### Project Objective: E-commerce Platform Optimization

#### Problem Statement:

An e-commerce company that sells clothing online also provides in-store style and clothing advice sessions. Customers visit the store for personalized styling advice and later make purchases either via the company’s mobile app or website. The company is looking to determine which platform—mobile app or website—contributes more to customer spending and should be prioritized for future development efforts.

#### Business Objective:

The goal of this project is to analyze customer behavior and spending trends to determine which digital platform (mobile app vs. website) has a greater impact on annual revenue. By identifying key factors influencing customer purchases, we aim to provide data-driven insights to help the company make strategic decisions regarding resource allocation, platform improvements, and customer engagement strategies.

#### Dataset Overview:

We will use the *Ecommerce Customers CSV* dataset, which includes customer demographic information and key behavioral metrics. The dataset consists of the following columns:

* **Avg. Session Length:** The average duration (in minutes) of in-store styling advice sessions.
* **Time on App:** The average time (in minutes) a customer spends on the mobile app.
* **Time on Website:** The average time (in minutes) a customer spends on the website.
* **Length of Membership:** The number of years a customer has been a member of the e-commerce platform.
* **Yearly Amount Spent:** The total amount the customer has spent in dollars within a year (this is the target variable for the predictive model).
* **Customer Information:** Email, Address, and Avatar (not relevant for analysis).

#### Approach:

1. **Exploratory Data Analysis (EDA):**
   * Analyze the distribution of numerical variables.
   * Identify correlations between different variables and customer spending.
   * Visualize trends in app and website usage.
2. **Feature Engineering:**
   * Identify the most relevant variables for predicting yearly spending.
   * Explore interactions between session length, membership duration, and platform usage.
3. **Model Building:**
   * Develop a regression model to predict yearly spending based on customer behavior.
   * Evaluate the impact of mobile app usage versus website usage on revenue.
   * Identify key drivers of higher spending customers.
4. **Business Insights & Recommendations:**
   * Determine which platform (mobile app or website) contributes more to yearly spending.
   * Suggest improvements for the platform that drives the most engagement.
   * Recommend personalized marketing strategies based on customer behavior.

#### Expected Outcomes:

* A predictive model that accurately estimates customer spending.
* Insights into whether the company should invest more in improving the mobile app or the website.
* Actionable recommendations to enhance customer engagement and revenue growth.