A STUDY ON THE FORMATION OF CANDLESTICK PATTERNS WITH REFERENCE TO NIFTY INDEX FOR THE PAST FIVE YEARS

George Joseph¹, Saranya G Das², Amrudha Romeo*²

¹Asst. Prof, School of Management & Entrepreneurship, Kerala University of Fisheries and Ocean Studies, Panangad, Kerala, India.

²School of Management & Entrepreneurship, Kerala University of Fisheries and Ocean Studies, Panangad, Kerala, India.

ABSTRACT

Candlesticks are one of the most powerful technical analysis tools in the trader's toolkit. Candlestick Charting originates back to Japan from centuries ago. It is a method of looking at data differently than has been developed in western cultures. The advantage of using candlestick charting in place of Bar charts is that you have the ability to use same techniques and analysis that bar charts offer plus the diversity and unique signals that candlesticks generate. The study on the formation of candlestick pattern was done to find out the different candlestick patterns and identify its accuracy. It will help the investors to check whether the candlestick patterns are dependable for trading decision. This study is conducted based on the past five years Nifty index. The main findings from this study are candlestick patterns are not 100% accurate as per the past five year Nifty index. And these patterns are not very much supported by technical indicators. From this study we can conclude that investors should consider other factors along with candlestick patterns. It helps to improve the accuracy level.

Keywords: Technical Analysis, Technical Indicators, Candlestick Patterns, Bullish Patterns, Bearish Patterns.

INTRODUCTION

The study on the formation of candlestick pattern is done to finding out the different candlestick patterns and identifying its accuracy. It will help the investors to check whether the candlestick patterns are dependable for trading decision. This study is conducted based on the past five years Nifty index. The study is actually conducted at ‘THE STRATEGIST’, a stock broking firm at Ernakulam for a period of one month.

Candlestick charts are one of the important charting technique used in technical analysis. Technical analysis is a security analysis discipline for forecasting the future direction of prices through the study of past market data, primarily price and volume. It is a process of identifying trend reversals at an earlier stage to formulate the buying and selling strategy.

A candlestick chart is a style of bar-chart used primarily to describe price movements of a security, derivative, or currency for a designated span of time. It is a combination of a line-chart and a bar-chart, in that each bar represents the range of price movement over a given
time interval. It is most often used in technical analysis of equity and currency price patterns. They appear superficially similar to box plots, but are unrelated. Candlestick charts are thought to have been developed in the 18th century by Munehisa Homma, Japanese rice trader of financial instruments. They were introduced to the Western world by Steve Nison in his book, Japanese Candlestick Charting Techniques. Candlesticks contain the same data as a normal bar chart but highlight the relationship between opening and closing prices. The advantage of candlestick charts is the ability to highlight trend weakness and reversal signals that may not be apparent on a normal bar chart. Candlestick Charts are an effective way of visualizing price movements.

**IMPORTANCE OF THE STUDY**

Technical analysis is widely used by forex, equity, and commodity traders, to determine the short term as well as the long term trends of the market. The scope of technical analysis is increasing every day, as more and more people are trying to learn the skills of technical analysis to earn good returns. Scope of candlestick patterns as one of the tools used in technical analysis;

1. It helps investors and traders predict the trend of the market. Up trend, downtrend, and sideways moves of the market are easy to predict, with the help of chart analysis.

2. Timing plays an important role in trading and investing. With the help of candlestick patterns, traders and investors can predict the right time to enter and exit a trade thereby enabling good returns. Chart patterns, candlesticks, moving averages, Elliot wave analysis, and other indicators are very useful for traders to make entry and exit points.

3. Candlestick patterns gives early signals and also paints a picture about the psychology of investors and traders regarding what they are doing. Price-volume analysis also indicates the movement of market makers and their activities related to a particular market.

4. Candlestick charts gives a quick result for traders who use 1 minute, 5 minutes, 30 minutes, and 1 hour charts. For instance, the formation of a head and shoulder on 1 minute and 5 minutes chart gives fast results, as compared to the daily charts.

Technical charts provide a lot of information that helps the traders and investors build their positions and take trades. Information like support, resistance, chart pattern, momentum of the market, volatility, and trader’s psychology are just some examples of types of information provided by technical analysis and used by traders in the Forex market.

**STATEMENT OF THE PROBLEM**

To find whether candlestick patterns are useful in taking investment decisions by comparing its accuracy with technical indicators reference to Nifty index for the past five years.

**REVIEW OF LITERATURE**

**Technical Analysis**

Technical analysis is a security analysis discipline for forecasting the future direction of prices through the study of past market data, primarily price and volume. It is a process of identifying trend reversals at an earlier stage to formulate the buying and selling strategy.
The principles of technical analysis derive from the observation of financial markets over hundreds of years. The oldest known hints of technical analysis appear in Joseph de la Vega's accounts of the Dutch markets in the 17th century. In Asia, the oldest example of technical analysis is thought to be a method developed by Homma Munehisa during early 18th century which evolved into the use of candlestick techniques, and it is today a main charting tool.

Dow Theory is based on the collected writings of Dow Jones co-founder and Editor Charles Dow, and inspired the use and development of modern technical analysis is from the end of the 19th century. Other pioneers of analysis techniques include Ralph Nelson Elliott and William Delbert Gann who developed their respective techniques in the early 20th century. Many more technical tools and theories have been developed and enhanced in recent decades, with an increasing emphasis on computer-assisted techniques.

Technical analysts seek to identify price patterns and trends in financial markets and attempt to exploit those patterns. While technicians use various methods and tools, the study of price charts is primary. Technicians especially search for archetypal patterns, such as the well-known head and shoulders or double top reversal patterns, study indicators such as moving averages, and look for form such as lines of support, resistance, channels, and more obscure formations such as flags, pennants or balance days. Technical analysts also extensively use indicators, which are typically mathematical transformations of price or volume. These indicators are used to help determine whether an asset is trending, and if it is, its price direction. Technicians also look for relationships between price, volume and, in the case of futures, open interest. Examples include the relative strength index, and MACD (Moving Average Convergence Divergence).

Candlestick charts

A candlestick chart is a style of bar-chart used primarily to describe price movements of a security, derivative, or currency for a designated span of time. It is a combination of a line-chart and a bar-chart, in that each bar represents the range of price movement over a given time interval. It is most often used in technical analysis of equity and currency price patterns. They appear superficially similar to box plots, but are unrelated.

Candlestick charts are thought to have been developed in the 18th century by Munehisa Homma, Japanese rice trader of financial instruments. They were introduced to the Western world by Steve Nison in his book, Japanese Candlestick Charting Techniques. Candlesticks contain the same data as a normal bar chart but highlight the relationship between opening and closing prices. The advantage of candlestick charts is the ability to highlight trend weakness and reversal signals that may not be apparent on a normal bar chart. Candlestick Charts are an effective way of visualizing price movements. There are two basic candlesticks:

- **Bullish Candle**: When the close is higher than the open (usually green or white)
- **Bearish Candle**: When the close is lower than the open (usually red or black)

Given below is a model of candlestick;
Candlestick Patterns

The power of Candlestick Charts is with multiple candlesticks forming reversal and continuation patterns. Following are the different candlestick patterns used in technical analysis:

- Bullish Engulfing Pattern
- Bearish Engulfing Pattern
- Dark Cloud Cover
- Doji
- Dragonfly Doji
- Evening Star
- Gravestone Doji
- Hammer
- Hanging Man
- Harami
- Inverted Hammer
- Morning Star
- Piercing Pattern
- Shooting Star
- Tweezer Tops and Bottoms
- Windows

1. Bullish Engulfing Pattern

The Bullish Engulfing Candlestick Pattern is a bullish reversal pattern, usually occurring at the bottom of a downtrend. The pattern consists of two Candlesticks:

- Smaller Bearish Candle
- Larger Bullish Candle
2. Bearish Engulfing Pattern

The Bearish Engulfing Candlestick Pattern is a bearish reversal pattern, usually occurring at the top of an uptrend. The pattern consists of two Candlesticks:

- Smaller Bullish Candle
- Larger Bearish Candle

3. Dark Cloud Cover

Dark Cloud Cover is a bearish candlestick reversal pattern, similar to the Bearish Engulfing Pattern. There are two components of a Dark Cloud Cover formation:

- Bullish Candle
- Bearish Candle
4. Doji

The Doji is a powerful Candlestick formation, signifying indecision between bulls and bears. A Doji is quite often found at the bottom and top of trends and thus is considered as a sign of possible reversal of price direction, but the Doji can be viewed as a continuation pattern as well.

![Fig 5: Model of Doji](image)

Two powerful versions of the Doji formation are linked below:

- **Dragonfly Doji**

  The Dragonfly Doji is a significant bullish reversal candlestick pattern that mainly occurs at the bottom of downtrends.

![Fig 6: Model of dragonfly doji](image)

- **Gravestone Doji**

  The Gravestone Doji is a significant bearish reversal candlestick pattern that mainly occurs at the top of uptrends.

![Fig 7: Model of gravestone doji](image)

5. Evening Star

The Evening Star Pattern is a bearish reversal pattern, usually occurring at the top of an uptrend. The pattern consists of three candlesticks:
• Large Bullish Candle
• Small Bullish or Bearish Candle
• Large Bearish Candle

6. Hammer

The Hammer candlestick formation is a significant bullish reversal candlestick pattern that mainly occurs at the bottom of downtrends.

7. Hanging Man

The Hanging Man candlestick formation, as one could predict from the name, is a bearish sign. This pattern occurs mainly at the top of up trends and is a warning of a potential reversal downward. It is important to emphasize that the Hanging Man pattern is a warning of potential price change, not a signal, in and of itself, to go short.
8. Harami

The Harami Pattern is considered either bullish or bearish based on the criteria below:

- **Bearish Harami**: A bearish Harami occurs when there is a large bullish green candle on Day 1 followed by a smaller bearish or bullish candle on Day 2. The most important aspect of the bearish Harami is that prices gapped down on Day 2 and were unable to move higher back to the close of Day 1. This is a sign that uncertainty is entering the market.

- **Bullish Harami**: A bullish Harami occurs when there is a large bearish red candle on Day 1 followed by a smaller bearish or bullish candle on Day 2. Again, the most important aspect of the bullish Harami is that prices gapped up on Day 2 and price was held up and unable to move lower back to the bearish close of Day 1. The chart below of the Nifty shows an example of both a bullish and bearish Harami candlestick pattern:

9. Inverted Hammer

The Inverted Hammer candlestick formation occurs mainly at the bottom of downtrends and is a warning of a potential reversal upward. It is important to note that the Inverted pattern is a warning of potential price change, not a signal, in and of itself, to buy.

![Inverted Hammer](image)

**Fig 11: Model of inverted hammer**

10. Morning Star

The Morning Star Pattern is a bullish reversal pattern, usually occurring at the bottom of a downtrend.

![Morning Star](image)

**Fig 12: Model of morning star**
11. Piercing Line Pattern

The Piercing Pattern is a bullish candlestick reversal pattern, similar to the Bullish Engulfing Pattern. There are two components of a Piercing Pattern formation:

- Bearish Candle
- Bullish Candle

![Fig 13: Model of piercing pattern](image)

12. Shooting Star

The Shooting Star candlestick formation is a significant bearish reversal candlestick pattern that mainly occurs at the top of uptrends.

![Fig 14: Model of shooting star](image)

13. Tops and Bottoms

The Tweezer Top formation is a bearish reversal pattern seen at the top of up trends and the Tweezer Bottom formation is a bullish reversal pattern seen at the bottom of downtrends.

![Fig 15: Model of tweezers](image)
Sometimes Tweezer Tops or Bottoms have three candlesticks.

A bearish Tweezer Top occurs during an uptrend when bulls take prices higher, often closing the day off near the highs (a bullish sign). However, on the second day, how traders feel (i.e. their sentiment) reverses completely. The market opens and goes straight down, often eliminating the entire gains of Day 1. The reverse, a bullish Tweezer Bottom occurs during a downtrend when bears continue to take prices lower, usually closing the day near the lows (a bearish sign). Nevertheless, Day 2 is completely opposite because prices open and go nowhere but upwards. This bullish advance on Day 2 sometimes eliminates all losses from the previous day.

14. Windows (Gaps)

Windows as they are called in Japanese Candlestick Charting, or Gaps, as they are called in the west, are an important concept in technical analysis. Whenever, there is a gap (current open is not the same as prior closing price), that means that no price and no volume transacted hands between the gap.

Fig 16: Model of windows

A Gap Up occurs when the open of Day 2 is greater than the close of Day 1. Contrast, a Gap Down occurs when the open of Day 2 is less than the close of Day one. There is much psychology behind gaps. Gaps can act as:

Resistance: Once price gaps downward, the gap can act as long-term or even permanent resistance.

Support: When prices gap upwards, the gap can act as support to prices in the future, either long-term or permanently.

MATERIALS AND METHODS

Technical Indicators

Oscillators are chart studies that are designed to show the strength of the current price in relation to the recent price action. As such, they display the short term momentum of the market, giving signals that the bias of the market is shifting before the price actually changes directions. The principle upon which oscillators are based is that of regression to a mean. Essentially, a large part of a statistical sample should be within a certain number of standard
deviations from the mean of the sample, and if the price strays too far from this center, then it will likely revert back to the rest of the sample. In terms of trading, the price should not rise or fall too far in too short a time. Oscillators are not usually displayed on the same graph as the price itself, but often placed at the bottom of the chart to show that the fluctuations do not occur on the same scale as the price movement.

**Relative Strength Index**

RSI is an indicator that falls under the category of oscillators, and it is an extremely simple indicator to use. RSI works well in range-bound markets, but it has limited value in trending or breakout markets. RSI was created by Welles Wilder, who also created ATR, Parabolic SAR and other well-known indicators. Like all oscillators, RSI offer indications of when a currency pair is overbought or oversold. RSI essentially calculates the strength of all upward candles (green) against the strength of all downward candles (red) over the course of the specified time frame.

If RSI is above 70, the pair is considered to be overbought. Some traders enter short at this point, but this can be dangerous as the price may still be rising. Enter short when the RSI crosses back under 70, as this may indicate that the momentum has turned. If the RSI is below 30, the pair is considered to be oversold; enter when RSI crosses back above 30. Like most oscillators, RSI works best when the market is range-bound – in other words, when the market is expected to simply gravitate between an upper and lower level. In trending or momentum-driven markets, using the overbought/oversold levels offered by RSI is generally of limited value. RSI can also be used to signal when a trend is weakening. If a currency pair makes new highs in its price but RSI does not – meaning there is divergence between the price movement and RSI – it may signal that the trend is not strong, and that a reversal may be imminent. If candlestick patterns confirm, a trader can use this as an opportunity to enter a position.

**Moving Average Convergence Divergence**

MACD is a commonly used technical indicator derived from exponential moving averages that can be used in both momentum and range bound markets. Like RSI it is an oscillator plotted at the bottom of the chart, and it shows the momentum of the market relative to its recent history.

**Parameters**

The MACD line is the difference between the 12 and 26 day EMA. The signal line is the 9 day EMA of the MACD. Visually, the MACD consists of three elements:

- **MACD line**: This is simply the difference between the 12 and 26 day EMA. It is a line plotted on the chart.
- **Signal line**: The signal line is the 9 day EMA of the MACD line. Like the MACD, it is a line plotted on the bottom of the chart.
- **Histogram**: The MACD histogram is simply a bar chart located at the bottom of the chart, where the MACD and signal lines are plotted. The histogram is simply a visual representation.
of the difference between the MACD and the signal line. The “zero” point of the histogram – meaning the point where the bars cross above and below – is referred to as the centerline.

**How to use it?**

- **Trade Signal:** When the MACD crosses the signal line, a trade signal is issued. Traders can enter positions following the direction of the MACD.
- **Overbought/Oversold:** No specific numbers indicate whether it is overbought or oversold, but if it is relatively far from its mean compared to its recent history, this may suggest that it is due for a reversion.
- **Divergence:** When the pair makes new highs/lows but the MACD does not, this suggests divergence, and that the trend may in fact be weakening with a reversal in store.

**Nifty index**

The CNX Nifty is the flagship index on the National Stock Exchange of India Ltd. (NSE). The Index tracks the behavior of a portfolio of blue chip companies, the largest and most liquid Indian securities. It includes 50 of the approximately 1600 companies listed on the NSE, captures approximately 65% of its float-adjusted market capitalization and is a true reflection of the Indian stock market.

The CNX Nifty covers 21 sectors of the Indian economy and offers investment managers exposure to the Indian market in one efficient portfolio. The Index has been trading since April 1996 and is well suited for benchmarking, index funds and index-based derivatives. The CNX Nifty is owned and managed by India Index Services and Products Ltd. (IISL). IISL is India’s first specialized company focused on an index as a core product.

**Tools used for analysis**

The data collected are analyzed with the help of following tools;

- Candlestick charts
- Technical indicators;
  - Relative Strength Index (RSI)
  - Simple Moving Average (SMA)
  - Moving Average Convergence Divergence (MACD)

**RESULTS AND DISCUSSION**

In order to analyse the price movement of NIFTY, candlestick charts for the past five years (1-5-2009 to 31-4-2014) is selected. From these charts we can identify different candlestick patterns and what does it meant for and also find out the indicators that support candlestick patterns.

With reference to the past five years (1-5-2009 to 30-4-2014) daily price movement chart of Nifty, six candlestick patterns can be identified. They are:

1. Bearish engulfing
2. Bullish engulfing
3. Harami
4. Shooting star
5. Hanging man
6. Hammer
7. Dark cloud cover.

**Bullish Engulfing**

The Bullish Engulfing Candlestick Pattern is a bullish reversal pattern, usually occurring at the bottom of a down trend.

![Bullish Engulfing Candlestick Pattern](image)

**Fig 17: Formation of bullish engulfing, Source: NSE**

The following table shows the information regarding the occurrence of bullish engulfing pattern for the last five years.

**Table 1: Actual Accuracy of bullish engulfing**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullish engulfing</td>
<td>15</td>
<td>Bullish</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

From this table, it is clear that accuracy level is not high. Only 53.33% is the accuracy level of this pattern. It is not a trustable accuracy level to traders. The market expects a bullish trend by the occurrence of this pattern. But there is a 47% chance for happening bearish trend. So it is difficult to predict accurate price movement in the future.

- **Bullish engulfing with other technical indicators**

**Table 2: Bullish engulfing with other technical indicators**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullish engulfing</td>
<td>38</td>
<td>SMA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

- **Bullish engulfing with RSI**

If RSI is above 70, it is considered to be over bought and if the RSI is below 30, it is considered to be over sold. There are 15 bullish engulfing patterns are formed in the last five
years. Out of which only two of them are formed at the point of overbought /over sold shown by RSI. That means RSI is not supporting very well to this pattern. Therefore bullish engulfing pattern can’t predict the overbought /over sold with RSI.

- **Bullish engulfing with SMA**

  It can be checked by observing that SMA is passing through any bullish engulfing pattern. From this we can understand that whether there is any chance for the formation of bullish engulfing pattern by hitting on the SMA line. By analysing the past five years candlestick charts of Nifty, only four times SMA line is passing through the bullish engulfing pattern.

- **Bullish engulfing with MACD**

  When the MACD crosses the signal line, a trade signal is issued. The crossovers of MACD and signal line shows over bought or over sold signals. From the charts of NSE we can analyze that, any candlestick patterns formed at the point of crossover of MACD and signal line. From the past five years charts of NSE, we can identify that there are only three bullish engulfing patterns are formed at the point of cross over of MACD and signal line. This shows that the MACD is not a good supporting indicator for the bullish engulfing pattern. Because in the past five years there are 38 total number of bullish engulfing patterns are formed and out of which only three of the patterns are supported by MACD.

**Bearish engulfing**

The following chart shows the formation of bearish engulfing pattern on 12-10-2010. The Bearish Engulfing Pattern is a bearish reversal pattern, usually occurring at the top of an uptrend. In the chart also this pattern formed at the top of an uptrend.

![BEARISH ENGULFING](image)

**Fig 18: Formation of bearish engulfing, Source:NSE**

**Table 3: Actual accuracy of bearish engulfing**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearish engulfing</td>
<td>38</td>
<td>Bearish</td>
<td>21</td>
<td>17</td>
</tr>
</tbody>
</table>
The table shows that the bearish engulfing pattern occurred 38 times in the past five years. The theoretical outcome of this pattern is bearish trend. But only 21 times its actual outcome became the theoretical outcome and 17 times it shows bullish trend after the occurrence of this pattern. The accuracy level is only 55.26%. That means it is not a high level of accuracy.

**Table 4: Bearish engulfing with other technical indicators**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SMA</td>
</tr>
<tr>
<td>Bearish engulfing</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

- **Bearish engulfing with RSI**

There are 15 bearish engulfing patterns are formed in the past five years. Out of which only ten times bearish engulfing patterns are formed at the point of overbought /over sold shown by RSI. That means this pattern can’t predict the overbought /oversold with RSI.

- **Bearish engulfing with SMA**

Out of 15 bearish engulfing patterns formed in the last five years, only one pattern is hitting on the SMA line. That means the support of this indicator is very less in the case of bearish engulfing pattern.

- **Bearish engulfing with MACD**

In the past five years, 14 bearish engulfing patterns are formed at the point of the crossover of MACD and signal line. It shows that MACD is a very good supporting indicator of this pattern. Because out of 15 patterns, 14 of them are formed at the point of the crossover of MACD and signal line.

- **Bearish Harami**

![BEARISH HARAMI]

**Fig 19: Formation of bearish harami , Source: NSE**

**Table 5: Actual accuracy of bearish harami**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearish harami</td>
<td>18</td>
<td>Bearish</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>
In the past five years bearish harami pattern has occurred 18 times and 10 times the actual outcome became the theoretical outcome. Only 55.55% is the level of accuracy of this pattern. This is not a high level of accuracy.

**Bearish harami with other technical indicators;**

**Table 6: Bearish harami with other technical indicators**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of pattern with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SMA</td>
</tr>
<tr>
<td>Bearish harami</td>
<td>18</td>
<td>1</td>
</tr>
</tbody>
</table>

- **Bearish harami with RSI**

There are 18 bearish harami patterns are formed in the past five years. Out of which one pattern is formed at the point of overbought or over sold shown by RSI. That means this pattern can’t predict the overbought or oversold with RSI.

- **Bearish harami with SMA**

There are 18 bearish harami patterns formed in the last five years. Out of which SMA line passes through only one pattern. This pattern also get very less support from the indicator SMA.

- **Bearish harami with MACD**

From the past five years charts of NSE, we can identify that there are only four bearish harami patterns are formed at the point of cross over of MACD and signal line. This shows that the MACD is not a good supporting indicator for the bearish harami pattern. Because in the past five years there are 18 total number of bearish harami patterns are formed and out of which only three of the patterns are supported by MACD.

**Bullish shooting star**

**Table 7: Actual accuracy of bullish shooting star**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>bearish</td>
<td>bullish</td>
</tr>
<tr>
<td>Bullish shooting star</td>
<td>3</td>
<td>Bullish</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

There are three bullish shooting stars occurred in the past five years. Theoretically bullish shooting star pattern shows the bullish trend of the market. But in the past five years actual outcome of this pattern shows a bearish trend. The actual accuracy level of this pattern is zero. So it is not a trustable pattern for traders.

**Table 8: Bullish shooting star with other technical indicator**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SMA</td>
</tr>
<tr>
<td>Bullish shooting star</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
- **Bullish shooting star with RSI**

There are 3 times bullish shooting star pattern formed in the past five years. Out of which only one time bullish shooting star pattern formed at the point of overbought /over sold shown by RSI. That means this pattern can’t predict the overbought /oversold with RSI.

- **Bullish shooting star with SMA**

Out of 15 bearish engulfing patterns formed in the last five years, SMA line never passes through any one of the bullish shooting star pattern. That means the support of this indicator is very less in the case of bullish shooting star pattern.

- **Bullish shooting star with MACD**

The above table shows that only one bullish shooting star pattern is formed at the point of crossover of the MACD.

**Bearish shooting star**

![Bearish shooting star chart]

**Fig 20: Formation of bearish shooting star, Source: NSE**

**Table 9: Actual accuracy of bearish shooting star**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Bearish shooting star</td>
<td>3</td>
<td>Bearish</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The theoretical expectation of the bearish shooting star is bearish market. The above table shows that 33.33% is the actual accuracy level of this pattern. So investors cannot predict the market accurately and they cannot take a decision based on this pattern.

**Table 10: Bearish shooting star with other technical indicators**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearish shooting star</td>
<td>3</td>
<td>0 0 0</td>
</tr>
</tbody>
</table>
- **Bearish shooting star with RSI**

There are 3 bearish shooting star patterns are formed in the past five years. Out of which bearish shooting star pattern is not formed at the point of overbought /over sold shown by RSI. That means this pattern can’t predict the overbought /oversold with RSI.

- **Bearish shooting star with SMA**

Like RSI, SMA line never passes through any one of the bearish shooting star pattern. That means the support of this indicator is very less in the case of bearish shooting star pattern.

- **Bearish shooting star with MACD**

The indicator MACD also shows that there is no any bearish shooting star pattern is formed at crossovers of MACD.

**Bullish hangingman**

**Table 11: Actual accuracy of bullish hanging man**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullish hanging man</td>
<td>4</td>
<td>Bullish</td>
<td>2, 2</td>
<td>50.00%</td>
</tr>
</tbody>
</table>

Actually this pattern expects bullish trend in the market. In the last five years, bullish hanging man has occurred four times. The table shows that there is an equal chance for the occurrence of the theoretical outcome. Because the accuracy level of this pattern is 50%.

**Table 12: Bullish hanging man with other technical indicators**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullish hanging man</td>
<td>4</td>
<td>SMA 2, RSI 2, MACD 4</td>
</tr>
</tbody>
</table>

- **Bullish hanging man with RSI**

There are 4 bullish hanging man patterns are formed in the past five years. Out of which only one bullish hanging man pattern formed at the point of overbought /over sold shown by RSI. That means this pattern can’t predict the overbought /oversold with RSI.

- **Bullish hangingman with SMA**

There are four bullish hangingman patterns are formed in the last five years. Out of which SMA line passes through only one pattern. This pattern also get very less support from the indicator SMA.

- **Bullish hangingman with MACD**

From the past five years charts of NSE , we can identify that four of the bullish hanging man patterns are formed at the point of cross over of MACD and signal line. This shows that the MACD is a good supporting indicator for the bullish hanging man pattern.
Bearish hanging man

Table 13: Actual accuracy of bearish hanging man

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearish hanging man</td>
<td>6</td>
<td>Bearish</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Bearish hanging man has occurred six times in the past five years. The theoretical expectation of the bearish hanging man is bearishness of the market. The above table shows that four times the theoretical outcome has occurred. That means 66.67% is the actual accuracy of this pattern. The accuracy level is above fifty percent but it is not a high level of accuracy.

Bearish hanging man with other technical indicators;

Table 14: Bearish hanging man with other technical indicators

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearish hanging man</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

- **Bearish hanging man with RSI**

There are 6 bearish hanging man patterns formed in the past five years. Out of which no any one of the bearish hanging man patterns are formed at the point of overbought /over sold shown by RSI. That means this pattern can’t predict the overbought /oversold with RSI.

- **Bearish hanging man with SMA**

There are six bearish hangingman patterns are formed in the last five years. Out of which SMA line never passes through anyone of the pattern. This pattern also get very less support from the indicator SMA.

- **Bearish hanging man with MACD**

In the past five years, there is no any bearish hanging man patterns formed at the point of the crossover of MACD and signal line. It shows that MACD is not a good supporting...
indicator of this pattern. Because out of six patterns, no one of them are formed at the point of the crossover of MACD and signal line.

**Bearish Hammer**

![BEARISH HAMMER 19-12-2011](image)

**Table 15: Actual accuracy of bearish hammer**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearish hammer</td>
<td>4</td>
<td>Bearish</td>
<td>3</td>
<td>75.00%</td>
</tr>
</tbody>
</table>

Bearish hammer pattern expects a bearish trend in the market. In the past five years accuracy level of this pattern is 75%. That means it can predict the market accurately up to a certain limit.

**Table 16: Bearish hammer with other technical indicators**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearish hammer</td>
<td>4</td>
<td>SMA 0, RSI 2, MACD 1</td>
</tr>
</tbody>
</table>

- **Bearish hammer with RSI**

There are 4 bearish hammer patterns formed in the past five years. Out of which only two times bearish hammer patterns are formed at the point of overbought/over sold shown by RSI. That means this pattern can’t predict the overbought/oversold with RSI.

- **Bearish hammer with SMA**

Out of four bearish hammer patterns formed in the last five years, SMA line never passes through any patterns. That means the support of this indicator is very less in the case of bullish shooting star pattern

- **Bearish hammer with MACD**

From the past five years charts of NSE, we can identify that only one bearish hammer patterns are formed at the point of cross over of MACD and signal line. This shows that the
MACD is not strongest supporting indicator for the bullish engulfing pattern. Because in the past five years there are four total number of bearish hammer patterns are formed and out of which only one of the pattern is supported by MACD.

**Bullish Hammer**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullish hammer</td>
<td>4</td>
<td>Bullish</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

The bullish hammer occurred four times in the past five years. Like bearish hammer, bullish hammer also shows 75% level of accuracy.

**Table 18: Bullish hammer with other technical indicators**

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullish hammer</td>
<td>4</td>
<td>SMA: 0  RSI: 0  MACD: 0</td>
</tr>
</tbody>
</table>

- **Bullish hammer with RSI**

  There are 4 bullish hammer patterns are formed in the past five years. But there is no any bullish hammer patterns are formed at the point of overbought /over sold shown by RSI. That means this pattern can’t predict the overbought /oversold with RSI.

- **Bullish hammer with SMA**

  Out of four bullish hammer patterns formed in the last five years, SMA line never passes through any one of the bullish hammer pattern. That means the support of this indicator is very less in the case of bullish shooting star pattern.

- **Bullish hammer with MACD**

  In the past five years, bullish hammer patterns are never formed at the point of the crossover of MACD and signal line. It shows that MACD is not a good supporting indicator of this pattern. Because out of four patterns, bullish hammer pattern is never formed at the point of the crossover of MACD and signal line.

**Dark cloud cover**

![Formation of dark cloud cover, Source: NSE](image)
Table 19: Actual accuracy of dark cloud cover

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence</th>
<th>Theoretical outcome</th>
<th>Actual outcome</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark cloud cover</td>
<td>1</td>
<td>Bearish</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Dark cloud cover is a rare pattern which is formed one time in the past five years. The above graph shows that a bearish dark cloud cover pattern is occurred on December 19th, 2013. The theoretical outcome of this bearish dark cloud cover pattern is bearishness of the market. The dark cloud cover occurred on December 19th shows the bearish trend after the formation of this pattern. It shows a 100% accuracy level.

Dark cloud covers with other technical indicators

Table 20: Dark cloud covers with other technical indicators

<table>
<thead>
<tr>
<th>Name of pattern</th>
<th>Number of occurrence of the pattern</th>
<th>Number of occurrence of patterns with the support of technical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SMA</td>
</tr>
<tr>
<td>Dark cloud cover</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

- **Dark cloud cover with RSI**
  There is only one dark cloud cover pattern formed in the past five years. That one pattern is formed at the point of overbought or over sold shown by RSI. That means this pattern can’t predict the overbought/oversold with RSI.

- **Dark cloud cover with SMA**
  There is only one pattern is formed in the last five years. This one pattern not hitting on the SMA line. It means that the support of this indicator is very less in the case of dark cloud cover pattern.

- **Dark cloud cover with MACD**
  In the past five years, only one dark cloud cover pattern is formed and that is formed at the point of cross over of MACD and signal line. From this we cannot say that MACD is strongly supporting the pattern. Because the total number of pattern formed in the past five years is one.

FINDINGS OF THE STUDY

- Candlestick patterns are not 100% accurate as per the past five year Nifty index.
- Candlestick patterns are not very much supported by technical indicators.
- Among SMA, RSI and MACD, MACD is the indicator which mostly supporting candlestick patterns.
- Among 16 candlestick patterns, only 10 patterns are identified.
- Engulfing patterns are identified as the mostly occurred candlestick pattern (bullish engulfing 38 and bearish engulfing 15 times).
- Number of occurrence of the candlestick patterns are very less in the past five years (96 occurrence). Most of the pattern occurred very rarely.
• Dark cloud cover pattern is the pattern which formed lowest number of times (one time).
• Hammer pattern is the most accurate pattern among the 10 patterns (75% accuracy).
• Investors cannot trust candlestick patterns in their trading decisions. Because the accuracy level of the most accurate pattern is only 75% (hammer pattern).
• Bearish engulfing pattern is the pattern which get most support of technical indicator.
• Investors should consider the other factors along with candlestick patterns. It helps to improve the accuracy level.

SUGGESTIONS
• Investors should have deep knowledge about candlestick patterns and other technical indicators.
• Investors should consider other factors which affecting the market movements.
• Investors need not be wait for the occurrence of candlestick patterns. Because the past five year study of Nifty index shows that number of occurrence of candlestick patterns is very less.

CONCLUSION
The main objective of the study on candlestick pattern is to identify various candlestick patterns and finding out the accuracy of it and identify the indicators which supports the candlestick patterns. The researcher identified different candlestick patterns from the past five years and arrived at a conclusion that the candlestick patterns are not 100% accurate and also the candlestick patterns are formed with the support of certain technical indicators. So the users of candlestick patterns should consider the other factors to improve the accuracy of candlestick patterns. One of the important fact is that there is other more accurate technical tools available in technical analysis. This study provides deep knowledge about the candlestick patterns and technical indicators.

REFERENCES

www.candlestickforum.com

www.NSE.com