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SENTIMENT ANALYSIS OF SOCIAL MEDIA AND ITS IMPLICATIONS FOR CORPORATE GOVERNANCE AND FINANCIAL MISREPORTING

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ABSTRACT

Objective: This study discusses various literature reviews of the findings of various previous studies that discuss social media sentiment analysis to explore the potential of analyzing predictors of financial misreporting and financial governance.

Research Design & Methods: This research uses a qualitative method by analyzing various article findings that discuss social media-based sentiment analysis. Consists of collecting, categorizing, analyzing data and conclusions.

Findings: The results of this study offer significant benefits to companies and investors. The use of sentiment analysis allows market participants to more accurately predict stock price movements, especially during periods of high volatility or crisis. In addition, sentiment data from social media helps in identifying corporate credit risks and responding to negative sentiment trends that could be detrimental to the company.

Implications: This research provides important insights into marketing strategies, where companies can customize their campaigns based on changes in consumer perceptions reflected by social media.

Contribution: The use of social media as a financial reporting tool can increase transparency and expand audience reach, but it also raises new challenges in terms of regulatory compliance.

Keywords: Social Media, Corporate Government, Financial Report, Economic.

JEL codes: G34, D83, K22 **Article type:** research paper

INTRODUCTION

Social media usage has increased rapidly in recent years, Social media such as Facebook, Twitter, and LinkedIn have become an integral part of the daily lives of many people around the world. With billions of users active every day, social media generates a huge and diverse volume of data that reflects human behaviour, opinions, and preferences in various aspects of life. This data is invaluable to researchers who use modern data analysis techniques to gain deep insights into a wide range of social, political, economic and cultural phenomena. The utilization of data from social media has grown rapidly, with applications extending from political sentiment analysis, market trend prediction, to evaluating people's mental health. For example, data analysis from Twitter and Facebook has been used to predict product demand in the market and assist companies in their supply chain planning (Iftikhar and Khan, 2022). In politics, data from social media is also used to predict election results, such as in the 2020 US Presidential Election, where machine learning methods were applied to analyse user sentiment and predict results with a fairly high accuracy

(Vindua and Zailani, 2023). In addition, data from social media is also increasingly being used in mental health research, where analysis of content posted by users can help predict mental conditions such as depression or anxiety (Choudhury et al., 2020). Social media reporting has been shown to increase firm value by improving financial and sustainability disclosures, especially in the GCC region, where social media activity correlates with better valuations (Al-Sartiwi, 2019). Effective governance structures also play an important role, as companies with good governance tend to be more proactive in using social media for financial reporting, which improves transparency and communication with investors (Yang and Mo, 2016). In addition, social media is used to manage crises by strengthening Corporate Social Responsibility (CSR) disclosures, helping to defuse negative impacts and strengthen investor confidence (Zhang and Yang, 2021). A positive online reputation also influences investment decisions, with companies that have a good reputation for CSR performance more likely to attract investment (Magid et al., 2023).

This study discusses various literature reviews of the findings of various previous studies that discuss social media sentiment analysis to explore the potential of analyzing predictors of financial misreporting and financial governance. This approach has the potential to provide significant new insights, which can be used by investors, regulators and other stakeholders to detect early signs of financial misreporting. In addition, the results from this study may encourage the development of more sophisticated predictive tools or models, which combine social media sentiment analysis with traditional financial data to improve transparency and accountability in corporate financial reporting.

LITERATURE REVIEW

Sentiment analysis, also known as opinion mining, is a broad and multidisciplinary branch of artificial intelligence that focuses on the computational study of opinions, sentiments, and emotions (Kaur and Bhatia, 2016). Sentiment analysis is extracting people's opinions, sentiments, evaluations and emotions about a particular topic written using natural language processing techniques. A number of other major works mention sentiment analysis focusing on specific applications that classify positive, negative and neutral opinions. Basically, this analysis aims to identify and classify opinions or sentiments contained in text. By applying sentiment analysis to a specific domain, we can understand how data from that domain affects the sentiment categorization process (Neethu & Rajasree, 2013). For example, research conducted by Song et al. (2018) explored the use of language in the annual reports of companies in the U.S. They found that sentiment information contained in these reports can serve as an important indicator for forecasting a company's financial performance. Therefore, sentiment information can play an important role in supporting the decision-making process for stakeholders (Hajek et al., 2014).

However, although sentiment analysis is frequently used in academic research, there are two main challenges that often arise. The first challenge is classifying documents into positive or negative sentiment categories (Agarwal et al., 2011). The second challenge is to classify the sentence or clause as subjective or objective. If the sentence is subjective, the next step is to categorize it as a positive, negative, or neutral opinion (Aguilera-Caracuel and Guerrero-Villegas, 2018; Harymawan et al., 2020). With an intensive understanding of these aspects, sentiment analysis makes a significant contribution in evaluating public perceptions of financial performance, helping companies and stakeholders make more informed decisions for corporate governance.

Corporate governance is a set of policies, procedures and practices that a company must implement to ensure transparent and accountable operations. In good governance, companies must be able to maintain a balance between the interests of owners or shareholders and the interests of other stakeholders, such as employees, customers, suppliers, and the wider community, at all levels of the organization. In addition, effective governance serves as a monitoring mechanism to protect the rights and interests of stakeholders from potential abuse by irresponsible management. Transparent governance practices can reduce the risk of adverse actions, such as corruption and manipulation of financial statements, thereby ensuring strategic decisions that support the long-term interests of the company (Devi, 2024). Good governance is ultimately the foundation for the protection, sustainability and growth of the company.

Social media sentiment can also affect the implications of financial misreporting, because public perceptions formed through social media can exacerbate the negative impact of fraud on reputation and trust in the company. According to the Association of Certified Fraud Examiners (ACFE), financial statement fraud is one of three types of fraud, which involves the misrepresentation or omission of accounting facts, so that the information conveyed can affect users' decision making. This fraud is very detrimental to society because many parties depend on financial reports in making strategic decisions. Financial statement fraud is usually committed by falsifying, manipulating, or ignoring important events, transactions, and information, as well as using inappropriate accounting policies to hide certain values or transactions (Devi, 2024).

METHODS

This research uses a qualitative method with analysis through a systematic review of similar research, which consists of the following steps:

- 1. Data Collection
 - Data collection is carried out to obtain appropriate data regarding the information needed by researchers. The data used is a collection of findings from previous research taken from google scholar which consists of 40 articles that discuss social media sentiment analysis on financial governance and the financial reporting process.
- 2. Data Clustering
 - The process of grouping the data was done by organizing the studies based on the similarity of the methods and findings used in the form of a table. First, data from various studies were collected, and then the methods used were identified, such as sentiment analysis with machine learning, bibliometrics, or semantic approaches. Once the methods were identified, studies with similar methods were grouped together to identify patterns and similarities. Next, the findings from each study are compared and grouped based on similarities in results, such as the impact of social media sentiment on stock prices or the use of social data in financial predictions. In this way, similar research data can be analyzed more systematically and provide a comprehensive overview of trends.
- 3. Data Analysis
 - The data analysis process is carried out using the discovery data from the articles that have been collected by identifying based on the method and the main findings produced. For example, articles that use machine learning or k-nearest-neighbor (k-NN) based sentiment analysis methods are classified according to the method used. The results of each category were described in detail to provide a clear picture of the research trends, advantages, limitations of the methods used, as well as potential future research directions. For example, in a study involving stock price prediction based on Twitter sentiment analysis, details include the accuracy rate, low latency, and impact on financial decisions.
- 4. Conclusions and Implications
 - This final stage of analysis summarizes the key findings and their implications in an industrial or academic context. For example, the implications of research that shows a strong correlation between social media sentiment and stock performance can guide investors or policymakers in databased decisions.



RESULT

Social media sentiment analysis has become an increasingly valued tool in monitoring public opinion and has significant implications for corporate governance and financial reporting misconduct detection. Social media platforms provide a vast amount of data that can be mined to gain insight into public sentiment regarding a variety of topics, including corporate behavior and financial information (Astarkie et al., 2023; Zhang and Liu, 2017). The application of natural language processing (NLP) and machine learning (ML) techniques enables the extraction and analysis of sentiment from this textual data, which can be used to gauge public perception and potentially identify irregularities or fraudulent activity (Dong et al., 2018). Several studies have shown the great potential of social media sentiment analysis in a financial context. Research by Daradkeh (2022) highlights how deep learning techniques, such as Convolutional Neural Networks (CNN) and Multilayer Perceptrons (MLP), are capable of automatically extracting complex features from large text data, improving the accuracy of sentiment analysis and predicting financial market trends more sophisticatedly. However, the challenges involve the need for very large data and powerful computing infrastructure, which may limit their applicability in resource-constrained environments. Table 1 are some research articles that use methods to address social media sentiment analysis on corporate governance and financial reporting processes.

Table 1. Overview of the included studies

No.	Methods	Application/Invention	Author
1	Thematic, bibliometric, and literature reviews	Identify key clusters in stock performance, investor sentiment, social media sentiment analysis research trends, marketing strategies, and investor behavior.	(Byrka-Kita and Gola, 2023; Dahish and Miah, 2023; Dash et al., 2022; Farimani et al., 2022)
2	Sentiment analysis with LSTM, CNN-LSTM, and deep learning models	Correlation between sentiment on Twitter and stock prices during the COVID-19 pandemic; stock price prediction with improved accuracy using deep learning.	(Asgarov, 2023; Ibnu Sina and Setiawan, 2023; Katsafados et al., 2023; Wang et al., 2022)
3	Sentiment analysis with k-nearest-neighbor (k-NN)	Analysis of corporate credit risk during the pandemic with up to 70% classification accuracy, based on Twitter data.	(Mengelkamp et al., 2023)
4	Sequence-to- sequence transformer	A transformation model for stock market sentiment analysis with low latency and high prediction performance.	(Wu & Gu, 2023)
5	Sentiment analysis with VADER	The relationship between sentiment on Twitter and stock prices during the COVID-19 pandemic. Positive sentiment on social media is associated with a short-term increase in stock prices, while negative sentiment results in a long-term decrease in stock prices, especially in English-speaking countries.	(Katsafados et al., 2023)
6	System Functional Linguistics (SFL) and machine learning	The use of social media data to detect corporate fraud with sentiment, emotion, topic and social network features.	(Dong et al., 2018)
7	Systematic review	Identifying the opinion-lexicon method to analyze text sentiment on social media, by extracting data on microblogging sites especially Twitter and sentiment analysis applications can be seen in world events, health, politics and business.	(Drus and Khalid, 2019)
8	Granger causality dan analysis dataset tweet	Indicates a causal relationship between sentiment on social media and stock market returns.	(Tabari et al., 2018)
9	Sentiment lexicon adaptation with corpus annotation	Improve the performance of sentiment classification on social media related to stock market and political topics.	(Deng et al., 2017)

No.	Methods	Application/Invention	Author
10	Social network analysis	Using corporate governance data and social network analysis to evaluate the relationship between governance and business performance.	(Park et al., 2012)
12	Regression and nonparametric techniques	An analysis of the impact of social media on the financial performance of restaurant companies in Europe, showing heterogeneous relationships between countries.	(Fernández-Miguélez et al., 2020)
13	Naïve Bayes and SVM	Classification of sentiments on Twitter to predict JCI stock prices, with a strong correlation between sentiments and stock prices.	(Triany and Isa, 2020)
14	Text analysis on stock message boards	Criticism on stock message boards can predict corporate acquisition decisions, demonstrating the role of social media in corporate governance.	(Ang et al., 2021)
15	Moving average and sentiment analysis	The combination of moving averages with sentiment analysis from official news accounts on Twitter improves the effectiveness of Facebook stock price predictions.	(Jessica and Oetama, 2019)
16	Correlation analysis Pearson and Granger causality	Twitter sentiment has a significant relationship with abnormal returns during volume peaks, the "event study" method was used.	(Ranco et al., 2015)
17	A review of financial reporting practices on social media	Discuss the challenges and opportunities in financial performance reporting through social media, including new SEC regulations.	(Alexander and Gentry, 2014)

DISCUSSION

Social Media Sentiment Analysis in Financial Market Prediction

Sentiment analysis on social media is becoming an important innovation in predicting financial market movements. As one of the most recent studies, Asgarov (2023) showed that sentiment from the Twitter platform can affect the stock prices of large companies such as Tesla and Apple. Using the Long Short-Term Memory (LSTM) model, the study found that negative sentiment expressed on social media has a stronger impact than positive sentiment, indicating faster investor reaction to negative information. The LSTM model is highly effective in predicting stock price fluctuations based on changes in sentiment on social media, especially during periods of market uncertainty.

The research of Katsafados et al. (2023) also highlighted the role of sentiment during global crises such as the COVID-19 pandemic. They found that positive sentiment can trigger a short-term rise in stock prices, especially in the technology sector, while negative sentiment leads to a longer decline in stock prices. These findings confirm that social media plays an important role in signaling market volatility, especially when investors tend to react to news that circulates widely and quickly. In addition, Katarzyna Byrka-Kita and Renata Gola revealed that investors are increasingly using social media to express and analyze their sentiments towards certain stocks. Retail investors, in particular, are highly susceptible to changes in sentiment, which often directly affect their investment decisions. The research emphasizes that positive sentiment from social media often correlates with rising stock prices, while negative sentiment contributes to falling stock prices.

Machine Learning and Deep Learning Methods in Sentiment Analysis

To improve the accuracy of sentiment-based market predictions, many studies have adopted machine learning and deep learning methods. Research by Katarzyna Byrka-Kita uses these techniques to identify more complex patterns in sentiment data that conventional methods may not be able to uncover. Using the k-nearest-neighbor (k-NN) model, A. Mengelkamp et al. (2023) showed that Twitter sentiment analysis could predict corporate credit risk during the pandemic with 70% accuracy. These results suggest that sentiment expressed on social media can be a significant indicator in assessing corporate credit risk, especially in volatile situations like the pandemic. While 70% accuracy shows promising potential, this result also emphasizes the need for

further improvements in the model and data to achieve higher accuracy rates. While there is still room to improve accuracy, this study proves the great potential of sentiment analysis as a tool to assess credit risk in more real-time. In addition, a study by Wu and Gu (2023) introduced a new approach using a lightweight transformation model optimized with the spars attention mechanism. This approach is able to speed up the sentiment analysis process in the stock market, allowing companies and investors to obtain faster and more accurate information so that their decisions can be more responsive to changes in the market. This efficiency is especially important in commercial applications that require real-time processing of sentiment data.

The Long-Term Effects of Social Media on Investor Behavior

Further research by Dahish and Miah (2023) in their bibliometric review showed that the use of sentiment analysis has had a significant long-term impact in improving transparency in financial markets. These researchers revealed that investors are increasingly relying on sentiment data from social media to more accurately detect market trends and systemic risks. The behavior of investors who rely massively on social media sentiment has changed the way companies and financial institutions develop their business and investment strategies. The research also found that in the long run, social media sentiment can influence herd behavior among investors. This herding can lead to rapid changes in financial markets, which emphasizes the importance of better analytics tools in anticipating investor responses to evolving sentiment. Further use of machine learning and deep learning techniques can help detect more complicated sentiment patterns, which may be difficult for traditional investors or analysts to see manually.

Credit Risk Analysis and Application in Marketing

In addition to its impact on stock market predictions and investor behavior, social media sentiment analysis has also been applied to credit risk assessment and corporate marketing strategies. Dash et al. (2022) have found that companies can utilize sentiment data to adjust their marketing strategies more effectively. Positive sentiment towards a particular product can drive an increase in sales, while negative sentiment can give companies an early warning of potential problems faced by customers, so that companies can act more proactively.

In addition, research by A. Mengelkamp et al. (2023) found that sentiment analysis can also be applied to assess a company's credit risk. Using social media data such as Twitter and the k-nearest-neighbor (k-NN) algorithm, they managed to identify signs of corporate bankruptcy with a high degree of accuracy. This provides a great opportunity for financial institutions to incorporate sentiment analysis in their decision support systems, which in turn can help reduce the risk of default.

Challenges and Limitations in Social Media Sentiment Analysis

While social media sentiment analysis has made great contributions to understanding market dynamics and investor behavior, there are still a number of challenges that need to be overcome. Content on social media is often informal and dynamic, which causes sentiment analysis to face biases. Zhang et al. (2018) mentioned that social media texts that are informal and rich in sarcasm and irony are difficult to interpret accurately by sentiment models. To address this issue, further development in natural language processing (NLP) is needed to capture more complex nuances in everyday language.

Research by Karayiğit et al. (2018) also found that misinterpretation in social media sentiment analysis can have a major impact on business and financial decision-making. Since data on social media tends to be unstructured and sometimes full of irony or sarcasm, sentiment analysis systems that are not sophisticated enough can misinterpret the true sentiment. Therefore, a more nuanced approach and more robust algorithms are needed to overcome these misinterpretations.

Overall, these studies underscore the importance of social media sentiment analysis in various aspects of finance and business, from market predictions to risk management and marketing strategies. Social media sentiment analysis has the potential to inform corporate governance practices and detect financial misreporting, providing early warning signs of fraudulent activity by analyzing sentiment and emotions expressed on financial social media platforms (Dong et al., 2018).

However, the dynamic and informal nature of social media content poses challenges for sentiment analysis, which has the potential to introduce bias if not handled properly (Zhang et al., 2018). Furthermore, the effectiveness of sentiment analysis in this domain relies on the ability to accurately capture and interpret the nuances of human language and emotions (Karayığit et al., 2018). Further research shows that the application of sentiment analysis in corporate governance and misreporting detection is not without limitations. While sentiment analysis can be a powerful tool for detecting public safety threats and managing emergencies, its application in the context of corporate governance and financial misreporting requires addressing informal and context-dependent content-related challenges. To ensure the reliability of results, it is important to address biases that may arise from the dynamic and informal nature of social media content (Zhang et al., 2018).

Therefore, the integration of sentiment analysis as a complementary tool to traditional methods can improve corporate oversight and accountability, ensuring financial decisions are based on more accurate and comprehensive information (Velte, 2023). This interdisciplinary approach, which combines sentiment analysis with traditional financial methods, offers great potential for improving transparency and accountability in corporate financial reporting. Realizing this potential requires the development of more sophisticated tools and models, as well as cross-sector testing to ensure reliability and accuracy in various industry contexts. By effectively utilizing sentiment data from social media, companies can gain deeper insights into public perceptions of their performance. This not only helps in detecting potential misreporting but also supports better governance practices by increasing transparency and responsiveness to public feedback. As a result, this approach can improve market efficiency and investor protection, and strengthen public trust in corporate financial reports (Dong et al., 2018).

Overall, the integration of social media sentiment analysis with financial reporting offers an innovative and effective method to identify and prevent financial misreporting. Combining rich sentiment analysis from social media data with traditional financial data, stakeholders can gain a more comprehensive tool to ensure integrity and accuracy in financial reporting, supporting more transparent and accountable corporate governance.

CONCLUSION

This research uses a qualitative method by analyzing various article findings that discuss social media-based sentiment analysis. It consists of the stages of collecting, categorizing, analyzing data and drawing conclusions. The results of this study offer a range of significant benefits to companies and investors. The use of sentiment analysis allows market participants to more accurately predict stock price movements, especially during periods of high volatility or crisis, as observed during the COVID-19 pandemic. In addition, sentiment data from social media helps in identifying corporate credit risks and responding to negative sentiment trends that can be detrimental to the company. This research also provides important insights into marketing strategies, where companies can customize their campaigns based on changing consumer perceptions reflected by social media. The use of social media as a financial reporting tool is also discussed, with SEC regulations allowing companies to deliver financial performance information through these platforms. This increases transparency and expands audience reach, but also raises new challenges in terms of regulatory compliance.

The role of social media in influencing various aspects of financial markets and business decisions. Sentiments expressed on platforms such as Twitter and Facebook are directly related to stock price movements, especially in periods with high trading volumes. Positive sentiments on social media tend to increase stock prices in the short term, while negative sentiments can have a more significant impact in the long term. The study also highlights that retail investors are often influenced by information obtained from social media, leading to speculative or herd behavior, amplifying market volatility. In addition, the application of sentiment analysis in corporate governance is also an important concern, where data from social media can be used to detect financial misreporting and support better accountability and transparency.

Overall, this study shows that the integration of social media sentiment analysis with traditional financial analysis methods can improve the accuracy of market predictions and business decisions. However, there are still challenges to overcome, especially in dealing with biases arising from the informal and dynamic nature of social media content. Further research is needed to develop more sophisticated tools for analyzing social media sentiment, to ensure reliability and accuracy in various industry contexts. By effectively utilizing data from social media, companies and investors can make better, more informed decisions, increase transparency and reduce risk in financial markets.

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