E-Commerce Sales Data Analysis

Project Description

This project focuses on analyzing sales data from an e-commerce company to uncover trends and insights. The analysis spans sales data from January to December 2019. It aims to answer key business questions such as which month had the highest sales, which states or cities generated the most revenue, the peak hours for customer purchases, commonly sold product combinations, and the top-selling products.

Project Walkthrough

Data Import and Merging:

Sales data from each month of 2019 is imported and merged into a single DataFrame for comprehensive analysis.

Data Cleaning:

Invalid data and empty rows are removed.

Columns are correctly typed (e.g., converting Quantity Ordered and Price Each to integers and floats, respectively).

The Purchase Address is split into separate columns for street, city, state, and zip code.

Revenue Analysis:

Calculated total revenue for each month.

Identified the month with the highest and lowest sales.

Visualized monthly revenue trends.

Geographic Sales Analysis:

Analyzed total revenue by city and state.

Visualized revenue distribution across different cities.

Peak Purchase Hours:

Converted Order Date to datetime format.

Determined the number of orders placed during each hour of the day.

Visualized peak purchasing hours.

Product Combination Analysis:

Identified orders containing multiple products.

Analyzed and listed the most common product combinations purchased together.

Product Sales Analysis:

Counted the number of times each product was sold.

Visualized the most sold products.

Usage

This script can be used to perform detailed sales analysis for e-commerce companies, providing insights into sales performance, customer purchasing behavior, and product popularity. The visualizations created help in making data-driven business decisions.

Feel free to customize and extend this analysis based on specific business needs or additional data.

Key Insights

Identified the best and worst performing months in terms of revenue.

Recognized top cities and states generating the highest sales.

Determined peak hours for customer purchases, aiding in optimizing marketing strategies.

Found frequently bought product combinations, helpful for cross-selling strategies.

Highlighted the most popular products, guiding inventory management and promotional efforts.