

The exploratory data analysis (EDA) performed on the eCommerce Transactions dataset provides valuable insights into customer behavior, product performance, and sales trends. Here's a comprehensive report on the EDA:

Customer Analysis

- 1. Europe appears to have the most recent customer acquisitions, followed by Asia, then South America, with North America having the oldest customer base. This suggests effective marketing or strategic efforts in European markets.
- 2. This trend indicates that the company has been expanding its customer reach, with Europe being the most recent focus of growth. This can be a consequence of
 - a. Market saturation in North America leading to a shift in focus to other regions
 - b. Recent marketing efforts or expansion strategies targeting European markets
 - c. Growing e-commerce adoption rates in Europe compared to other regions

Product Analysis

- 1. 100 unique products across four categories:
Books(26%), Electronics(26%), Clothing(25%), and Home Decor(23%).

	count	mean	std	min	25%	50%	75%	max
Category								
Books	26.0	292.212308	153.800135	33.59	154.2975	337.94	419.2125	497.76
Clothing	25.0	263.720000	157.965038	18.82	126.3400	303.50	389.2000	481.78
Electronics	26.0	275.353462	137.056612	16.08	168.8000	282.72	394.3650	459.86
Home Decor	23.0	235.020000	122.236552	41.18	142.3800	235.58	314.9750	454.53

- 2. Books and Electronics dominate sales (26% each), indicating strong demand in these categories. Books also have the highest average price, making them profitable despite their lower frequency of purchase.
- 3. Home Decor has the lowest average price, potentially signaling either a pricing strategy to attract more customers or a market where premium pricing isn't viable.
- 4. Continue promoting Books and Electronics since they are high-performing categories. Highlight best selling products like TechPro Headphones in campaigns.

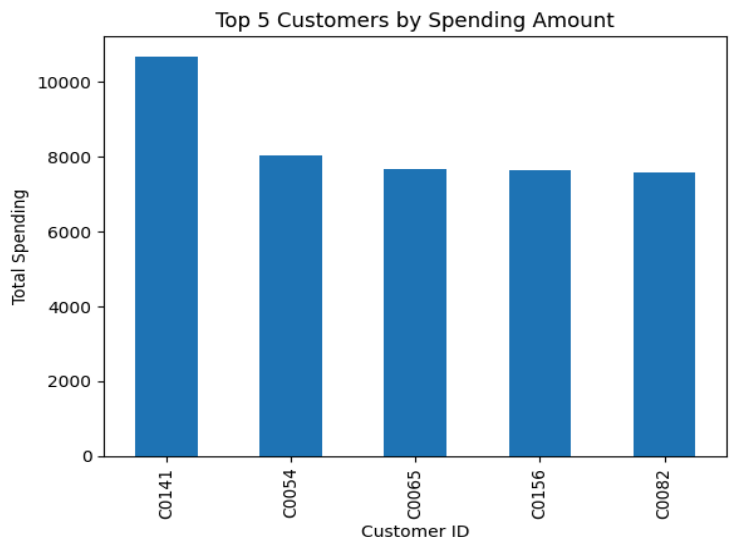
Transaction Analysis

- 1. frequently bought product - Soundwave Jeans P059- quantity: 19
- 2. less frequent product Soundwave Headphones-P031- Quantity 4

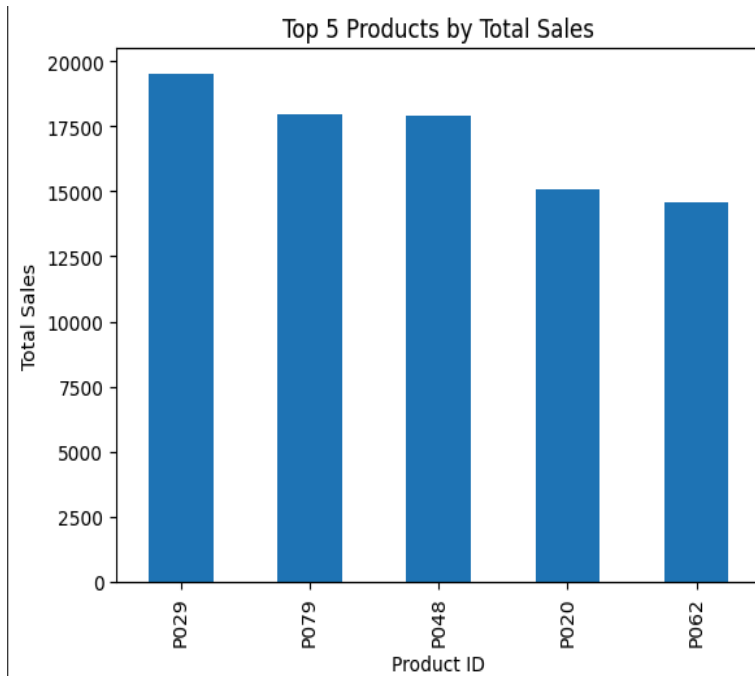
- 3. **Activewear Smartwatch and Soundwave Headphones** are repeated product names across the data, suggesting high demand for these products or multiple versions being sold.
- 4. The average transaction value of ₹689.99 suggests that most customers purchase mid-priced items.

Key Findings and Visualizations

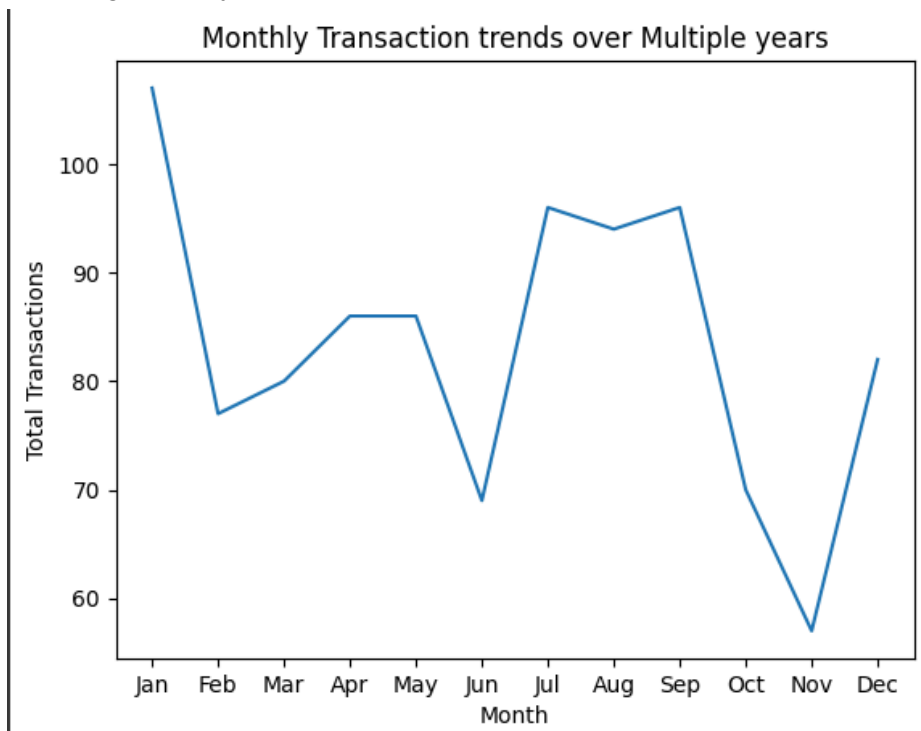
- 1. Top Customers by Spending: bar chart showcased the highest-spending customers, with customer C0141 (Paul Parsons from Europe) leading at ₹10,673.87 in total purchases.

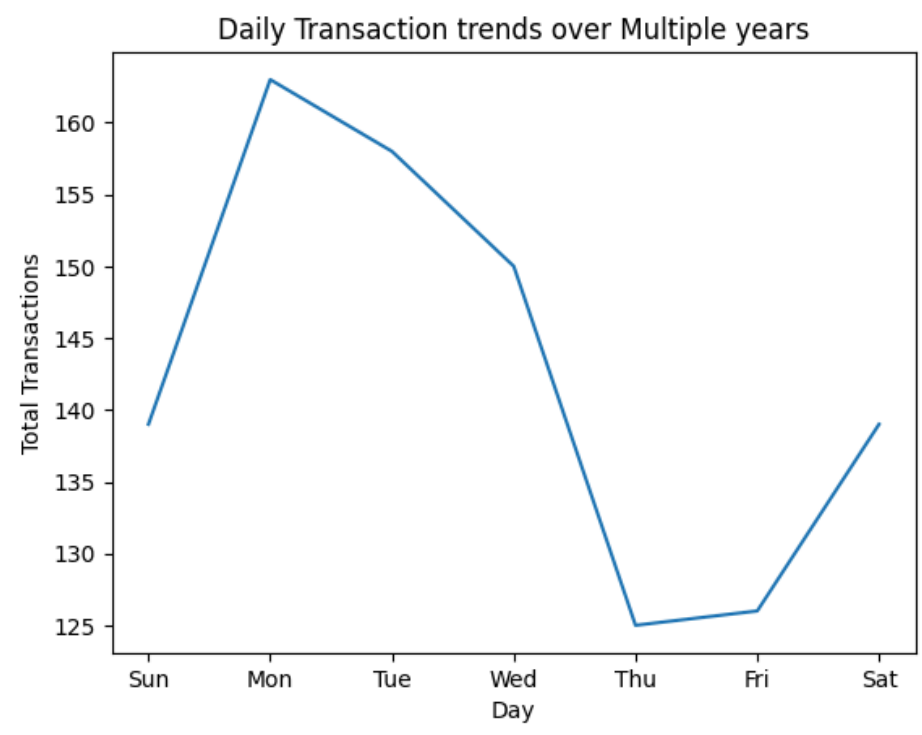


- 2. Top Selling Product: TechPro Headphones (P029) generated ₹19,513 in total sales, making it the top performer. The product's popularity may stem from brand reputation, competitive pricing, or marketing.



3. Monthly and Daily Transaction Trends: A line chart illustrates monthly sales trends, revealing January 2024 as the peak month with ₹66,376.39 in sales.





January 2024 was the highest sales month, possibly due to post-holiday shopping or New Year campaigns. This trend highlights the importance of capitalizing on seasonal sales opportunities.

Actionable insights:

Focus on Europe:

- Invest further in Europe through localized ads, partnerships, and region-specific promotions to continue growth in this emerging market.

Strengthen Top Categories:

- Continue promoting Books and Electronics since they are high-performing categories. Highlight bestselling products like TechPro Headphones in campaigns.

Leverage Seasonality:

- Plan targeted promotions in January and other high-sales periods to maximize revenue.

Customer Retention Programs:

- Develop loyalty programs to retain high-spending customers like Paul Parsons, offering perks like discounts or exclusive early access.