Assignment 1: Analyzing the Impact of Advertising Budgets on Sales

2025-06-04

Introduction

The goal of this assignment is to analyze how advertising budgets across YouTube, Facebook, and Newspaper platforms influence product sales. The dataset provided contains 200 observations from a marketing experiment. Each observation represents an advertising campaign with corresponding budget allocations and resulting sales figures.

Dataset Description

- YouTube : Budget spent on YouTube ads (in thousands of USD)
- Facebook: Budget spent on Facebook ads (in thousands of USD)
- Newspaper: Budget spent on Newspaper ads (in thousands of USD)
- Sales: Product sales (in thousands of units)

Your task

Use a suitable statistical modeling technique to analyze the relationships between advertising budgets and sales.

You are expected to:

- Build a data-driven model that captures how different advertising platforms affect sales.

- Interpret the model results and derive meaningful insights.

- Communicate findings effectively through both code and written explanation.

Report Submission Requirements

You must submit the following:

1. A Python notebook (.ipynb) containing:

   - All code used for data loading, processing, analysis, and visualization
   - Python Outputs
   - Clear interpretation of model results alongside the relevant code cells
   - Diagnostic analysis of model assumptions (residuals, normality, etc.)
   - A concise conclusion and recommendations based on your findings

2. An HTML version of your final report generated from the notebook.

Marking Scheme (Total: 20 Marks)s

- Python Code & Output Generation 4
- Interpretation of Results 10
- Completeness of Analysis 4
- Conclusions and Recommendations 2

Assignment Duration

Date: 4 June 2025

Time: 10:30 AM – 2:15 PM

All submissions must be made before 2:15 PM.

NOTE

Plagiarism and Similar Submissions

- All submissions must be your individual work. You are strictly advised not to copy or share your code, interpretations, conclusions, or any part of the report with other candidates.

- Submissions that exhibit substantial similarities in code, analysis, structure, or interpretation will receive zero marks for all students involved, regardless of who originally completed the work.

To avoid penalties:

- Do not share your notebook or outputs with others.

- Do not copy code or text from others' submissions.

- Always explain and write your results in your own words.

- This policy is enforced to maintain fairness, promote learning, and uphold academic standards.