Retail Sales Performance Overview

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BACKGROUND

Welcome to the world of Fast-Moving Consumer Goods (FMCG) industry, where rapid market dynamics and intense competition demand in-depth analysis of sales trends. This dashboard is designed to provide insights into FMCG product sales performance based on various factors, including product category, promotions, and sales locations. With a better understanding of these trends, businesses can improve sales strategies, stock optimization, and overall profitability.

ANALYSIS OBJECTIVE

The objective of this analysis is to understand the sales patterns in the Fast-Moving Consumer Goods (FMCG) industry by exploring the various factors that influence business performance. With the available data, this analysis focuses on identifying sales trends by product category, the impact of promotions on sales volume, and stock distribution across regions.

By leveraging this information, businesses can optimize marketing strategies, ensure product availability at the right locations, and improve operational efficiency to support sustainable growth.

Through this analysis, we aim to:

- Identify the most popular product categories and understand how product variations affect sales volume.
- Evaluate the effectiveness of promotions in increasing sales figures and determine marketing strategies that can provide optimal impact.
- Analyze sales by location, understand consumption patterns in rural, suburban, and urban areas, and how geographic factors contribute to sales performance.
- Measure the profitability of each product category, ensure healthy profit margins, and identify potential areas of improvement in pricing strategies and operational costs.
- Provide data-driven insights that businesses can use to optimize strategic decisions, improve efficiency in stock management, and strengthen competitiveness in the competitive FMCG industry.

With this data-driven approach, it is hoped that businesses can make smarter and more proactive decisions, ensure sustainable growth, and achieve success in an ever-evolving market.

DATASET

This dataset contains information about FMCG product sales with 10 main columns:

1. Date – Date of transaction or data recording.
2. Product_Category – Product category (e.g. Household, Personal Care, Dairy, etc.).
3. Sales_Volume – Number of product units sold.
4. Price – Price per product unit.
5. Promotion – Indicator of whether there is a promotion (1 = yes, 0 = no).
6. Store_Location – Store location (Urban, Suburban, or Rural).
7. Weekday – Day of the week in numeric format.
8. Supplier_Cost – Supplier cost for the product.
9. Replenishment_Lead_Time – Lead time for stock replenishment in days.
10. Stock_Level – Amount of product stock available.

This dataset can be used to analyze sales trends, promotion effectiveness, stock distribution, and product category performance across locations.

DATA PREPROCESSING

```
print(data.head())

        Date Product_Category  Sales_Volume      Price  Promotion  \
0  2022-01-01        Household          1583   5.190661          0
1  2022-01-02    Personal Care          1103   8.949596          0
2  2022-01-03            Dairy           455   4.867987          0
3  2022-01-04    Personal Care          1107  16.968596          1
4  2022-01-05    Personal Care          1447   4.309673          1

  Store_Location  Weekday  Supplier_Cost  Replenishment_Lead_Time  Stock_Level
0          Urban        5       9.299281                        9          207
1          Urban        6      13.274109                        5          253
2          Rural        0      13.302265                        9          245
3          Urban        1      10.056158                        5          265
4          Rural        2       3.562862                        8          334
```

```
print(f"Jumlah baris: {data.shape[0]}, Jumlah kolom: {data.shape[1]}")
```

```
Jumlah baris: 1000, Jumlah kolom: 10
```

```
[5]  # Informasi tipe data dan jumlah data kosong
     print(data.info())
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1000 entries, 0 to 999
Data columns (total 10 columns):
 #   Column                   Non-Null Count  Dtype
---  ------                   --------------  -----
 0   Date                     1000 non-null   object
 1   Product_Category         1000 non-null   object
 2   Sales_Volume             1000 non-null   int64
 3   Price                    1000 non-null   float64
 4   Promotion                1000 non-null   int64
 5   Store_Location           1000 non-null   object
 6   Weekday                  1000 non-null   int64
 7   Supplier_Cost            1000 non-null   float64
 8   Replenishment_Lead_Time  1000 non-null   int64
 9   Stock_Level              1000 non-null   int64
dtypes: float64(2), int64(5), object(3)
memory usage: 78.3+ KB
None
```

In the data processing stage, I check the data structure, number of rows and columns, and data types in each column. This step is important to ensure that the data is well structured and does not have empty values before conducting further analysis. By understanding the data type, I can perform conversions if necessary so that the analysis and visualization process is more optimal.

DASHBOARD

SALES PROMOTION VS NON-PROMOTION

Sales Promotion VS Non-Promotion costs

This graph shows the comparison between promotional costs (light blue line) and non-promotional costs (dark blue line) to sales volume over the period from 2022 to 2024.

- Promotional costs tend to have greater fluctuations compared to non-promotional costs, especially in 2023, where there is a significant spike in promotions in certain months (peaking at 11,111).
- Although promotions have higher peaks in some months, non-promotional costs are more consistent and stable throughout the period.
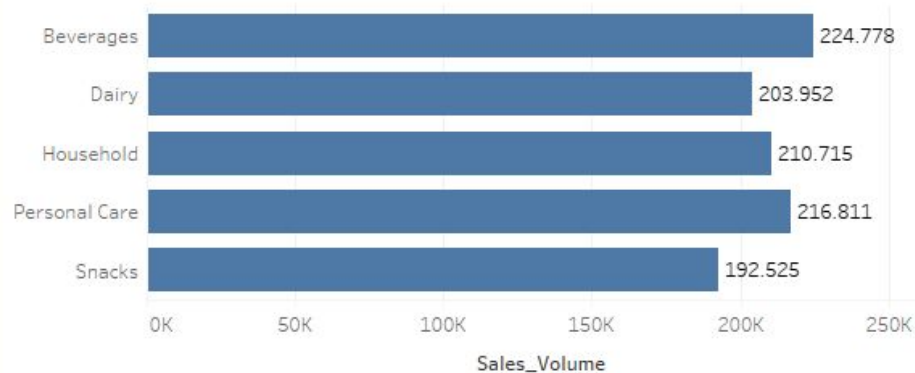- Sales volume for promotions is often higher than non-promotional, especially in early 2022 and most of 2023, but a decline in late 2024 suggests a potential reduction in the effectiveness of promotions or a new, more efficient strategy for non-promotional.
- In late 2024, there is a sharper reduction in non-promotional costs compared to promotions, which may indicate a change in marketing strategy.

This insight shows that while promotions generate spikes in sales volume, non-promotions tend to provide a more stable and sustainable contribution in the long run.

SALES BY PRODUCT CATEGORY

Sales By Product Category

Category	Sales_Volume
Beverages	224.778
Dairy	203.952
Household	210.715
Personal Care	216.811
Snacks	192.525

This graph shows sales volume by product category. The beverages category is in the highest position with sales of 224,778 units. Followed by personal care with 216,811 units and the household category with 210,715 units. Meanwhile, the snacks category has the lowest sales of 192,525 units.

SALES BY DAY AND LOCATION

Sales by Day and location
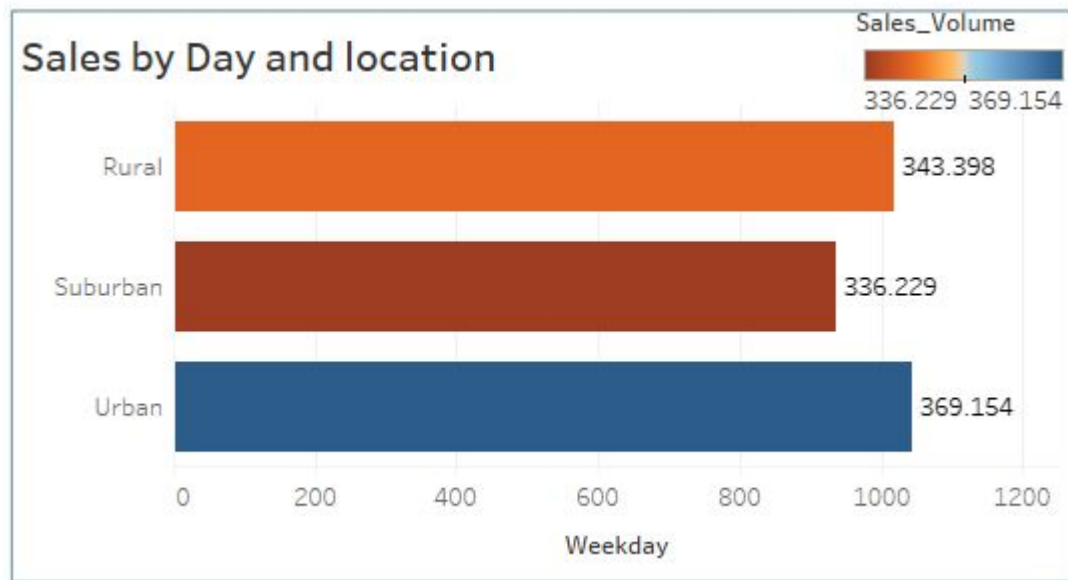
This graph shows sales volume by location (Rural, Suburban, and Urban). Sales in urban areas reached 369,154 units, which is the highest sales compared to rural areas (Rural) with 343,398 units, and suburbs (Suburban) with 336,229 units.

STOCK DISTRIBUTION BY LOCATION AND CATEGORY
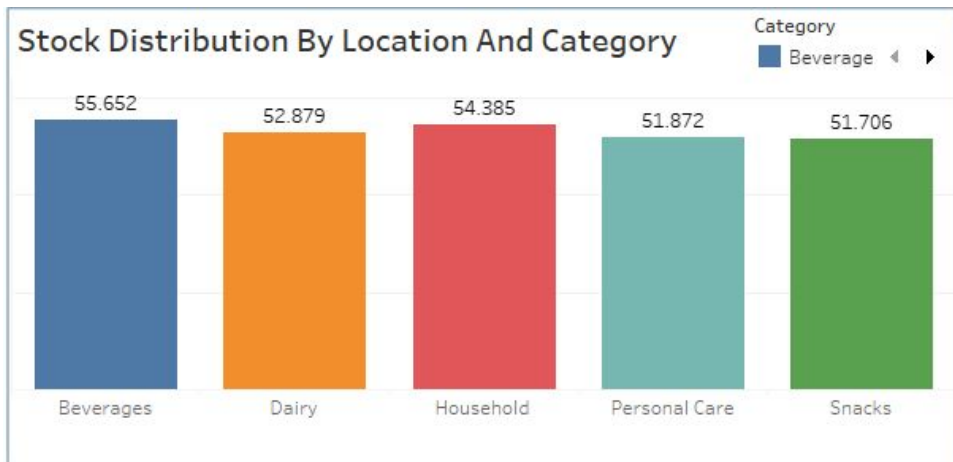
This graph shows the distribution of stock based on location and product category. The beverage category has the highest stock of 55,652 units, followed by household products with 54,385 units. Meanwhile, the snack category has the lowest stock of 51,706 units.

CONCLUSION

1. Effectiveness of Promotion in Increasing Sales: From the comparison between promotional and non-promotional costs, it is clear that promotions play an important role in increasing sales volume, especially in certain periods such as in 2023. However, significant fluctuations in promotional costs indicate that promotions may be effective in the short term but less consistent than non-promotions, which are more stable. Towards the end of 2024, the effectiveness of promotions appears to be declining, indicating that promotional strategies may need to be updated or adjusted.

2. Sales Performance by Product Category: Beverages category had the highest sales, followed by Personal Care and Household. Snacks category showed the lowest sales performance, which could be an area for improvement in terms of promotion or stock.

3. Effect of Location on Sales: The highest sales occur in urban areas, followed by rural and suburban areas. This suggests that urban areas may be more responsive to promotional strategies, with greater potential for higher sales.

4. Relatively Even Stock Distribution: Stock distribution across product categories is fairly even, with the highest stock in Beverages and the lowest in Snacks. Having adequate stock in each category is important to ensure demand is met across all regions, but lower stock in Snacks may indicate room for improvement or enhancement in the category.

Key Takeaways: Effective promotional strategies can indeed increase sales, but companies also need to maintain sales stability outside of promotions. Focusing on low-performing product categories, such as Snacks, and optimizing promotions in areas such as urban areas, can increase total sales and overall performance. Even stock distribution is also important to support sustainable growth across all product categories.

THANK YOU

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