

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

1) Derive at least 5 business insights from the EDA.

1. Customer Distribution and Regional Trends

Insight:

- The customer base is not evenly distributed across regions. Some regions, such as **Asia and North America**, have a higher number of customers, while others have lower engagement.

Business Implications:

- The company should **focus its marketing and sales efforts on high-customer-density regions** while exploring growth strategies in underrepresented markets.
- Regional sales promotions and personalized marketing campaigns can be designed to cater to specific regional preferences.

2. Best-Selling Products and Inventory Optimization

Insight:

- A small subset of products contributes to the majority of transactions, with **books, electronics, and clothing** being the top-selling categories.
- Some products have very low sales, indicating possible inventory inefficiencies.

Business Implications:

- The company should **optimize its inventory management** by stocking up on best-selling items while reconsidering or promoting slow-moving products.
- Dynamic pricing strategies can be applied to slow-selling products to increase demand.
- Bundling top-selling and underperforming products together might help clear inventory while boosting overall sales.

3. Seasonal Sales Trends and Revenue Peaks

Insight:

- Monthly transaction trends indicate **fluctuations in sales, with certain months showing significant spikes in revenue.**
- Peak sales periods coincide with **major shopping seasons, likely influenced by global events such as Black Friday, holiday sales, or back-to-school periods.**

Business Implications:

- The business should **strategically time marketing campaigns, discounts, and promotions** to align with seasonal peaks.
- Supply chain planning should be adjusted to **anticipate demand surges** and prevent stockouts during peak seasons.
- Off-peak months can be used to introduce **loyalty programs, referral discounts, or special deals** to maintain steady revenue.

4. Customer Retention and High-Value Customers

Insight:

- A **small percentage of customers make repeat purchases frequently**, contributing significantly to total revenue.
- A large portion of customers make **only a single transaction**, indicating potential retention challenges.

Business Implications:

- A **customer loyalty program** should be introduced to incentivize repeat purchases through exclusive discounts, personalized offers, and reward points.
- High-value customers (those with frequent transactions) should be **targeted with premium offers** to enhance their lifetime value.
- The company should analyze **churn reasons for one-time buyers** and implement strategies like post-purchase engagement emails and retargeting ads.

5. Pricing Strategy and Revenue Optimization

Insight:

- The **price distribution of products is highly varied**, with some expensive products experiencing fewer sales while mid-range products are more popular.
- Products with extreme prices (too low or too high) may not be optimally priced for maximum revenue.

Business Implications:

- The company should conduct **A/B pricing tests** to identify the optimal price points for underperforming products.
- **Bundling high-priced items with complementary lower-cost products** can encourage purchases.
- Discounts and installment payment options can be introduced for premium-priced products to **boost accessibility and sales**.