MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

Conference on Advances in Engineering & Technology – 2024

A Platform for Young Innovator (C-AET'24)

PAPER ID :IC-AET2024_709
TITLE OF PAPER: Comparative Analysis of Leading and Lagging Technical Indicators in the Indian Stock Market
GUIDE NAME: Mrs. Pranjali Kasture
AUTHOR'S NAME: Pranav Bhavsar
DESIGNATION:Student

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

PRESENTATION FLOW

- **Abstract**
- **Problem Definition/ Objective**
- **Introduction**
- **Theory**
- **Important Findings**
- **Results and Discussions**
- **SWOT Analysis**
- **Conclusion/Future Scope**
- **Acknowledgement**
- **References**

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

ABSTRACT

1. Objective: Project aims to develop a ML model to compare the performance of leading vs. lagging technical indicators in predicting the price movements of the Nifty index in the Indian stock market.

2. Methodology: Model utilizes historical Nifty data, including open, close, high, and low prices, and applies Model to calculate both leading and lagging indicators. machine learning algorithms are employed for time series forecasting, with the model's performance evaluated using metrics such as MAE, MSE, and RMSE.

3. Findings: Preliminary results indicate that a combination of leading and lagging indicators, when integrated into the machine learning model, can enhance predictive accuracy, offering valuable insights for traders and investors in making informed decisions in the stock market.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

PROBLEM DEFINITION / OBJECTIVE

1.Dynamic market: The Indian stock market is characterized by its dynamism, diversity, and volatility,a rich landscape for technical analysis.

2.Cornerstone method : Technical analysis, a fundamental methodology in predicting price movements and informing trading decisions in the stock market.

3.Central Role: Technical indicators are crucial tools in evaluating market sentiment, momentum, and trend strength.

4.Application/Evaluation: The compelling nature of the Indian stock market landscape necessitates the application and evaluation of technical indicators.

5.Insights for Market Participants: The use of technical indicators provides valuable insights for market participants, aiding in informed decision-making and strategy development.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

INTRODUCTION

1. Technical indicators are mathematically defined movement or formula, forecasting the price for any financial instrument.
2. Allows for better price prediction and future movement to invest and to grow
3. Research allows to generate better probability making the risk much lesser

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

BACKGROUND:

Why Technical Analysis ?

Leading Vs Lagging ?

Claiming Result ?

Potential application in large Hedge Funds, Mutual Funds or any higher Financial Institution

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

- Literature Survey

1. Efficacy of Indicators: Research has consistently shown the effectiveness of indicators like moving averages, RSI, and Stochastic Oscillator in forecasting stock price movements in the Indian market.

2. Machine Learning Integration: Recent studies highlight the integration of machine learning algorithms, such as decision trees and support vector machines, to improve predictive accuracy in stock market analysis.

3. Comparative and Combined Analysis: Comparative studies reveal the relative performance of leading and lagging indicators, with findings suggesting that combining multiple indicators enhances trading signal accuracy and investment decisions.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

THEORY

1. Collect the data from authentic source (for this project - yahoo finance)
2. Cleaning the data and making no error
3. Better data preprocessing and use of data
4. Choose machine learning algorithms suitable for time series forecasting, such as Linear Regression, Decision Trees, Random Forest, or more advanced techniques like LSTM (Long Short-Term Memory) networks.
5. Adding the volume, liquidity data for enhancement.
6. Consider using ensemble methods or combining multiple models to improve accuracy.

•Choose machine learning algorithms suitable for time series forecasting, such as Linear Regression, Decision Trees, Random Forest, or more advanced techniques like LSTM (Long Short-Term Memory) networks.

•Adding the volume, liquidity data for enhancement.

•Consider using ensemble methods or combining multiple models to improve accuracy.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

IMPORTANT FINDINGS

- Training the data on the model and tuning it to best condition
- Evaluate the model's performance on the testing set using metrics such as Mean Absolute Error (MAE), Mean Squared Error (MSE), or Root Mean Squared Error (RMSE).
- Compare the performance of models using leading indicators vs those using lagging indicators.
- Model performs well, consider deploying it for real-time stock market predictions or integrating it into a trading system.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

RESULTS AND DISCUSSION

1.Indicator Performance: The results emphasize the effectiveness of both leading and lagging indicators in forecasting price movements in the Indian stock market.

2.Comparative Insights: Comparative analysis provides insights into optimal conditions for each indicator type, informing trading strategies.

3.Trader Recommendations: Based on findings, recommendations are provided for integrating leading and lagging indicators into market analysis and decision-making.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

SWOT ANALYSIS

CONCLUSION/FUTURE SCOPE

Conclusion:

•The project successfully developed a machine learning model to compare the performance of leading vs. lagging indicators in forecasting the Nifty index's price movements.
•The analysis revealed that a combination of both leading and lagging indicators, when properly engineered and integrated into the model, can provide enhanced predictive accuracy.
•The evaluation of the model on the testing set demonstrated its effectiveness in capturing market trends and potential for real-time stock market predictions.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

- Future Scope:

The model can be further refined by incorporating additional features, such as macroeconomic indicators or global market trends, to improve its predictive capabilities.

- The application of more advanced machine learning techniques, such as deep learning or reinforcement learning, could be explored to enhance the model's performance.
- The model can be extended to other stock indices or individual stocks to assess its generalizability and adaptability to different market conditions.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

ACKNOWLEDGEMENT

The successful realization of the "Comparative Analysis of Leading and Lagging Technical Indicators in the Indian Stock Market" project owes much to the generous support and collaboration of numerous individuals and institutions. We express profound gratitude to our sponsors whose visionary support provided the foundational resources and encouragement essential for this research's development, contributing significantly to shaping its vision and methodology. Special appreciation is extended to Mrs. Pranjali Kasture for her invaluable guidance, mentorship, and expertise, which played a pivotal role in steering the research towards success. Her insightful feedback and unwavering encouragement were instrumental in refining our approach and ensuring the quality of our analysis. Furthermore, we acknowledge Thakur College of Engineering and Technology for providing the conducive academic environment and resources that facilitated the research and development process, reflecting the institution's commitment to fostering excellence in education and research. Lastly, we extend our thanks to all individuals who directly or indirectly contributed to this project's realization, as your support has been invaluable in bringing this research to fruition.

MULTICON-W 2024
- A platform for Multiple Conferences and Workshops
15th International & National Conferences and Workshops

REFERENCES

[1] Gupta, R., et al. (2019). A Comparative Analysis of Moving Averages and Relative Strength Index (RSI) in Stock Market Trading. International Journal of Management, Technology, and Engineering, 9(1), 2229-3191.
[2] Sharma, S., & Jain, R. (2018). Predictive Power of Stochastic Oscillator in Indian Stock Market. International Journal of Recent Technology and Engineering, 8(2), 209-213.
[3] Goyal, N., & Arora, A. (2020). Predicting Stock Prices using Machine Learning Techniques. International Journal of Recent Technology and Engineering, 8(4), 8235-8241.
[4] Agarwal, S., et al. (2017). Predicting Stock Prices using Machine Learning Techniques. International Journal of Computer Applications, 160(2), 19-24.
[5] Mishra, S., et al. (2016). A Comparative Study of Technical Indicators in Stock Market for Generating Trading Signals. International Journal of Scientific Research in Computer Science, Engineering, and Information Technology, 2(5), 27-32.
[6] Singh, R., & Sharma, S. (2017). A Comparative Study of Technical Indicators in Stock Market for Generating Trading Signals. International Journal of Engineering Science, 6(11), 54-58

QUESTION and

ANSWER ??