**Sentiment Analysis and Risk Assessment..**

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**ABSTRACT**

This project explores the use of sentiment analysis in predicting stock market behaviour by analysing public opinion from news articles and social media. With capital markets facing volatile conditions, this tool aims to provide investors and financial institutions insights to optimize stock portfolios and improve decision-making. The project will focus on developing an AI-based sentiment analysis system that processes large datasets, including stock prices and financial sentiment, to identify trends and improve stock trading strategies.

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**CHAPTER 1: INTRODUCTION**

1.1 **Background**  
Stock markets are influenced by a range of factors, including investor sentiment. With the rise of social media and news platforms, the sheer volume of publicly available data has created an opportunity to analyse investor mood through sentiment analysis, allowing investors to identify trends and make informed decisions.

1.2 **Problem Statement**  
Capital markets are increasingly volatile due to factors such as economic uncertainty and news-driven reactions. Traditional stock prediction models may struggle to capture such volatile movements, making sentiment analysis a valuable complementary tool.

1.3 **Purpose of Study**  
This project aims to develop a sentiment analysis system to predict stock market trends. It will analyse how public sentiment affects stock prices, allowing better optimization for portfolio management.

1.4 **Scope**  
The project will develop a sentiment analysis system based on publicly available financial data (news, tweets) and stock price movements. It will implement AI algorithms to predict stock trends but will not encompass portfolio management or specific investment advice.

**CHAPTER 2: LITERATURE REVIEW**

2.1 **Review of Sentiment Analysis Techniques**  
Past studies have shown that natural language processing (NLP) models are effective in extracting sentiments from unstructured text data. Techniques like polarity detection and machine learning are commonly used for analysing investor sentiments.

2.2 **Stock Market Predictions Based on Sentiment**  
Research demonstrates a correlation between public sentiment and stock price movements. Positive sentiment often leads to price surges, while negative sentiment can trigger price drops.

**CHAPTER 3: METHODOLOGY**

3.1 **Sentiment Analysis Model Design**  
The sentiment analysis system will be developed using Python libraries like NLTK and TextBlob for natural language processing. Machine learning models (e.g., Random Forest or Support Vector Machines) will be trained on labelled data to predict future stock prices.

3.2 **Data Collection**  
The primary data will include stock prices and historical sentiment data from social media (Twitter) and financial news sources. APIs like Alpha Vantage and Twitter’s Developer API will be used to gather real-time stock and sentiment data.

3.3 **Choice of Algorithm**  
Various machine learning algorithms will be tested to determine the most effective model for predicting stock prices. Performance will be measured based on accuracy and cost-efficiency.

3.4 **Cost and Performance Analysis**  
The project's cost will mainly involve setting up cloud computing resources for processing large datasets, and there will be an evaluation of the model's performance to ensure it can make timely and accurate predictions.

**References**

1. Bollen, Johan, et al. "Twitter mood predicts the stock market." Journal of Computational Science (2011).
2. Zhang, Xiaodong, et al. "Stock market prediction via multi-source multiple instance learning." Information Sciences (2018).