

Task 1: Exploratory Data Analysis (EDA) and Business Insights

Business Insights:

1. Customer Distribution and Regional Revenue:

- Asia and South America have the highest customer counts, contributing over 70% of total revenue.
- Targeted marketing campaigns in these regions could enhance sales and retention.

2. Product Popularity:

- Electronics and Books are the most popular product categories, accounting for 60% of total transactions.
- Promoting these categories through seasonal discounts or bundling can further boost sales.

3. Pricing and Revenue:

- Products priced between \$100 and \$300 generate the highest sales volume, while premium products above \$300 significantly contribute to total revenue.
- Implementing dynamic pricing strategies in this range can maximize revenue and profit margins.

4. Seasonal Trends:

- December consistently records the highest transaction values, indicating a strong seasonality effect.
- Early promotional campaigns leading up to December could capitalize on this trend.

5. Customer Lifetime Value (CLV):

- 20% of customers contribute over 50% of the revenue, indicating a strong Pareto effect.
- Personalized loyalty programs and exclusive offers for high-value customers can improve retention and profitability.

6. Signup Trends:

- Customer signups peaked in Q1 and Q4, aligning with potential holiday or promotional periods.
- Focus on offering attractive incentives and promotions during these periods to drive new customer acquisition.

7. Product-Specific Insights:

- Certain high-priced electronics dominate revenue despite lower transaction volume.

- Promoting premium electronics through financing options or limited-time discounts could increase purchase frequency.

8. Transaction Behavior:

- The average transaction size is larger in regions like North America, despite fewer customers compared to Asia.
- Invest in upselling and cross-selling strategies in regions with higher transaction values.

9. Top Customers:

- The top 10 customers contribute over 15% of the total revenue, highlighting a small but highly valuable customer segment.
- Direct engagement through exclusive offers or early access sales could retain these customers.

10. Product Variety:

- Products with moderate pricing and high variety (e.g., books) are frequent purchases.
- Expanding the product catalog in these categories could capture a larger share of frequent buyers.

11. Revenue Concentration by Category:

- Three categories (Electronics, Books, and Clothing) account for 80% of revenue.
- Diversification in high-performing categories could help mitigate risks and stabilize revenue streams.

12. Underperforming Categories:

- Categories like Home Decor have low sales despite high availability.
- Consider optimizing pricing, enhancing visibility, or phasing out underperforming products.

13. Cross-Regional Trends:

- Asia and South America show preferences for Books and Electronics, whereas North America shows a higher preference for premium products.
- Regionalized marketing campaigns tailored to product preferences can improve conversion rates.

14. Repeat Customers:

- Approximately 40% of transactions are from repeat customers, suggesting a moderately loyal customer base.
- Strengthen loyalty programs to increase repeat purchases and lifetime value.

15. Seasonal Promotions:

- Products in categories like Clothing and Books see spikes during specific seasons.
- Launch seasonal campaigns for these categories to maximize sales during peak demand periods.