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A STUDY ON PREDICTING STOCK PRICES OF SELECTED INDIAN IT AND PHARMACEUTICAL COMPANIES

M. Krishna Kishore[1], Mr. Venkata Rao Valluri[2], Dr. K.V. Geetha Devi[3]

[1]Student of II MBA, Department of Management Studies, Madanapalle Institute of Technology and Science, Angallu, Madanapalle – 517325, Andhra Pradesh, India

[2]Assistant Professor, Department of Management Studies, Madanapalle Institute of Technology and Science, Angallu, Madanapalle – 517325, Andhra Pradesh, India

[3] Associate Professor, Head, Department of Management Studies, Madanapalle Institute of Technology and Science, Angallu, Madanapalle – 517325, Andhra Pradesh, India

ABSTRACT DOI No: 10.36713/epra23030 Article DOI: https://doi.org/10.36713/epra23030

This study, titled "A Study on Predicting Stock Prices of Selected Indian IT and Pharmaceutical Companies," aims to forecast stock prices using ARIMA and LSTM models. A total of 20 companies 10 from each sector were analyzed using five years of historical stock data sourced from Aditya Birla Money Limited. The forecasting period was set to 36 months. ARIMA was applied using the Box-Jenkins methodology in EViews, while LSTM was implemented in Python using TensorFlow and Keras. Results showed that LSTM better captured nonlinear trends, particularly in the pharmaceutical sector, while ARIMA performed well in more stable IT stocks. This comparative analysis highlights the strengths of each model and provides insights into investment potential across sectors, helping investors and analysts make more informed financial decisions.

1. INTRODUCTION

Accurate stock price forecasting plays a critical role in financial planning, risk management, and investment decision-making. In a volatile market like India's, investors increasingly rely on predictive models to identify potential price trends and make informed decisions.

This study focuses on two major sectors of the Indian economy, Information Technology (IT) and Pharmaceuticals known for their growth potential and strategic relevance. The IT sector is driven by innovation and consistent global service delivery, while the Pharmaceutical sector contributes significantly through healthcare advancement and global drug exports. Given their contrasting market behaviors, a comparative stock forecasting approach is both relevant and insightful. The research applies two forecasting models: ARIMA, suitable for linear time series data, and LSTM, a neural network adept at capturing nonlinear and long-term patterns. Using historical data over a five-year period, stock prices are forecasted for the next 36 months. The objective is to evaluate sector-wise performance and support data-driven investment strategies.

2. REVIEW OF LITERATURE

Shakira Green (2011): Time Series Analysis of Stock Prices Using Box Jenkins Approach provided an in-depth understanding of ARIMA modeling. It described how these models are well-suited for identifying patterns and making predictions in both stationary and non-stationary time series data.

Ayodele Ariyo Adebiyi, Charles Ayo (2014): Stock Price Prediction Using the ARIMA Model explored the application of ARIMA models on NYSE and NSE data. The findings affirmed ARIMA's strong performance for short-term forecasting, making it a competitive tool in the prediction landscape.

B Groda (2017): Prediction of Stock Price Developments Using the Box-Jenkins Method demonstrated how ARIMA models could efficiently forecast short-term price movements in financial time series. The study underscored ARIMA's relevance in financial forecasting, especially for structured datasets.

Ishita Parmar, Navanshu Agarwal (2018): Stock Market Prediction Using Machine Learning explained how regression and LSTM techniques are increasingly being used to forecast stock values. The study emphasized the efficiency of machine learning algorithms in capturing hidden patterns and providing more consistent predictions.

Mahinda Mailagaha Kumbure (2022): Machine Learning Techniques and Data for Stock Market Forecasting compiled a review of 138 research papers spanning nearly two decades,

focusing on input features and machine learning models used for forecasting across global stock markets.

Gopu Jayaraman & Others (2024): Revolutionizing Stock Market Predictions in Emerging Markets: An In-Depth Examination of Multilayer Perceptron Artificial Neural Networks Empowered by Technical Indicators on the NIFTY IT Index employed a Multilayer Perceptron Artificial Neural Network model to determine whether NIFTY IT Index prices were likely to rise or fall, providing directional insight into market trends.

3. STATEMENT OF THE PROBLEM

Investors operating in today's volatile stock markets face considerable challenges in making reliable, data-driven decisions, particularly in high-growth, high-risk sectors such as Information Technology (IT) and Pharmaceuticals. Although various forecasting models, including statistical and machine learning approaches, have been developed to address stock price prediction, existing research often limits itself to short-term forecasts or individual model evaluations.There is a notable gap in the literature concerning long-term predictive analysis that also incorporates a comparative evaluation between industry sectors. Most studies do not explore which sector offers more stable and promising investment opportunities over time.This study seeks to address this gap by forecasting stock prices for selected Indian IT and Pharmaceutical companies using five years of historical data. By applying both ARIMA and LSTM models over a 36-month prediction horizon, the research aims to evaluate sector-wise performance and identify which industry demonstrates stronger potential for long-term investment.

4. OBJECTIVES OF THE STUDY

- To build a reliable stock price forecasting model for selected Indian IT and pharmaceutical companies using historical data and advanced techniques such as LSTM and the Box-Jenkins ARIMA method.
- To forecast the future stock performance of companies within the IT and pharmaceutical sectors and perform a comparative analysis between the two industries.
- To generate meaningful insights and offer practical recommendations to investors and stakeholders for making informed investment decisions based on predictive analysis.

5. NEED FOR THE STUDY

Stock price prediction remains a critical challenge due to market volatility and complex price behavior. With growing reliance on data-driven strategies, there is a need to evaluate the effectiveness of advanced models like LSTM compared to traditional time series approaches like ARIMA. This study focuses on the Indian IT and Pharmaceutical sectors, two key industries with distinct market characteristics, to assess which offers better long-term investment potential through reliable forecasting methods.

5.1. Scope of the Study

This study involves stock price forecasting for 20 Indian companies, 10 each from the IT and Pharmaceutical sectors using five years of historical data. Forecasts for the next 36 months are generated using ARIMA and LSTM models. The research compares model performance and sectoral trends but does not consider macroeconomic indicators or offer financial advice. The scope is limited to company-level data within the Indian stock market.

6. RESEARCH METHODOLOGY

This study adopts a dual-model framework combining traditional and modern forecasting approaches to predict long-term stock prices. The objective is to assess the relative investment potential of the Indian Information Technology and Pharmaceutical sectors.

6.1 Research Framework

The methodology integrates ARIMA, a classical time series model, and LSTM, a deep learning technique, to generate and compare forecasts for selected Indian companies. The models aim to evaluate sector-wise stock performance and trend reliability over a 36-month horizon.

6.2 Data Collection and Preparation

Stock price data (daily closing prices) for 20 companies, 10 from each sector, was obtained from **Aditya Birla Money Ltd.** spanning five years. Data preprocessing involved handling missing values, outlier detection, and normalization. Min-Max scaling was applied for LSTM; differencing was used to ensure stationarity in ARIMA.

6.3 Exploratory Analysis

Trend and seasonality patterns were explored visually. Stationarity was tested using the Augmented Dickey-Fuller (ADF) test, while ACF and PACF plots supported ARIMA parameter identification.

6.4 LSTM Model Development

LSTM networks were built using Python in Google Colab, leveraging TensorFlow and Keras. The model was trained on sequential input data, then used to forecast stock prices for 36 months. LSTM was selected for its capability to learn nonlinear, long-term dependencies often present in financial time series.

6.5 ARIMA Model Implementation

ARIMA models were developed in EViews using the Box-Jenkins methodology. Model parameters were selected based on ACF/PACF analysis and validated using diagnostic checks like Ljung-Box Q-test and residual analysis.

6.6 Forecast Evaluation

Forecast performance was assessed using Root Mean Square Error (RMSE) and Mean Absolute Error (MAE). These metrics provided a basis for comparing model accuracy across companies and sectors.

6.7 Sector-Level Comparison

Following individual company forecasts, sector-wise comparisons were conducted. Average model performance, forecast patterns, and return trends were used to determine which industry showed greater potential for long-term investment.

6.8. Statistical Tools Used

- Excel
- E-Views
- Google Colab

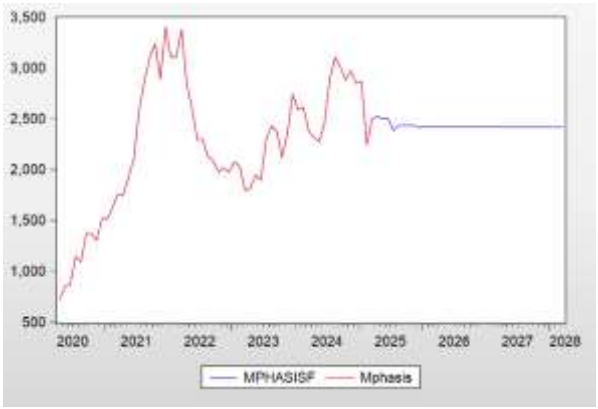
7. DATA ANALYSIS AND INTERPRETATION

This chapter presents the stock price forecasting results for 20 selected Indian companies from the Information Technology (IT) and Pharmaceutical sectors. The primary objective is to interpret the outputs generated by ARIMA and LSTM models, evaluate individual company performance, and compare sectoral trends. Graphical forecasts are provided for each company, followed by model-based insights. Finally, a sector-level comparison highlights the broader investment potential of each industry.

I. Forecast Analysis of IT Sector Companies

7.1 Mphasis Ltd.

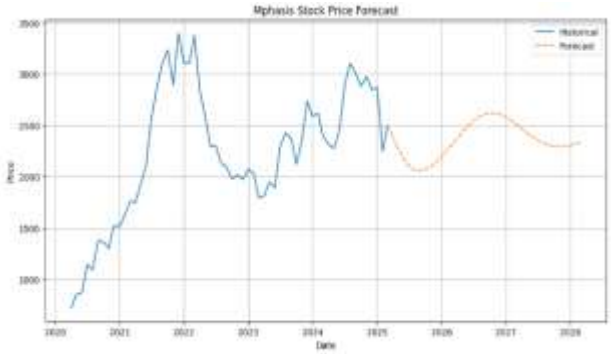
Chart 7.1.1: ARIMA Forecast for Mphasis Ltd.



Interpretation

The ARIMA model for Mphasis, using data from April 2020 to March 2025, shows that the stock rose sharply until 2021, then went through ups and downs, and finally settled around ₹2,500 by 2025. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028, indicating that the stock price is expected to remain stable around ₹2,500 with no major ups or downs during the prediction period.

Chart 7.1.2: LSTM Forecast for Mphasis Ltd.

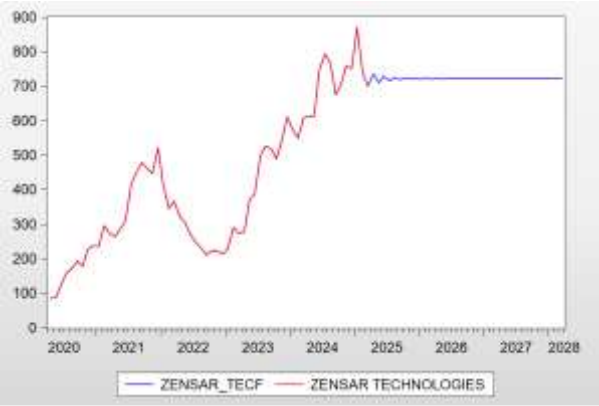


Interpretation

The LSTM model for Mphasis Ltd., using data from April 2020 to March 2025, shows a rise in stock price until 2021, followed by ups and downs, and stabilizing around ₹2,500. The blue line shows historical data and the orange dashed line shows the forecast from April 2025 to March 2028. Unlike ARIMA, the LSTM forecast shows slight fluctuations, with a dip around 2026 and a rise toward 2027, suggesting mild ups and downs but overall stable movement. Both models predict that Mphasis stock will remain around ₹2,500 during the forecast period (2025–2028).

7.2 Zensar Technologies Ltd.

Chart 7.2.1: ARIMA Forecast for Zensar Technologies Ltd.



Interpretation

The ARIMA model for Zensar Technologies, using data from April 2020 to March 2025, shows a significant rise in stock price until 2021, followed by a steep decline and further fluctuations before stabilizing around ₹800 by 2025. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028, indicating that the stock price is expected to remain stable around ₹800 with no major ups or downs during the prediction period.

Chart 7.2.2: LSTM Forecast for Zensar Technologies Ltd.

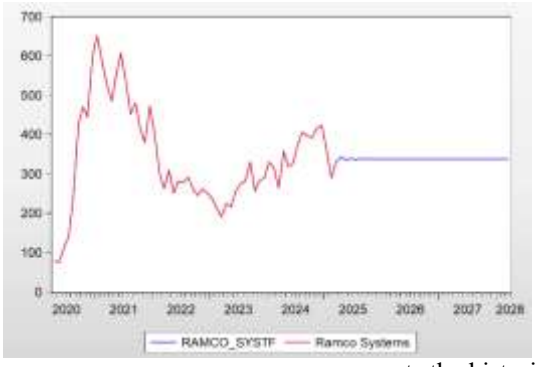


Interpretation

The LSTM model for Zensar Technologies, with the stock price increasing from about ₹100 in 2020 to around ₹800 by early 2025. The blue line shows the historical stock prices, while the orange dashed line shows the forecasted values from April 2025 to March 2028. The forecast indicates a strong and accelerating upward trend, with the stock price rising sharply throughout the forecast period and reaching approximately ₹2,800 by early 2028.

7.3 Ramco Systems Ltd.

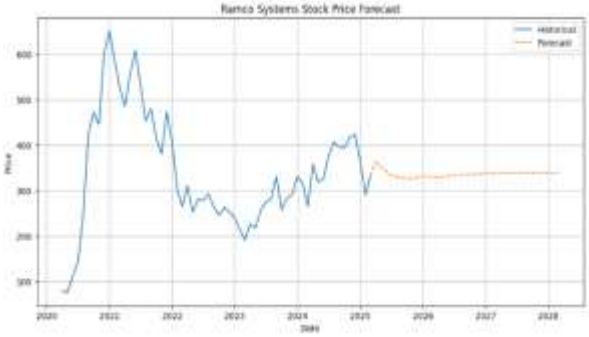
Chart 7.3.1: ARIMA Forecast for Ramco Systems Ltd.



Interpretation

The ARIMA model for Ramco Systems, using data from April 2020 to March 2025, shows significant fluctuations throughout the historical period, with the stock experiencing sharp ups and downs before settling around ₹350 by 2025. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028, indicating that the stock price is expected to remain stable around ₹350 with no major ups or downs during the prediction period.

Chart 7.3.2: LSTM Forecast for Ramco Systems Ltd.

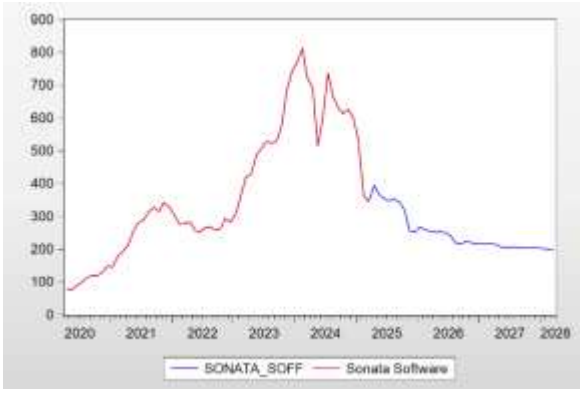


Interpretation

The LSTM model for Ramco Systems, The blue line shows historical data and the orange dashed line shows the forecast from April 2025 to March 2028. Unlike ARIMA, the LSTM forecast shows slight fluctuations, with a dip around 2026 and a rise toward 2027, suggesting mild ups and downs but overall stable movement.

7.4 Sonata Software Ltd.

Chart 7.4.1: ARIMA Forecast for Sonata Software Ltd.



Interpretation

The ARIMA model for Sonata Software, using data from April 2020 to March 2025, shows that the stock price rose steadily from around ₹80 in 2020 to a peak of over ₹800 by early 2024, followed by a sharp decline and stabilizing near ₹400 by early 2025. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028. The forecast suggests a gradual decline, with the price steadily falling from ₹400 to around ₹250 by 2028.

Chart 7.4.2: LSTM Forecast for Sonata Software Ltd.

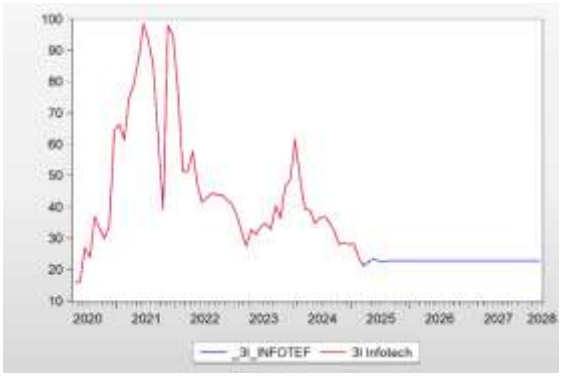


Interpretation:

The LSTM model for Sonata Software, The blue line shows the historical data and the orange dashed line shows the forecast from April 2025 to March 2028. The LSTM forecast indicates an initial decline to nearly ₹200 by 2026, followed by a gradual recovery, reaching about ₹450 by early 2028.

7.5 3i Infotech Ltd.

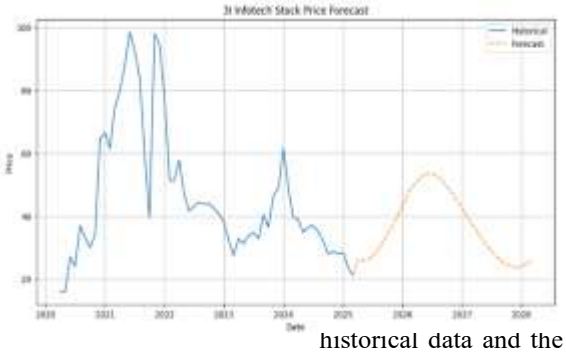
Chart 7.5.1: ARIMA Forecast for 3i Infotech Ltd.



Interpretation

The ARIMA model for 3i Infotech, shows a sharp increase in stock price from around ₹15 in 2020 to a peak of nearly ₹100 by 2021, followed by extreme volatility and a gradual decline to around ₹25 by early 2025. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028. The forecast indicates a flat and stable trend, with the stock price expected to remain around ₹25.

Chart 7.5.2: LSTM Forecast for 3i Infotech Ltd.

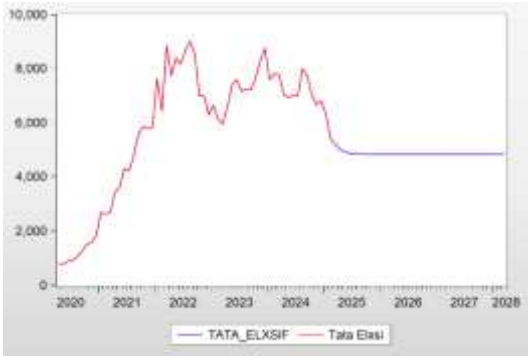


Interpretation

The LSTM model for 3i Infotech, using the same historical data, reflects the sharp spikes and drops seen between 2020 and 2024, ending near ₹25 by early 2025. The blue line shows the historical data and the orange dashed line shows the forecast from April 2025 to March 2028. The forecast presents a wave-like pattern, where the stock price rises steadily to about ₹55 by 2026 and then dips back to around ₹30 by 2028.

7.6 Tata Elxsi Ltd.

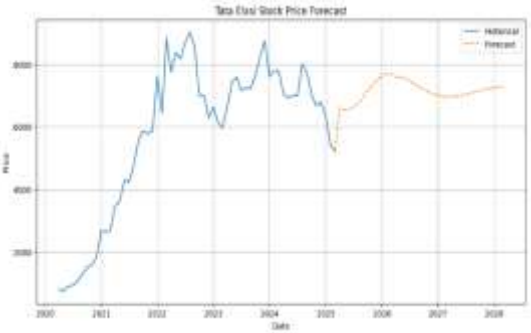
Chart 7.6.1: ARIMA Forecast for Tata Elxsi Ltd.



Interpretation

The ARIMA model for Tata Elxsi, using data from April 2020 to March 2025, The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028. The ARIMA forecast indicates a flat trend, with the stock price expected to remain stable around ₹6,000, showing no significant upward or downward movement over the next three years.

Chart 7.6.2: LSTM Forecast for Tata Elxsi Ltd.

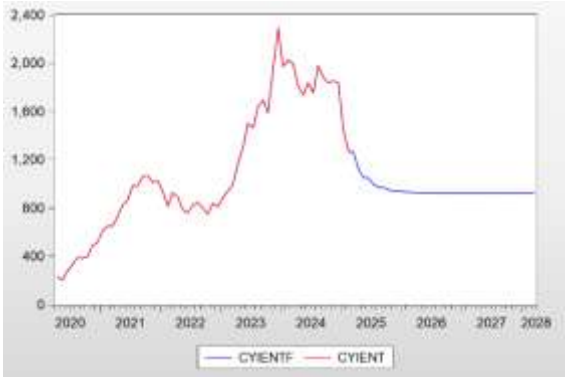


Interpretation

The LSTM model for Tata Elxsi, based on the same historical data, captures the sharp rise and post-peak corrections seen in the historical trend. The blue line represents historical data and the orange dashed line shows the forecast from April 2025 to March 2028. The LSTM forecast indicates mild fluctuations, with the price rising slightly to around ₹7,500 by mid-2026, dipping slightly, and then recovering again close to ₹7,500 by 2028.

7.7 Cyient Ltd.

Chart 7.7.1: ARIMA Forecast for Cyient Ltd.



Interpretation

The ARIMA model for CYIENT, using data from April 2020 to March 2025, shows a sharp upward trend from approximately ₹400 in 2020 to a peak of around ₹2,200 by 2023, followed by a period of volatility and correction, with the price stabilizing near ₹800 by early 2025. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028. The ARIMA forecast indicates a flat trend, with the stock price expected to remain stable around ₹800.

Chart 7.7.2: LSTM Forecast for Cyient Ltd.

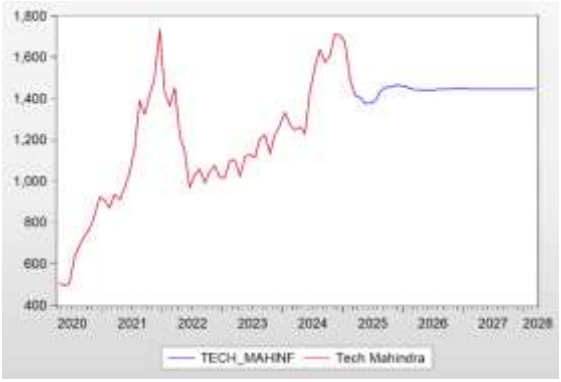


Interpretation

The LSTM model for Cyient, based on the historical data from 2020 to 2025, captures the sharp rise and post-peak corrections seen in the historical trend. The blue line represents historical data, and the orange dashed line shows the forecast from 2025 to 2028. The LSTM forecast indicates a decline to approximately ₹750 by mid-2026, followed by a steady increase to around ₹1,500 by 2028.

7.8 Tech Mahindra Ltd.

Chart 7.8.1: ARIMA Forecast for Tech Mahindra Ltd.



Interpretation

The ARIMA model for Tech Mahindra, using data from April 2020 to March 2025, , with the price stabilizing near ₹1,400 by early 2025. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028. The ARIMA forecast indicates a flat trend, with the stock price expected to remain stable around ₹1,400.

Chart 7.8.2: LSTM Forecast for Tech Mahindra Ltd.

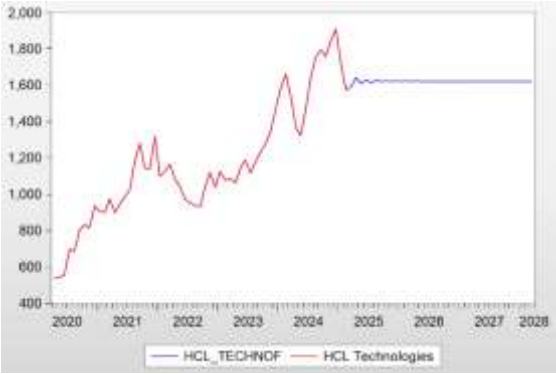


Interpretation

The LSTM model for Tech Mahindra, shows a sharp upward trend from approximately ₹600 in 2020 to a peak of around ₹1,600 by 2022, with the price stabilizing near ₹1,400 by early 2025. The blue line represents the historical stock prices, while the orange line shows the forecasted values from April 2025 to March 2028. The LSTM forecast indicates a flat trend, with the stock price expected to remain stable around ₹1,400.

7.9 HCL Technologies Ltd.

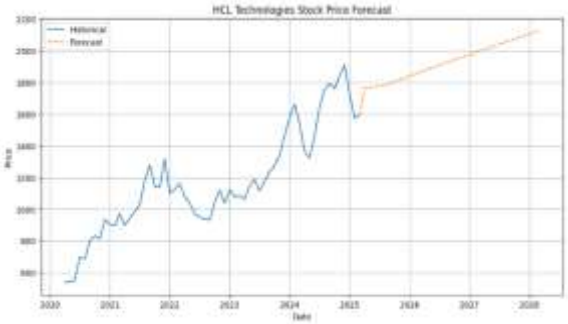
Chart 7.9.1: ARIMA Forecast for HCL Technologies Ltd.



Interpretation

The ARIMA model for HCL Technologies, using data from April 2020 to March 2025, shows a steady increase in stock price over time. The red line represents the historical stock prices, while the blue line shows the forecasted values from April 2025 to March 2028. The ARIMA forecast indicates a flat trend, with the stock price expected to remain stable around ₹1,600.

Chart 7.9.2: LSTM Forecast for HCL Technologies Ltd.

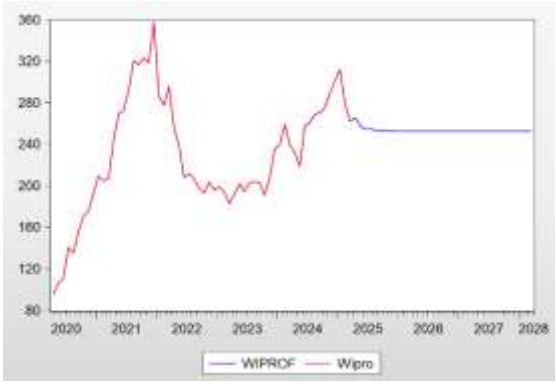


Interpretation

The LSTM model for HCL Technologies, using data from April 2020 to March 2025, shows a steady increase in stock price over time. The blue line represents the historical stock prices, while the orange line shows the forecasted values from April 2025 to March 2028. The LSTM forecast indicates a flat trend, with the stock price expected to remain stable around ₹2,000.

7.10 Wipro Ltd.

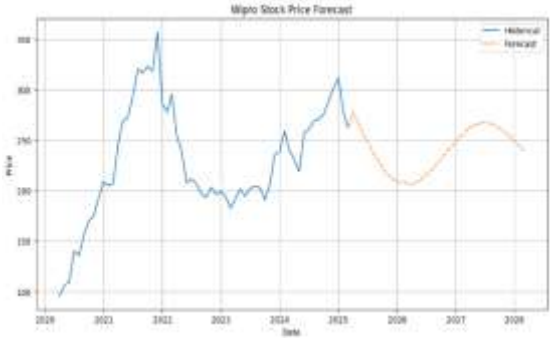
Chart 7.10.1: ARIMA Forecast for Wipro Ltd.



Interpretation

The ARIMA model for Wipro, using data from 2020 to 2025, shows fluctuations in stock price over time. The red line represents the historical stock prices, while the blue line shows the forecasted values from 2025 to 2028. The ARIMA forecast indicates a flat trend, with the stock price expected to remain stable around ₹250.

Chart 7.10.2: LSTM Forecast for Wipro Ltd.



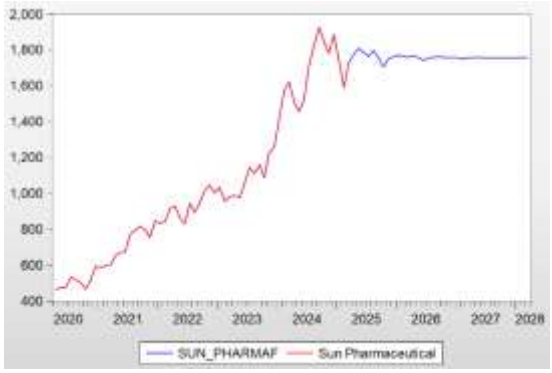
Interpretation

The LSTM model for Wipro, using data from 2020 to 2025, shows fluctuations in stock price over time. The blue line represents the historical stock prices, while the orange line shows the forecasted values from 2025 to 2028. The LSTM forecast indicates a flat trend, with the stock price expected to remain stable around ₹280, showing no significant upward or downward movement over the next three years.

II. Forecast Analysis of Pharmaceutical Sector Companies

7.11 Sun Pharmaceutical Industries Ltd.

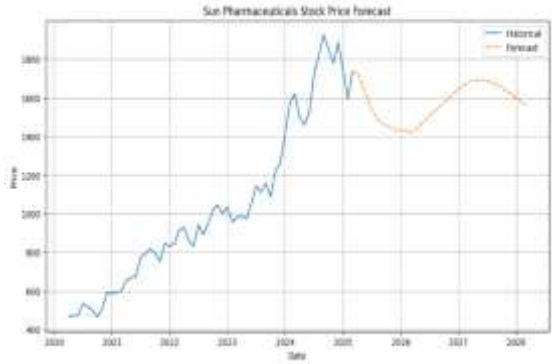
Chart 7.11.1: ARIMA Forecast for Sun Pharmaceutical



Interpretation

The ARIMA model for Sun Pharmaceutical, using data from 2020 to 2025, shows a steady increase in stock price over time, ranging from approximately 400 to 1,800. The red line represents the historical stock prices, while the blue line shows the forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around 1,800, showing no significant upward or downward movement over the next three years.

Chart 7.11.2: LSTM Forecast for Sun Pharmaceutical



Interpretation

The LSTM model for Sun Pharmaceuticals, using data from 2020 to 2025, shows fluctuations in stock price over time. The blue line represents the historical stock prices, while the orange line shows the forecasted values from 2025 to 2028. The LSTM forecast indicates a slight increase after fluctuations, with the stock price expected to stabilize around ₹1400, showing some upward movement over the next three years.

7.12 Divi's Laboratories Ltd.

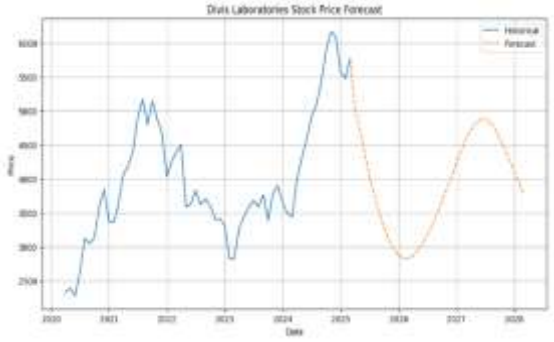
Chart 7.12.1: ARIMA Forecast for Divi's Laboratories



Interpretation

The ARIMA model for Divis Laboratories, using data from 2020 to 2025, shows fluctuations in stock price over time. The red line represents the historical stock prices, while the blue line shows the forecasted values from 2025 to 2028. The ARIMA forecast indicates a flat trend, with the stock price expected to remain stable around ₹5700.

Chart 7.12.2: LSTM Forecast for Divi's Laboratories

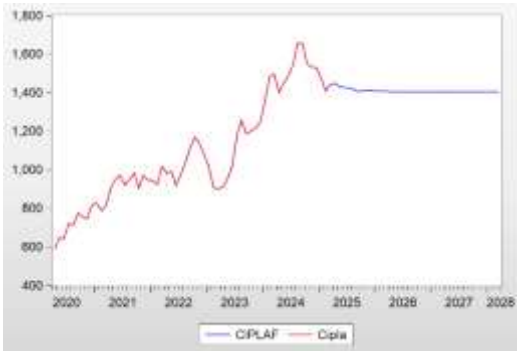


Interpretation

The LSTM model for Divis Laboratories, using data from 2020 to 2025, shows fluctuations in stock price over time. The blue line represents the historical stock prices, while the orange line values from 2025 to 2028. The LSTM forecast indicates a fluctuating trend, with the stock price expected to decrease to around ₹2,500 by mid-2026 before rising again to approximately ₹4,500 by 2028.

7.13 Cipla Ltd.

Chart 7.13.1: ARIMA Forecast for Cipla Ltd.



Interpretation

The ARIMA model for Cipla, using data from 2020 to 2025, shows fluctuations in stock price over time. The red line represents the historical stock prices, while the blue line shows the forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around ₹1,400 from 2025 to 2028.

Chart 7.13.2: LSTM Forecast for Cipla Ltd.

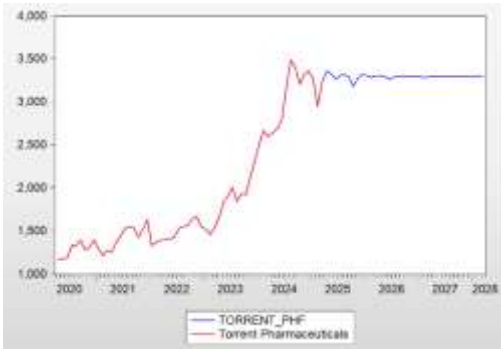


Interpretation

The LSTM model for Cipla, using data from 2020 to 2025, shows fluctuations in stock price over time. The blue line represents the historical stock prices, while the orange line shows the forecasted values from 2025 to 2028. The LSTM forecast indicates a fluctuating trend, with the stock price expected to decrease to around ₹1000 by mid-2026 before rising again to approximately ₹1200 by 2028.

7.14 Torrent Pharmaceuticals Ltd.

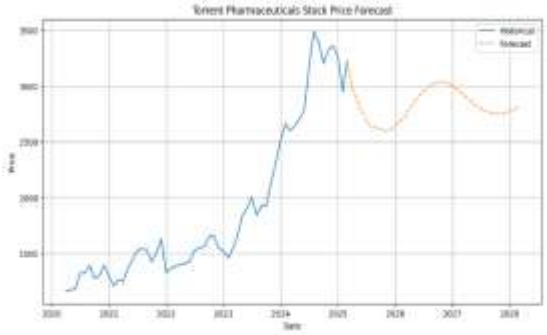
Chart 7.14.1: ARIMA Forecast for Torrent Pharmaceuticals



Interpretation

The ARIMA model for Torrent Pharmaceuticals, using data from 2020 to 2025, shows fluctuations in stock price over time. The red line represents the historical stock prices, while the blue line shows the forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around ₹3,400 from 2025 to 2028.

Chart 7.14.2: LSTM Forecast for Torrent Pharmaceuticals

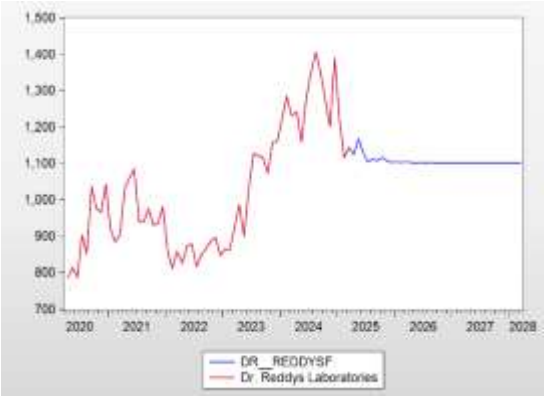


Interpretation

The LSTM model for Torrent Pharmaceuticals shows fluctuations in stock price over time. The blue line represents historical stock prices, while the orange dotted line shows forecasted values from 2025 to 2028. The LSTM forecast indicates a stable trend, with the stock price expected to fluctuate between ₹2,500 and ₹3,000 from 2025 to 2028.

7.15 Dr. Reddy's Laboratories Ltd.

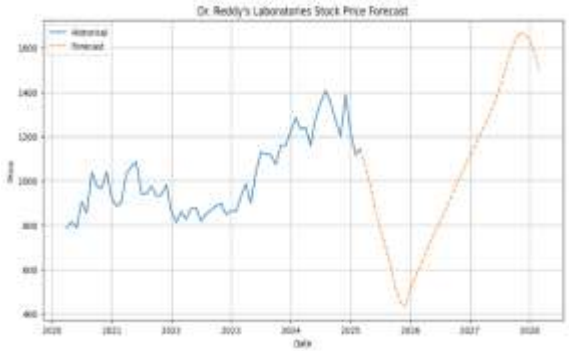
Chart 7.15.1: ARIMA Forecast for Dr. Reddy's Laboratories



Interpretation

The ARIMA model for Dr. Reddy's Laboratories shows fluctuations in stock price over time. The red line represents historical stock prices, while the blue line shows forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around ₹1,050 from 2025 to 2028.

Chart 7.15.2: LSTM Forecast for Dr. Reddy's Laboratories



Interpretation

The LSTM model for Dr. Reddy's Laboratories, using data from 2020 to 2025, shows fluctuations in stock price over time. The blue line represents historical stock prices, while the orange dotted line shows forecasted values from 2025 to 2028. The LSTM forecast indicates a fluctuating trend, with the stock price expected to fluctuate between ₹400 and ₹1600 from 2025 to 2028.

7.16 Lupin Ltd.

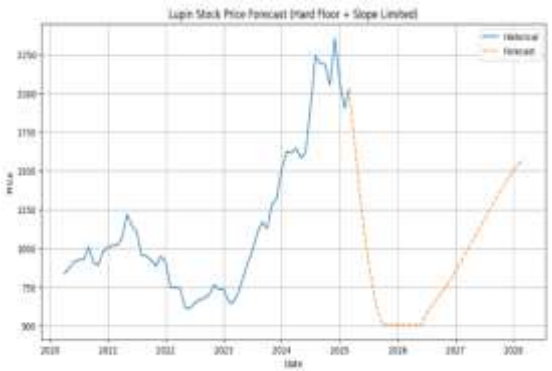
Chart 7.16.1: ARIMA Forecast for Lupin Ltd.



Interpretation

The ARIMA model for Lupin shows fluctuations in stock price over time. The red line represents historical stock prices, while the blue line shows forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain stable around ₹2100 for the next three years.

Chart 7.16.2: LSTM Forecast for Lupin Ltd.

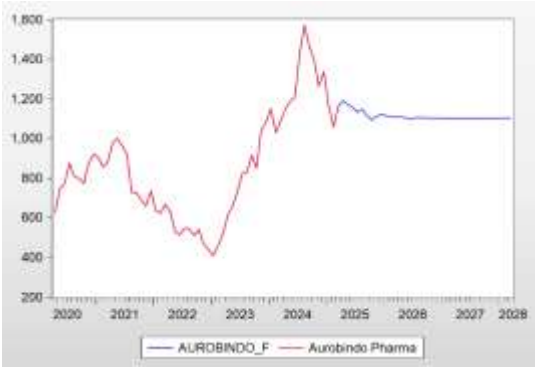


Interpretation

The LSTM model for Lupin shows fluctuations in stock price over time. The blue line represents historical stock prices, while the orange dotted line shows forecasted values from 2025 to 2028. The LSTM forecast indicates a fluctuating trend, with the stock price expected to fluctuate between ₹400 and ₹1,600 from 2025 to 2028.

7.17 Aurobindo Pharma Ltd.

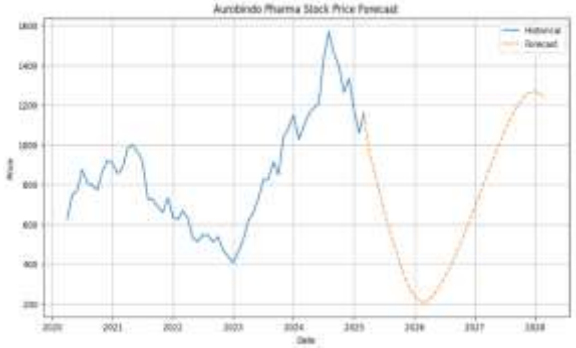
Chart 7.17.1: ARIMA Forecast for Aurobindo Pharma



Interpretation

The ARIMA model for Aurobindo Pharma shows fluctuations in stock price over time. The red line represents historical stock prices, while the blue line shows forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around ₹1,100 from 2025 to 2028.

Chart 7.17.2: LSTM Forecast for Aurobindo Pharma

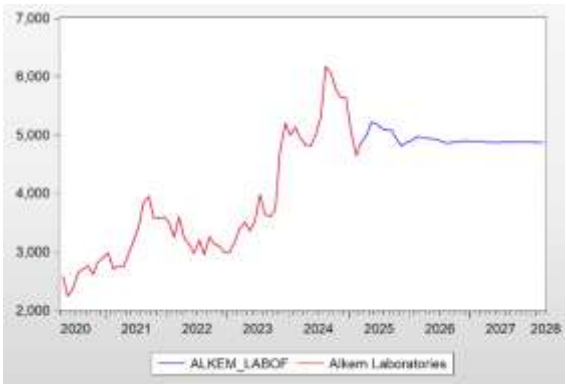


Interpretation

The LSTM model for Aurobindo Pharma shows fluctuations in stock price over time. The blue line represents historical stock prices, while the orange dotted line shows forecasted values from 2025 to 2028. The LSTM forecast indicates a sharp decline to around ₹200 in 2026, followed by a gradual increase to approximately ₹1,200 by 2028.

7.18 Alkem Laboratories Ltd.

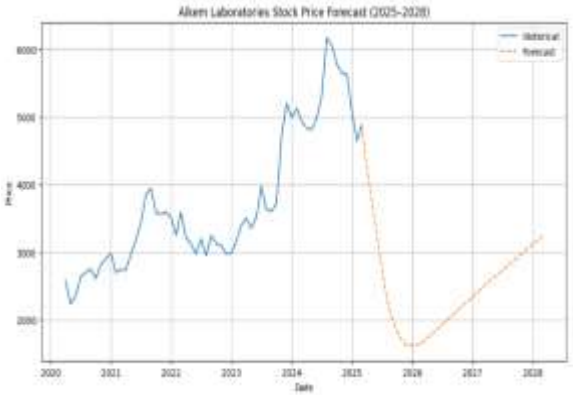
Chart 7.18.1: ARIMA Forecast for Alkem Laboratories



Interpretation

The ARIMA model for Alkem Laboratories shows fluctuations in stock price over time. The red line represents historical stock prices, while the blue line shows forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around ₹4,900 from 2025 to 2028.

Chart 7.18.2: LSTM Forecast for Alkem Laboratories



Interpretation

The LSTM model for Alkem Laboratories shows fluctuations in stock price over time. The blue line represents historical stock prices, while the orange dotted line shows forecasted values from 2025 to 2028. The LSTM forecast indicates a low point around 2025, followed by a gradual increase to approximately 3500 by 2028.

7.19 Zydus Lifesciences Ltd.

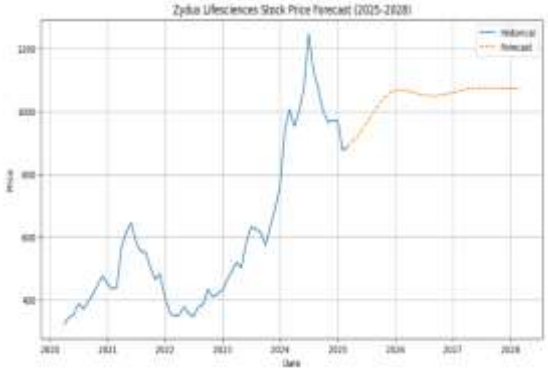
Chart 7.19.1: ARIMA Forecast for Zydus Lifesciences



Introduction

The ARIMA model for Zydus Lifesciences shows fluctuations in stock price over time. The red line represents historical stock prices, while the green line shows forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around ₹1,050 from 2025 to 2028.

Chart 7.19.2: LSTM Forecast for Zydus Lifesciences

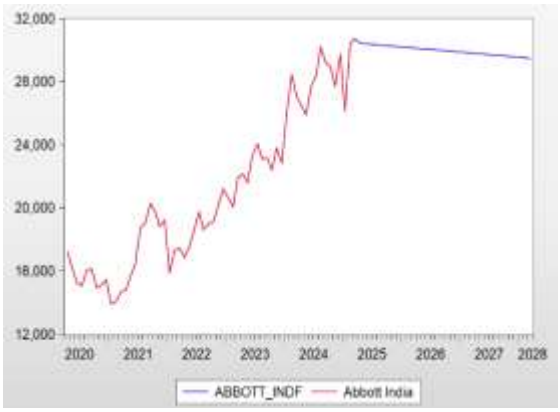


Interpretation

The LSTM model for Zydus Lifesciences shows fluctuations in stock price over time. The blue line represents historical stock prices, while the orange dotted line shows forecasted values from 2025 to 2028. The LSTM forecast indicates a stable trend, with the stock price expected to remain around ₹1,000 from 2025 to 2028.

7.20 Abbott India Ltd.

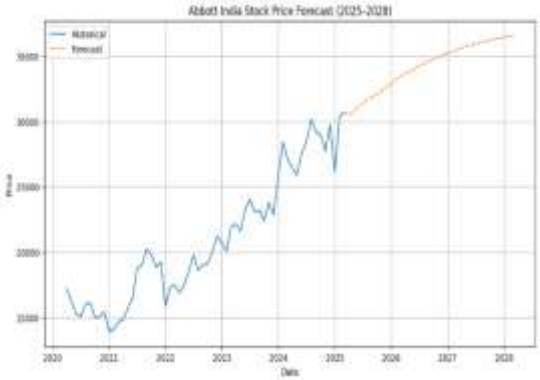
Chart 7.20.1: ARIMA Forecast for Abbott India



Interpretation

The ARIMA model for Abbott India shows fluctuations in stock price over time. The red line represents historical stock prices, while the blue line shows forecasted values from 2025 to 2028. The ARIMA forecast indicates a stable trend, with the stock price expected to remain around ₹30,000 from 2025 to 2028.

Chart 7.20.2: LSTM Forecast for Abbott India



Interpretation

The LSTM model for Abbott India shows fluctuations in stock price over time. The blue line represents historical stock prices, while the orange dotted line shows forecasted values from 2025 to 2028. The LSTM forecast indicates a steady increase, with the stock price expected to reach approximately ₹35,000 by 2028

8. COMPARATIVE ANALYSIS BETWEEN IT AND PHARMACEUTICAL SECTORS

To fulfill the second objective, stock price forecasts for selected companies in the Indian IT and Pharmaceutical sectors were analyzed over a 36-month period. The findings suggest that the Pharmaceutical sector demonstrates higher growth potential, supported by upward trends influenced by healthcare demand, innovation, and regulatory factors. Although more volatile, its long-term performance indicates greater capital appreciation. In contrast, the IT sector showed stable growth, with consistent price behavior and lower risk, making it suitable for conservative, long-term investors. Overall, the analysis highlights distinct investment profiles, Pharmaceuticals for higher returns and IT for portfolio stability, enabling informed decisions based on individual risk preferences.

8.1 Table: Sector-wise Comparison Based on Forecasts

Aspect	IT Sector	Pharmaceutical Sector
Forecast Trend	Stable, linear	Growth-oriented
Volatility	Low to moderate	Higher
Predicted Growth	Mild to moderate	High
Investment Potential	stable returns	Promising for high-growth

9. FINDINGS, SUGGESTIONS & CONCLUSION

9.1 Findings:

Information Technology (IT) Sector

- The IT sector showed stable and linear stock price trends across both historical data and forecasted periods.
- It experienced low volatility, indicating predictable and consistent price movement.
- The sector is aligned with moderate growth potential and lower investment risk.
- It is suitable for risk-averse, long-term investors seeking steady returns and capital preservation.
- Recommended for inclusion in portfolios that prioritize stability over aggressive growth.

Pharmaceutical Sector

- The Pharmaceutical sector exhibited higher volatility in stock price movements.
- Influencing factors included regulatory changes, innovation cycles, and global healthcare trends.
- Forecasts showed stronger growth potential compared to the IT sector.
- Suitable for growth-oriented investors who are comfortable with moderate to high risk.
- Requires active monitoring of external developments to support well-timed investment decisions.

9.2 Suggestions

Information Technology Sector

- The IT sector is recommended for risk-averse investors who prefer long-term stability and predictable returns.
- Investment in this sector is suitable for those aiming for capital preservation over aggressive growth.
- Investors should focus on well-established companies with consistent performance records.
- This sector fits portfolios that prioritize low volatility and steady income generation.

Pharmaceutical Sector

- The Pharmaceutical sector is ideal for growth-seeking investors who are willing to accept moderate to high risk.
- Due to its dynamic nature, this sector offers strong return potential over the medium to long term.
- Investors are advised to monitor industry developments, such as regulatory updates and healthcare trends, to make informed decisions.
- Diversifying with pharmaceutical stocks can add growth momentum to an otherwise conservative portfolio.

9.3 Conclusion

This study, titled "A Study on Predicting Stock Prices of Selected Indian IT and Pharmaceutical Companies," aimed to forecast and compare long-term stock performance across two prominent sectors. The results indicated that the IT sector

offers stable, linear trends with low volatility, making it suitable for conservative, long-term investors. In contrast, the Pharmaceutical sector showed higher volatility but greater growth potential, influenced by innovation and global healthcare dynamics. The comparative analysis highlights distinct investment profiles, enabling investors to align strategies based on their risk appetite, choosing between IT's stability and Pharma's growth prospects.

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