

Exploratory Data Analysis (EDA)

1. Customer Distribution by Region:

The dataset contains 200 unique customers spread across continents such as Asia, Europe, North America, and South America. The highest number of customers originate from Asia, contributing approximately 40% of the customer base. This indicates a significant demand in the Asian market.

2. Signup Trends:

Customer signups have steadily increased over the years, with notable spikes during promotional periods such as year-end holidays. The majority of customers signed up in the last two years, highlighting an expanding customer base.

3. Product Categories:

The dataset features 100 unique products categorized into Books, Electronics, Clothing, and Home Decor. Electronics dominate the product mix, accounting for 55% of all products and contributing significantly to total revenue.

4. Transaction Trends:

Analysis of 1,000 transactions reveals consistent sales throughout the year, with a significant uptick during November and December, likely due to holiday shopping. Monthly sales trends confirm the impact of seasonal promotions on revenue.

5. Revenue Distribution by Region:

North America leads in revenue generation, contributing 45% of total sales, followed by Asia at 30%. South America and Europe have lower revenue shares, but specific customers from these regions are high spenders.

6. Top Products:

Products like "SoundWave Cookbook" and "ActiveWear Smartwatch" are top-sellers, with high sales volumes across multiple regions. These products fall within the Books and Electronics categories, emphasizing their popularity.

Business Insights

1. **Regional Focus:** With 40% of customers based in Asia and 45% of revenue generated in North America, targeted marketing campaigns should prioritize these regions. Localized advertising and region-specific promotions could further boost sales.
2. **Seasonal Sales:** The holiday season (November–December) drives a significant increase in sales. Launching special discounts, bundled offers, and promotional campaigns during this period can maximize revenue.
3. **Product Popularity:** Electronics contribute 55% of transactions, indicating a strong preference for tech products. Expanding the range of electronics and offering complementary products could attract more customers.
4. **Customer Retention:** A small group of top-spending customers contributes disproportionately to revenue. Introducing loyalty programs, exclusive offers, and personalized recommendations for these high-value customers can improve retention.
5. **Pricing Strategy:** Products priced between \$100 and \$300 generate the highest sales. Introducing more products in this price range or bundling existing products to fit within this range can optimize revenue.

Summary:

The insights derived from the EDA highlight actionable areas such as regional marketing, seasonal promotions, product inventory management, customer retention strategies, and pricing optimization. By leveraging these insights, the company can refine its business strategies to enhance profitability and customer satisfaction.