Hands-On Learning Activity: Advanced Tools and Techniques in Financial Modeling

Hands-On Learning activity will help you apply concepts from Module 5: Advanced Tools and Techniques. You'll explore how to build a simple AutoML-powered forecast using a simulated process similar to platforms like DataRobot, and evaluate model accuracy.

Objective

To simulate using AutoML for financial forecasting and interpret the model accuracy using standard evaluation metrics.

Instructions:

- Use Excel or Google Sheets to simulate model output and performance evaluation. You may optionally use an AI tool like ChatGPT to help explain evaluation metrics.

Step 1: Define Your Modeling Goal

- Read the scenario: You want to forecast monthly website subscription revenue for a SaaS product over the next 3 months.
- Goal: Build a model that predicts revenue and assess its accuracy using metrics like MAE and RMSE.

Step 2: Review Sample Predictions

- Use the following actual and predicted values:
- Actual Revenue ($): 10,000 | 10,800 | 11,600
- Predicted Revenue ($): 9,800 | 10,500 | 11,900
- Enter the values in your spreadsheet.

Step 3: Calculate Model Accuracy Metrics

- Compute the following using formulas in your spreadsheet:
  - Mean Absolute Error (MAE)
  - Root Mean Squared Error (RMSE)
  - R-squared (optional, bonus)
- Write the formulas and final values for each metric.

Step 4: Analyze Feature Importance

- Simulate feature importance using these weights:
  - Ad Spend: 40%
  - Seasonality Index: 35%
  - Website Visitors: 25%
- Interpret what these percentages mean for the forecast model.
- Write 3–4 bullet points on how this insight would influence business strategy.

Step 5: Reflect and Evaluate AI Use

- Use ChatGPT or your own notes to answer the following:
  - What are the strengths and risks of using AutoML tools like DataRobot?
  - When might a human analyst outperform the AI?
  - How would you validate a model before relying on its outputs?
- Write a 6–8 sentence reflection summarizing your insights.