# Report

E-commerce Business Insights Report

Executive Summary

Analysis of e-commerce platform's performance reveals several key insights that can drive strategic decision-making. This report presents five critical business insights derived from exploratory data analysis.

Key Business Insights

1. Seasonal Sales Pattern & Growth Potential

The monthly sales pattern shows significant peaks in July and September (reaching around 70,000 in sales), with a notable dip in November (around 38,000). This cyclical pattern suggests opportunity for better inventory planning and targeted marketing during low periods. The average monthly growth rate of 140.7% indicates strong business expansion, though this rapid growth needs sustainable management.
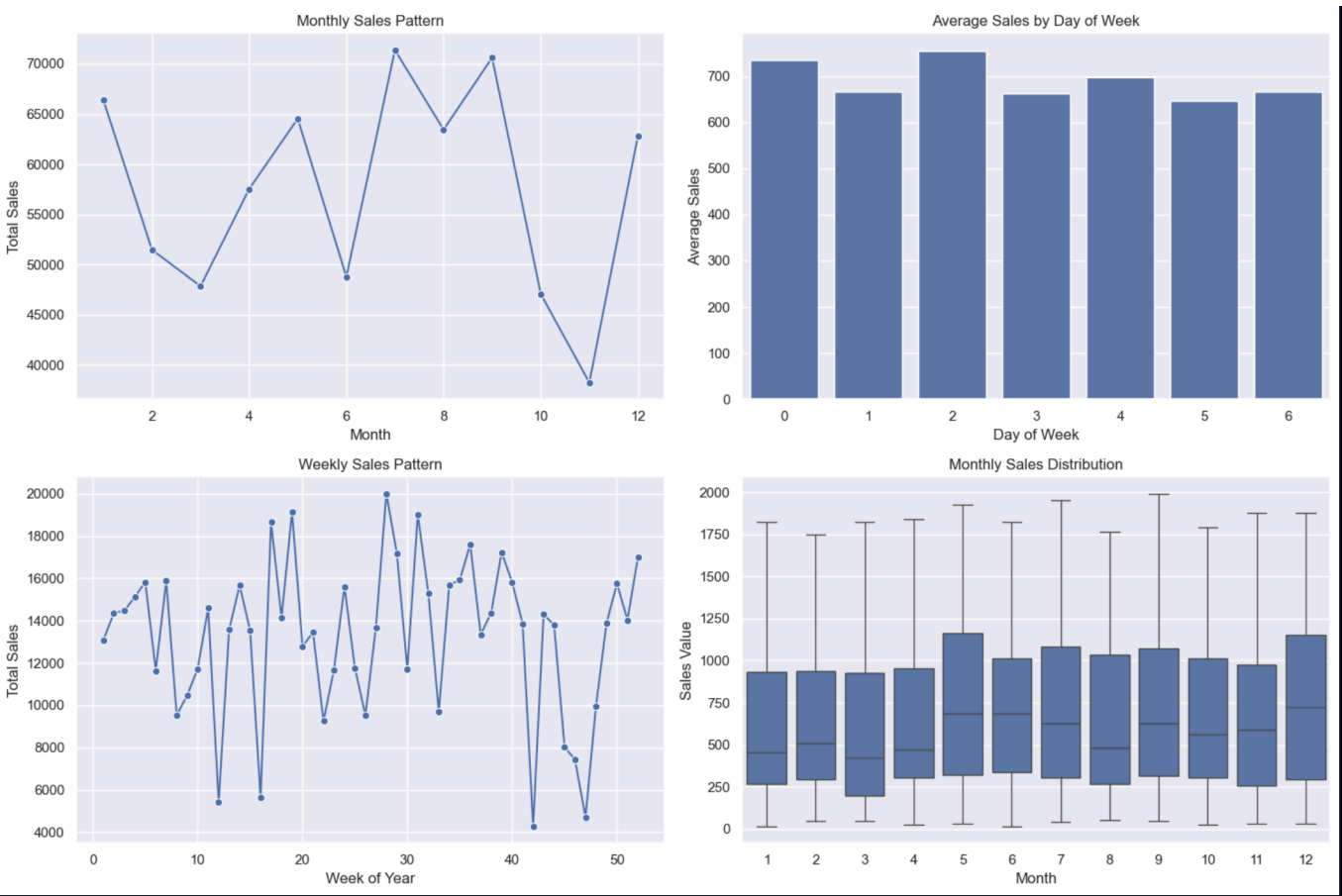
Transaction Statistics:


Total number of transactions:
1000
Total revenue: $689,995.56
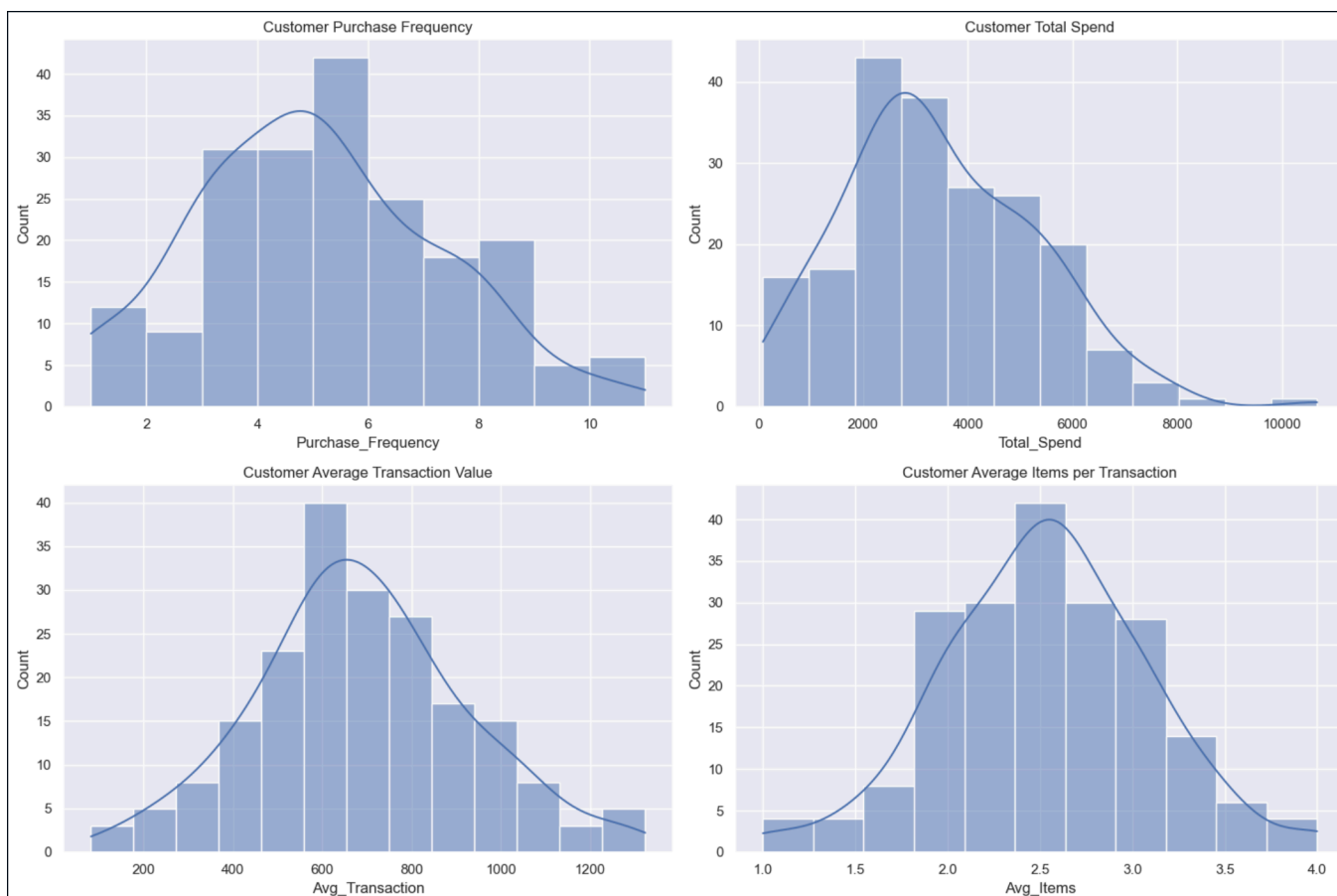
Monthly Sales Trend

2. Category Performance & Revenue Distribution

Books lead revenue generation at 27.8% of total sales, followed closely by Electronics (26.2%), Clothing (24.1%), and Home Decor (21.9%). Despite similar product counts across categories (23-26 products each), Books generate higher revenue (approximately 190,000) compared to Home Decor (150,000), suggesting better profit margins or higher-priced items in the Books category.
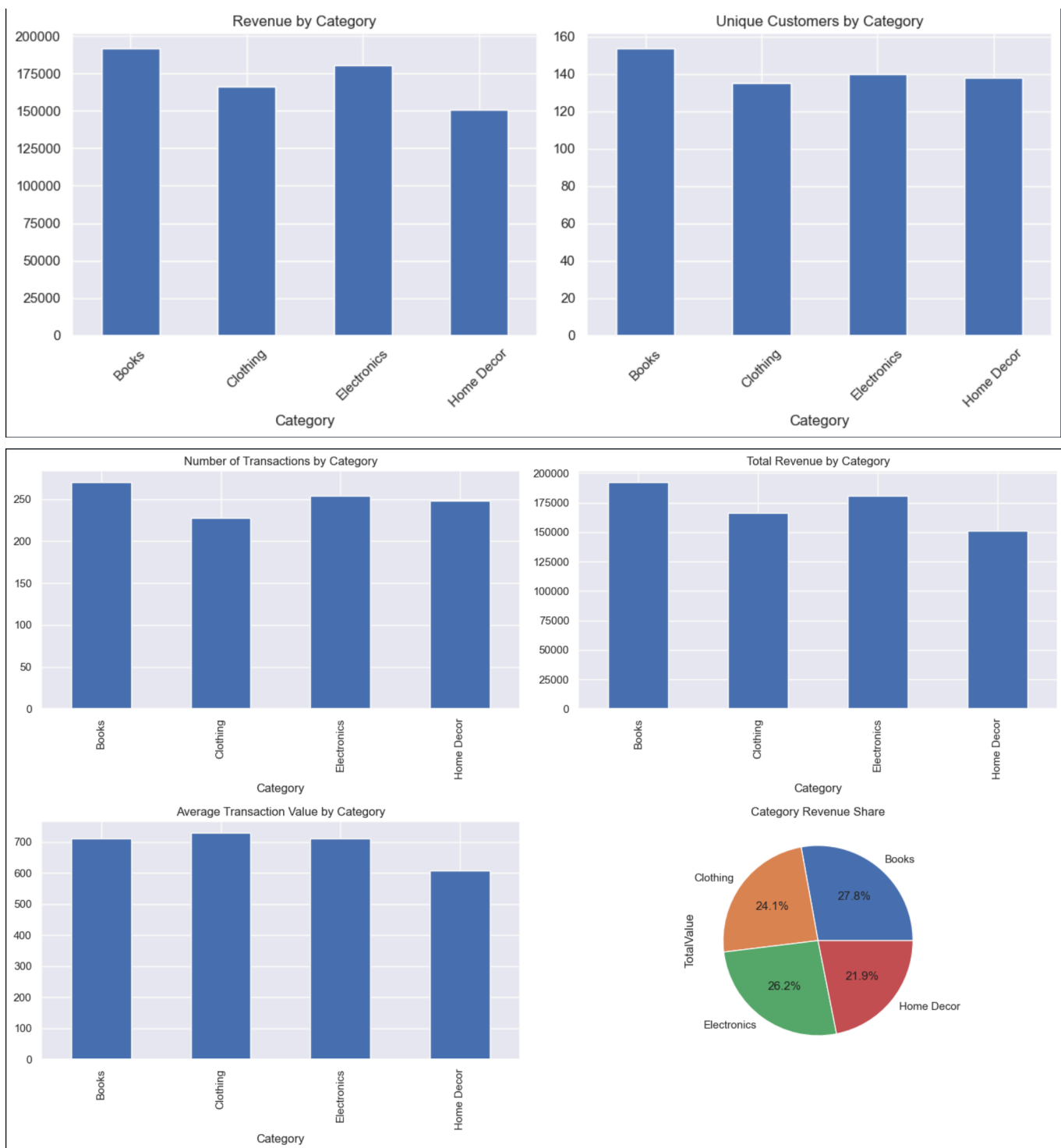
3. Customer Purchase Behavior

The average customer makes 5.02 purchases (median 5.0), with most customers buying between 3-6 items (75th percentile at 6.0). The purchase frequency distribution shows a healthy mix of both new and returning customers, with some highly engaged customers making up to 11 purchases. This indicates strong customer retention potential.

Customer Purchase Frequency | **Customer Total Spend**
Customer Average Transaction Value | **Customer Average Items per Transaction**

4. Regional Market Dynamics

South America shows the strongest performance with highest total revenue ($219,352) and most customers (59), followed by Europe ($166,254, 50 customers). However, North America leads in orders per customer (5.30), suggesting higher customer engagement despite lower total customer count. This indicates different regional marketing strategies may be needed.

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Regional Performance Metrics:
            TotalValue                 CustomerID TransactionID   \
                  sum        mean        nunique          count
Region
Asia         152074.97  697.591606           44            218
Europe       166254.63  710.489872           50            234
North America 152313.40  624.235246           46            244
South America 219352.56  721.554474           59            304


            Orders_Per_Customer

Region
Asia                 4.954545
Europe               4.680000
North America        5.304348
South America        5.152542

Key Business Insights:
1. Top 10 customers contribute $76,013.31 in revenue
2. Top 5 products account for 19.4% of revenue
3. Customer distribution: {'Asia': 44, 'Europe': 50, 'North America': 46, 'South America': 59}
4. Average monthly growth rate: 140.7%
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5. Customer Value Concentration

The top 10 customers contribute $76,013.31 in revenue, while the top 5 products account for 19.4% of revenue. This concentration suggests both opportunity (high-value customer retention) and risk (dependency on key customers/products). The customer lifetime value distribution shows several outliers above 200,000, indicating potential for premium customer programs. Also, When customers buy more(purchase count), they are spending more money. In contrast, if we can offer them good deals, then they will purchase more leading to higher profits .

Customer Activity Period

Customer Lifetime Value Distribution

Relationship between Purchase Count and Total Spend