Zeotap Data Science Internship

Name: R Karthik

EDA

1. This analysis evaluates customer performance and regional trends using transactional and signup data. Customer metrics reveal insights like maximum tenure (1061 days), average lifetime value ($3467.31), and regional distribution of customers. South America emerges as the top-performing region with the highest total transaction value. The average monthly spending across all customers is $865.69, while the average transaction value is $690. Data visualizations provide a clear view of customer tenure vs. total value, lifetime value distribution, and regional performance trends over time. These insights can guide strategic decisions, such as targeting high-value customers and focusing on strong-performing regions for growth.

2. This analysis explores sales trends and category performance across regions. Key insights include the top-performing categories in each region: Clothing in Asia, Books in Europe, Electronics in North America, and Books in South America. The most consistent category, with the lowest sales variance, is Home Decor, indicating stable demand. Electronics is identified as the highest growth category, highlighting its rising popularity. The regional category mix reveals the top three categories by sales percentage in each region, helping to understand market preferences. Visualizations show trends, category mix, and regional breakdowns, aiding strategic decisions for targeted marketing and product focus.

3. This analysis highlights shopping patterns based on transaction data across different regions. Key insights reveal the overall peak shopping hour at 14:00, with Tuesday being the busiest day for shopping. Regional peak hours vary, with Asia seeing a spike at 3:00, Europe at 16:00, North America at 1:00, and South America at 14:00. The hour with the highest average transaction value is 16:00. Monthly patterns show peak shopping months by region, with Asia and Europe peaking in January, North America in April, and South America in July. Visualizations provide detailed breakdowns of hourly, daily, and monthly trends across regions.

4. The analysis reveals key product performance insights, highlighting the top-performing items both by quantity and revenue. The top five products overall, based on quantity sold, include the *ActiveWear Textbook* and *ActiveWear Smartwatch*, each with 38 units sold, generating significant revenue. The *SoundWave Headphones* also performed well in quantity, with 37 units sold. Category leaders show that the *ActiveWear Smartwatch* leads in Electronics, while the *HomeSense T-Shirt* dominates Clothing, the *ActiveWear Textbook* tops Books, and the *ActiveWear Rug* leads Home Decor. Regionally, Europe's top product is the *ActiveWear Rug*, while Asia's leader is

the *HomeSense T-Shirt*, South America's top performer is the *ActiveWear Textbook*, and North America saw the *SoundWave Headphones* as its best-seller. This provides a comprehensive view of both product and regional trends, offering actionable insights into the highest-performing items across different categories and regions.

5. The customer purchase frequency analysis reveals several key insights into customer behavior. The total number of customers in the dataset is 199, which are segmented into three groups based on their purchase frequency: *Scarce*, *Regular*, and *Frequent* buyers. Scarce buyers, numbering 67, make an average of 4 transactions and spend an average of $2,757.52, with a low purchase frequency of 0.44 purchases per month and an average of 72.3 days between purchases. Regular buyers (65 customers) make 5.5 transactions, spend an average of $3,865.77, and purchase 0.68 times per month, with 44.8 days between purchases. Frequent buyers (67 customers) have the highest activity, making 5.6 transactions, spending $3,790.54, and purchasing 6.47 times per month, with only 23.3 days between purchases. The percentiles for purchase frequency show that most customers fall into the lower frequency range, with the 95th percentile being 30 purchases per month, indicating some customers may be highly active. Additionally, the total spend by segment shows that frequent buyers contribute the most ($253,966.30), followed closely by regular buyers ($251,275.31), while scarce buyers contribute $184,753.95. This analysis provides valuable insights into customer engagement, helping to target different segments effectively.