Exploratory Data Analysis Report

This report presents key insights derived from the exploratory data analysis of a shop's performance across products, transactions, and customer behaviour.

Key Business Insights: -

1. Category Performance and Revenue Distribution

- Our analysis reveals that Books lead in revenue generation ($192,147) with 270 transactions, followed by Electronics ($180,783) with 254 transactions.
- While Books drive higher transaction volumes, Electronics show strong average transaction values, indicating premium product positioning.
- Home Decor, despite having competitive transaction counts (248), generates the lowest revenue ($150,893), suggesting potential pricing optimization opportunities.

2. Customer Engagement and Purchase Patterns

- Customer analysis shows an average of 5 transactions per customer. This healthy repeat purchase rate indicates strong customer loyalty.
- The customer base spans four major regions: North America, Europe, Asia, and South America, with South America being the largest customer base having almost 32% more revenue generation than Asia, the second largest consumer base.
- This geographical diversity presents opportunities for region and culture specific marketing strategies and expansion initiatives.

3. Seasonal Revenue Trends

- Clear seasonal patterns emerge in our sales data, with peak revenues in July ($71,366) and September ($70,603), and a notable trough in November ($38,224).
- This seasonality suggests opportunities for:
  - Inventory optimization aligned with peak seasons
  - Targeted promotions during slower months
  - Season-specific product launches and marketing campaigns

4. Product Pricing Strategy Insights

- Price analysis reveals significant variation across categories:
  - Electronics: Highest average price point ($267.55)
  - Books: Most accessible price range (starting from $16.08)

- Premium segment products (>$400) show strong performance

- These findings indicate opportunities for strategic pricing adjustments and category-specific promotion strategies.

5. Regional Market Performance

Regional analysis reveals distinct purchasing patterns across markets. Each region shows unique category preferences and average transaction values, suggesting the need for:

- Localized marketing approaches

- Region-specific product assortment

- Customized pricing strategies by market