Retail Business performance and Profitability Analysis

Introduction:

This project focus on Retail Business Performance and Profitability using SQL,Python, PowerBI. The Objective is to explore sales,revenue and profit patterns across different product categories ,sub-categories,regions,and seasons. The dataset contains 220 retail transaction records , including details like quantity , unit price ,discounts,revenue and profit .

The analysis begins with **data cleaning**, including handling missing values and standardizing categorical fields. After preparing the dataset, various SQL queries were used to derive key insights such as total profit, total revenue, profit margins, top-performing products, seasonal sales trends, and region-wise performance. Additionally, **KPIs** such as total orders, maximum profit, minimum profit, and average profit were calculated to evaluate the overall business performance.

This analysis helps in understanding **which product categories generate the highest profit, which regions contribute the most revenue, and how seasonal demand impacts sales**, supporting stronger decision-making for inventory planning, pricing strategy, and market targeting.

In Python impute the values if there is categorical column impute mode and there is numerical column value mean method .

Is there is an date and time null values using forwardfill and backward fill . droped the duplaicate values

- In clothing category south region is highest and East region is low
- In Electronics category south Rehion is high and west Region is low
- In Furniture category south Region is high and East Region is low
- In Grocery category East & and south regions are same and North is low
- In Toys category South region is high and West region is low

Same as well as powerbi and Tableau

PowerBI Analysis :

KPI's –

1.Total order 220 means Total number of sales transactions completed

2.Maximum profit showed the highest profit made in single sale

3.minimum profit showed Loss from the lowest perfotming item.

4.Total money earned from sales

Line Chart :

- Line graph shows how revenue and profit month to month
- Stable revenue but rising and falling profit indiacets changes in cost structures

Donut chart :

- Shows which regioncontributes more revenue
- South region has high and north region has lowest

Barchart:

1. Show product categories generate more profit

2. Furniture is the most profitable and clothing is the least

Pie chart:

Percentage dhare of each category's profit
Helps in revenue segmentation and product focus planning

Tools Used:

1.SQL

2.Python (Pandas , Numpy, matplotlib, seaborn)

3.Tableau

4.PowerBI

Steps Involved in Building the Project :

1. Data Cleaning:Identified and replaced missing values in categoria; and numerical columns using suitable imputation methods
2. Data preparation:Fixed Datatypes ,and created derived metrices like sales and profit margins.
3. Exploratory Analysis : Used Sql Queries analyze category -wise profit,region – wise revenue ,seasonal trends and top performing products.
4. KPI & insights Generation:Calculated business KIPs and interpreted results to understand profitability and sales pattern.

Conclusion:

This analysis clearly highlights the most profitable categories, regions, and seasons in the retail business. The KPIs and insights provide strong guidance for inventory planning, pricing, and marketing strategies. Overall, the project helps in improving decision-making to enhance revenue and optimize profit performance.

Conclusion

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