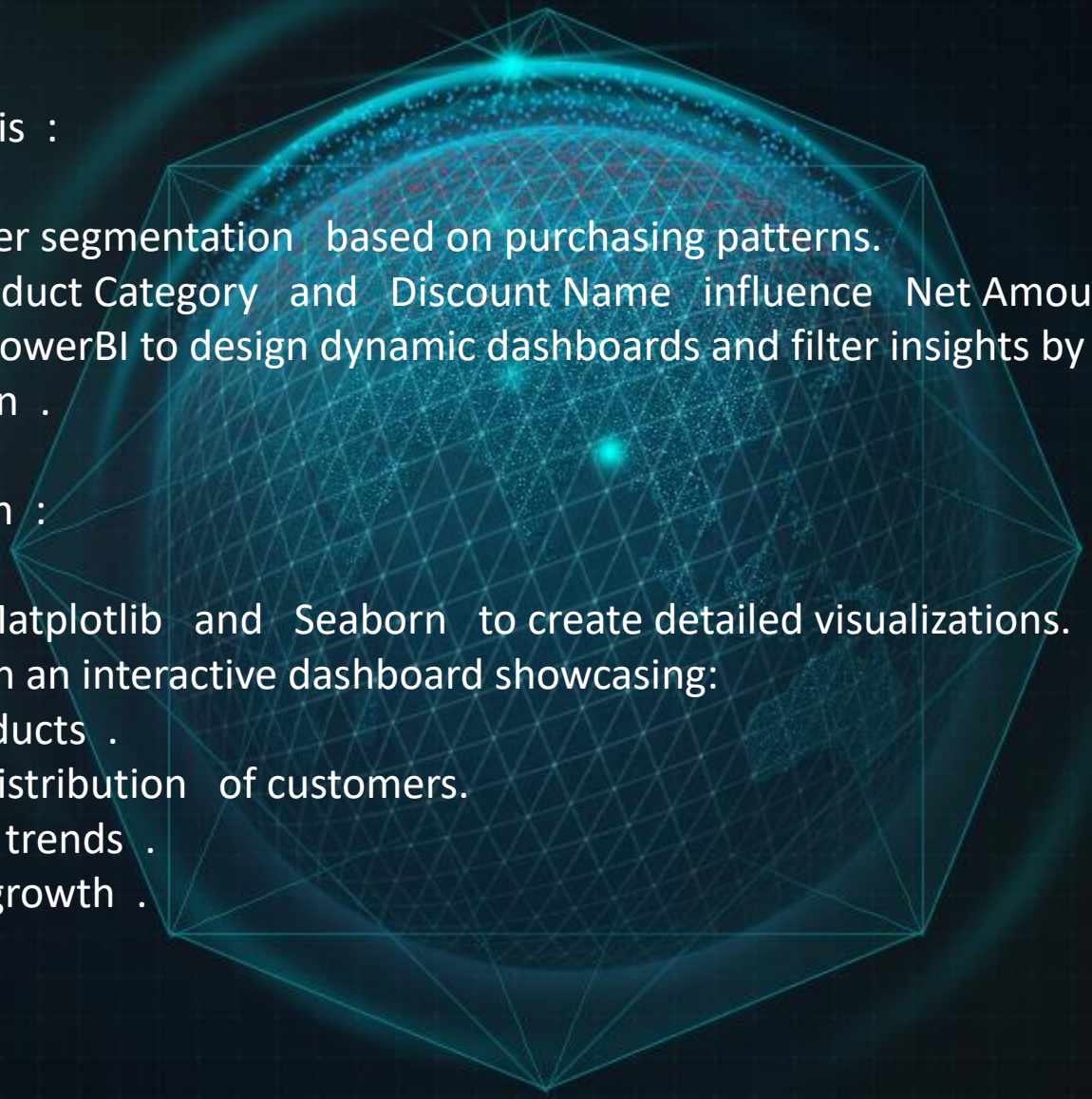
1. Total Sales Revenue (Net Amount)
2. Discount Usage Rate (Discount Availed, Discount Name, Discount Amount)
3. Product Performance (Product Category)
4. Customer Demographics (Age Group, Gender)
5. Average Order Value (Gross Amount, Net Amount)
6. Regional Sales Performance (Location)
7. Sales Seasonality (Purchase Date)
8. Return on Discounts (Net Amount - Discount Amount)
9. Top-Selling Categories (Product Category)
10. Sales by Purchase Method (Purchase Method)

Step-by-Step Approach:

1. Data Understanding :
- Load the dataset into Python using libraries like Pandas.
- Inspect the structure and data types.
- Handle missing values, outliers, and ensure consistency in the data.

2. Exploratory Data Analysis (EDA) :
- Visualize the distribution of sales by gender and age group .
- Examine discount impact on revenue through scatterplots and bar charts.
- Analyze regional sales trends and seasonality using time series plots.

3. Data Cleaning and Transformation :
- Convert Purchase Date to a datetime format and extract month/season for trend analysis.
- Create new columns to calculate metrics like Average Discount Impact (Net Amount - Discount Amount).



4. Advanced Analysis :

- Perform customer segmentation based on purchasing patterns.
- Analyze how Product Category and Discount Name influence Net Amount .
- Use Python and PowerBI to design dynamic dashboards and filter insights by gender , age group , and location .

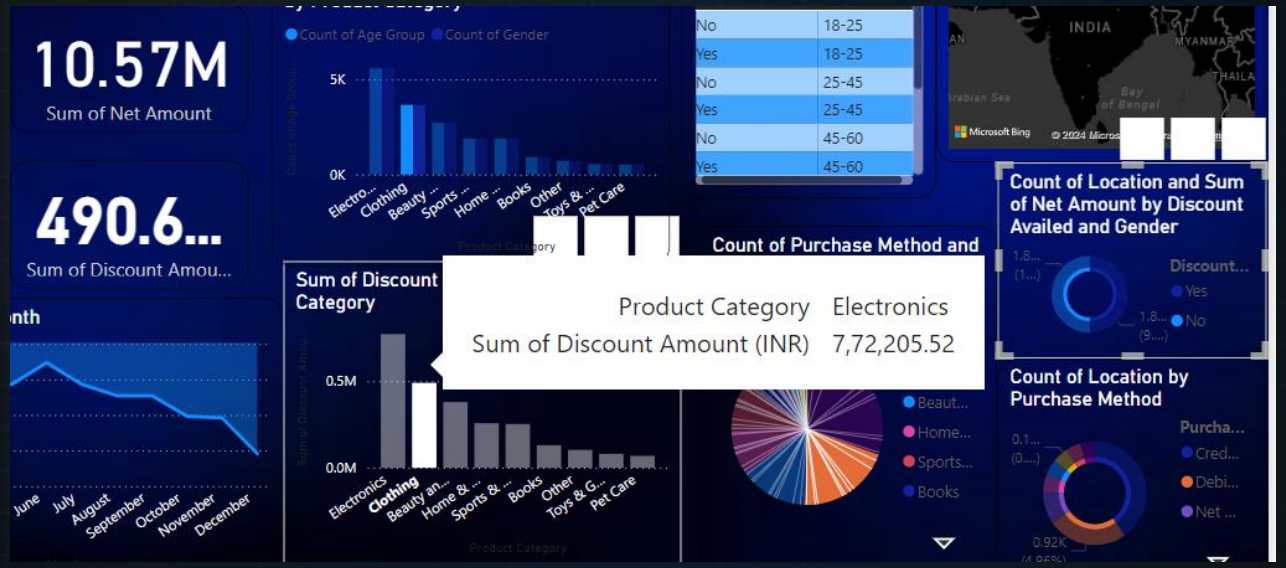
5. Data Visualization :

- In Python, use Matplotlib and Seaborn to create detailed visualizations.
- In PowerBI, design an interactive dashboard showcasing:
  - Top-selling products .
  - Demographic distribution of customers.
  - Discount usage trends .
  - Monthly sales growth .

Insights and Visualization:

BUSINESS SOLUTIONS :

Increasing Discount in Electronics category caters more profit.



CONCLUSION :

This project offers an in-depth understanding of customer demographics, discount performance, and product trends, providing data-driven insights to improve revenue, customer loyalty, and inventory management.

THANK YOU