

## **Data Science Assignment Report:**

### **eCommerce Transactions Dataset**

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

##### **1. EDA Summary:**

- The dataset consists of three main files: Customers.csv, Products.csv, and Transactions.csv.
- Key attributes were analyzed for missing values, outliers, and distributions.
- Relationships between customers, products, and transactions were visualized using charts and summary statistics.

##### **2. Business Insights:**

###### **1. Customer Distribution by Region:**

- Customers are unevenly distributed across continents, with the majority residing in Asia and North America.
- **Actionable Insight:** Develop region-specific marketing campaigns to increase customer engagement in underserved regions.

###### **2. Top-Selling Products by Category:**

- Categories such as Electronics and Apparel dominate the sales volume and revenue.
- **Actionable Insight:** Prioritize stock management for these categories to ensure availability and avoid lost sales.

###### **3. High-Spending Customers:**

- A small percentage of customers contribute to the majority of revenue (Pareto Principle observed).
- **Actionable Insight:** Launch exclusive loyalty programs and personalized offers for high-value customers to retain them.

###### **4. Transaction Trends:**

- Sales exhibit a seasonal pattern, peaking during specific months (e.g., holiday seasons).
- **Actionable Insight:** Enhance marketing and promotional activities during peak seasons to capitalize on high demand.

###### **5. Average Transaction Value:**

- High-value transactions are often associated with premium products.
- **Actionable Insight:** Implement upselling and cross-selling strategies to boost average transaction value further.