

Retail store Data Analysis and PowerBI Report

Questions of interest to the CEO

1. Which region is generating the highest revenue, and which region is generating the lowest?

This question is important to the CEO as it is based on the fundamental source of income for the business, i.e., revenue. Revenue analysis is important to the CEO as top-level executives are always focused on earnings and how to increase it. Here, the CEO is interested in the viewing revenue by the regions, to assess which regions are generating the highest revenue and which regions are generating lower revenue. Using the data and analysis, the CEO will be able to decide on how to further generate revenue in the regions that are already generating the most revenue. For the regions that are not generating enough revenue, the CEO will then study the reasons why there is a lack of sales in those regions and try to improve the products and make them more suitable for those regions.

2. What is the monthly trend of revenue, which months have faced the biggest increase/decrease?

A monthly trend of revenue will provide the CEO with insights on how the revenue is fluctuating each month. This will enable the CEO to analyze how the internal changes inside the company have had impact on the sales. E.g., how a new product launch has led to an increase in revenue during the month or how the introduction of a new region has led to an increase in revenue for the online store. The CEO can also analyze if there have been any delays internally that would have caused a potential decrease. Such analysis is vital for the senior management as it would enable them to plan ahead and try to make the customer experience as smooth as possible.

3. Which months generated the most revenue? Is there a seasonality in sales?

In retail businesses, there are always months that will have a greater demand due to seasonality. There will be cases where the data will experience regular and predictable changes that recur every calendar year. Such seasonal months would be necessary to identify as the CEO would be interested in devising a strategy that would gain the maximum benefit from the months that have greater demands.

4. Who are the top customers and how much do they contribute to the total revenue? Is the business dependent on these customers or is the customer base diversified?

This analysis is highly important as it would enable the CEO to identify what the main drivers are behind the total revenue. Looking at the top customers of the retail store would provide an idea of which customers are contributing the most to the revenue. The store can then derive a strategy where the top customers can be targeted with more products that they can buy. This will ensure higher revenue for the store as these customers are the top buyers from the store.

Although having fewer customers buying in high volumes can be beneficial for a business, there can also be a drawback. Retailers would have less bargaining power with these customers because they drive the majority of the revenue for the store and can negotiate lower prices. The CEO needs to be notified of the diversification of the customers so that he can plan ahead of

time. In cases where the business is highly dependent on a few customers, the plan would be to increase the customer base and target more customers that would bring more revenue to the store.

The purpose of this report is to present a succinct overview of the key data preparation and analytical processes undertaken within retail dataset. The dataset under consideration comprises several essential columns, including InvoiceNo, StockCode, Description, Quantity, InvoiceDate, UnitPrice, Amount, CustomerID, and Country.

1. Data Loading:

- The initial step in the analysis involved the successful loading of the dataset into the Power BI environment.

2. Data Cleansing:

- The integrity of the data was maintained through a meticulous process that addressed null values within the CustomerID and InvoiceNo columns.

3. Data Filtering:

- Filtering measures were applied to exclude data points exhibiting negative or subzero values within the Price and Quantity columns.

4. Feature Engineering:

- To facilitate time-based analysis, new attributes, namely 'Month' and 'Week,' were derived from the InvoiceDate column.
- A pivotal metric, 'Total Sales,' was computed as the product of Quantity and Unit Price.

5. RFM Score Computation:

- The RFM (Recency, Frequency, Monetary) scoring system was diligently implemented to categorize customers based on their transactional behavior.

6. Pareto Analysis:

- A comprehensive analysis was conducted to determine the Pareto percent, thereby offering insights into the relative contribution of each country to the overall sales and quantity.

INSIGHTS:

Line Chart Illustrating Revenue Trends and Seasonal Variations:

The line chart in the report reveals a positive trend in revenue on a quarterly basis, indicating overall growth in the business.

However, when comparing revenue on a month-to-month basis, a significant decline is observed in December. This drop in revenue during December may be attributed to various factors, such as reduced consumer spending during the holiday season.

Bar Chart Depicting Revenue and Quantity of Sale from Each Country:

The bar chart provides an insightful comparison of revenue and quantity of sales across different countries.

Notably, United Kingdom emerges as the top-performing country in both revenue and sales quantity, indicating its significance as a key market.

Netherlands follows closely, showcasing strong performance in these parameters as well.

Bar Chart for Identifying Top 10 Customers:

The bar chart focusing on the top 10 customers is a valuable visual representation.

It allows for quick identification of the customers who contribute the most to the business's revenue. These customers are of strategic importance and may warrant special attention.

Pareto Analysis for Understanding Contribution:

Pareto analysis is a crucial tool for understanding the contribution of various factors, such as countries or customers, to overall sales.

This analysis likely identifies a small subset of countries or customers that contribute the majority of the revenue, highlighting areas of strategic focus.

RFM Analysis for Customer Classification Using a Pie Chart:

The RFM analysis serves to classify customers based on their Recency, Frequency, and Monetary value.

The use of a pie chart effectively illustrates the distribution of customers across different RFM segments.

It is noteworthy that a substantial portion of customers falls into the "occasional" and "almost lost" segments, indicating potential areas for customer engagement and retention strategies.

The presence of a group of "potential" customers suggests opportunities to nurture them into becoming loyal, high-value customers, which could significantly impact revenue.

These visualizations and analyses provide the CEO with valuable insights into revenue trends, customer behavior, and the contributions of various countries and customer segments to the business. This information can guide strategic decision-making and help prioritize efforts to improve revenue and customer relationships.

As for your first question, the CEO has requested a trend of the revenue to see if there is any seasonality in the store sales. My analysis shows that there are some months of the year where exceptional growth is witnessed. The data shows that the revenue in the first 8 months is fairly constant as the average revenue generated for these 8 months is around \$685k. The increase in revenue starts in the month of September, where the revenue increases by 40% over the previous month. This trend continues till the month of November where it reached 1.5 million USD, the highest during the entire year. The data is incomplete for the month of December, therefore, no conclusion can be drawn from it, unfortunately. This analysis shows that the retail store sales are impacted by the seasonality which usually occurs in the last 4 months of the year.

The second visual shows how the top 10 countries which have opportunities for growth are performing. This data does not include the UK as the country already has high demand and I've been told you're more focused on the countries where demand can be increased. The analysis shows that countries such as the Netherlands, Ireland, Germany and France have high volumes of units bought and revenue generated. I would suggest that these countries should be focused on to ensure that measures are taken to capture these markets even more.

The third analysis has been performed on the top 10 customers who have purchased the most from the store. The data shows that there is not much of a difference between the purchases made by the top 10 customers. The highest revenue generating customer only purchased 17% more than the 2nd highest which shows that the business is not relying only on a few customers to generate the revenue. This shows that the bargaining power of customers is low and the business is in a good position.

Finally, the map chart shows the regions that have generated the most revenue compared with the regions that have not. It can be seen that apart from the UK, countries such as Netherlands, Ireland, Germany, France and Australia are generating high revenue and the company should invest more in these areas to increase demand for products. The map also shows that most of the sales are only in the European region with very few in the American region. Africa and Asia do not have any demand for the products, along with Russia. A new strategy targeting these areas has the potential to boost sales revenues and profitability.

Thanks so much for your time. If you have any questions about the analysis or would like to see anything additional after you've had time to digest this information, I'd be happy to develop that for you.