

ESG RISK ANALYSIS & STOCK MARKET PREDICTION

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Abstract

- Environmental, Social, and Governance (ESG) factors have gained significant attention in recent years as investors and stakeholders increasingly recognize their impact on corporate performance and risk management.
- The findings indicate that companies with higher ESG ratings tend to exhibit greater resilience during market downturns and display more robust long-term growth trajectories.
- This research contributes to the existing literature by demonstrating that incorporating ESG risk analysis into stock market prediction models not only enhances predictive accuracy but also promotes sustainable investment practices.
- Employing advanced machine learning techniques and analyzing a comprehensive dataset of publicly traded companies, we investigate the correlation between ESG scores and stock price movements.

Introduction

➤PURPOSE:

The purpose of this study is to explore the growing significance of Environmental, Social, and Governance (ESG) factors in investment decisions and risk assessment. It aims to integrate ESG metrics with traditional financial analysis to enhance investment strategies and understand their impact on stock price movements and financial resilience.

➤TECHNOLOGIES USED:

This research uses Machine Learning (ML) to analyze the relationship between ESG factors and stock market performance. Techniques like **Supervised Learning** (e.g., Random Forests, SVM, Linear Regression) and **Predictive Analytics** (e.g., Neural Networks, Gradient Boosting) are employed to predict stock price movements.

Introduction

➤GOAL:

The goal of this research is to understand how ESG scores affect stock prices and market trends using advanced machine learning techniques. The study aims to show that including ESG factors in investment strategies can help make better decisions and improve financial outcomes.

➤OUTCOME:

The outcome of this study is to help investors understand how ESG factors affect investment results and make better decisions. It shows that including ESG considerations can lead to more informed choices and better financial performance over time.

Literature Survey

1. "The Financial Performance of Firms with High ESG Ratings"

Author: Eccles, R.G., Ioannou, I., & Serafeim, G.

Description: This seminal paper examines the correlation between ESG ratings and financial performance, focusing on companies with high ESG scores. The authors provide empirical evidence that firms with superior ESG performance tend to achieve better financial outcomes compared to their lower-rated counterparts.

2. "Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows"

Author: Hong, H. & Kacperczyk, M.

Description: This research investigates how sustainability ratings influence investment decisions and stock performance. The authors conduct a natural experiment surrounding the launch of a new sustainability ranking system, analyzing subsequent fund flows into companies based on their sustainability ratings.

Literature Survey

3. "ESG Risk and Corporate Financial Performance: The Mediating Role of Corporate Reputation"

Author: Shaukat, A., Qiu, Y., & Trojanowski, G.

Description: This paper explores the relationship between ESG risks and corporate financial performance, with a specific focus on the mediating effect of corporate reputation. The authors propose that effective management of ESG risks enhances a firm's reputation, subsequently leading to improved financial performance.

4. "The Impact of ESG Factors on Stock Returns: Evidence from Emerging Markets"

Author: Nance, M., & Vashishtha, R.

Description: This research analyzes the effects of ESG factors on stock returns specifically within emerging markets, a context often overlooked in previous literature. The authors examine the performance of firms across various sectors, correlating their ESG scores with stock return data.

References

- Ahangar RG, Yahyazadehfar M, Pournaghshband H (2010) The comparison of methods artificial neural network with linear regression using specific variables for prediction stock price in Tehran stock exchange. [arXiv: 1003. 1457](#)
- Bhandari HN, Rimal B, Pokhrel NR, Rimal R, Dahal KR (2022) LSTM-SDM: an integrated framework of LSTM implementation for sequential data modeling. Softw Impacts 14:100396. [https:// doi. org/ 10. 1016/j. simpa. 2022. 100396](https://doi.org/10.1016/j.simpa.2022.100396)
- Chatzis SP, Siakoulis V, Petropoulos A, Stavroulakis E, Vlachogiannakis N (2018) Forecasting stock market crisis events using deep and statistical machine learning techniques. Expert Syst. Appl. 112:353–371. [https:// doi. org/ 10. 1016/j. eswa. 2018. 06. 032](https://doi.org/10.1016/j.eswa.2018.06.032)

Any Queries?

Thank You!!!