**A provide example of your own design on linear regression and logistics models**

Linear regression is a well-known statistical analysis tools for predicting the linear relationship between the response variable and one or more predictor variables. Assuming we are to investigate the recent company stock prices after the financial market breakdown or stumbled by Pandemic. After the collection of data, we can perform a scattered plot analysis to verify changes in price in the recent months or years, the plotted trend line is to reveal if we have an upward movement or download movement. The following data below were obtained from the stock prices of Friday movers.

|  |  |  |
| --- | --- | --- |
| S/N | STOCKS | $ PRICE |
| 1. | MTD | 77.37 |
| 2. | ALB | 6.72 |
| 3. | CVS | 3.54 |
| 4. | PAVC | 14.86 |
| 5. | HFC | 1.10 |
| 6. | CI | 12.69 |
| 7. | DXC | 1.47 |
| 8. | FLS | 2.97 |

**Analysis**

Scattered plot

Trend

The graph shows that the stock prices in Friday movers company reveals that the price is experienced both upward and downward movement, no stable or fixed price.

Regression Equation and line

The trend line shows that the stock price in the company has experience a fall in estimated time period. For every one percentage increase in the number of stocks in the company there is 63.5% decrease in the Stock Price in the company.

Coefficient Analysis

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SUMMARY OUTPUT | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *Regression Statistics* | |  |  |  |  |  |  |  |
| Multiple R | 0.605653 |  |  |  |  |  |  |  |
| R Square | 0.366816 |  |  |  |  |  |  |  |
| Adjusted R Square | 0.261285 |  |  |  |  |  |  |  |
| Standard Error | 22.07147 |  |  |  |  |  |  |  |
| Observations | 8 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| ANOVA |  |  |  |  |  |  |  |  |
|  | *df* | *SS* | *MS* | *F* | *Significance F* |  |  |  |
| Regression | 1 | 1693.291 | 1693.291 | 3.475915 | 0.111544 |  |  |  |
| Residual | 6 | 2922.899 | 487.1498 |  |  |  |  |  |
| Total | 7 | 4616.19 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
| Intercept | 43.66286 | 17.19795 | 2.538841 | 0.04415 | 1.580988 | 85.74473 | 1.580988 | 85.74473 |
| s/n | -6.34952 | 3.405702 | -1.86438 | 0.111544 | -14.683 | 1.983928 | -14.683 | 1.983928 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| RESIDUAL OUTPUT | |  |  | PROBABILITY OUTPUT | | |  |  |
|  |  |  |  |  |  |  |  |  |
| *Observation* | *Predicted Stock price* | *Residuals* |  | *Percentile* | *Stock price* |  |  |  |
| 1 | 37.31333 | 40.05667 |  | 6.25 | 1.1 |  |  |  |
| 2 | 30.96381 | -24.2438 |  | 18.75 | 1.47 |  |  |  |
| 3 | 24.61429 | -21.0743 |  | 31.25 | 2.97 |  |  |  |
| 4 | 18.26476 | -3.40476 |  | 43.75 | 3.54 |  |  |  |
| 5 | 11.91524 | -10.8152 |  | 56.25 | 6.72 |  |  |  |
| 6 | 5.565714 | 7.124286 |  | 68.75 | 12.69 |  |  |  |
| 7 | -0.78381 | 2.25381 |  | 81.25 | 14.86 |  |  |  |
| 8 | -7.13333 | 10.10333 |  | 93.75 | 77.37 |  |  |  |

Observed and Predicted stock price

The graph above shows that the next stock price in the nearest future will also experiences a fall in price.

The residual shows that the assumption of equal variances is valid, thus the stock price effect is normal distributed to all stocks in the company.

Logistics regression is the relationship between a categorical dependent variable and two or more independent variable. Logistics regression can be binary or dichotomous, ordinal and nominal. Assumed we are to investigate if the fall of stock prices in Friday movers is good or bad and to investigate the odd and probability of how likely or more likely the fall in prices can affect the company economy.

Stocks prices = good if its 14 and more, bad if its less than 14.

|  |  |  |  |
| --- | --- | --- | --- |
| S/N | STOCKS | $ PRICE | Y logistics |
| 1. | MTD | 77.37 | 1 |
| 2. | ALB | 6.72 | 0 |
| 3. | CVS | 3.54 | 0 |
| 4. | PAVC | 14.86 | 1 |
| 5. | HFC | 1.10 | 0 |
| 6. | CI | 12.69 | 0 |
| 7. | DXC | 1.47 | 0 |
| 8. | FLS | 2.97 | 0 |