

# EDA Report: Business Insights from eCommerce Transactions

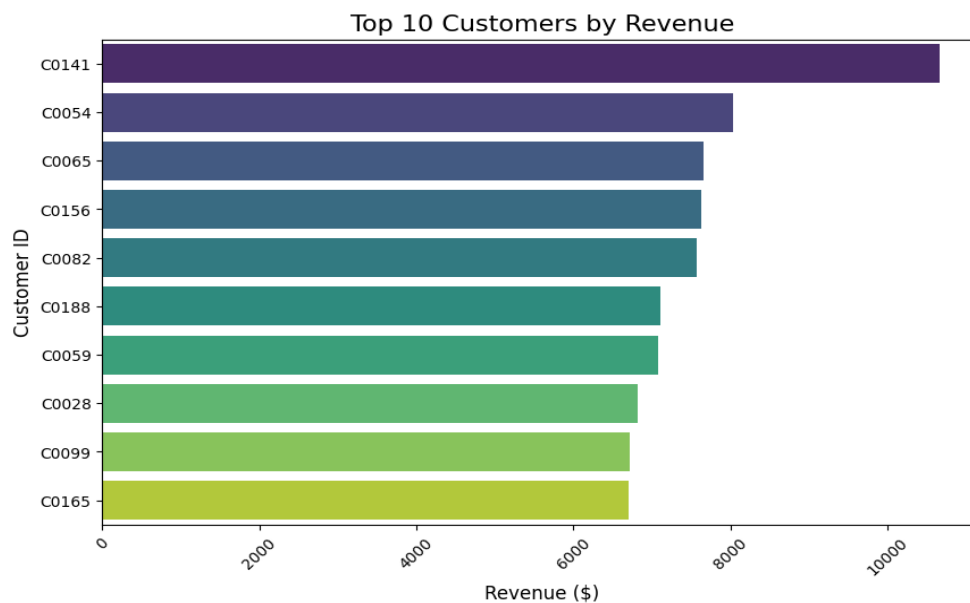
## Dataset

### Objective:

The objective of this Exploratory Data Analysis (EDA) is to derive actionable business insights that can guide decision-making for marketing, inventory management, customer retention, and sales strategies in an eCommerce business.

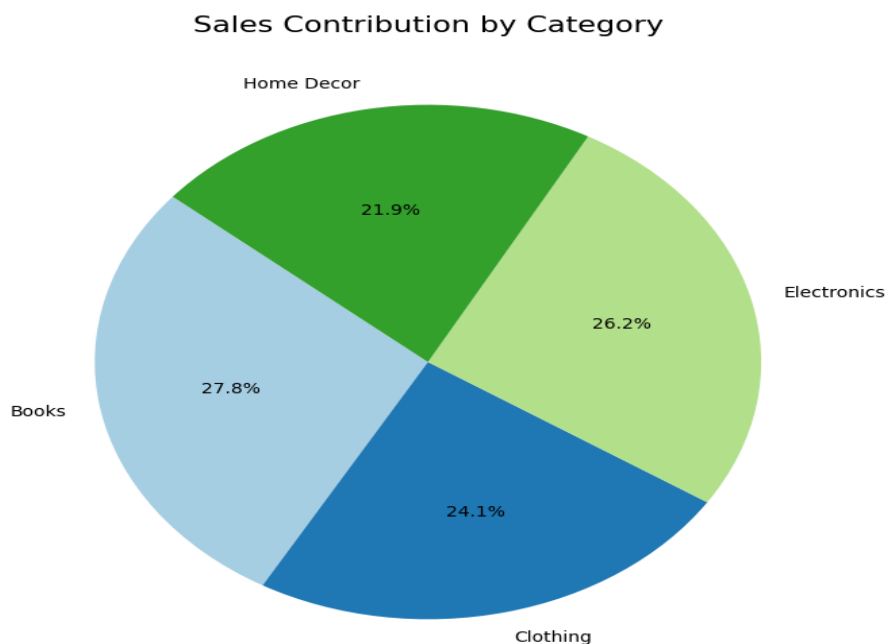
## Business Insight

### 1) Customer Segmentation By Revenue



- The highest revenue is generated by **Customer C0141**, contributing significantly more than other customers. This suggests a small number of customers drive the majority of the business.
- Revenue distribution is heavily skewed, with the top customers (C0141, C0054, C0065) accounting for the largest share. The remaining customers generate relatively lower revenue.
- Focus marketing efforts on retaining high-revenue customers like C0141 through loyalty programs, personalized offers, and exclusive discounts.
- Investigate strategies to increase revenue from medium and low-revenue customers by identifying cross-selling or up-selling opportunities.

## 2) High-Demand Product Categories



- Books are the highest contributor to total sales, indicating strong customer interest and frequent purchases in this category.
- Clothing comes second in terms of sales, highlighting its importance in the overall sales strategy and the potential for targeted marketing.
- Electronics also play a major role in driving sales, reflecting consumer demand for gadgets and tech-related products.
- While home decor has the lowest share, it still contributes a significant portion, suggesting potential for growth through increased marketing efforts.

### Suggestions:

#### ➤ Focus on High-Performing Categories:

Since **Books** and **Electronics** account for a large portion of the revenue, these categories should be prioritized in terms of inventory, marketing, and promotional efforts. Ensure these categories are always well-stocked and frequently promoted to capitalize on their demand.

#### ➤ Targeted Campaigns for Clothing and Home Decor:

Clothing, with its substantial contribution, should benefit from targeted seasonal campaigns (e.g., summer collections, holiday sales). Similarly, **Home Decor** can be promoted through lifestyle content, as it's an area with room for growth.

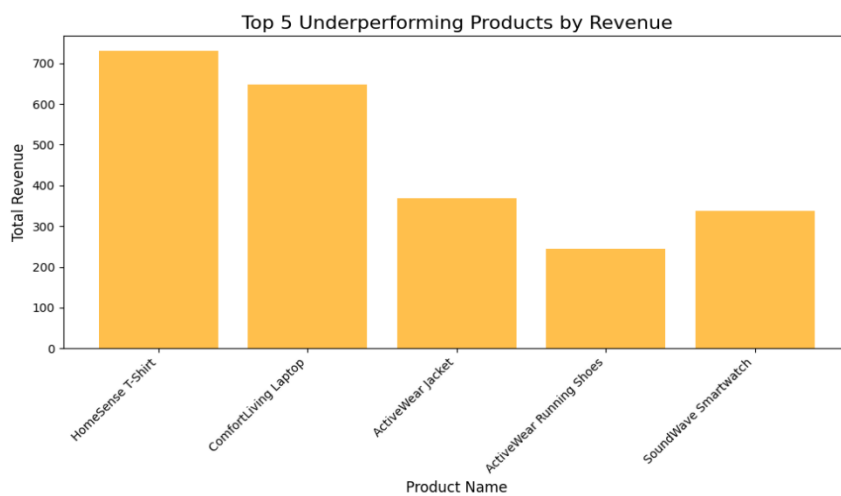
➤ **Cross-Selling Opportunities:**

Leverage the synergy between categories. For instance, bundle **Electronics** with **Books** (e.g., Kindle) or **Home Decor** with **Clothing** (e.g., themed products), offering discounts to increase the average order value.

➤ **Customer Segmentation:**

Further analyze customer preferences and purchasing patterns within each category. This will help in refining product recommendations and personalized offers, leading to higher conversion rates.

### 3) Top 5 underperforming Products



- Despite being a clothing item, the Home Sense T-Shirt generates relatively low revenue compared to other apparel. This could indicate lower demand or ineffective marketing strategies.
- Laptops generally attract higher prices and customer interest, but this product's sales are lower than expected. The issue could be due to pricing, competition, or lack of differentiation.
- Jackets in the activewear category are underperforming, possibly due to factors like design, quality, or poor seasonal timing, which impacts demand
- Running shoes, despite being part of a popular category, have low sales. This could be attributed to market saturation, lack of targeted promotion, or weak product positioning.

- The Smartwatch in the electronics category is underperforming compared to other tech products. It may lack the features or marketing push that other popular smartwatches offer, contributing to low revenue.

**Suggestions:**

➤ **Product Evaluation and Improvement:**

Review the product offerings for these underperforming products. For example, check the quality, design, and pricing of ActiveWear items and SoundWave Smartwatch to ensure they meet customer expectations. If required, revamp the product range or offer upgraded versions to increase appeal.

➤ **Targeted Marketing Campaigns:**

Develop specific marketing campaigns for these products to increase their visibility. ComfortLiving Laptop could benefit from showcasing its unique features in comparison to competitors. Use targeted ads, influencer marketing, or discounts to attract more customers to these items.

➤ **Repositioning and Branding:**

Evaluate the current branding and positioning of these underperforming products. ActiveWear Running Shoes may require a brand refresh, positioning them as a high-performance, must-have item for fitness enthusiasts.

➤ **Seasonal Adjustments and Discounts:**

Some of these products may be seasonal (like the ActiveWear Jacket), so offering them at discounted prices during peak seasons or bundling them with other products could increase sales. Consider launching promotions or limited-time offers to boost interest.

➤ **Customer Feedback:**

Gather customer feedback on these products to understand why they are underperforming. Conduct surveys, read reviews, or analyze returns data to identify any recurring issues with quality or customer satisfaction.

## 4) Regional Customer Growth



- **Asia**

- 2022: 13 signups
- 2023: 16 signups
- 2024: 16 signups

Insight: Asia experienced steady growth in customer signups from 2022 to 2024. This indicates a consistent interest, with no significant fluctuations in demand.

- **Europe**

- 2022: 16 signups
- 2023: 19 signups
- 2024: 15 signups

Insight: Europe showed an increase in signups in 2023 but saw a slight dip in 2024. This suggests a potential market saturation or increased competition in 2024.

- **North America**

- 2022: 10 signups

- 2023: 8 signups

- 2024: 28 signups

Insight: North America experienced a sharp decline in 2023, followed by a significant spike in 2024. The growth in 2024 could be attributed to effective marketing campaigns, promotions, or new product offerings.

- **South America**

- 2022: 25 signups

- 2023: 14 signups

- 2024: 20 signups

Insight: South America had strong initial growth in 2022, but the following years saw a decline in signups, with a slight recovery in 2024. This suggests that further market research or targeted promotions are needed to maintain customer growth in this region.

### **Suggestions:**

- **Targeted Marketing for North America and South America:**

North America saw a significant increase in 2024 signups, likely due to a successful strategy. Replicating these strategies, such as offering targeted promotions or localized campaigns, could drive even higher growth. In contrast, South America should focus on understanding the causes behind the decline in signups and address these issues, such as offering localized discounts, improving the product offering, or addressing market challenges.

- **Stabilizing Growth in Europe and Asia:**

Both Asia and Europe showed relatively stable growth. While this is good, there is an opportunity to further accelerate growth. Implementing more aggressive customer acquisition strategies in Europe (to recover from the 2024 dip) and expanding promotional efforts in Asia could help achieve higher growth.

- **Customer Retention Strategies:**

Since North America experienced a steep decline and a subsequent sharp rise,

it is essential to ensure that these customers stay. Offering loyalty programs, referral bonuses, or personalized discounts can improve retention.

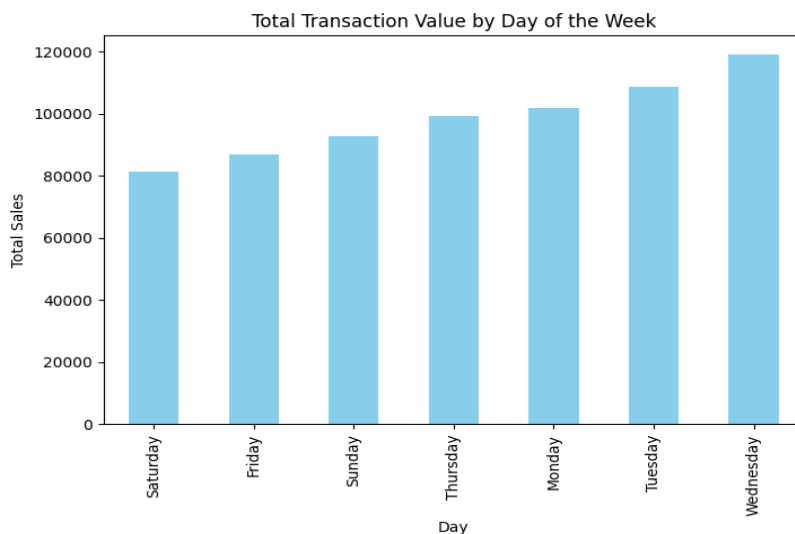
➤ **Regional Product Customization:**

Customize marketing strategies and product offerings based on the cultural preferences and purchasing behavior of each region. For example, Asia may prefer certain product types or services, while North America may respond better to others. Tailor products accordingly.

➤ **Monitor Regional Competitor Activity:**

In regions like South America, where the growth fluctuated, investigate local competitor activity. Implementing competitive analysis will help the company refine its offerings to stay ahead of competitors in these regions.

## 5) Transaction Patters DayofWeek



- **Wednesday - 119,203.15**

Wednesday is the highest performing day, indicating that customers are most likely to make purchases mid-week. This could be due to mid-week promotions, restocking, or customers planning purchases for the end of the week.

- **Tuesday - 108,567.61**

Tuesday also sees high sales, second only to Wednesday. The consistent sales on Tuesday might suggest that customers are still in purchasing mode after the weekend.

- **Monday - 101,984.33**

Monday follows closely behind Tuesday in terms of sales, possibly due to the start of a new week where customers are resuming shopping habits. Offering promotions post-weekend could keep sales consistent throughout the early week.

- **Thursday - 99,202.71**

Thursday shows solid sales but is slightly lower than Monday and Tuesday. This could suggest that customers are gearing up for weekend shopping and may prefer to delay purchasing until later in the week.

- **Sunday - 92,605.93**

Sunday shows a slight dip in sales compared to earlier days in the week, likely due to customers preparing for the upcoming work week. Promotions toward the end of the weekend could help boost sales further.

- **Friday - 87,032.09**

Friday has the lowest sales figure, indicating a potential lack of customer activity as they head into the weekend. This could be an opportunity to target customers with time-limited weekend offers or discounts.

- **Saturday - 81,399.74**

Saturday also has relatively low sales compared to mid-week days, likely due to customers being occupied with personal or leisure activities over the weekend.

### **Suggestions:**

- **Increase Promotions on Low-Performing Days (Friday and Saturday):**

Since Friday and Saturday show the lowest sales, launching **time-limited offers**, **weekend discounts**, or **exclusive promotions** can encourage customers to shop during these days. This could drive higher traffic and sales during the weekend.

- **Capitalize on Mid-Week Sales (Wednesday and Tuesday):**

With **Wednesday** and **Tuesday** driving the highest sales, continue promoting **mid-week sales** or create incentives such as loyalty programs, flash sales, or restock announcements to keep the momentum high.

- **Weekend Campaigns:**

Given that Sunday sales are lower than mid-week days, implementing targeted



**Sunday promotions** could shift the weekend demand. Special **Sunday deals** or exclusive products available only on Sundays might help recover some of the lost revenue from the previous days.

➤ **Tailor Marketing Campaigns:**

Based on sales patterns, tailor marketing campaigns to align with customer behavior on specific days. For instance, focus on **Thursday to Friday marketing** to build anticipation for the weekend, while using **Tuesday and Wednesday for mid-week discounts**.

➤ **Customer Behavior Analysis:**

Further analyze customer data to identify why certain days perform better. Are there specific promotions that work better on certain days? Are customers more likely to make higher-value purchases mid-week?

## **Conclusion**

The analysis of **Sales Performance by Day of the Week** reveals distinct patterns that can guide marketing and sales strategies. **Tuesday** and **Wednesday** are the highest-performing days, indicating that customers are more likely to make purchases mid-week. To capitalize on this, businesses can reinforce mid-week promotions and targeted marketing. On the other hand, **Friday** and **Saturday** show a significant decline in sales, with Friday being the lowest, suggesting the need for **weekend-specific offers** to boost customer engagement. **Sunday** also presents a recovery opportunity by introducing **weekend-ending promotions** to drive last-minute purchases. By aligning strategies with these trends, businesses can maintain steady sales throughout the week while improving performance on traditionally slower days.