**Data Cleaning**

* There are 50,000 missing values for Customer ID, Payment Method, Store Type, Customer Age, Customer Gender, Product Name and Transaction Date. 42,633 missing values in Region column.
* There are 7,446 rows with negative values for Transaction Amount. This is probably faulty data and will have to be removed or corrected.

**Overall Sales Performance**

* Total Transactions: 492,554 resulting in a Total Transaction Amount of Rs. 10.2 billion.
* Average transaction value: Rs. 20,721, indicating a high-value products on an average.
* Total quantity sold: 3.69 million units, showing strong sales volume.

**Monthly Sales Trends**

* Sales are relatively stable from January to November, averaging around Rs. 800 million per month.
* A sharp decline in December (~57% drop). Further analysis is needed to understand the reason.
* The highest sales month was August (Rs. 822 million), while the lowest was December (Rs. 342 million).

**Customer Demographics & Spending Patterns**

* Ages 50, 38, and 55 have the highest spending.
* Youngest high-spending age group: 21-year-olds (~Rs. 61M), indicating strong engagement from younger customers.
* Senior customers (65+) still contribute significantly, spending ~ Rs. 60M.
* All genders (Male, Female, Other) show comparable spending patterns across age groups.

**Loyalty Points**

* The top customers have over 100,000 loyalty points, indicating strong long-term engagement.
* The highest loyalty point holder has 132,369 points, suggesting repeat purchases and high spending.
* A loyalty program analysis could help determine how these high-value customers contribute to overall revenue and whether targeted rewards could drive even more spending.

**Regional Sales Performance**

* Delhi (South) leads in total sales (Rs. 1.02B), significantly ahead of other cities.
* Sales are relatively evenly distributed across other regions, with multiple cities with sales ~Rs. 250M
* East region dominates sales, with Kolkata, Lucknow, Pune, Ahmedabad, Mumbai, Jaipur, Bangalore, Hyderabad, and Chennai all showing strong numbers.

**Product Performance Analysis**

* Laptops generate the most revenue (Rs. 6.23B) but have low sales volume (88,931 units) → indicates high unit price.
* Sofas are the second-highest revenue generator (Rs. 3.78B) with a similar low sales volume (88,834 units), suggesting a luxury or premium positioning.
* Apple products have high volume (2.27M units sold) but lower revenue (Rs. 22.75M), indicating low average price per unit.

**Product Returns Analysis**

* All major products have high return counts (~44,000-45,000 each), possibly due to defects, incorrect orders, or customer dissatisfaction.
* Laptops (44,904 returns) have high returns despite being the top revenue generator (Rs. 6.23B), which could indicate issues with product quality, customer expectations, or warranty claims.

**Impact of Discounts on Sales**

* High-discounted items (>30%) contribute Rs. 4.08B in revenue (~40% of total sales) and account for 1.48M units sold.
* Medium-discounted items (10-30%) generate a similar Rs. 4.09B in revenue with a slightly lower volume.
* Low-discounted items (<10%) contribute only Rs. 2.03B (~20% of total revenue) and have the lowest sales volume (737K units).

**Sales Performance by Store Type**

* In-Store and Online sales are nearly equal (~Rs. 5.08B each), with online having slightly more transactions (225K vs. 224K).
* 50,000 transactions are recorded with a "NULL" store type, accounting for ~Rs. 45.7M in revenue – this needs further investigation.

**Shipping Cost Impact on Transactions**

* Low shipping cost (<Rs. 200) dominates transactions (338K, ~68%), indicating that customers prefer lower shipping fees.
* Medium shipping cost (Rs. 200–Rs. 1400) accounts for 95.8K transactions (~19%), showing moderate acceptance.
* High shipping cost (>Rs. 1400) has the lowest transaction count (65.9K, ~13%).