Executive Summary

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Final Project

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**Executive Summary: EaseInvests**

**Background**

The main techniques used to guide investing decisions, fundamental and technical trading, require expert training, yet are made available to all investors through analyst reports. Nevertheless, the texts are written with a high-technical language and rely on traditional stock prediction methods, thus failing to incorporate investors’ sentiments. Acknowledging the key role emotions play in investing, as highlighted by the field of behavioral economics, newer models have incorporated behavioral elements (e.g., emotions expressed in Twitter feeds1  and sentiments on financial news2 used to predict stock prices).

**Approach and Findings**

We compiled Morningstar’s analyst reports from Q4 2016 to Q3 2018 for the 15 largest companies (n= 577) in both the technology and retail sector and extracted the headline, introduction and conclusion. From these texts, we extracted sentiments in two ways: a) using the VADER general sentiment lexicon, and b) through Loughran and MCdonald financial sentiment lexicon. To control for different company’s characteristics, we collected quarterly financial data (e.g., quarterly revenue, quarterly market cap, quarterly net income, etc) from S&P Capital IQ. Finally, we included the stock’s close price, from Yahoo finance, for the date the report was published (T0), the next business day (T1), 5 business days after (T5) and a month after (T30).

Applying both linear regression model we predicted the percent change in the stock price from the day of publication (T0) to the three time periods. Our results indicate that the VADER sentiment lexicon is better, compared to the financial lexicon. Moreover, with a 98% confidence, our model predicts that, on average, a 10% increase in the sentiment score of the headline and introduction results in a 0.5% increase in the stock price the day after (T1) the publication of the report, controlling for other factors3. Similarly, with 97% confidence, our model predicts that, on average, a 10% increase in the overall sentiment score of the report, results in a 0.2% increase in the stock price five days after (T5) the publication of the report, controlling for other factors3. Finally, our model is unable to predict the effect on stock prices a month after the publication of an analyst report. We confirmed these results through the use of using logistic regression in predicting whether stock prices will go up or down for the time periods.

**Conclusion**

We have incorporated the insights from these analytical techniques into EaseInvests, an online subscription service designed for traders looking for short-term gains in the stock market. The combination of both traditional and newer stock prediction techniques results in a novel stock prediction service.

**References**

1. Bollen, J., & Mao, H., Twitter mood as a stock market predictor. IEEE Computer, 44(10):91–94.
2. Kalyani, J., Bharathi, H.N., & Jyothi, R. (2016). Stock trend prediction using news sentiment analysis. *CoRR, abs/1607.01958*.
3. Models control for the effects of market value, industry, and time delta (date of report’s release – date of announcement of earnings).