E-commerce Return Rate Reduction Analysis

INTRODUCTION:

The E-commerce Return Rate Reduction dashboard provides insights into why customers return products. By visualizing data on orders, returns, and customer segments, it helps identify high-return categories and supports strategies to minimize return rates and improve overall sales performance.

ABSTRACT:

This Power BI dashboard analyzes e-commerce return rates to identify key patterns across product categories, payment methods, and user demographics. It highlights metrics like total orders, total returns, and return rate percentage to help businesses understand and reduce returns effectively.

TOOLS USED:

- **Power BI** – for data visualization and dashboard creation

- **Python** – for data cleaning and return rate prediction using logistic regression

- **SQL** – for data extraction and preprocessing from databases

This project uses Power BI, Python, and SQL for comprehensive e-commerce return analysis. Power BI creates interactive dashboards to visualize key metrics, Python handles data cleaning and predictive modeling, and SQL manages data extraction and preprocessing. Additionally, tools like Excel and Power Query support data validation and transformation for accurate and efficient reporting.

STEPS INVOLVED IN BUILDING THE PROJECT:

1.**Data Collection & Cleaning:** Gathered e-commerce order and return data, removed duplicates, and handled missing values using SQL and Python.

2.**Data Analysis:** Calculated key metrics such as return rate, total returns, and order quantity by category and payment method.

3.**Predictive Modeling:** Used logistic regression in Python to predict the probability of product returns.

4.**Data Visualization:** Created an interactive Power BI dashboard to display insights through chartsand filters.

CONCLUSION:

The E-commerce Return Rate Reduction project helps businesses understand and minimize product returns through data-driven insights. By combining SQL, Python, and Power BI, it enables accurate prediction of high-risk products and provides a visual overview for strategic decision-making, ultimately improving customer satisfaction and profitability.