**Objective**

Conduct a choice-based conjoint analysis to understand consumer preferences for entry-level fish products labeled as genetically modified, farm-raised, or wild-caught. The analysis aims to determine the importance of product attributes, estimate consumer willingness to pay, and analyze market dynamics under varying conditions.

**Tasks**

1. **Binary Logit Model Specification**
   * Develop a binary logit model treating:
     + "Salmon" as the baseline type.
     + "Farm-raised/Genetically Modified" as the baseline production method.
     + Price as a linear term in tens of dollars.
   * Use an intercept term to build a log-likelihood function in Excel.
   * Optimize the model parameters using Solver and report the estimated coefficients.
2. **Predict Probabilities**
   * Using the optimized model, compute the predicted probabilities of purchasing each profile for all consumers.
3. **Derived Attribute Importance**
   * Calculate the derived importance of each attribute (type, production method, and price).
   * Identify the most important attribute based on the results.
4. **Dollar Value Estimation**
   * Estimate the dollar value of:
     + Tuna relative to Salmon.
     + Halibut relative to Salmon (holding production method constant).
     + Wild relative to Farm/GMO and Farm relative to Farm/GMO (holding type constant).
   * Provide an interpretation of these results.
5. **Market Simulation (Part I)**
   * Simulate a market with four products and a "None" option using the following attributes:
     + **Product 1**: Tuna, Wild, $19.99.
     + **Product 2**: Halibut, Wild, $18.99.
     + **Product 3**: Salmon, Wild, $15.99.
     + **Product 4**: Salmon, Farm, $13.99.
   * Compute the predicted market shares for each product using the logit rule.
   * Assess the change in the market share of Product 4 if it becomes "Farm-Raised and Genetically Modified" but retains its price.
6. **Elasticity Analysis (Part II)**
   * Keep Product 4 as "Farm/GMO Salmon" priced at $13.99.
   * Vary the price of Product 3 ("Wild Salmon") from $13.99 to $19.99 in $3.00 increments, holding other prices constant.
   * Predict product shares and compute own and cross-price elasticities using the arc elasticity formula.
   * Analyze the patterns of cross-price elasticities and their implications for price competition in this market.