

Question #57239, Economics, Microeconomics

Question

The following regression equation estimates the relationship between the number of cups of hot chocolate sold (H) and number of swimmers (N) at the beach:

$$H = 252.8 - 2.05N \quad R^2 = 0.45.$$

(2.06) (-3.05) (t values are shown in parentheses)

- a) Explain or interpret the regression coefficient of N, the t-values, and the coefficient of determination of this equation.
- b) How is it possible that more hot chocolate is sold when there are fewer people at the beach? Does this relationship suggest anything about the specification of the equation?

Answer

- a) Explanation / interpretation:
 - a. Coefficient of N – coefficient -2.05 means that when number of swimmers increases by 1 swimmer, number of cups of hot chocolate sold decreases by 2.05 cups;
 - b. T-values – for complete interpretation of t-values we need to know quantity of observations that were used to build this regression equation. However, using given values we can conclude that null hypothesis is almost true (coefficients a and b are not significant);
 - c. Coefficient of determination – it estimates the quality of regression equation and its value is between 0 and 1. Coefficient of regression equal to 0.45 means that this regression equation explains only 45% of dispersion. It is low rate. And 55% of dispersion could not be explained by this regression equation.
- b) Hot chocolate is seasonal good for cold weather; number of swimmers at the beach is also seasonal indicator for hot weather. Looking at R-square coefficient and t-values of regression coefficients we can conclude that terms used in this regression equation are not in strong relationship. Even if number of swimmers explains cups of hot coffee sold, it is definitely not the only indicator of coffee sales. So regression model should be improved.