Impact of Executive Pay on Firm’s Performance

Solutions

Task 1 – Data Modelling.

To explain executive salary with the given data, I first identified which columns are relevant to build the model. Out of 13 columns, only three were appropriate – Executive Rank, Total Compensation, and Salary. To determine the relationships between these variables, I plotted a scatter plot. The plots for TDC1 vs. Salary displayed no relationship, while the plot for Executive Rank vs. Salary showed a negative linear relationship. As the range of the data points is vast, I calculated the average of the salary w.r.t Executive rank. This helped me build the Ordinary Least Squares (OLS) model and obtain an R2 value of 83.9%. From this, it is conclusive that higher rank executives have a higher salary, and the salary decreases as the rank of executive increases.

Task 2 – Machine Learning

To obtain Stock High Prices of each company for a given year, I used the “yfinance” library, which extracts data from the Yahoo Finance website. The run time of the for loop is prolonged due to a large combination of data being requested and extracted from the website. After pairing, I used a scatter plot to visually analyze the relationship between the TDC1 and Stock high price for the given data. The plot displayed no ties. To further simplify, I normalized the data for every company and added new normalized value columns to the data frame. Upon plotting the normalized columns, a cluster with no trends was obtained. So I linked each company with their respective industry, knowing that the compensation percentage for executives varies from industry to industry. After plotting data points of each industry, no trend was observed. To build the model, I used KNN as it is efficient for regression and classification problems. The model provided a maximum score of 0.6 with n-neighbors = 1.

Therefore it is conclusive that it is not possible to predict Stock price using TDC1 alone. To predict stock price, we need to break down TDC1 and get values for each component of TDC1. Also, it is essential to consider other external factors which can affect the stock price.