WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

An Analysis for Stock Trend Prediction of Nifty Midcap 50

Sunil Hatti[1], Prof, Deepak Shyam[2]

[1]PG Student, PES1PG22MB449, PES1202204441,[2]Guide
[1,2]Department of Management Studies, PES University

ABSTRACT

In this research paper we will be predicting the values of Nifty 50, National Stock Exchange – National Fifty top companies that are in it. We will be predicting the trends on the basis of all the companies along with the top 4 best nifty index companies with best maximum midcap. The capital structure is based on the middle structuring of market capitalization on the basis of the criteria that has been given. It includes the 50 companies in the midcap which includes the stocks in NSE which belongs to the 101 to 250 companies in NSE. These midcaps and small caps are riskier than the large cap since these companies are not available to earn profits every year. Prediction of the stocks in the midcap based on all the companies available and the market capitalization. From this we will be predicting the trends of these companies which come in the midcaps. These midcaps stocks are the raising stocks in the stock exchanges which are riskier as compared to the large caps.

Having small caps and midcaps are necessary for the growth of technology as well as infrastructure development related aspects along with the standard of living of people as people invest in the stocks to have a sustainable wealth maximization over a period of time.

INTRODUCTION

The midcaps are useful in knowing the risk and return factors, as well as the stability. SEBI has a guideline that has to be followed by all the companies as well as stock exchanges, it clearly states that all those companies from the rank 101 to 250 come under the mid cap. The market capitalization is the total equity shares multiplies into the market share. Companies having market capitalization ranging from 5000 crores to 20000 crores will come under midcap. Companies like Reliance, Adani, Birla groups come in the large cap where the risk is less as compared to other caps and the income will be stable. Companies like Vodafone Idea, Ashok Leyland, Bata India and few other companies. There have been a similar kind of trend in the companies as an equal amount of companies have fallen to small caps as well as raised to midcaps. The sturdy change in the adoption may lead a downward trend for the companies. These companies play a vital role in the GDP as well as many of the midcaps are from the FMCG and daily needs goods, so they have a very good turnover as well as they have a very high growth rate and have been a part of the growth for GDP in the country.

Many of the recognized company here are gaining and are earning good market share, recently Adani company is losing the market share due to the recent report that was against the company. These midcaps offer a very high times for wealth maximization for shareholders as within few years the invested amount will double or gets more than the amount invested. Colgate Palmolive is one of the top companies that has a very good PE Ratio as well as EPS.

The NSE has been a part of decision making for a variety of purposes. These predicted variables are a part of the dependents which are affected by the independent variables. The variables that affect the changes in stock depends on the ROC, CCI and many others. It depends on the various criteria related to the stocks.

The prediction on stock market can be done on the basis of previous few days data and comparing it with the actuals and later forecast them on the basis of smoothing model which may be moving averages, may be single or double or triple exponential method so that the best outcome is possible out of these data. Nifty midcap 50 has top brands like Canara bank, Adani, Tata power, Idea, Colgate and many more companies most of them are related to infrastructure. So these are the companies that have a market capitalization from 5000 crores to 20000 crores. If even a single rupee is more than they come under large caps.

LITERATURE REVIEW

1) "Estimating and Forecasting Volatility using ARIMA Model – A study on NSE, India, 2019, Dikshita Wadhawan."
2) "ARIMA MODEL: FORECASTING THE STOCK PRICES: A STUDY CONDUCTED FOR TOP FIVE JEWELLERY BRANDS IN INDIA, Prof. Jayashree Kowtal."

3) “SOFT COMPUTING APPROACHES TO STOCK FORECASTING: A SURVEY, A. Ayodell.”

4) “An effective time series analysis – Based stock price prediction using machine learning and deep learning models, Sidra Mehtab, Jaydeep Den, May 2021.”

5) “An effective time series analysis for stock trend prediction using ARIMA Model for NIFTY Midcap 50, B. Uma Devi, D Sundar and Dr. P Alli.”

6) "Stock Market Prediction Using Machine Learning Algorithms" by B. Jadhav, et al. (2017): This study reviews various machine learning techniques used for stock market prediction.

7) "A Survey on Stock Market Prediction Using Machine Learning" by P. S. Saranya and D. Shanthi (2020): This survey paper provides insights into the application of machine learning in stock market prediction.

8) "Stock Market Prediction Using Sentiment Analysis" by A. Sharma and S. S. M. Bommu (2018): This literature review explores how sentiment analysis of news and social media data can impact stock market prediction.

9) "A Comprehensive Survey of Deep Learning for Predictive Analytics in Financial Markets" by M. D. S. Sai, et al. (2021): This review discusses the role of deep learning in financial market prediction.

10) "Stock Market Prediction Using Time Series Forecasting" by S. R. Anuse and M. S. Gaikwad (2015): This study focuses on time series forecasting methods for stock market prediction.

11) "A Review on Stock Price Prediction Models" by A. S. Kumar and K. M. Bhaskaran (2018): This review provides an overview of various stock price prediction models, including machine learning and statistical approaches.

12) "Predicting Stock Market Prices Using Data Mining Techniques" by J. S. Shah and D. R. Patel (2012): This study explores data mining techniques for stock market prediction.

13) "A Survey of Stock Market Prediction Using Neural Networks" by S. K. Verma and S. K. Jena (2012): This survey focuses on the application of neural networks in stock market prediction.

14) "A Review on Deep Learning Techniques for the Prediction of Stock Market" by S. K. Tiwari, et al. (2020): This review discusses deep learning techniques and their applications in stock market prediction.

15) "Stock Price Prediction Using Support Vector Machines" by R. K. Jain, et al. (2013): This study examines the use of support vector machines for stock price prediction.

16) "An Empirical Analysis of Machine Learning Algorithms for Stock Market Trading" by A. K. Sahoo, et al. (2018): This paper empirically evaluates the performance of various machine learning algorithms in stock market trading.

17) "Predicting Stock Prices Using Technical Analysis and Machine Learning" by A. K. Khandelwal, et al. (2020): This study combines technical analysis and machine learning for stock price prediction.

18) "A Review of Predictive Modeling of Financial Time Series Data" by D. Zhao and H. Zou (2015): This review provides insights into predictive modeling of financial time series data, including stock prices.

19) "Stock Price Prediction Using LSTM, RNN, and GRU Neural Networks" by V. N. Patil and M. D. Raut (2019): This study explores the application of recurrent neural networks for stock price prediction.

20) "Predicting Stock Prices Using Hybrid Model" by M. Raj and R. K. Singh (2017): This research investigates hybrid models that combine different forecasting techniques for stock price prediction.

OBJECTIVES

The objective of the study is to determine the main reason for the trend changes and what factors affect the change in the trends in the midcap NIFTY 50. These trend changes affect the company in their growth or whether the downward trend suggests that the company is in a bad situation. All the business cycles commonly known as the economic cycles is a part of this process. The cycle tells about the ups and downs in the stock value due to the economic changes. In this the trends depends on the industry that the company is in and how the technology or other macro factors affect the company’s growth.

PRIMARY OBJECTIVES

The primary or main objective is to find the normality through the multiple regression. Check all the assumption on the trend analysis of the future prediction made data and check whether there is relation in the data collected and see whether there are any outliers and later determine the best fit line. Check on the prediction that has been made in the research and follow the same for the better results.

SECONDARY OBJECTIVES

The other objective is to check the result of the prediction and later comment on the normality of prediction made over the time and if any change in the forecasted value needs to be trimmed and changed accordingly. Check whether those 50 companies will be same in the next coming years or will there be any change in the list in the companies if any of the companies get upgraded to lap caps or they may be downgraded to small caps.

RESEARCH METHODOLOGY

The method that can be used here would be the exponential smoothing method on the basis of seasonal character and check the MAE, MAPE, MSE and RMSE. Later we can check for the Regression model on the basis of dependency of each factor on the stock market. We can also use the ARIMA technique here for modelling of the data and predicting for future. We can adopt a variety of technique for this prediction model and check on the accuracy of each model in the research. Here in this we will be testing only one prediction model.

RESEARCH DESIGN

The research design is structured in a way in which the Assumptions are to be fulfilled along with the predictions. The best reason for prediction actually comes from the stock price changes. It is designed to check the accuracy and the fitness of the data from the data set value.

SCOPE

The scope for the research has a very high potential as it covers all those companies that are in the NIFTY stocks in the NSE. These companies mainly depend on the price of NIFTY to increase so that the demand for stock and price of share increases as well as the many ratios of the companies will increase depending on the change in the prediction model suggested. There is a very high scope for forecasting these shares as the company as well as SEBI needs to track the shares and rate them on the basis of these predictions. If the prediction doesn't work then there is very high fluctuations in the market which may lead to the fall in the economy. The shares of the company depend on the demand and the shareholder's wealth maximization a wrong report on any company may lead the stock price of the company to fall. We can see the same happening in the Adani Company as well.

POPULATION

The data collected is based on the stocks of the midcaps from the past few days and these depends on the various. The data collected on the midcaps and these are necessity for changes in the variables. The stock factors are necessary for checking the data on the stock of 100 to 250.

SAMPLING

The sampling is based on the previous ten days based on the stock price. The sample is based on the ten days opening, closing price which is independent and the price is dependent. For the eleventh day we will determine the sample data and check the prediction accordingly

DATA COLLECTION

The data is collected from money control. These data is based on the stock price of the nifty 50 and we calculate the next day price on the basis of previous days data by taking moving averages and later check on the adequacy and normality. Data collected is based on the midcaps that are mostly from the top established company stocks which has a good growth rate, revenue, and few portfolio and few others are to be taken. Data is collected on the Nifty stocks from 101 to 250 which can be determined as midcap stocks.

DATA ANALYSIS

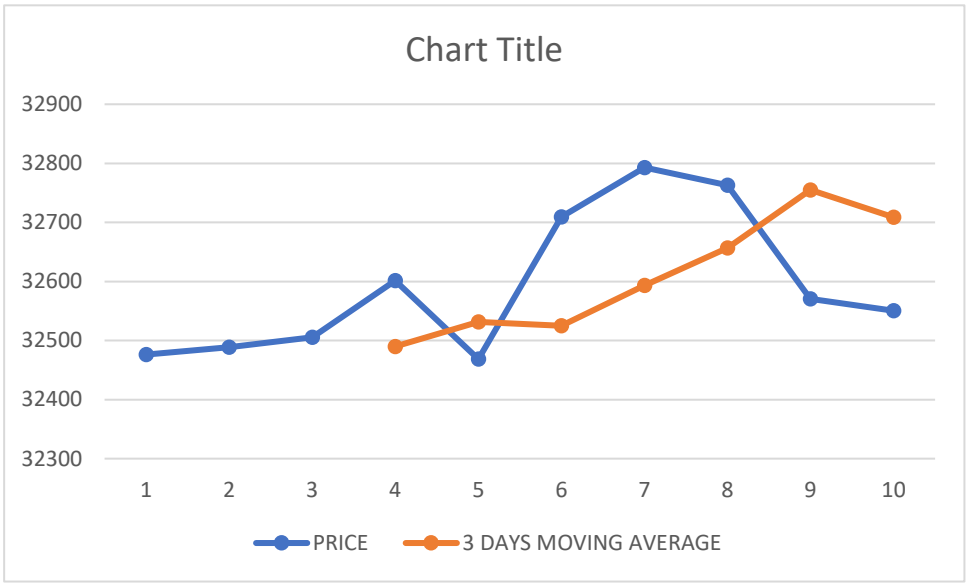
1) Moving Average Method

In the moving average we take 3 moving averages where the forecasting can be made by taking Yt and Ft values that is actual and forecasted value.

DAY (MAY)	PRICE	3 DAYS MOVING AVERAGE	Yt-Ft	I Yt-Ft I	(yt-ft)*(Yt-Ft)	|(Yt-Ft)|/yt
8	32476.1					
9	32488.5					
10	32505.35					
11	32601.3	32489.98333	111.3167	111.3167	12391.40028	0.003414486
12	32468.45	32531.71667	-63.2667	63.26667	4002.671111	0.001948558
15	32709.4	32525.03333	184.3667	184.3667	33991.06778	0.005636504
16	32792.85	32593.05	199.8	199.8	39920.04	0.006092792
17	32762.75	32656.9	105.85	105.85	11204.2225	0.003230803
18	32570.55	32755	-184.45	184.45	34021.8025	0.005663091
19	32550.35	32708.71667	-158.367	158.3667	25080.00111	0.004865283
		32627.88333		1007.417	160611.2053	0.030851517

The MAE, MAPE, MSE and RMSE value has to be calculated for the stock nifty 50 price for stocks from May 8-19 2023, it shows the following results. The forecasted value for May 20 is 23627.88333 .

MAE	143.9167	MAPE	0.004407	MSE	22944.46	RMSE	151.4743

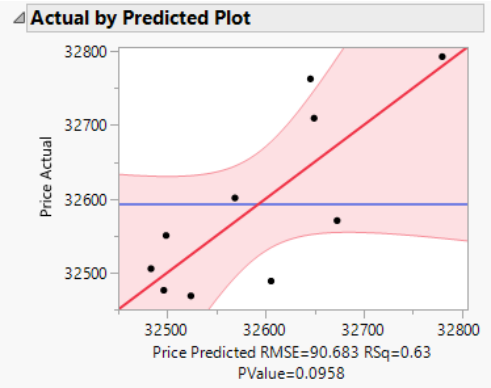


2) The next would be the multiple regression analysis.

Day	Price	open	high	low
8	32476.1	32259.65	32,500.85	32233.5
9	32488.5	32571.9	32,739.55	32437.75
10	32505.35	32578.1	32,578.4	32276.95
11	32601.3	32625.55	32,694.2	32541.05
12	32468.45	32646.6	32,646.6	32417.3
15	32709.4	32493	32,779.5	32421.7
16	32792.85	32830.85	33,044.8	32766.85
17	32762.75	32821.1	32,868.05	32529.45
18	32570.55	32904	32,934.2	32520.25
19	32550.35	32615.25	32,616.25	32232.4

In order to fulfill the assumption of normality we check the regression on the features with decision. Here in this price is decision and other are feature variables.

Assumption 1 – Linearity.



Assumption 2 – Covariance of Residuals and Xi equals 0.

Covariance Matrix

	Residual Price	open	high	low
Residual Price	5482.3231	-0.00000	0.00000	0.00000
open	-0.00000	34914.956	25659.863	21627.567
high	0.00000	25659.863	28668.434	24984.676
low	0.00000	21627.567	24984.676	27179.107

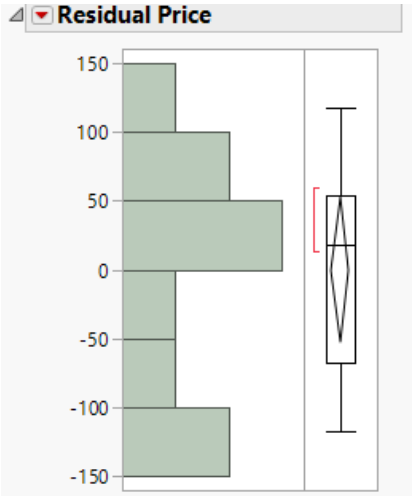
Assumption 3 – Mean equals 0.

Assumption 4 – Variance is a positive.

Assumption 5 – N must be greater than parameters.

	Sum	N	Variance
Residual Price	-0.000	10.000	5482.323
open	326346.000	10.000	34914.956

Assumption 6 – Residuals Distribution.



Summary Statistics

Mean	-3.64e-13
Std Dev	74.042711
Std Err Mean	23.414361
Upper 95% Mean	52.966965
Lower 95% Mean	-52.96696
N	10
Skewness	-0.297112
Kurtosis	-0.587091
N Missing	0

Goodness-of-Fit Test

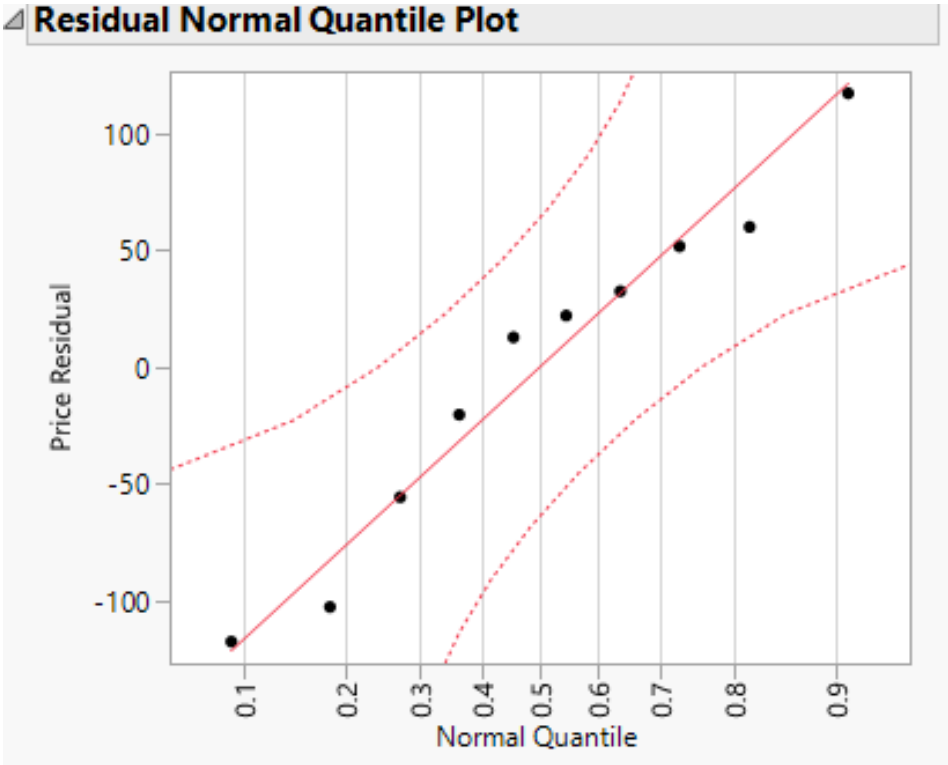
	W	Prob<W
Shapiro-Wilk	0.9589947	0.7744

	A^2	Simulated p-Value
Anderson-Darling	0.236901	0.7492

Note: Ho = The data is from the Normal distribution. Small p-values reject Ho.

Since Shapiro Wilkin Test value is close to 1 and is greater than p value we can say that the distribution is a good fit.

Assumption 7 – Normal distribution of residuals.



There are no outliers so the quantile plot is normally distributed. So the quartile plot has all the values in it. All the plots are within the range so they are close to the line so they explain normality.

Assumption 8 – Multi collinearity should not exist.

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Std Beta	VIF
Intercept	15116.529	6155.665	2.46	0.0494*	0	.
open	-0.217545	0.277706	-0.78	0.4632	-0.33505	2.9469203
high	0.6912402	0.489392	1.41	0.2075	0.964684	7.5145763
low	0.0599347	0.412895	0.15	0.8893	0.081442	5.0710948

There exist multi collinearity in this as the Variance Inflation Factor values are more than 4.

Assumption 9 – Auto correlation must not be there.

Durbin-Watson

Durbin-Watson	Number of Obs.	AutoCorrelation
2.7329194	10	-0.3976

There is no auto correlation since Durbin Watson test value is close to the value 2.

Though in this we can say that the data is normally distributed since it satisfies the 7 assumptions.

Summary of Fit

RSquare	0.627546
RSquare Adj	0.441319
Root Mean Square Error	90.68343
Mean of Response	32592.56
Observations (or Sum Wgts)	10

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	83134.20	27711.4	3.3698
Error	6	49340.91	8223.5	Prob > F
C. Total	9	132475.11		0.0958

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	Std Beta	VIF
Intercept	15116.529	6155.665	2.46	0.0494*	0	.
open	-0.217545	0.277706	-0.78	0.4632	-0.33505	2.9469203
high	0.6912402	0.489392	1.41	0.2075	0.964684	7.5145763
low	0.0599347	0.412895	0.15	0.8893	0.081442	5.0710948

The values of the given co efficient of variation explains 62% is explained by the given variables. Since the probability value is greater than alpha value we reject H0. The Standard error value is 90.68 and this states that the error occurs in this range from the actual and residuals.

LIMITATION OF THE WORK

This is a moving average method it may be less effective in prediction as compared to single exponential smoothing because we do not consider the value of alpha in this. The exponential method is necessary to forecast where the values will be close to the price obtained.

SCOPE OF FUTURE STUDY

We can use this data for the study but the stocks vary from day to day so the prediction method can be used as a way to forecast when the alpha value is not determined so that the forecasted value can be predicted by using the resources. These have to be triple exponential smoothing to be a better fit, we here considered just moving averages. The values of alpha, beta and gamma needs to be a better when we evaluate them in solver. This source can be used for the study related to the ARIMA model as a base technique where the normality and the regression relationship between feature and decision variable may be known.

RESULTS AND FINDINGS

From the above research we can find that the prediction is a good fit as all the assumptions related to goodness of fit is fulfilled. It states about the dependency of open and close price on the price of NIFTY midcap 50. Evaluation of trend on the basis of graph analysis and checking the accuracy to what extent the given data is effective for the decision making of the price of these midcap values.

BIBLIOGRAPHY

https://www.researchgate.net

https://aircconline.com

https://moneycontrol.com

https://www.semanticscholar.org

https://munafasutra.com