Retail Business Performance & Profitability Dashboard

Project Overview

This project analyzes transactional data from an online retail business to uncover patterns in revenue, returns, and product performance. The raw dataset includes invoice-level data with product descriptions, quantities, pricing, and customer details from multiple countries.

Using Python (Pandas) for data cleaning and Power BI for data visualization, an interactive dashboard was developed to provide actionable insights.

Technologies Used

- Python (Pandas, NumPy): Data cleaning, feature engineering
- Power BI: Interactive dashboard creation
- DAX: Custom calculations (e.g., TotalRevenue, NetRevenue)

Data Preparation

- Removed rows with missing Customer IDs or null values
- Created new columns:
    - TotalRevenue = Quantity * UnitPrice
    - is_return = TRUE if Quantity < 0
    - YearMonth = FORMAT(InvoiceDate, 'YYYY-MM')
- Exported cleaned dataset to cleaned_retail_data.csv

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Dashboard Highlights

1. Monthly Revenue Trend (Line Chart): Shows seasonal revenue peaks in Q4

2. Top 10 Most Profitable Products (Bar Chart): Highlights key revenue drivers

3. Country-wise Revenue Distribution (Map): UK, Germany, Netherlands top contributors

4. Monthly Sales vs Returns (Stacked Column Chart): Visualizes sales vs. return volumes

5. Top Returned Products (Bar Chart): Identifies frequent return items

6. Revenue Heatmap by Country and Month (Matrix): Seasonal trends per country

7. KPI Cards: Total Revenue, Returns, Net Revenue, Avg Order Value

Key Insights

- High seasonality with >35% of revenue in Q4

- Returns account for ~14% of total quantity

- UK leads both in sales and return volume

- High-sales products often have high return rates

- Identified slow-moving inventory for action

Business Value

The dashboard enables:

- Real-time performance monitoring

- Regional and product-level profitability insights

- Data-driven inventory and marketing strategies