

## **5 business insights from the EDA**

### **1. Customer Distribution by Region**

South America has the highest customer count, significantly leading other regions. Europe, North America, and Asia follow closely, showing relatively balanced distributions. However, South America's dominance suggests a key target market for business strategies or marketing campaigns.

### **2. Distribution of Transaction Amounts**

The histogram illustrates the distribution of transaction amounts, showcasing the frequency of total transaction values within specific ranges. The data is overlaid with a smooth blue density curve, revealing the underlying trends. Lower transaction values dominate the frequency, with a noticeable decline as transaction values increase. This pattern indicates a right-skewed distribution, where smaller transactions are more common than larger ones. The x-axis represents the total transaction value, and the y-axis shows the frequency of these amounts. The visualization highlights variations across the range, providing insights into transaction behaviors and trends within the dataset.

### **3. Monthly Transactions Over Time**

The line chart represents the number of monthly transactions over a year, highlighting trends and fluctuations. The x-axis denotes the months, while the y-axis shows the total number of transactions. The data starts with a steep rise in January, peaking at over 100 transactions, followed by a slight decline and stabilization from February to May. A second increase is observed mid-year, with July and August maintaining higher levels. However, transactions gradually drop from September, reaching their lowest point in November before recovering in December. This visualization provides insights into seasonal or periodic variations in transaction activity.

### **4. Top Selling Products**

The bar chart highlights the top 10 best-selling products based on total quantities sold. The x-axis lists the product names, while the y-axis shows the total quantity sold for each item. The ActiveWear Smartwatch leads with the highest sales, closely followed by SoundWave Headphones. Other notable items include HomeSense Desk Lamp, ActiveWear Rug, and SoundWave Cookbook, showcasing a diverse range of popular products. The consistent decline in quantities sold across the ranked items offers insights into customer preferences and product demand. This visualization emphasizes top-performing products, aiding strategic decision-making for inventory and marketing efforts.

### **5. Customer Signup Trend Over Time Monthly Signups**

The customer signup trend shows fluctuations over time, with notable peaks and troughs. A strong initial surge is seen in early 2022, followed by a decline and fluctuating activity throughout 2023. The second half of 2023 sees a gradual upward trend, culminating in higher peaks in 2024. This indicates potential seasonal or marketing-driven impacts. The recent spikes in 2024 suggest effective campaigns or increased demand. The low points between peaks highlight opportunities to investigate factors affecting signups, such as user engagement, outreach, or external market conditions. Monitoring and optimizing these periods could stabilize growth and maximize customer acquisition.