US Regional Sales Analysis

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Introduction

Welcome to my data-driven insights presentation. Today, we will embark on an analytical exploration of the US regional sales data. This project provides a comprehensive analysis using Python, leveraging powerful libraries such as Pandas for data manipulation and Matplotlib for data visualization.

This presentation is more than just a review of figures; it's a strategic analysis aimed at uncovering the underlying patterns and insights that have driven the sales activities, offering actionable recommendations for future growth.

Data Source:
The dataset utilized for this analysis is sourced from Kaggle, curated by Dorothy Joel. The data can be accessed via here.

Data Overview:

- Total Entries: 7,992
- Columns: 16

Additional Columns Created:

‘date_difference’: Measures the difference between order and delivery dates.

‘Unit Profit’: Calculates the profit per unit sold.

‘Total Profit’: Aggregates the profit for each transaction.

Potential Operational Improvements

1. Product Stocking Efficiency:
By identifying products with the highest lead times and order frequencies, we can determine which items should be kept in stock to avoid shortages, thereby improving operational efficiency.

2. Sales Channel Optimization:
Analyzing high-performing sales channels provides a deeper understanding of customer behavior, enabling more targeted marketing strategies and effective advertising campaigns.

3. Sales Team Incentives:
Recognizing top-performing sales teams allows us to implement reward systems to incentivize success. Additionally, offering discount codes for the products they excel in selling can boost orders and profitability.

Product Stocking Analysis

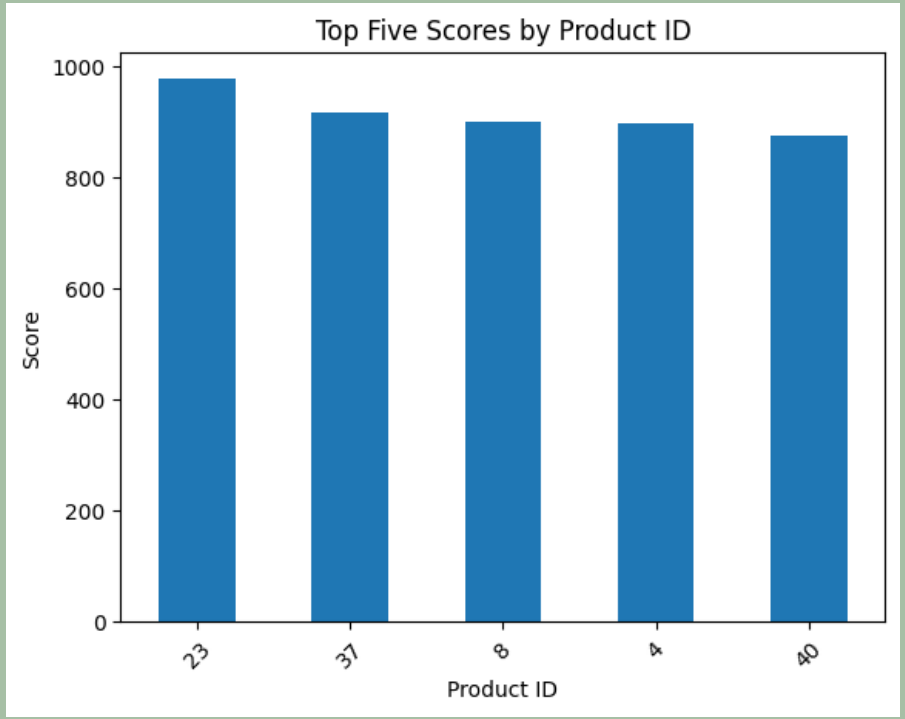
Data Cleaning:

- Standardized the format of both delivery and order dates to %d/%m/%Y
- Calculated the average lead time per product by determining the difference between Delivery Date and Order Date
- Computed the order frequency for each product ID

Lead Time and Order Frequency Scoring:

- A combined score for lead time and order frequency was calculated
- The top five products with the highest scores are listed below:

	order_quantity	lead_time	score
23	956	20.505155	976.505155
37	896	21.205000	917.205000
8	879	19.835897	898.835897
4	878	20.105000	898.105000
40	855	21.059783	876.059783



- As observed, the top five product IDs with the highest scores are **23**, **37**, **8**, **4**, and **40**

- These products should be prioritized for inventory stocking to reduce lead times and improve operational efficiency

Sales Channel Evaluation

Order Volume by Channel:

Analyzed the number of orders made through each of the four sales channels:

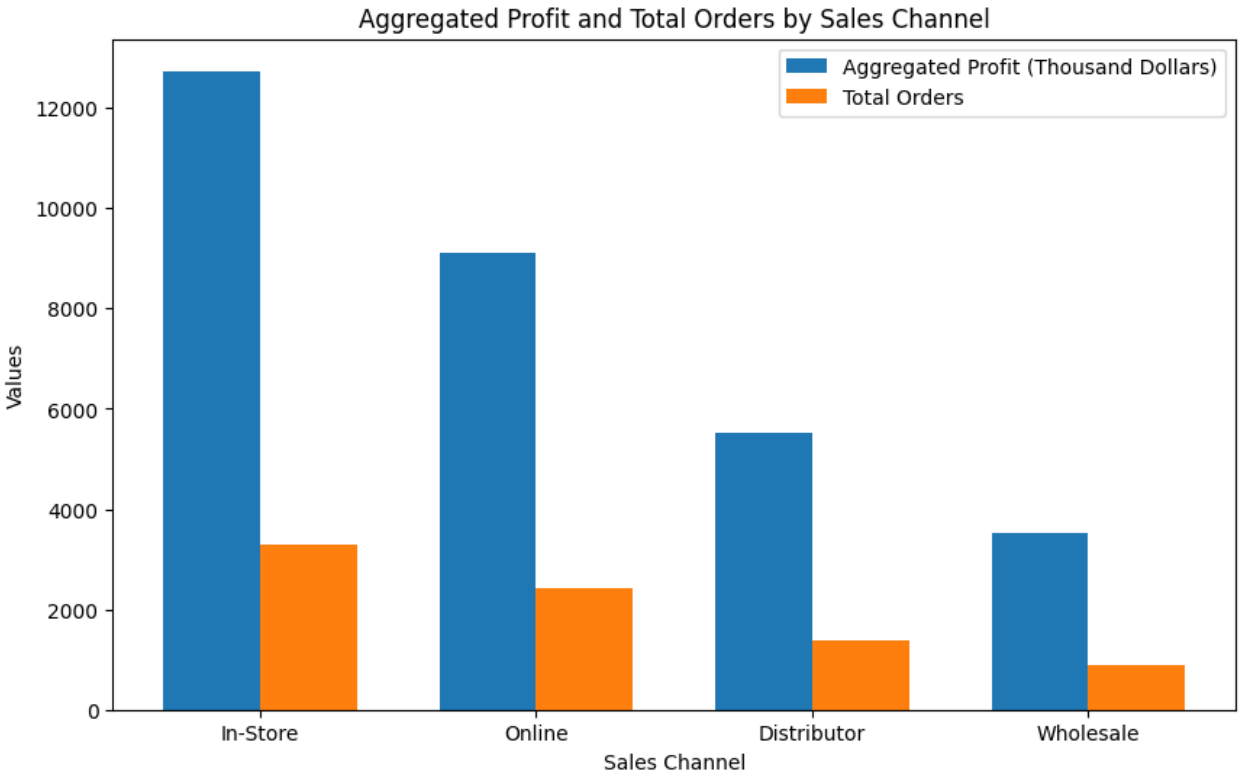
- In-Store: 3,298 orders
- Online: 2,425 orders
- Distributor: 1,375 orders
- Wholesale: 893 orders

Profit Calculation:

- Calculated total profit for each order using the formula:
  (Unit Price - Unit Cost) * Order Quantity

- Aggregated profits by channel (standardized in thousands for better visualization on the chart):

	Sales Channel	Aggregated Profit
0	In-Store	12735.06234
1	Online	9098.01294
2	Distributor	5528.65754
3	Wholesale	3512.92490



The bar chart illustrates that **In-Store** and **Online** channels are the primary methods through which customers place orders. These channels should be prioritized for increased focus and targeted advertising efforts.

Sales Team Evaluation

Order Volume by Sales Team:

Analyzed the number of orders made by 28 different sales teams. The order distribution is :

{key = Sales Team ID, value = order volume}

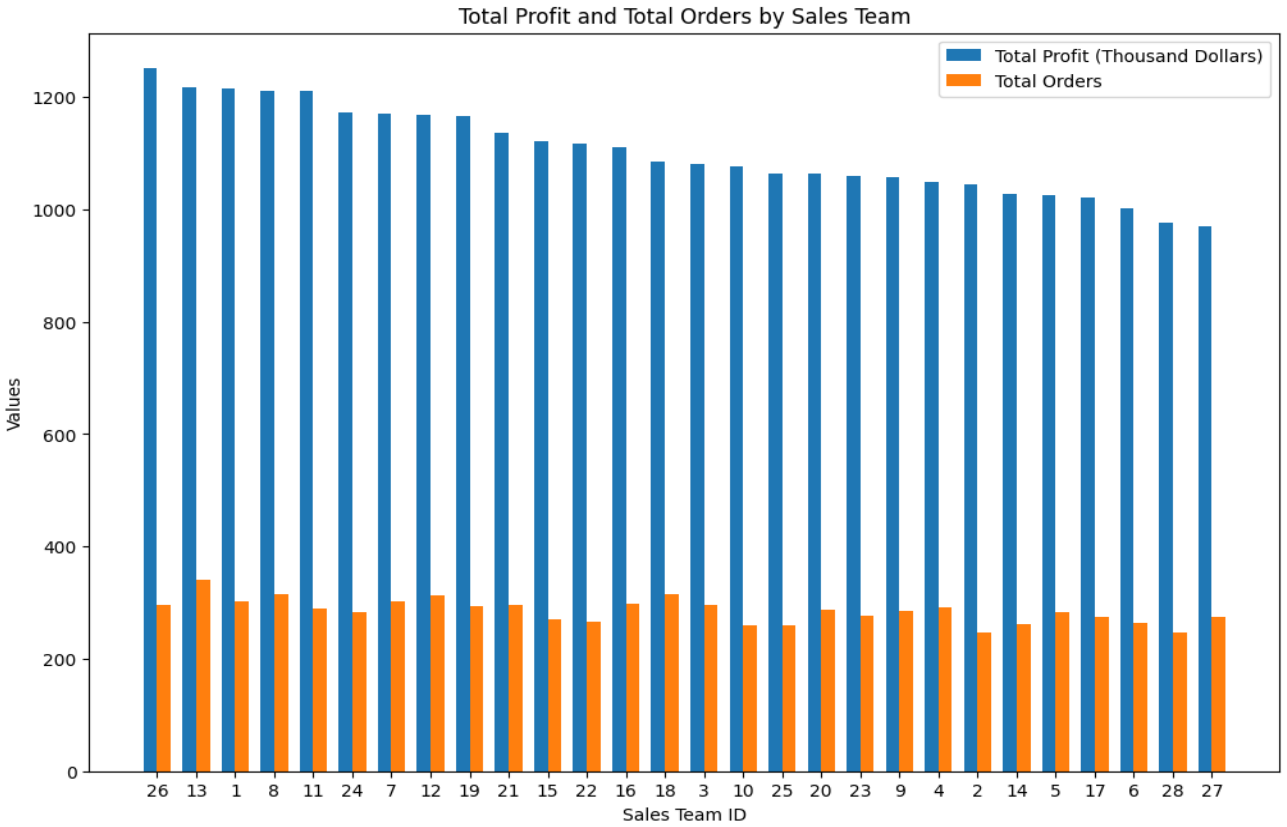
{6: 265, 14: 261, 21: 296, 28: 247, 22: 266, 12: 314, 10: 260, 4: 292, 23: 277, 8: 315, 9: 285, 5: 283, 25: 259, 2: 246, 7: 303, 24: 284, 18: 316, 20: 288, 13: 340, 19: 293, 17: 275, 26: 296, 11: 289, 15: 271, 16: 298, 27: 274, 3: 296, 1: 302}

Sales Team Evaluation

Profit Calculation:

The total profits are standardized in thousands for better visualization

_SalesTeamID	Total Profit
26	1251542.04
13	1217348.85
1	1214764.14
8	1210697.29
11	1210649.32
24	1173595.59
7	1170325.76
12	1169519.76
19	1167064.18
21	1136079.54
15	1121190.10
22	1117437.75
16	1110364.65
18	1084325.23
3	1080322.22
10	1075905.12
25	1064887.70
20	1063274.53
23	1059804.57
9	1058026.32
4	1048352.62
2	1044022.54
14	1028609.66
5	1025453.81
17	1020593.53
6	1003093.95
28	977467.66
27	969939.29



The bar chart reveals that the top five sales teams with the highest performance are **26, 13, 1, 8, and 11**.Awards and incentives can be presented to these teams to further motivate and encourage their continued success.

Recommendations

Enhance Inventory Management:
To minimize lead times and prevent stockouts, focus on optimizing inventory levels for high-demand products with extended lead times, specifically targeting items such as Product IDs 23, 37, 8, 4, and 40.

Refine Marketing Strategies:
Allocate resources more effectively by concentrating marketing efforts on the In-Store and Online channels, which have demonstrated the highest customer engagement. This could include more targeted advertising campaigns tailored to these channels.

Implement Performance-Based Rewards:
Recognize and incentivize top-performing sales teams, particularly Teams 26, 13, 1, 8, and 11. Consider implementing a structured rewards program or offering exclusive incentives to maintain high performance and drive further sales growth.

Thanks for your time!