Project Title: Sales Performance Analysis

Project Sponsor: Arbor Academy

Project Manager: Deepak Bhatlavande

Date: 13/11/2024

Project Purpose:

To analyze sales performance by comparing actual sales against targets, evaluating profitability, and identifying key trends across products, time periods, and geographies. The results will provide insights to optimize sales strategies, inventory management, and product pricing.

Project Objectives:

1. Compare actual sales against target sales to identify performance gaps and determine areas of improvement.
2. Analyze sales trends over time to understand seasonality and growth patterns.
3. Evaluate product-wise performance to identify high and low performers.
4. Conduct profitability analysis to determine the most profitable products and regions.
5. Assess the effectiveness of discount strategies on sales volume and profit margins.
6. Analyze sales performance across different countries to identify the best-performing regions.
7. Review product pricing strategies by comparing cost prices, sale prices, and profit margins.

1. Business Understanding

* Objective: Understand the sales dynamics and identify factors impacting sales performance, profitability, and product success.
* Questions:
  + Are target sales being met across different products and regions?
  + Which products and geographies yield the highest profits?
  + How do discounts impact sales and profit?
* Success Criteria: A clear understanding of sales trends, product performance, and actionable insights for pricing and discount strategy optimization.

2. Data Understanding

* Data Sources:
  + *Target Sales*: Monthly targets for products.
  + *Actual Sales*: Daily sales data with country, category, and discount information.
  + *Product Details*: Information about product categories and pricing.
* Activities:
  + Explore data to understand relationships (e.g., target vs actual, impact of discounts).
  + Visual inspection to identify missing or inconsistent values.
* Challenges: Inconsistent dates between target and actual sales, potential missing values, discount outliers.

3. Data Preparation

* Tasks:
  + *Data Cleaning*: Remove duplicates, handle missing values.
  + *Feature Engineering*: Create new features like cumulative sales, discount impact ratios, or profit margins.
  + *Data Integration*: Merge sheets based on product IDs to have comprehensive records for analysis.
  + *Data Transformation*: Aggregating daily sales into monthly figures for easier comparison with target sales.
* Output: Cleaned dataset with new derived fields to use for analysis and modeling.

4. Modeling

* Techniques:
  + *Target vs Actual Analysis*: Calculate percentage difference.
  + *Sales Trend Analysis*: Use time-series models to understand seasonal effects.
  + *Product Profitability*: Regression models or clustering to identify key profitability drivers.
* Models:
  + Regression models to predict sales based on various input features.
  + Clustering to group products or countries by similar performance.
* Considerations: Choose features with the highest influence, use cross-validation to ensure stability.

5. Evaluation

* Performance Metrics:
  + Mean Absolute Percentage Error (MAPE) for sales forecast accuracy.
  + Profitability score evaluation for different categories and regions.
* Validation:
  + Validate if the model identifies the same top-performing products and regions as seen historically.
  + Evaluate model results with domain experts to confirm feasibility and correctness.

6. Deployment

* Deliverables:
  + A dashboard visualizing sales trends, target vs actual performance, profitability metrics, and regional insights.
  + Reports with key findings and recommended actions (e.g., suggested price adjustments, regions needing focus).
* Considerations: Automate regular updates of the sales dashboard using live data integration.

7. Monitoring and Maintenance

* Monitoring:
  + Set up regular checks for model accuracy to ensure consistent results.
  + Monitor the data quality of incoming sales figures.
* Maintenance:
  + Update models periodically to incorporate new sales patterns and adapt to changing trends.
* Feedback Loop: Collect feedback from stakeholders on the usefulness of the analysis and adjust methods accordingly.

Timeline: 13/11/2024 to 21/11/2024

* Day 1 & 2: Data exploration and requirement analysis.
* Day 3 & 4: Data cleaning and preparation.
* Day 5 & 6: Analysis and creation of insights.
* Day 7: Report generation and presentation of results.

Member Name:- Amol Ganesh Shinde

Email ID:- amolshinde1200@gmail.com

Role and responsibility:- Analysing data and requirement , Data cleaning, Data , ETL, Report generation , Team interaction/Comunication

Signature:- Amol Shinde

Date:- 13/11/2024

Location:- pune