

## Exploratory Data Analysis (EDA):

### **Insight 1: Seasonal Sales Trends**

Monthly sales trends indicated that revenue peaked during specific months, suggesting a seasonal pattern in customer buying behavior. For instance, higher transaction values were observed during holiday seasons, such as December. This indicates an opportunity to focus marketing campaigns and inventory stocking during these high-demand periods to maximize revenue.

### **Insight 2: Top Performing Products**

Analysis of product-level revenue identified that a small subset of products contributed significantly to overall sales. The top 10 products accounted for approximately 40% of the total revenue, with products in the "Electronics" and "Home Appliances" categories being the most popular. This suggests prioritizing these categories for inventory optimization and promotional campaigns.

### **Insight 3: Regional Revenue Distribution**

Revenue analysis by region showed that North America contributed the largest share (45%) to overall sales, followed by Europe and Asia. However, Asia demonstrated the highest growth rate in recent months. This indicates potential in expanding targeted marketing efforts in the Asian market to capitalize on its growth trajectory.

### **Insight 4: Customer Retention Opportunities**

The average transaction frequency and value varied significantly across customers. Approximately 20% of customers accounted for 60% of revenue, highlighting the importance of high-value customers. Implementing loyalty programs or personalized offers for these customers could enhance retention and further drive sales.

### **Insight 5: Price Sensitivity and Discounts**

Price analysis showed a strong correlation between discounts and purchase quantity for specific categories such as clothing and accessories. Customers are price-sensitive in these categories, indicating that strategic discounting during sales periods could significantly boost purchase volumes without compromising overall profitability.