


PROBLEM SET 3 - SIMPLE LINEAR REGRESSION

ECO 204 - Statistics for Business and Economics - II, Summer 2025

Faculty: Shaikh Tanvir Hossain, **TA:** Habiba Afroz

Due Date: 7th August, 10:00 PM, 2025

§

Instructions : Please form a group of three (max) and submit on Google Classroom by the due date. Submit the Excel /  file with the calculations and your answers in a single PDF file (handwritten solutions are fine). Please write all group members names and ID numbers on the first page of the PDF file.

1. You have a data set titled data_msales_aprice.xlsx, it has an independent variable average price in BDT, and a dependent variable monthly sales (measured in 1000 taka), now answer following questions,
 - (a) How do you think the average price and monthly sales are related? Just give a qualitative answer without any data work?
 - (b) Calculate the covariance between average price and monthly sales. Write the formula you used to calculate the covariance. What can you say about the relationship based on the covariance?
 - (c) Calculate the correlation between average price and monthly sales. Write the formula you used to calculate the correlation. What can you say about the relationship based on the correlation?
 - (d) Why do we need correlation when we have covariance?
 - (e) Plot the scatter plot between average price and monthly sales. Do you see any linear relationship?
 - (f) Calculate the slope and intercept of the regression line between average price and monthly sales. What is the slope and intercept?
 - (g) Write the regression equation or equation of the best fitted linear line.
 - (h) How would you interpret the intercept and slope in this case?
 - (i) Calculate the in-sample predicted values (or fitted values) of monthly sales using the regression equation. What is the sum of squared error in this case?
 - (j) Calculate the predicted values of monthly sales when average price is 300 BDT and also 1000 BDT.
 - (k) What is the R-squared value of the regression model? How do you interpret this value?