Customer Analytics Portfolio

🚀 Project Overview

This repository showcases two distinct data analysis projects performed on large datasets to derive actionable insights for e-commerce and retail operations. The analyses focus on understanding customer satisfaction and identifying core sales trends and anomalies.

Project	Focus Area	Key Tool	Summary
Customer Sentiment Analysis	Customer Feedback & Product Ratings	Python (Pandas)	Categorized millions of product ratings into Positive, Neutral, and Negative sentiments to measure overall customer satisfaction.
Sales Trend Analysis	Time-Series Forecasting & Anomaly Detection	Python (Time Series)	Identified yearly growth, seasonal patterns (monthly/quarterly), and statistical anomalies in sales data to optimize business planning.

🧭 Repository Structure

The projects are organized into separate, self-contained directories, with the full report available as the README.md within each folder.

```
/Data-Analysis-Projects/
├── README.md                 <-- (You are here) Main Index
├── 01_Customer_Sentiment/    <-- Detailed Sentiment Analysis Project
└── 02_Sales_Trend_Analysis/  <-- Detailed Sales Trend Project
```

1️⃣ Customer Sentiment Analysis

This project analyzed over **7.8 million** customer ratings to categorize feedback into clear sentiment classes (Positive, Neutral, Negative).

Key Findings Snapshot

- **Overall Sentiment**: **55.56%** of reviews were classified as **Positive**.
- **Data Size**: 7,824,481 reviews analyzed.
- **Goal**: Provide a quantitative measure of customer satisfaction based on rating scores (1-5 stars).

➡️ **View Full Customer Sentiment Report**

2️⃣ Sales Trend Analysis

This project performed time-series decomposition to analyze sales patterns across a four-year period, focusing on seasonal peaks and statistical outliers.

Key Findings Snapshot

- **Overall Trend**: Consistent **progressive sales growth** year-over-year.
- **Peak Season**: **Q4 (October-December)** consistently drives the highest sales.
- **Anomalies Detected**: **November** and **December** were identified as statistically significant sales outliers (Z-score > 1.5).
- **Actionable Insight**: Optimize marketing and inventory around end-of-year holidays and strong performance days (Monday and Friday).

➡️ **View Full Sales Trend Report**

🛠️ Tools Used

Tool	Purpose
Python	Core language for analysis and scripting.
Pandas	Data loading, cleaning, and aggregation.
Jupyter Notebooks	Reproducible analysis and iterative coding.
Z-score	Statistical method used for anomaly detection in sales data.
Markdown	Report generation and documentation.