DATA SPARK:ILLUMINATING INSIGHT OF GLOBAL ELECTRONICS:

Comprehensive Exploratory Data Analysis (EDA) And Strategic Recommendations for Global Electronics

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Executive summary:

Project overview:

This report represent retail analytics project focused on the electronics industry. Here we have several datasets containing information about their customers.

Key objectives:

The project aim seeks to leverage this data to better understand the business and provide actionable recommendations to enhance customer satisfaction, optimize operations, and drive business growth

Major findings:

- Identified key customer segments and their purchasing patterns.
- Recognized top-performing Products and stores.
- Highlighted the impact of currency Exchange rates on scale.

Main Recommendations:

- Tailor marketing campaigns to specific customer segments.
- Optimize inventory based on sales trends.
- Improve international pricing strategies to maximize profits.

Introduction:

Purpose and scope:

Global electronics is a leading retailer electronics with a strong market presence globally.so our purpose for this project is analysis to uncover valuable insight from their customers, products, sales, stores, and currency exchange rates data sets. We seeks to leverage this data to better understand their business and identify areas for improvement.

Datasets overview:

Dataset Description:

- Customers: information on customers demographics and locations
- Sales: Data on sales transactions , including order details and dates.
- Products: Details about products, including costs, prices and categories.
- Stores: Information on store locations ,sizes and operational dates.
- Exchange Rates: Historical exchange rates for various currencies.

Data cleaning and preparation:

- Missing values were handled appropriately.
- Converted data types where necessary (e.g., dates, numerical values).
- Merged datasets where necessary for analysis (e.g., linking sales data with product and customer data)
- Outliers were diagnosed to avoid skewed analysis .

Analysis and Insight:

1. **Customer Analysis:**
- Demographic Distribution: Analyzed the distribution of customers based on gender, age (calculated from birthday), and location (city, state, country, continent).
- Purchase Patterns: Identified purchasing patterns such as average order value, frequency of purchases, and preferred products.
- Segmentation: Segmented customers based on demographics and purchasing behavior to identify key customer groups.

Age Distribution by State
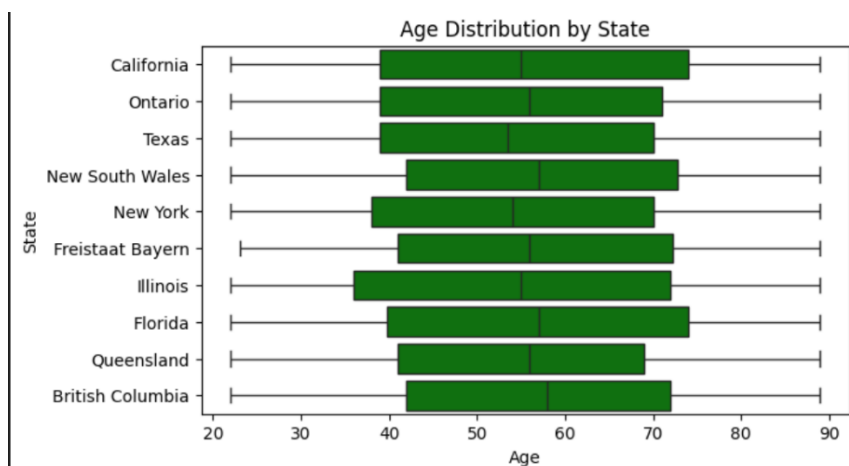
From above customer age distribution by state graph we see that most customer who purchase the electronics , mainly from age between 40-70. We can focused on age group between 25 to 40. To improve the sales in these age group.

2. Sales Analysis:

- Overall Sales Performance: Analyze total sales over time, identifying trends and seasonality.
- Sales by Product: Evaluate which products are the top performers in terms of quantity sold and revenue generated.
- Sales by Store: Assess the performance of different stores based on sales data. Sales by Currency: Examine how different currencies impact sales figures, considering exchange rates.(some of the important charts :)
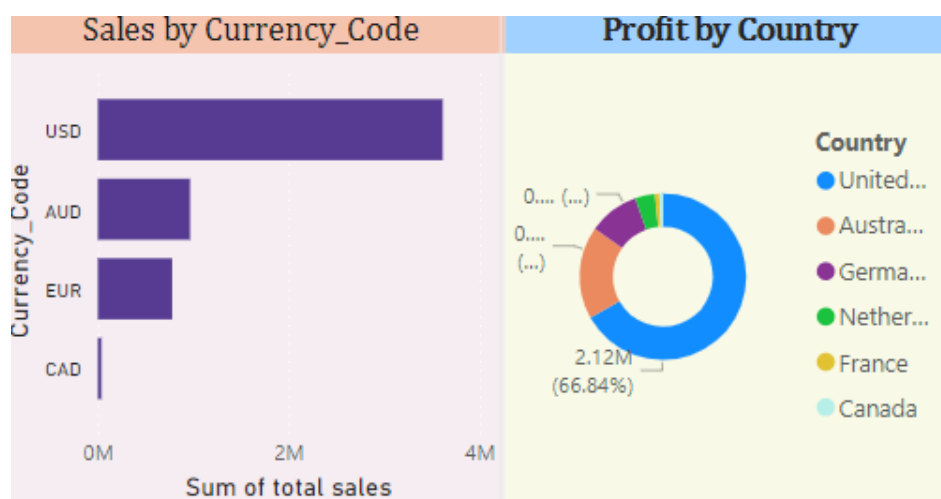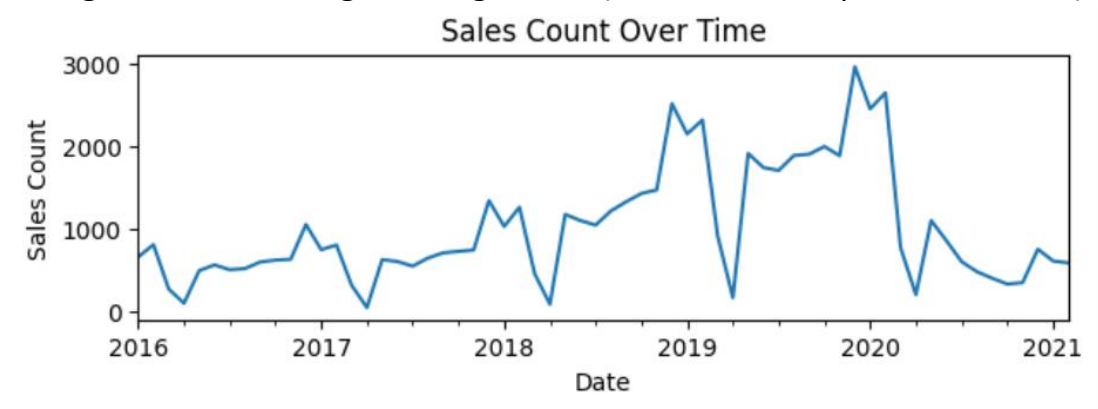

As we see from above chart we get maximum sales and profit were from United States and Australia and Canada, France other European country has very less profit and sales. We need to diagnosis the root cause and much focused should be placed on these countries. We can see from first chart over

period of time Mainly in 2020 the sales count go down we may find the some event and reasons why the sales count suddenly drop down. May be due pandemic. So we need to come up with better E-commerce plans and Marketing to increase the sale and customer satisfaction .

3.Product Analysis :

- Product Popularity: Identified the most and least popular products based on sales data.
- Profitability Analysis: Calculated profit margins for products by comparing unit cost and unit price.
- Category Analysis: Analyzed sales performance across different product categories and subcategories.
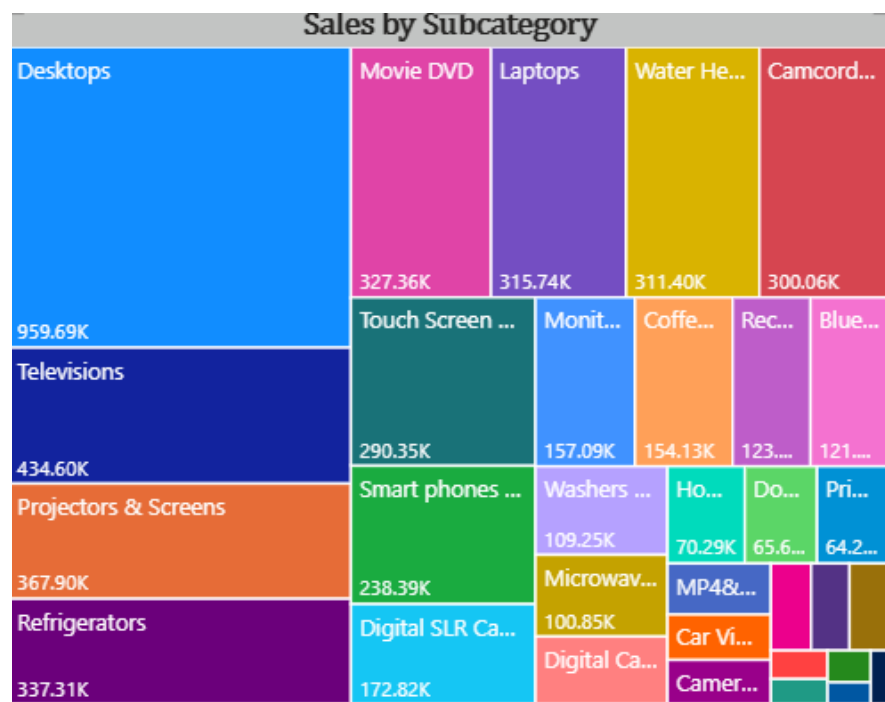
Here in above chart(& we also have some top products which sold most) we can see that desktop , Televisions, Projections these are most selling product and lamp, microwave, fans and air conditioners are least selling product . we need conduct some marketing Strategies and campaigns to increase the sale of the products and we can also build a new product based on customer preferences and intreast.

4.Store Analysis:

- Store Performance: Evaluated store performance based on sales, size (square meters), and operational data (open date).
- Geographical Analysis: Analyzed sales by store location to identify high-performing regions.

In above graph we see that no of stores by country, the united states has more stores as compare to other countries.so we can conduct customer feedback or survey to know the reasons and cause and build a strategies and we can also learn from the high performance store .

We can see that the over the period of time the number of stores opening are decreased so we can find the reasons and conduct the survey for which brand and for which product store is not that

successful and which product store or which store should to be opened so that global electronics get maximum sales and profit.

Actionable Recommendations:

Marketing strategies:

- we can develop campaigns tailored to specific customer segments based on demographic and purchasing behavior.
- Identifying the key areas for future marketing efforts to maximize reach and engagement.

Product Development:

- Highlight area for new product development based on customer preference and market trend.
- improving the quality of existing product as per the customer requirement.

Store performance:

- Implement the best practices from high performance stores across the network
- Recommending improvements for store to increase the operational efficiency and customer experience.

International pricing:

- Adjust pricing strategies based on the impact of currency exchange to maximize the profitability.

Customer retention:

- Develop the loyalty programs to retain customers and encourage repeat purchase.
- Implement segmentation based strategies to improve customer retention rates.

Digital transformation and partnerships:

- Enhance E-commerce experiences to increase sales and customer satisfaction.
- Collaborations with innovative company to stay ahead in the market.

Areas for improvement:

Data quality: Enhance data collection and storage to improve data reliability.

Technology upgrades :Invest in new technology and stay competitive.

Customer feedback : Implement a robust system for collecting and analyzing customer feedback to drive continuous improvement.

Conclusion:

The comprehensive analysis of global electronics dataset provided valuable insights into key customer segment and top performing products and stores, significance impact of currency exchange rates on sales and provide actionable recommendations. By implementing these recommendations .Global Electronics can enhance customer satisfaction, optimize operations, and drive overall business growth .

References :

- Python Documentation :(https://docs.python.org/3/)

- SQL Documentation : (https://dev.mysql.com/doc/)

- PowerBi Documentation :(https://learn.microsoft.com/en-us/power-bi/)

- EDA Documentation :(https://python-data-science.readthedocs.io/en/latest/exploratory.html)