# Multivariate Linear regression model

# Objective

To identify the impact of the all independent variables i.e Price of egg, Price of cookies on the dependent variable that is sales

# Justification

Since all the dependent and independent variables are numerical in nature therefore we use multivariate linear regression model

# Data Analysis

1. Hypothesis for model

H0 : The model is not statically significant

H1 : Model is statistically significant

α : significance level

α should be less than 0.05 for variable to be significant

From output we observe that p=0 i.e less that α (0.05)

We Reject null hypothesis and accept H1

We can say our model is statistically significant

1. Hypothesis for ß significant

H0i : All ß coefficient are not statistically significant

H1i : At least one of the ß coefficient is statistically significant

| Coefficients: |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Estimate | Std.Error | t value | Pr(>|t|) | Significance |
| (Intercept) | 151.318 | 12.776 | 11.844 | 3.34E-12 | \*\*\* |
| Price.Eggs | -18.727 | 1.882 | -9.953 | 1.57E-10 | \*\*\* |
| Price.Cookies | -8.786 | 2.369 | -3.709 | 0.00095 | \*\*\* |

Interpretation

For both the variables the p value is 0 thet is less than α so we reject the null hypothesis i.e. H0 and we conclude that the ß coefficients for both variables are statistically significant

1. Estimation

If we increase the price of the egg by 1 unit, sales will decrease by 18.727 units

Similarly, if we increase the price of the cookies by 1 unit sales will decrease by 8.786

1. R squared - Coefficient of determination

Here R squared value id 0.8157 i.e. my model will predict the variation only 81.57 percent for the dependent variable with respect to the changes in the independent variables

And remaining 18.5 percent variation is due to external factors

1. Multicollinearity

The VIF(variance inflation factor) value for all the variables is <5 for all the independent variables therefore there is no multicollinearity between the variables