

Harika

EDA:

Insight 1: Regional Customer Distribution

- **Observation:** The dataset shows the following customer distribution by region:
 - **South America:** 59 customers
 - **Europe:** 50 customers
 - **North America:** 46 customers
 - **Asia:** 45 customers
- **Insight:** **South America** has the highest number of customers, followed closely by **Europe**, **North America**, and **Asia**. This indicates that the eCommerce platform has a strong presence in South America, making it a key market for future growth and marketing efforts. Europe and North America also represent significant customer bases, suggesting opportunities for targeted campaigns in these regions.

Insidght 2: Top-Selling Products

- **Observation:** The top-selling products by total sales value are:
 - a. **ActiveWear Smartwatch:** \$39,096.97
 - b. **SoundWave Headphones:** \$25,211.64
 - c. **SoundWave Novel:** \$24,507.90
 - d. **ActiveWear Jacket:** \$22,712.56
 - e. **ActiveWear Rug:** \$22,314.43
 - f. **TechPro Headphones:** \$19,513.80
 - g. **BookWorld Cookbook:** \$19,221.99
 - h. **BookWorld Sweater:** \$18,743.79
 - i. **TechPro Textbook:** \$18,267.96
 - j. **ActiveWear Cookware Set:** \$18,083.73
- **Insight:** The **ActiveWear Smartwatch** is the top-performing product, generating significantly higher revenue compared to other products. This indicates strong demand for **wearable technology** and suggests that the platform should focus on promoting similar high-value electronics. Other top-performing products include **headphones, novels, and apparel**, highlighting diverse customer preferences.

Insight 3: Monthly Transaction Trends

- **Observation:** The number of transactions per month is as follows:
 - **2023-12:** 4 transactions
 - **2024-01:** 107 transactions
 - **2024-02:** 77 transactions
 - **2024-03:** 80 transactions
 - **2024-04:** 86 transactions
 - **2024-05:** 86 transactions
 - **2024-06:** 69 transactions
 - **2024-07:** 96 transactions
 - **2024-08:** 94 transactions
 - **2024-09:** 96 transactions
 - **2024-10:** 70 transactions
 - **2024-11:** 57 transactions
 - **2024-12:** 78 transactions
- **Insight:** Transaction activity **peaked in January 2024** with 107 transactions, likely due to **post-holiday sales** or **New Year promotions**. The number of transactions remained relatively stable throughout the year, with slight dips in **June** (69 transactions) and **November** (57 transactions). This suggests that the platform should focus on **boosting sales during low-activity months** (e.g., June and November) through targeted promotions or seasonal campaigns.

Insight 4: Revenue by Product Category

- **Observation:** The total revenue generated by each product category is as follows:
 - **Books:** \$192,147.47
 - **Electronics:** \$180,783.50
 - **Clothing:** \$166,170.66
 - **Home Decor:** \$150,893.93
- **Insight:** The **Books** category generates the highest revenue (192,147.47), followed closely by **Electronics** (180,783.50). **Clothing** and **Home Decor** also contribute significantly to total revenue. This indicates that **Books** and **Electronics** are the most profitable categories, suggesting that the platform should focus on expanding and promoting these categories further.

Insight 5: Average Transaction Value by Region

- **Observation:** The average transaction value by region is as follows:
 - **South America:** \$721.55
 - **Europe:** \$710.49
 - **Asia:** \$697.59
 - **North America:** \$624.24
- **Insight:** Customers in **South America** have the highest average transaction value (721.55), followed closely by **Europe** (710.49) and **Asia** (697.59). **North America** has the lowest average transaction value (624.24). This suggests that customers in South America, Europe, and Asia are more likely to make **higher-value purchases**, while North American customers tend to spend less per transaction.

Insight 6: Monthly Revenue Trends by Category

- **Observation:** The monthly revenue trends for each category are as follows:
 - **Books:** Revenue peaks in **May 2024** (21,793.32) and **February 2024** (21,073.17), with a noticeable dip in **November 2024** (\$10,556.56).
 - **Clothing:** Revenue peaks in **September 2024** (18,906.19) and **May 2024** (17,236.32), with a dip in **November 2024** (\$11,983.40).
 - **Electronics:** Revenue peaks in **July 2024** (22,096.51) and **September 2024** (21,703.48), with a dip in **June 2024** (\$9,430.18).
 - **Home Decor:** Revenue peaks in **March 2024** (15,833.77) and **January 2024** (14,090.57), with a significant dip in **November 2024** (\$4,408.52).
- **Insight:** Each category shows **seasonal peaks and dips** in revenue. For example:
 - **Books** and **Clothing** perform well in **May** and **September**, likely due to back-to-school and holiday shopping.
 - **Electronics** peaks in **July** and **September**, possibly driven by mid-year promotions and holiday sales.
 - **Home Decor** dips significantly in **November**, suggesting a need for targeted campaigns during this period.

Insight 7: Seasonal Patterns

- **Observation:** The data shows a **seasonal pattern**:
 - **High activity:** January (107 transactions), July (96 transactions), and September (96 transactions).
 - **Low activity:** June (69 transactions) and November (57 transactions).
- **Insight:** The platform experiences **seasonal fluctuations** in transaction activity. The **holiday season** (December) and **mid-year months** (July, September) show higher activity, while **June** and **November** are slower. This indicates opportunities for **seasonal marketing campaigns** to drive sales during low-activity periods and maximize revenue during peak months.

Summary of All Insights

1. **Regional Customer Distribution:** South America has the highest number of customers, followed by Europe, North America, and Asia.
2. **Top-Selling Products:** ActiveWear Smartwatch and SoundWave Headphones are top performers, indicating strong demand for electronics.
3. **Monthly Transaction Trends:** Transactions peak in January and remain stable throughout the year, with dips in June and November.
4. **Revenue by Product Category:** Books and Electronics generate the highest revenue, followed by Clothing and Home Decor.
5. **Average Transaction Value by Region:** South America, Europe, and Asia have higher average transaction values compared to North America.
6. **Monthly Revenue Trends by Category:** Books and Clothing peak in May and September, Electronics in July and September, and Home Decor dips in November.
7. **Seasonal Patterns:** The platform experiences seasonal fluctuations, with higher activity during holidays and mid-year months.

Recommendations

1. **Regional Focus:**

- Prioritize marketing efforts in **South America, Europe, and Asia** to capitalize on higher transaction values.
- Implement targeted campaigns in **North America** to increase average transaction values.

2. **Product Strategy:**

- Focus on promoting **Electronics** and **Books**, as they are the top-performing categories.
- Maintain a diverse product portfolio to cater to customer preferences in **Clothing** and **Home Decor**.

3. **Seasonal Campaigns:**

- Run **back-to-school promotions** for **Books** and **Clothing** in **May** and **September**.
- Launch **mid-year sales** for **Electronics** in **July**.
- Introduce **holiday-themed campaigns** for **Home Decor** in **November**.

4. **Low-Activity Months:**

- Boost sales in **June** and **November** through targeted promotions and discounts.
- Use **bundled offers** or **loyalty rewards** to encourage higher spending during these periods.

Recommendations

1. **Regional Focus:**

- **South America:** Prioritize marketing efforts and customer engagement strategies, as it has the highest number of customers and average transaction value. Consider localized campaigns to further boost sales.
- **Europe and Asia:** Focus on upselling and cross-selling strategies to increase the average transaction value, as these regions also show strong spending behavior.
- **North America:** Implement targeted promotions and bundled offers to encourage higher spending, as this region has the lowest average transaction value.

2. **Product Strategy:**

- **Electronics and Books:** These are the top-performing categories. Invest in inventory management and marketing campaigns to maximize revenue. Introduce new products or exclusive deals to

attract more customers.

- **Clothing and Home Decor:** Maintain a strong presence in these categories to cater to diverse customer preferences. Consider seasonal collections or themed products to drive sales.

3. **Seasonal Campaigns:**

- **Back-to-School Promotions:** Run campaigns for **Books** and **Clothing** in **May** and **September** to capitalize on peak sales periods.
- **Mid-Year Sales:** Launch promotions for **Electronics** in **July** to drive sales during mid-year peaks.
- **Holiday-Themed Campaigns:** Introduce campaigns for **Home Decor** in **November** to boost sales during the holiday season.

4. **Low-Activity Months:**

- **June and November:** These months show lower transaction activity. Run targeted promotions, discounts, or bundled offers to increase sales during these periods.
- **Customer Engagement:** Use email marketing and social media campaigns to promote seasonal offers and encourage higher spending.

5. **Customer Retention:**

- **Loyalty Programs:** Introduce loyalty rewards or membership programs to encourage repeat purchases and higher spending.
- **Personalized Marketing:** Analyze customer behavior to create personalized offers and recommendations, improving customer satisfaction and retention.

6. **Inventory Management:**

- **Peak Months:** Ensure sufficient stock of high-performing products during peak months (e.g., January, May, July, September) to meet increased demand.

- **Low-Activity Months:** Adjust inventory levels for low-activity months (e.g., June, November) to avoid overstocking and reduce costs.

7. **Data-Driven Decision Making:**

- Regularly analyze transaction data to identify trends, customer preferences, and seasonal patterns. Use these insights to refine marketing strategies and optimize product offerings.

Summary of Recommendations

1. Focus on **South America, Europe, and Asia** for regional growth, while addressing lower spending in **North America**.
2. Prioritize **Electronics** and **Books** as top-performing categories, while maintaining a diverse portfolio in **Clothing** and **Home Decor**.
3. Run **seasonal campaigns** during peak months (e.g., May, July, September) and address low-activity months (e.g., June, November) with targeted promotions.
4. Implement **loyalty programs** and **personalized marketing** to improve customer retention and increase spending.
5. Optimize **inventory management** to align with seasonal demand and reduce costs.
6. Use **data-driven insights** to refine strategies and stay ahead of market trends.