

Business Insights Report from EDA

The exploratory data analysis (EDA) conducted provided insights into customer behavior, product performance, and revenue trends. The dataset comprised **200 customers**, **100 products**, and **1,000 transactions** spanning multiple regions, offering an opportunity to understand purchasing patterns and identify business opportunities.

Key Findings

1. Peak Seasons and Hours

- **Monthly Revenue Trends:**
 - **July (\$71,366.39)**, **September (\$70,603.75)**, and **January (\$66,376.39)** were the top revenue-generating months.
 - Sales were relatively low in **November (\$38,224.37)**, indicating a seasonal dip.
- **Peak Transaction Hours:**
 - Sales peaked between **12 PM and 4 PM**, likely due to customer availability during lunchtime and early afternoons.

Actionable Insight: Implement targeted promotions during low-sales months (e.g., November) and align marketing efforts to capture midday customer traffic.

2. Product Performance

- **Top Performing Products:**
 - **TechPro Headphones** led revenue generation with \$19,513.80.
 - Categories like **Electronics (\$180,783.50)** and **Books (\$192,147.47)** dominated revenue, contributing 36% and 38% of total sales, respectively.
- **Underperforming Categories:**
 - **Home Decor** had the lowest revenue contribution among major categories, though it comprised a significant share of sales volume.

Actionable Insight: Expand inventory or marketing for high-performing products. Introduce discounts for Home Decor items to improve revenue in this category.

3. Customer Insights

- **High-Value Customers:**
 - The top 10 customers accounted for \$76,634.40, led by **Paul Parsons (\$10,673.87)** from Europe.
 - Regions like **South America (\$219,352.56)** outperformed others, while **Asia (\$152,074.97)** lagged slightly.

- **Customer Churn:**
 - 179 customers (90%) were active, with 1 customer registering but not making a transaction.
 - Approximately 13% of customers exhibited signs of churn due to single or no transactions.

Actionable Insight: Develop loyalty programs and personalized discounts for high-value customers. Engage churned customers with follow-up offers or personalized messaging to drive transactions.

4. Regional Trends

- **Top Revenue Regions:**
 - South America (28%) and Europe (22%) dominated revenue.
 - **Region-Specific Preferences:**
 - Books were the most popular category in Europe and South America.
 - Electronics led in North America, indicating potential for localized marketing campaigns.
5. **Actionable Insight:** Region-specific campaigns emphasizing popular categories could enhance localized engagement and revenue.

5. Customer Churn Analysis

Key Findings

1. **Customer Drop-off Rate:**
 - A total of **179 customers (90%)** are active, meaning they have made at least one transaction.
 - However, **1 customer (C0180 - Amy Carpenter)** signed up but never made a transaction, indicating potential onboarding issues.
 - **13% of customers (26 out of 200)** exhibited signs of churn, having made only a single transaction and not returning for repeat purchases.
2. **Characteristics of Churned Customers:**
 - Most churned customers belong to regions such as **Asia and South America**, which suggests potential gaps in product-market fit or engagement strategies in these areas.
 - The majority of churned customers signed up within the past year, indicating challenges in sustaining engagement beyond initial purchases.