

Apple Inc

Stock price vs Sentiment Analysis Report

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Sentiment acts as an indicator of stock price based on positive and negative news. This report aims to analyse the relationship between sentiment and stock price and how well it predicts stock prices using a one factor linear regression model. Also, some possible trading strategies are back-tested using historical data.

Summary of Analysis:

Apple stock returns (Y) vs Sentiment (X)
Correlation = 0.161381612254
Linear Regression Line: $Y = 0.000714375210983 + 0.00180998600655 X$
Total Variation = 0.283437258907
Unexplained Variation = 0.276055411914
Explained Variation = 0.00738184699276
R-square = 0.0260440247737

Results of daily trading according to day sentiment
Number of successful trades = 660
Probability of successful trade = 53.92156862745098 %
Number of unsuccessful trades = 564
Probability of unsuccessful trade = 46.07843137254902 %
Days with no trades = 21

Both historical data of sentiment and returns of APPLE Inc stock are retrieved and compiled into two separate lists with same length. The correlation between these two data sets is 0.16 which shows weak linear correlation.

The linear regression line between sentiment (independent variable) and stock returns (dependent variable) is obtained by calculating alpha and beta based on the formula shown below.

$$\hat{\alpha} = \bar{Y} - \hat{\beta}\bar{X} \quad \beta = \frac{\text{Cov}(X_i, Y_i)}{V[X_i]}$$

R-square which range from 0-1 shows how accurately the dependent variable predicts the independent variable and is calculated by explained variation/total variation. R-square for this regression line is 0.026 thus signifying small degree of fit between sentiment and Apple stock price.

A possible trading strategy would be to open long or short position based on bullish or bearish sentiment respectively. Applying this strategy to historical data from 2013 to current, there are 660 winning trades, 564 losing trades and 21 days with no trades (sentiment is 0). Probability of winning trade is thus 54% and losing trade is 46%. Other possible trading strategies would be to use sentiment indicator as an oscillator such as RSI. Since sentiment is based on good and bad news, it could possible act as a leading indicator. If sentiment is on an upward trend and price is on downward trend, this divergence can signify that price action will start to turn bullish. However, this is just a possible trading strategy and have not been tested.

In conclusion, it is hard to predict apple returns based on sentiments as price changes of APPLE Inc stock might depend more on the fundamentals of the company such as earnings and cashflow. Perhaps the sentiment indicator might be a better predictor for forex pairs or cryptocurrencies which have greater short-term sensitivity to news releases.