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CMP-262-26222

# E-COMMERCE PURCHASE DATA ANALYSIS – FINAL PROJECT

# PROJECT OVERVIEW



This project presents an exploratory analysis of one year of online retail transactions from a UK-based company. The objective is to identify key trends in customer purchasing behavior, product performance, and geographic sales distribution.



The insights derived are intended to support data-driven decisions in inventory planning, marketing strategy, and regional expansion efforts.

## TOOLS AND TECHNOLOGIES

The following tools and technologies were used to conduct the analysis:

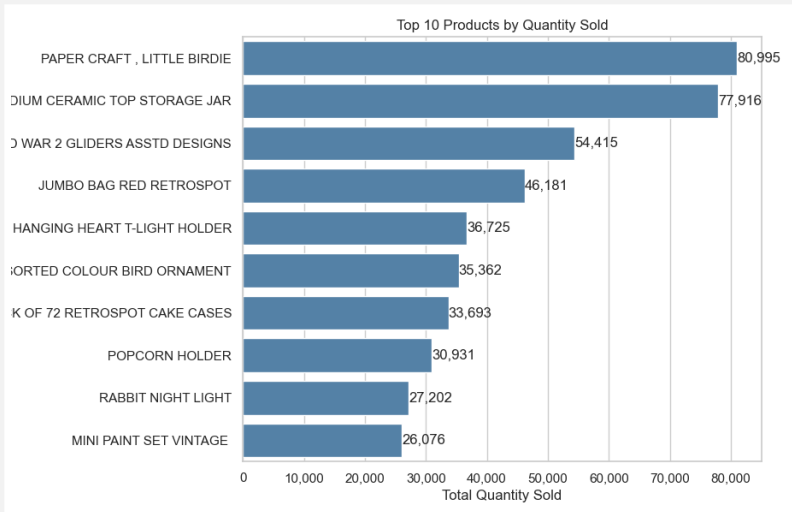
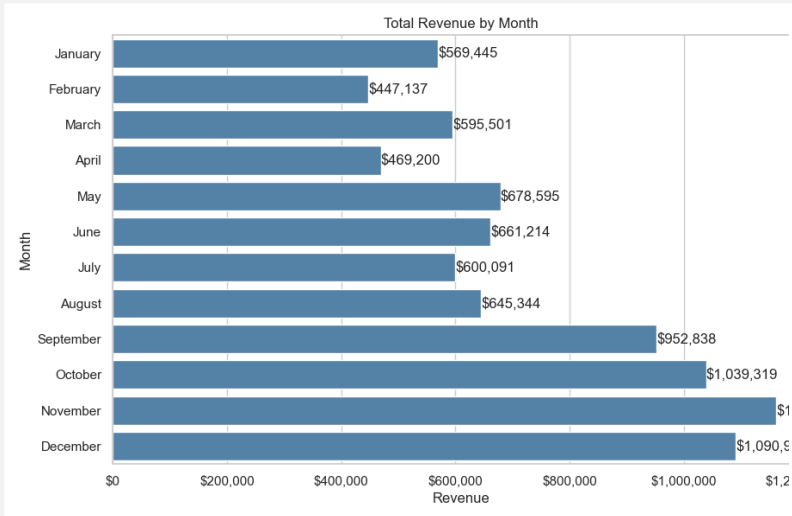
- Python (pandas, numpy, matplotlib, seaborn)
- Jupyter Notebook for development and documentation
- GitHub for version control and final project submission

# BUSINESS QUESTIONS

This analysis focuses on answering the following business-driven questions:

1. What times of year generate the highest sales volumes?
2. Which product categories are the most popular among customers?
3. Which products generate the highest total revenue?
4. Which countries contribute the most to overall revenue?

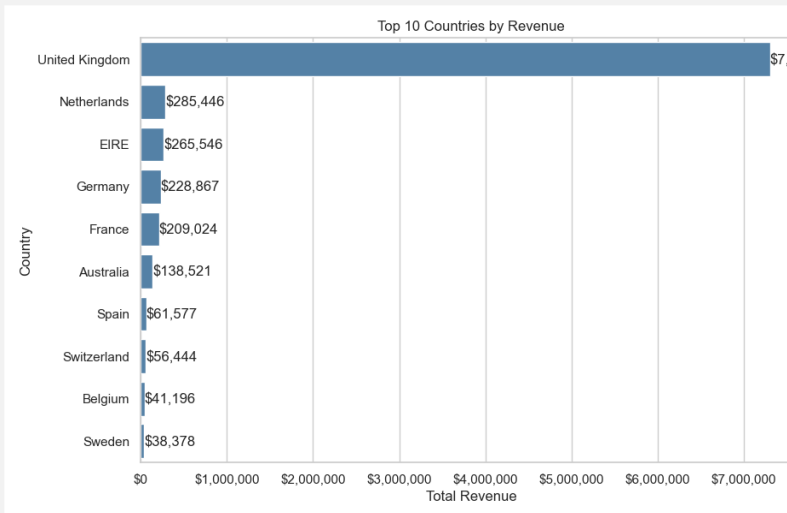
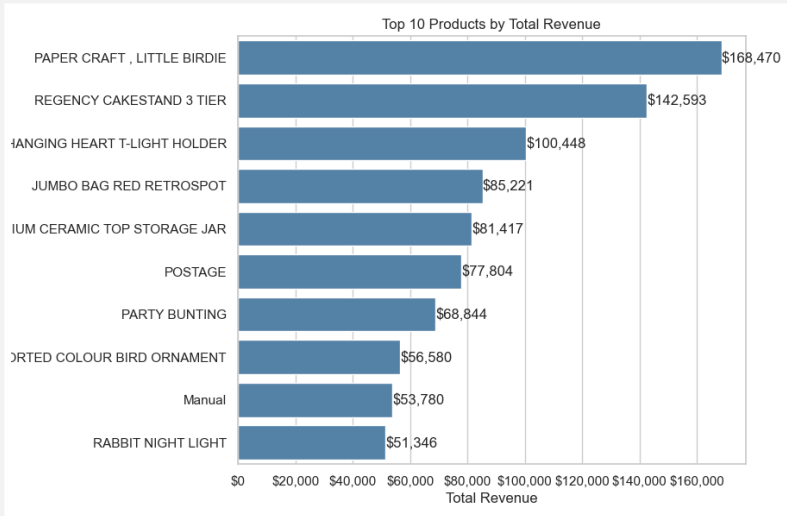
## KEY INSIGHTS – SEASONALITY AND SALES VOLUME



- The month of November recorded the highest sales revenue (~\$1.16 million), likely driven by holiday-related purchasing activity.

- The most frequently purchased products by quantity were:
  - PAPER CRAFT , LITTLE BIRDIE (80,995 units)
  - MEDIUM CERAMIC TOP STORAGE JAR (77,916 units)

# KEY INSIGHTS – REVENUE AND REGIONAL PERFORMANCE



- Top revenue-generating products:
  - PAPER CRAFT , LITTLE BIRDIE – \$168,469.60
  - REGENCY CAKESTAND 3 TIER – \$142,592.95
- Countries contributing the highest revenue:
  - United Kingdom – \$7.3 million
  - Netherlands – \$285,446
  - EIRE – \$265,545

## STRATEGIC RECOMMENDATIONS

Based on the analysis, the following recommendations are proposed:

- Increase inventory and marketing investment during Q4, with a focus on November.
- Highlight and promote top-performing products in both advertising and catalog strategy.
- Maintain emphasis on the UK market while exploring growth opportunities in high-performing regions such as the Netherlands and EIRE.

Potential areas for further analysis include:

- Customer segmentation based on purchase frequency and geography
- Time-series forecasting of monthly revenue trends
- Analysis of return patterns and customer lifetime value



FUTURE  
WORK