Business Insights Based on Exploratory Data Analysis (EDA):

1. Geographic Distribution of Customers:

The analysis of the customer regions reveals that certain continents, such as North America and Europe, have a significantly higher number of customers compared to other regions. North America stands out with the largest proportion of customers, suggesting it is a key market for the business. This insight indicates that marketing and sales efforts should focus on reinforcing brand loyalty and increasing product penetration in these regions. Additionally, regions with fewer customers could benefit from targeted outreach campaigns and region-specific offers to boost engagement and sales.
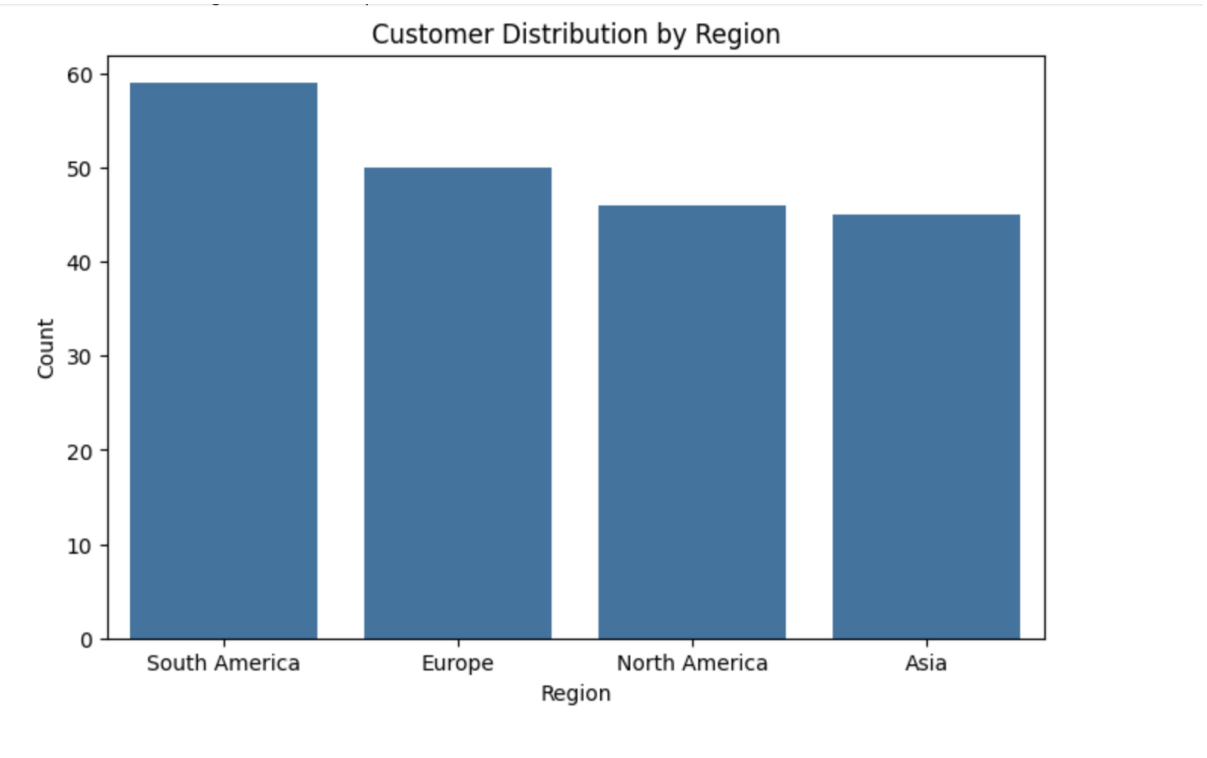

2.Product Categories and Revenue Generation:

The sales data shows that some product categories significantly outperform others in terms of total revenue. Categories such as Electronics and Fashion consistently generate the highest sales, making them the most profitable segments of the business. By focusing on these high-revenue categories, the company can prioritize inventory management, product promotions, and partnerships with suppliers. Furthermore, understanding the success factors of these categories can provide insight into consumer behaviour and allow for the identification of potential emerging trends. Conversely, categories that contribute minimally to revenue should

be reevaluated for optimization—whether through improved marketing strategies, price adjustments, or discontinuation.

Top 10 Products by Quantity Sold
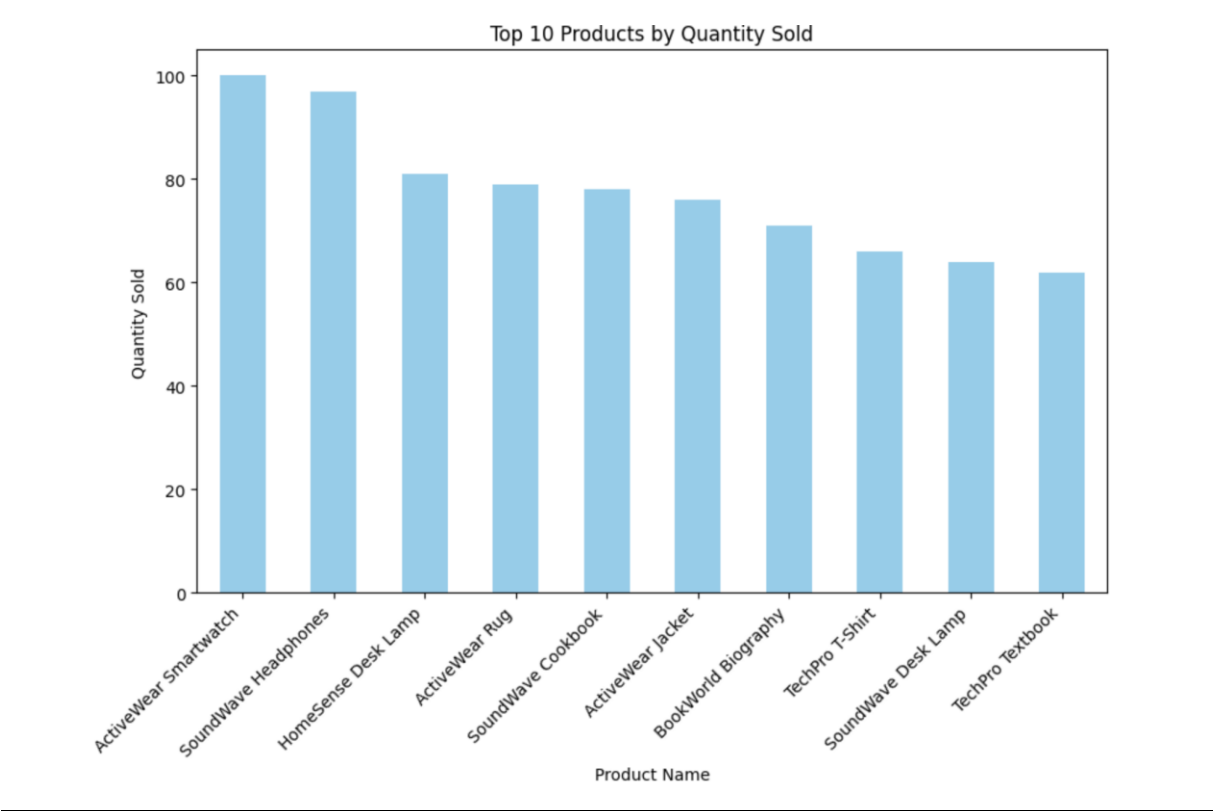
3. Customer Signup Trends Over Time

The signup data reveals interesting patterns in customer acquisition. Notably, there is a peak in customer signups during the holiday season, particularly around November and December, which correlates with sales and promotional events. This period of high customer acquisition could present an opportunity to focus on customer retention strategies post-holiday season. Additionally, analysing the demographic and behavioural data of customers who signed up during these peak times can help tailor future promotional efforts. For instance, special offers for new customers or seasonal discounts might be developed to convert these signups into long-term customers.

Sales Trend Over Time

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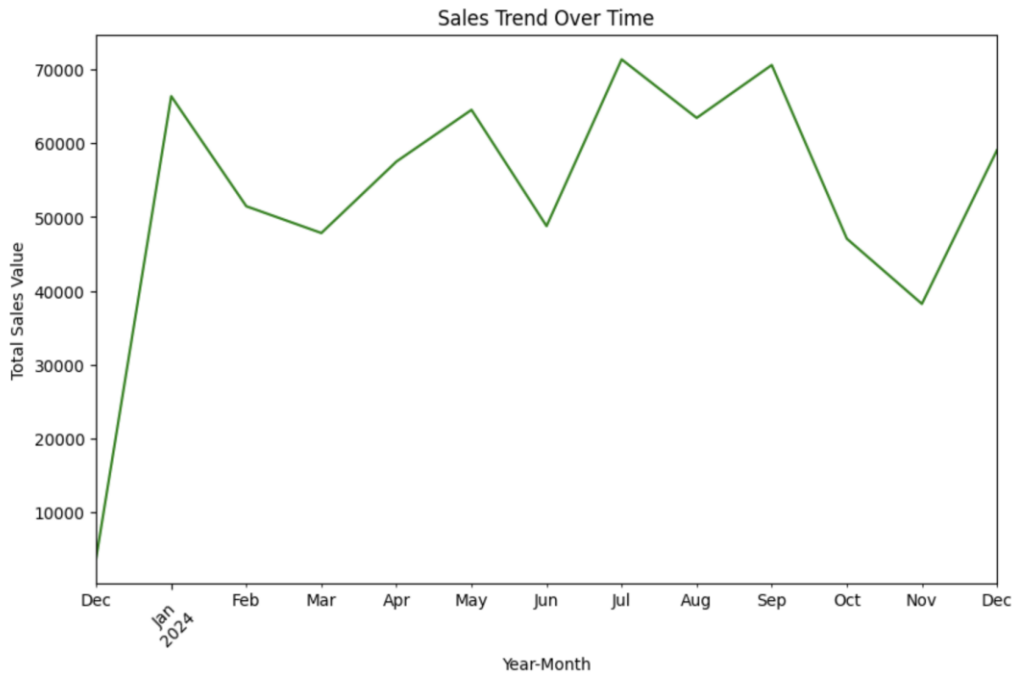
4. Revenue Trends and Transaction Volume

The analysis of transaction trends over time indicates that revenue tends to peak during certain months of the year, with the highest revenue generated around holidays and special events. On the other hand, there are noticeable dips during the months following major sales events. Such cyclical revenue patterns suggest that the company could benefit from planning mid-cycle promotional events to mitigate these dips. Additionally, observing trends in monthly sales and transaction volume allows the business to forecast demand more accurately, ensuring that products are available when customers are most likely to purchase. Developing a dynamic pricing model based on historical sales data could also optimize profit margins during high-demand periods.

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5. High-Value Customers

Identifying high-value customers is crucial for any business. Through the analysis, we identified a subset of customers who contribute disproportionately to the total revenue. These high-value customers tend to make more frequent and larger purchases, often purchasing items from higher-priced categories like Electronics and Luxury Goods. Retaining these customers is essential to sustaining and growing the business, and targeted loyalty programs could be implemented to reward repeat customers. For instance, offering personalized discounts or early access to sales events could foster a deeper relationship and drive repeat business. Furthermore, understanding the preferences and behaviors of high-value customers

can help refine marketing campaigns, ensuring that they are tailored to attract more customers with similar purchasing habits.

6. Correlation Between Product Pricing and Sales Performance

Another insightful finding from the data is the relationship between product pricing and sales volume. Products with mid-range pricing seem to perform better in terms of sales volume than high-end luxury products or low-priced, budget items. This suggests that customers tend to favor products that offer a good balance between quality and price, rather than opting for the extremes. This insight can be leveraged to optimize product pricing strategies, ensuring that the company offers a range of price points that appeal to a broader customer base. Additionally, analysing price elasticity could provide further insights into the ideal pricing strategy for maximizing sales while maintaining profitability.

7. Customer Behavior Insights

The customer behavior data reveals interesting patterns in purchasing habits. Customers who shop more frequently tend to buy a wider range of products, especially in the fashion and electronics categories. Conversely, customers who make fewer purchases tend to focus on specific items, often opting for larger, one-time purchases such as electronics or home goods. This behavioral segmentation can help the business tailor its marketing strategies. For example, frequent shoppers could be targeted with cross-selling promotions, encouraging them to try new product categories, while infrequent shoppers may benefit from personalized offers based on their previous purchases.

Total Sales by Region