**Retail analysis – A capstone project**

1. **Problem statement: -**

To develop a Power BI dashboard using the Retail Database to provide comprehensive insights into the retail business's performance. The dashboard will focus on sales, product, customer, and demographic analysis to facilitate data-driven decision-making, optimise sales strategies, and enhance customer experiences.

1. **Objective: -**

The goal is to empower retail stakeholders with actionable insights, enabling them to identify top-selling products, customer preferences, and target demographics. The dashboard will offer valuable insights and recommendations for targeted marketing, inventory optimization, and personalized customer experiences.

1. **Approach: -**

* The MECE approach is considered for this analysis
* Data sets were cleaned and pre-analysed.
* Imported to Big query as tables and data sets were loaded for further modifications
* Ran SQL queries, like join for joining multiple data sets to refine the analysis as per the problem statement and MECE framework.
* Results were exported to Excel and EDA was performed
* Imported SQL results to Power BI using online connection mode Big query to Power BI.
* Visuals were added and as per the problem statement dashboard was built.
* Analytics and Data story was generated to provide insights to the stake holders

1. **Tools used and analytics.**

* **Excel**
* **Big query-SQL**
* **Power BI**
* **Word**
* **Power point.**

**5. Sales Analysis**

* **Revenue Trends**: Examine the overall sales trends over different time periods (monthly, quarterly, yearly).
* **Product Performance**: Identify which products are generating the most revenue.
* **Sales by Region**: Analyze sales data based on different geographic regions to identify high-performing and low-performing areas.
* **Seasonal Variations**: Assess how sales fluctuate with seasons or specific events.
* **Sales Channels**: Compare sales performance across different channels (online, in-store, wholesale).
* **Customer Segmentation**: Evaluate sales by different customer segments to understand buying patterns.

**6. Customer Analysis**

* **Customer Segmentation**: Segment customers based on demographics, purchasing behavior, or psychographics.
* **Customer Lifetime Value (CLV)**: Calculate and analyze the lifetime value of different customer segments.
* **Customer Acquisition Cost (CAC)**: Assess the cost of acquiring new customers and compare it to the CLV.
* **Churn Rate**: Measure the rate at which customers stop doing business with you and identify factors contributing to churn.
* **Customer Satisfaction**: Analyze feedback and satisfaction scores from surveys or reviews.
* **Purchase Frequency**: Examine how often customers make purchases and identify trends or patterns.

**7. Product Analysis**

* **Product Popularity**: Determine which products are the most and least popular among customers.
* **Product Profitability**: Analyze the profit margins of different products to identify the most profitable ones.
* **Stock Levels and Turnover**: Assess inventory levels and product turnover rates to manage stock effectively.
* **Product Return Rates**: Evaluate the return rates for products to identify potential quality or satisfaction issues.
* **Product Lifecycle**: Analyze products based on their stage in the lifecycle (introduction, growth, maturity, decline).
* **Cross-Selling and Upselling**: Identify opportunities for cross-selling and upselling based on product purchase combinations.

**8. Demographics Analysis**

* **Age Distribution**: Examine the age distribution of your customer base.
* **Gender Distribution**: Analyze the gender distribution among customers and how it impacts purchasing behavior.
* **Income Levels**: Assess the income levels of customers to tailor marketing and product offerings.
* **Geographic Distribution**: Evaluate where your customers are located and how this affects sales.
* **Education Levels**: Analyze the education levels of customers to understand their preferences and needs.
* **Lifestyle and Interests**: Examine lifestyle data and interests to align products and marketing strategies with customer preferences.

1. **Insights and predictions**

* Revenue has shown a consistent upward trend between January 2003 and May 2005, with a 278.32% increase. ​ This indicates a positive growth in sales over time.
* The Sum of Sales started trending up in July 2003, rising by 37.03% in 5 months. ​ This suggests that there was a significant increase in sales during this period. ​
* Euro+ Shopping Channel had the highest Sum of Sales at $8,20,689.54, accounting for 8.55% of the total sales. ​ This indicates that Euro+ Shopping Channel is a major contributor to the company's revenue. ​
* Classic Cars had the highest Sum of quantityInStock at 219,183, accounting for 39.48% of the total quantity in stock. ​ This suggests that Classic Cars is a popular product line and has a high demand.
* The Sum of Sales for Classic Cars was $38,53,922.49, accounting for 40.13% of the total sales. ​ This further confirms the popularity and profitability of the Classic Cars product line. ​
* USA had the highest Total revenue at $32,73,280.05, indicating that it is a key market for the company. ​ New Zealand had the lowest Total revenue at $4,76,847.01. ​
* Count of salesRepEmployeeNumber was highest for USA at 36, followed by France and Spain. ​ This suggests that the company has a strong sales presence in these countries.
* The Count of customerNumber and Avg\_purchase\_frequency\_per\_customer both trended down between 2003 and 2005, indicating a decrease in customer engagement and loyalty. ​ This could be a concern for stakeholders and may require further analysis to identify the underlying reasons.
* The Sum of employeeNumber remained relatively constant between 2003 and 2005, while CLTV (Customer Lifetime Value) trended down by 80.59%. ​ This suggests that the company may need to focus on improving customer retention and increasing the value generated from each customer.
* The profitability and stock levels vary across different product lines. ​ Classic Cars, Motorcycles, and Ships have higher profitability and stock levels compared to other product lines. ​ This information can help stakeholders make informed decisions about product development and inventory management.
* The top 10 customers account for 71.57% of the total sales, indicating that a significant portion of the company's revenue comes from a small number of customers. ​ This highlights the importance of maintaining strong relationships with these key customers.
* The Count of orders and Previous year order count both trended up between January 2003 and December 2005, indicating an increase in customer activity and sales. ​ This is a positive sign for stakeholders as it shows growth in the customer base and sales volume.

1. **Conclusion**

The company should pay attention to the declining average purchase frequency per customer, which decreased by 42.34% between 2003 and 2005. This suggests that customers are making fewer purchases over time, which may require strategies to improve customer engagement and retention.

Stakeholders should consider the performance of different countries and product lines to identify potential growth opportunities and areas for improvement. This can help in making informed decisions about resource allocation and market expansion strategies.