DOJI BASED INTRADAY STRATEGY FOR INDIAN STOCK ANALYSIS [AN EXPERIMENTAL STUDY ON NSE-INDIA DURING COVID19]

Srinu madem1, D. Suryachandra Rao2, Dr. Ch. Harigovindaraao, Dr. P. Sanyasi Rao4 Dr. N ramya5

1Research Scholar, Department of Commerce and Management Studies, KrishnaUniversity, Machilipatnam, A.P, India, srinu.mbarfin@gmail.com (Corresponding author)
2Professor, Department of Commerce and Management Studies, Krishna University, Machilipatnam, A.P, India, profdsrao@gmail.com
3Assoc. Professor, Department of Management Studies, Vignan’s Institute of Information Technology, Duvvada, Visakhapatnam A.P, India, harigovindaraao@gmail.com
4Assoc. Professor, Department of Management Studies, Vignan’s Institute of Information Technology, Duvvada, Visakhapatnam A.P, India, sunnymcom36@gmail.com
5Assoc. Professor, Department of basic sciences and Humanities, Vignan’s Institute of Information Technology, Duvvada, Visakhapatnam A.P, India, ramya.nemani@gmail.com

ABSTRACT

In the past few days, Indian Stock markets are continuously falling due to the COVID-19 outbreak pandemic, and other global economic factors connected it. During this time, not only the Small but also the big player's wealth was affected. But Stock markets are wealth creators for long term investors, can be a small player like a trader or a big player like HNIs. Margin money is supplied by almost all the Stockbrokers including discount brokers in India to enable the intraday traders with a high level of leverage in the stock market with the small capital available with the traders. Margin money opportunity can be treated as a double-edged sword which can be used to win over the rival else it can kill ourselves if not used properly. Hence, the trader should have enough knowledge or strategy to use the margin money to gain from the opportunities that arise in real-time markets. The researcher has developed a strategy and back tested with past data. One of the prominent Doji based intraday strategies can be applied in stock markets to extract opportunities. The present study is an attempt to prove that stock markets can create wealth for the short-term investors as well. The objective of this study is to back-test the strategy for a short period and tests the results using the combination of algorithmic and statistical methods to decide on its consistency & future scope for implementation. During the Covid-19 many stocks have been affected due to uncertainty prevailed in both Domestic and Global markets. Especially the core sectors like Banking, IT, Steel, Chemical, and Pharma also affected due to the volatility in stock markets. Hence this study is enforced to observe all those sectors through DOJI based intraday strategy on selected stocks in NSE during 01-03-2020 to 31-03-2020.

Keywords: Doji, Candle Sticks, Stock market, Equity, Short term investment, intraday trading, Margin money

I. INTRODUCTION

During the first decade of the 21st century, there was a tremendous development in E-Commerce which can lead to the growth and prosperity of society in India. Also, financial markets have witnessed high growth in terms of complex financial products. At the same time, many stockbroking companies have launched automated trading platforms. Zerodha Streak, OmnesysNEST, ODIN, Algonomics, Presto ATS are some of the automated trading platforms available in India. They are playing a crucial role in any advanced investment industry. “The growth of information and communication technology tends to the development of different businesses and decision complement systems”. In the domain of financial markets, algorithmic trading (AT) refers to the use of software programs to automate one or more levels of the trading process. Now a day advanced traderis making decisions based on sophisticated mathematical algorithms. “High-frequency trading (HFT) is a type of algo trading featured by huge turnover rates, high speeds, and huge order-to-trade ratios that leverages high- frequency financial data
and electronic trading tools”. Though the order routing and processing are done by automated software in AT systems, it is very important to note that they all are backed by some achieve a profitable return by going long or short in markets. No software can do this unless it is based Artificial Intelligence. Now a day most of the orders are executed by automated trading systems by the institutional investors. Different analytical trading models that can be automated for the financial markets are presented by Larry Connors and with proved reliable results. Kathy Lien has presented some reliable trading strategies using automated trading systems. Considering the literature review it is obvious that there is no such study has been conducted. The researcher has attempted to conduct this study to fill this research gap. On 7th June 2020, S Ravi pointed in his article in the Business world that down fall in the BSE index is temporary and each down fall allows the traders or investors to enter into the market and earn handsome returns in the longer term which is the key to success for the investors. On April 21st, 2020, Abhishek Raja in Outlook money article mentioned that the investor opinion about the stock markets across the world is dark. This was witnessed by the recent crashes in the Indian stock markets and other world markets as well. Financial markets in India have observed a rise in volatility as a result of the impact of the international markets. On 28th May 2020 Economic Times has reported that FIIs’ holding in Nifty-500 stocks drops to a 5-year low. In April 2020 Business today has published that China, was least affected though it was the place of origin of Coronavirus with only 3 percent of fall in the financial markets during February 1 and April 9 whereas India was hit worst. On 4th April 2020, The Hindu stated that the world is on the verge of recession, the economic output in June 2020 quarter-end is also expected to fall for the financial year 2021 will be having a great impact on corporate earnings and their share prices. This paper will present a Doji based trading strategy that can be adopted for HFT or AT. The models presented here are based on “Doji” – A Japanese candlestick pattern. Doji can be formed or seen in the price chart of any Stock or an underlying after an Uptrend or a Down Trend and it is indecision. It means that the prevailing trend is completed and a fresh trend shall be started. The following trend after a Doji can be the same trend or an oppositetrend.

II. LITERATURE REVIEW

In 2019, Pflaumer, Peter. has presented a computer simulation study with R of the doubling strategy over the Martingale betting system or constant bet strategy. However, the results have shown that there are positive results with limited bets and if the bets are increased then the ultimate result is a negative return. HIALL, F., & TSUKADA, M. in 1987 discussed in his study about conditional expectations for the Martingale system. Horton, M. J. 2009 studied the use of Doji and other candlestick patterns in-stock selection. Martinssson, F., &Liljeqvist, I. (2017) have studied the stock market prediction based on Candlestick pattern analysis. Tharavanij, P., Siraprapasiri, V., &Rajchamaha, K. (2017) investigated the profitability analysis of Candlestick charting patterns. Zhang, W., Lin, S., & Zhang, Y. (2016) in his study proven that intraday up or downtrend movements in the previous trading will affect the opinion of retail investors, finally the up or down movements the same direction in the intraday. Egorova, L. (2014) studied The Effectiveness Of Different Trading Strategies For Price-Takers. THIRUNARAYANASAMY, M., &KUMAR, P. J. (2020) mentioned that operational problems, e-mailing and absence of analytical skills are key technical problems faced by the traders in share trading. From the literature review, it is very clear that traders are lack of proper analytical skills to gauge the stock market sentiment or prediction. Hence the present study is an attempt to develop a strategy where there is no need for prediction of the stock market while generating returns.

III. OBJECTIVE OF THE STUDY

To test the intraday trading strategy that can work in all types of markets in the short term. Subsequently, analyze the DOJI based strategy across various sectors. Also to study the DOJI based strategy for its validity in intradaytrading.

IV. HYPOTHESIS OF THE STUDY

The Doji is indecision which describes the stock movement as a neutral condition which indicates the pause for the current trend. Usually the underlying is expected to take a fresh movement after taking some consolidation. This is well suggested by the concept of Contraction and Expansion. Hence, a trader may achieve good results by taking positions after a Doji formation. But here the trader needs to predict the following trend which is again a tough thing. To make the trader job simple, the strategy assumes to invest in multiple times based on the underlying moment. To assess the validity of the strategy the researcher has developed the following hypothesis which is further tested using statisticaltools.

www.turkjphysiotherrehabil.org
H$_0$: The DOJI based strategy has no significance to gain from intraday trading
H$_1$: The DOJI based strategy has significance to gain from intraday trading

V. METHODOLOGY OF THE STUDY

The data to conduct the study is obtained manually from the price charts of trading software and interpreted the results. To conduct the study the researcher has collected data of selected stocks of NIFTY 50 from various industries especially during the COVID19 period. Since most of the investors lose money during the stock markets crash, the data is obtained from this time interval to give the selection of stocks is done randomly from major industries in NIFTY 50 Composite. The selected stocks are Axis Bank, Infosys, Tata Steel, Reliance Industries, and Cipla. This study mainly confined to the COVID19 break period that to intraday observations have been considered during the period from 01-03-2020 to 31-03-2020 and analyzed with the help of descriptive statistics. To avoid the sampling error, the researcher has collected the data of the entire month for all the selected stocks are considered.

VI. DOJI BASED TRADING TECHNIQUE

Candlestick price charts were developed by Japanese in the 18th century by Munehisa Homma (1724-1803). Japanese candlesticks are popular charts frequently used by many traders. There are many patterns in Japanese Candlesticks like Spinning tops, Marubozu, and Doji. Their patterns are shown in Figure No. 1:

![Candle Stick Patterns](image)

The Proposed Strategy: The researcher has studied many stock charts and devised a strategy based on Doji formation in an intraday price chart. The following are the key observations:

1. After a Doji, the price moves some times in an Uptrend and sometimes in a Down Trend, but it is not static in the rest of the day. (As presented in Fig.02)

2. A Doji is sometimes a single price bar and sometimes a combination of price bars. (As presented in Fig.02)

3. The price is visiting the Doji level infinite times roughly 5 to 6 times in a day. (As presented in Fig.02)

The idea is to identify the Doji formed in an intraday and mark the high and low levels. Then enter a trade using a limit order. Place one buy order above the high and one sell order below the low levels. For example, in a price chart, a Doji is formed in an Uptrend. Mark the high and low of that Doji. Now place the Buy order above the High and Sell order below the Low. The trade triggers when the price moves in either direction.
Now there is a chance that the price may go in a reverse direction and make the trader's position risky. Once the Buy order or Sell order is triggered then initiate Sell order and Buy order shall be initiated with double quantities respectively and repeat the process. Exit from the trade after the formation of another Doji. In this strategy, the trader position is direction neutral and hence he/she need not predict the market direction. Figure No: 2 shows the diagrammatic representation of the position of a trader in this strategy.

VII. TRADING RESULTS:

In this section, we will present the trading results obtained with the signals generated using the Doji based strategy. The net profit points obtained using the strategy is 1563. It implies that if a trader has a capital of as low as Rs.10000/-, then he/she could get margin money of at least 10 times. Then his/her purchasing power goes to Rs 100000/-. Table No. 1 shows the number of shares that can be obtained for each stock and each bet. The results are quite interesting and positive across all the sectors and almost all days are good. From Table No.2 it is evident that the strategy is successful in giving positive results by way of giving profit points of 183 for Tata steel. The same for Cipla, Reliance, Axis Bank and Infosys are 175, 542, 348, and 315 respectively.

<table>
<thead>
<tr>
<th>Stock Name</th>
<th>High Price</th>
<th>Bet1</th>
<th>Bet2</th>
<th>Bet3</th>
<th>Bet4</th>
</tr>
</thead>
<tbody>
<tr>
<td>TATASTEEL</td>
<td>388</td>
<td>10</td>
<td>20</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>CIPLA</td>
<td>446</td>
<td>10</td>
<td>20</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>RELIANCE</td>
<td>1348</td>
<td>4</td>
<td>8</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>AXISBANK</td>
<td>707</td>
<td>7</td>
<td>14</td>
<td>28</td>
<td>56</td>
</tr>
<tr>
<td>INFOSYS</td>
<td>758</td>
<td>7</td>
<td>14</td>
<td>28</td>
<td>56</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stock Name</th>
<th>Profit points gained</th>
</tr>
</thead>
<tbody>
<tr>
<td>TATASTEEL</td>
<td>183</td>
</tr>
<tr>
<td>CIPLA</td>
<td>175</td>
</tr>
<tr>
<td>RELIANCE</td>
<td>542</td>
</tr>
<tr>
<td>AXISBANK</td>
<td>348</td>
</tr>
<tr>
<td>INFOSYS</td>
<td>315</td>
</tr>
<tr>
<td>Net profit points gained from the Strategy</td>
<td>1563</td>
</tr>
</tbody>
</table>
**Testing Hypothesis:** The descriptive statistical analysis has given valuable insights about the said strategy. The stocks namely TATASTEEL, CIPLA, RELIANCE, AXISBANK, and INFOSYS are having the price median 300, 400, 1100, 500, and 650 respectively. Based on the trading results, the Doji based strategy is giving attractive and positive results. If the strategy is consistent then the results must be achieved based on the price level of the concerned stock i.e; If the stock is priced High then the profitability must be high and Vice-Versa. Also, other statistical values must confirm the same. From Fig. No. 6, the Range of profitability for Reliance is High i.e; 108, and the same for Tata Steel is 27. The standard deviation for Tata Steel is Low and Reliance is high. Also, other variables Mean, Standard Error, and Kurtosis have indicated that the results are by the price level of the stock. Ultimately, the Doji based strategy has produced the profit points which are by the price level.
of each stock considered for the study and is verified by the Descriptive statistical variables which have rejected the null hypothesis $H_0$ and accepted the alternative hypothesis $H_1$.

VIII. PROFITABILITY ANALYSIS

In this section, we will look into the details of profitability to the trader using the said strategy. Despite various sectors chosen for the study, types of market trends, and Level of stock prices the Doji based strategy has given positive results. When it comes to profitability analysis of Intraday, the Risk-Reward ratio is critical rather than a simple return on investment. The results are quite interesting that returns are not only consistent but also favorable to Risk reward as well. As per the study we have considered five stocks and assumed that a trader is having Rs 10000 with him/her to trade. However, the results are good and satisfactory subject to the brokerage and other charges involved in trading. The trader can gain Rs 1830, 1750, 2168, 2436, and 2205 respectively with Tata Steel, Cipla, Reliance, Axis Bank, and Infosys companies with an investment of Rs 10000 in either of the stocks selected for the study.

In India, we have discount brokers who provide basic broking services they don’t offer research support to their client and whereas full-service brokers to provide broking services with research-based support like Stock recommendations. Discount brokers charge less as they provide basic services but full-service firms charge high when comparing to discount brokers. One of the main supports given by full-service firms are they provide heavy margins to their clients.

<table>
<thead>
<tr>
<th>Stock Name</th>
<th>Gross Profit</th>
<th>Brokerage and Other charges (Approx.)</th>
<th>Net Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TATASTEE</td>
<td>1830</td>
<td>400</td>
<td>1430</td>
</tr>
<tr>
<td>CIPLA</td>
<td>1750</td>
<td>400</td>
<td>1350</td>
</tr>
<tr>
<td>RELIANCE</td>
<td>2168</td>
<td>400</td>
<td>1768</td>
</tr>
<tr>
<td>AXISBANK</td>
<td>2436</td>
<td>400</td>
<td>2036</td>
</tr>
<tr>
<td>INFOSYS</td>
<td>2205</td>
<td>400</td>
<td>1805</td>
</tr>
</tbody>
</table>

Table No. 3: Representation of Net Profit points after Brokerage and Other Charges (Approx.)

The charges levied by brokerage firms vary according to their service providers to their clients. The main service components are margin money supply, trading software, technical support, and other advisory services. These charges are different from locations as well. Even if we consider the full-service brokers also the charges for intraday trading are 0.05 percent for buying and the same for selling as well. Hence, if we consider this charge then the overall charge would be roughly Rs. 300 to 400 for the entire month for one stock. Then the net profits can be shown in Table No. 3.

It is evident from Table No. 1.2 that the trader can gain a net profit Rs. 1430, 1350, 1768, 2036, and 1805 from Tata Steel, Cipla, Reliance, Axis Bank and Infosys companies respectively with and investment of Rs 10000 in each of them. From the trading results, even if the trader invests in any of the selected companies he/she could be in profit. It indicates that the strategy is consistent concerning various industries. Further, the trader can gain minimum Rs 1350 and maximum Rs 2036 by trading in the stock market using the Doji based intraday strategy. If we calculate the rate of return per month then the minimum is 13.5% PM and 20.36%PM. From the data, considered for the study, sometimes the stocks have gone through an uptrend, some though downtrend and some through sideways or neutral. But in all the cases the DOJI based strategy has given positive results.

IX. LIMITATIONS

- The study is limited to onemonth
- If the trader miss the opportunity and don’t execute the order in time, the results may vary and have a significant impact on the profitability of the trader

www.turkjphysiotherrehabil.org
The trader should use his/her valuable time for trading and observe the stock movement from time to time during intraday. However, by adopting HFT or AT, putting limit orders in the system can be easier.

X. CONCLUSIONS:

The Doji based trading technique can be considered by the traders for algorithmic trading (AT) and high-frequency (HFT) trading to include in their trading software in today's market conditions. The present technique is helpful to the trader to take profit from Uptrend, Downtrend, and Sideways as the technique is direction neutral. Automated trading signals can be built using a Doji based trading technique in the live trading environment. Both buy and sell trading signals can be automated together with the existing signals like target profit or the next Doji formation etc. To avoid missing the trade, use the limit orders.

XI. SCOPE FOR FURTHER RESEARCH:

As the study reveals that the DOJI based strategy has the validity for intraday trading, it can be verified across various asset classes like Index Futures, Stock Futures, Commodity Futures, and Options. Further, the said strategy can be checked subjected to taxes and other charges, under live trading experiment, High-frequency trading, or Algo trading. Further to improve the trading results it is advised to pick the stocks which generate a signal by forming a small Doji, considering the uptrend stocks or downtrend stocks based on daily candles, considering the stockbroker who gives more margins for intraday trading. For example, Zerodha gives maximum 5 times leverage whereas Wisdom capital gives up to 60 times which could substantially increase the profits. The study has not considered Risk Management into consideration this can be included in further research.

REFERENCES:

8. Thirunarayanasamy, M., & Kumar, P. J. (2020). Investors' satisfaction on online share trading and technical problems faced by the investors—concerning Virudhanagar district. Studies in Indian Place Names, 40(3), 4264-4272.

www.turkjphysiotherrehabil.org