**Regional Sales Analysis: An EDA Case Study**

**Description**

**Overview**

This project aims to analyze and visualize regional sales data to uncover trends, evaluate profitability, and support strategic decision-making. The exploration focuses on identifying growth opportunities and optimizing resources within sales teams, addressing the common challenge of a data-driven understanding of regional performance.

**Dataset**

**Dataset Description**

The dataset used in this analysis contains sales order information spanning multiple regions over a five-year period. It includes key attributes such as order numbers, dates, customer indices, sales channels, currency codes, product descriptions, quantities, unit prices, and total costs. This rich dataset facilitates a deep dive into regional sales performance.

**Link to Dataset**

The dataset is included within this project repository as **Regional Sales Dataset.xlxs**.

**Files Included**

* **Regional Sales Dataset.xlxs**: The raw dataset used for analysis.
* **presentation**: A pdf presentation summarizing key findings.
* **Regional\_Sales\_Analysis\_Notebook.ipynb**: The Jupyter notebook containing the EDA code and results.
* **README.md**: This README file.

**Workflow**

1. **Data Acquisition & Loading**: Load the dataset for analysis.
2. **Domain Knowledge & Business Context**: Understand the business implications of sales data.
3. **Data Understanding**: Explore the dataset to identify key metrics.
4. **Data Cleaning & Preparation**: Clean and prepare the data for analysis.
5. **Exploratory Data Analysis (EDA)**: Conduct in-depth statistical analysis and visualizations.
   * **Statistical Analysis**: Calculate key metrics and trends.
   * **Visualization & Exploration**: Create visual representations of the data.
6. **Insights & Reporting**: Summarize findings and insights from the analysis.
7. **Recommendations**: Provide actionable insights based on the analysis.

**Analysis Overview**

**Key Analyses Conducted**

* **Regional Performance Analysis**: Compared revenue and profits across U.S. regions to identify strengths and weaknesses.
* **Seasonal Trends Examination**: Investigated seasonal variations in sales to understand their impact.
* **Top Product Identification**: Determined which SKUs are driving sales in different regions.
* **Sales Channel Evaluation**: Assessed the profitability of various sales channels for resource allocation.

**Conclusions**

**Summary of Findings**

* The West region emerged as the strongest performer, generating $372M in cumulative revenue with consistent growth from 2014 to 2017.
* The Midwest region suffered an 84% revenue drop in 2018, highlighting a significant decline.
* Seasonal analysis revealed strong sales surges in January and February, which surpassed the monthly average of ~$103M.
* The top 10 SKUs contributed 60.9% of total revenue, indicating a classic Pareto pattern.
* All sales channels showed high efficiency, with profitability ratios above 92%. The Export channel led in margin efficiency, while Wholesale generated the most revenue.

**Recommendations**

* Focus marketing and inventory efforts on Q1 and Q4, especially January and February, which show strong sales.
* Prioritize the West region for consistent revenue leadership.
* Address the Midwest's decline through exploration of alternative channels and niche SKUs.
* Implement targeted promotions in April and June to counter spring slumps.
* Emphasize top-performing SKUs for core revenue while leveraging long-tail products for regional or seasonal experimentation.