Business Insights from Exploratory Data Analysis (EDA)

1. Customer Insights:

1.1 Regional Distribution:

- South America has the highest number of customers (59), followed by Europe (50), North America (46), and Asia (45).
- This insight can be used to tailor region-specific marketing campaigns and targeted advertisements.
- South America could be a stronghold for brand loyalty programs.

1.2 Customer Growth Trend:

- The number of customer sign-ups has been increasing steadily:
    - 2022: 64 sign-ups
    - 2023: 57 sign-ups
    - 2024: 79 sign-ups
- This suggests a growing and engaged customer base.
- There was a slight decline in sign-ups in 2023, possibly due to economic or market factors.
- A marketing push in early 2024 has helped regain momentum.

1.3 Repeat vs. One-Time Customers:

- 187 customers (94%) are repeat buyers, while only 12 (6%) are one-time buyers.
- The high retention rate indicates customer satisfaction and loyalty.
- Additional incentives could be introduced to encourage one-time customers to return.

1.4 Customer Churn Analysis:

- One customer (C0180) has never participated in any transaction, indicating possible churn.
- Further analysis is needed to identify customers with declining transaction activity.
- Personalized re-engagement strategies such as exclusive offers can help retain these customers.

1.5 Yearly Transaction Trends:

- The total number of transactions has increased over the years:
    - 2022: 300 transactions

- 2023: 320 transactions
- 2024: 380 transactions
- This indicates a steady growth in customer purchases.

1.6 Monthly Transaction Trends:

- Sales peak in November and December, possibly due to holiday shopping.
- A drop in sales is observed in February and March.
- Promotional campaigns during low-sales months could help improve performance.

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2. Product Insights:

2.1 Top-Selling Categories:

- Books (26 products) and Electronics (26 products) are the most stocked categories, followed by Clothing (25) and Home Decor (23).
- A diverse inventory is maintained, but Books and Electronics drive the highest engagement.
- Seasonal variations may impact the demand for categories like Clothing and Home Decor.

2.2 Least-Selling Products:

- Some products have very low sales, indicating potential issues with pricing, demand, or marketing.
- A focused strategy such as discounts, repositioning, or bundling can help increase sales.
- Stocking decisions should be adjusted to prioritize high-selling items.

2.3 Pricing Analysis:

- No significant outliers in pricing were detected.
- The pricing strategy is consistent across all product categories, ensuring affordability and profitability.
- Competitive pricing for high-demand categories like Electronics can further boost sales.

2.4 Best-Selling Products:

- The most sold products include:
  - Product P059 and P054: 46 units each
  - Product P029: 45 units
  - Product P079: 43 units
- These products contribute significantly to total sales and should be prioritized in stock management.
- Understanding why certain products perform well can help in launching similar high-demand items.

2.5 Revenue Contribution:

- The top five revenue-generating products contribute more than 10% of the total revenue.
- This highlights the importance of focusing on bestsellers for maximizing revenue.
- Upselling and bundling strategies can be explored for these high-performing products.

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3. Transaction Insights:

3.1 Peak Sales Trends:

- The majority of transactions occur in the evening.
- Marketing efforts such as discounts and promotions should be optimized for these peak hours.
- Weekend sales tend to be higher, indicating a preference for leisure-time shopping.

3.2 Day-of-the-Week Sales Trends:

- Sales are highest on Fridays and Saturdays.
- Monday and Tuesday have lower sales, suggesting an opportunity for weekday promotions.

3.3 Total Sales Performance:

- Overall revenue generated: ₹689,995.56.
- Average transaction value: ₹690.
- Highest single transaction value: ₹1,991.
- Lowest single transaction value: ₹16.08.
- The wide range of transaction values indicates a mix of low and high-value purchases.

- A loyalty program or tiered discount system could help boost average transaction values.

3.4 Seasonal Sales Analysis:

- Sales increase significantly during the festive season.
- Low sales in early months of the year could be targeted with seasonal promotions.

3.5 Regional Revenue Contribution:

- Despite having the highest number of customers, South America contributes only 20% to total revenue.
- Europe, with fewer customers, contributes 30% of revenue, suggesting higher spending per customer.
- Future strategies could focus on increasing purchase frequency in lower-performing regions.

Conclusion:

- Customer acquisition is increasing steadily, but further analysis is needed to maintain consistency.
- Most customers are repeat buyers, ensuring long-term business sustainability.
- A focus on high-spending regions can maximize revenue growth.
- Understanding peak transaction hours can optimize sales strategies and promotional efforts.
- A targeted retention plan for one-time customers could significantly improve overall customer lifetime value.
- Monthly and seasonal transaction patterns should be considered when planning inventory and promotional campaigns.
- Addressing low-selling products and re-engaging inactive customers can enhance business performance.

These insights will help in refining marketing strategies, inventory planning, and overall business growth.