Study of Market Indicators used for Technical Analysis

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ABSTRACT

Anticipating and analyzing the stock market and the price movement is a challenging task as the nature of the stock prices is quite complicated, non-linear and dynamic. Examining the financial time series data and making decisions is the toughest job in stock market. These correct decisions help in improving the returns on investment and minimize the loss and risks incurred.

Technical analysis has been a trading tool since the 18th century which is used by investors and traders to evaluate the investments, identify the trading opportunities and forecast the future stock prices movement by analyzing price trends, chart patterns and volume data. Many different statistical tools are available for the investors and traders for making decision in financial market and analyze the stocks intrinsic value on the basis of fundamentals like balance sheet, revenues, industry trends, economic indicators and consumer behavior. Technical analysis helps the traders and investors predict the market situations and build the gap between market price and intrinsic value of the stocks by applying the techniques of behavioural economics and statistics. Many technical indicators like Simple Moving Averages, Weighted Moving Average, Trend Indictors, Momentum indicators like Stochastic, Relative Strength Index, Commodity Channel Index and Volatility indicators like the Bollinger Bands, Average True Range and Volume indicators are commonly available to study the stock price movement.

In this project, the importance and the application of market indicators for technical analysis in predicting stock price movement of large-cap, mid-cap and small-cap companies on BSE is researched.

Keywords-- Technical Indicators, Moving Averages, Stochastic, Relative Strength

I. INTRODUCTION

Technical analysis has been a trading tool since the 18th century which is used by investors and traders to evaluate the investments, identify the trading opportunities and forecast the future stock prices movement by analyzing price trends, chart patterns and volume data. Many different statistical tools are available for the investors and traders for making decision in financial market and analyze the stocks intrinsic value on the basis of fundamentals like balance sheet, revenues, industry trends, economic indicators and consumer behavior. Technical analysis helps the traders and investors predict the market situations and build the gap between market price and intrinsic value of the stocks by applying the techniques of behavioural economics and statistics.

History

The principles and rules which are applied for technical analysis are derived from a long duration of years of financial market data. Some aspects of technical analysis were observed in the 17th century in Amsterdam by merchant Joseph de la Vega from Dutch financial markets. In Asia, Homma Munehisa developed the used of candlestick technique of technical analysis in the early 18th century which is being used even today as a technical analysis charting tool.

An American Journalist Charles Dow, studied the stock market data, and published some of his conclusions and observations in The Wall Street Journal, developing a stock trading strategy and today is known as the Dow Theory. The theory uses the behaviour of the stock market as a basis of any company's conditions rather than as a basis for forecasting stock prices themselves The Dow Theory also states that stock behaviour is 90% psychological and 10% logical. It is the sentiments of the traders and the investors which determine the prices movements and the move can be used to analyse the price and volume of transactions.

According to the Dow Theory the basic principles of technical analysis were

1. The three market movements:
   (i) day to day "short swing" narrow movement varying with opinions from hours
   (ii) two to four weeks "medium swing", a secondary reaction to price change
   (iii) minimum 4 years "main movement", a major trend which can be bullish or bearish

2. The three phases of market trends:
   (i) Accumulation Phase, in which there is active buying or selling of stock based on general opinion of the market, which has no effect on the stock price.
   (ii) Absorption Phase, where the market catches the active buying or selling of stocks in large number and price change occurs.
   (iii) Distribution Phase, where the trend followers and market technicians distribute their holdings to market.

3. Stock prices and its movements react to all news. Any news released will reflect to prices change.

4. Stock market should move in same direction and must confirm each other. It is treated a buy or sell signal when the performance of the averages diverge.

5. High volume transactions are reflected in the market trends.

General Description

Analysts often use the technical tools like line graphs, charts and indicators. By studying the stock charts, analysts look forward to identify price patterns and market trends in financial markets. Technical analysts widely use market indicators for mathematical transformations of price, for statistical volume data and advance/decline data inputs. These indicators help traders and investors assess whether an asset is trending, analyze the probability of its direction, etc.

On the contrary, fundamental analysis is the study of microeconomic factors that affect the stock prices in the financial markets. Fundamental analysis uses the company data like the annual reports, balance sheets, revenue information, the external economic factors and sometimes the investor behavior to predict price movements. Some traders and investors uses technical and fundamental analysis exclusively, or a combination of both.

Principles of Technical Analysis

1. Actions reflected by the market discounts everything. This principle says the effect on price of stocks is the end result of the investor's perspective, inside information and the fundamental factors.

2. The stock prices always moves in trends and these has a tendency to continue for some time and may or may not reverse at some other point of time.

3. History tends to repeat itself over and again. The investor's behaviour collectively repeats itself and creates a predictable price pattern on the chart, which has a higher probability rate.

4. The market value of stock is associated with the demand and supply factors which are operating in the market.

5. Action and reaction affected from buying and selling pressures lead to corrections and rallies of stocks.

Tools of Technical Analysis

There are six most commonly used tools in technical analysis which are as follows:

1. Trend lines or Price line are drawn on a price chart of a stock just under or over the stock high's or lows to indicate a particular price movement. These lines are based on the buy or sell orders of the investors, where profit opportunities over or where there are a rise of fall on stop loss levels. Trend lines can be of three types: rising, falling or flat (zigzag).
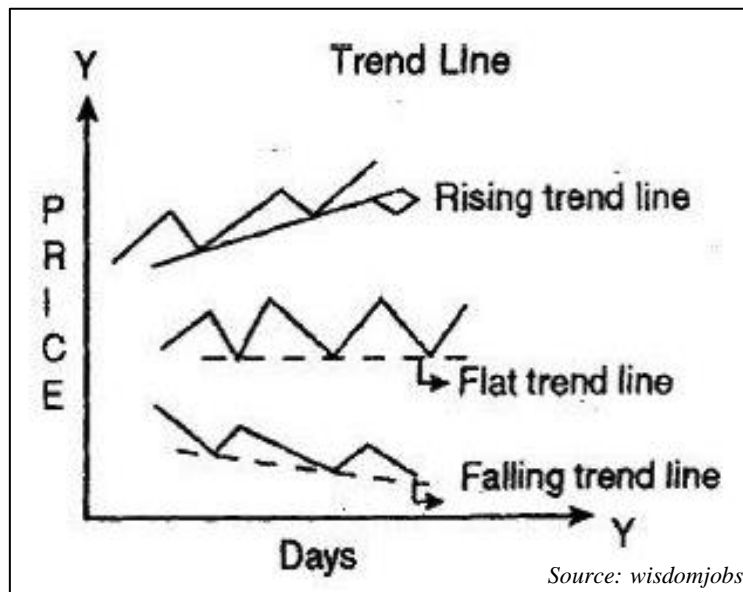

Figure 1: Types of Trend Lines

2. Support and Resistance Levels are the horizontal or diagonal representation on rise or fall of a trend line. Support is the level on the chart where the prices have

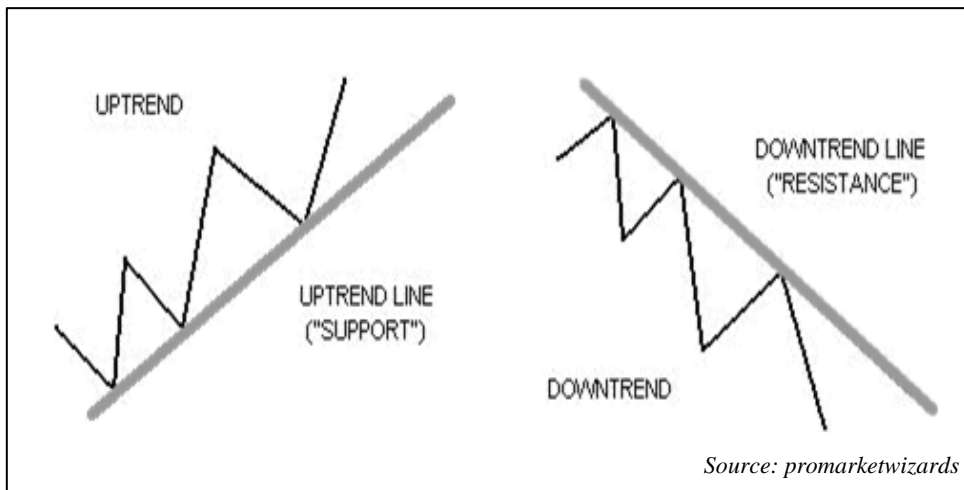low level over time while resistance indicates high level. Support level gives investors a buy signal.

Figure 2: Support and Resistance Lines

3. Trading Volume is often used by investors to confirm the validity of price movement as they can spot changes in price of stock by watching traded volumes.

4. Chart Patterns are shapes created in the price chart which help investors to predict future prices based on past prices. These are graphical representation of different shapes and patterns of price formation. When investors predict the shape of pattern it helps them to target their desired profit ahead of time. The Bullish price patterns include inverse Double and Triple Top, Falling Wedge, Head and Shoulder, ascending Triangles, etc. whereas the Bearish price patterns include Rising Wedges, Double and Triple Tops, Descending Triangles, etc.
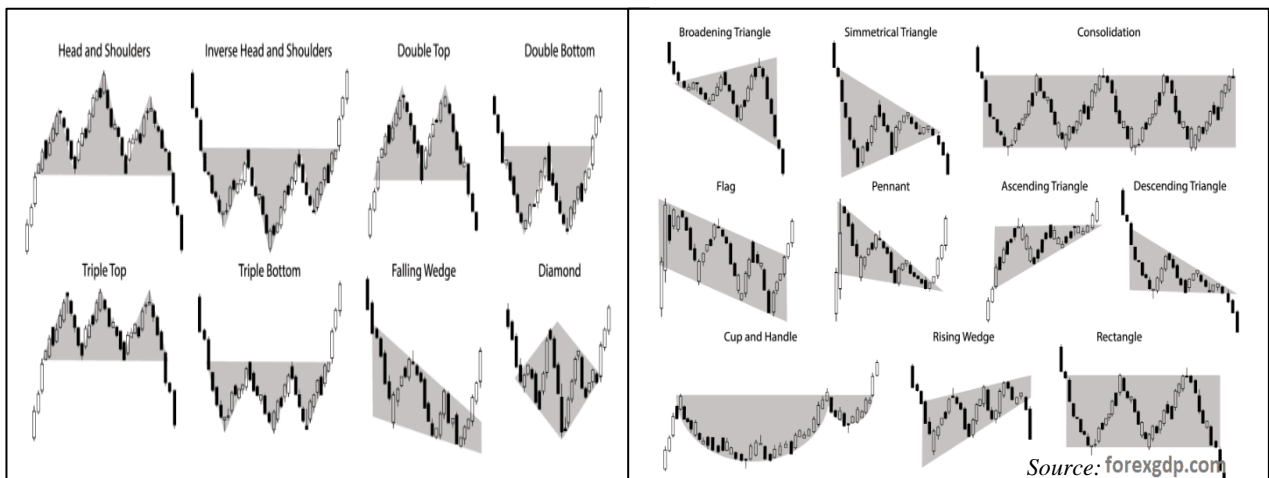

Figure 3: Types of Chart Patterns

5. Fractals are tools which identifies potential trend reversal points in the stocks. These help in recognising the price patterns so that traders can buy or sell on the basis of bearish or bullish indication to earn profits. The fractal patterns are comprised of five candlesticks in a "v" shape formed by the price movements.

Bearish Fractal: Pattern of highest high in middle and two highs and lower highs on each side forming an inverted "v" shape.

Bullish Fractal: Pattern of Lowest low in middle and two higher lows and lows on each side forming a "v" shape.
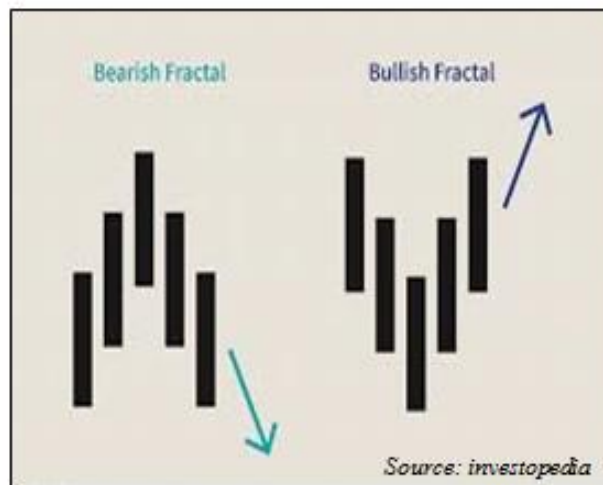
Figure 4: Bearish and Bullish Fractals

6. Candle Sticks were first introduced in Japan which helped investors in predicting future price movements. Depending on the candlestick pattern with its open, close high, low prices the future step can be anticipated. These patterns are formed by grouping two or more candles together. Even today candlestick is proven to be effective when used in combination with other tools.
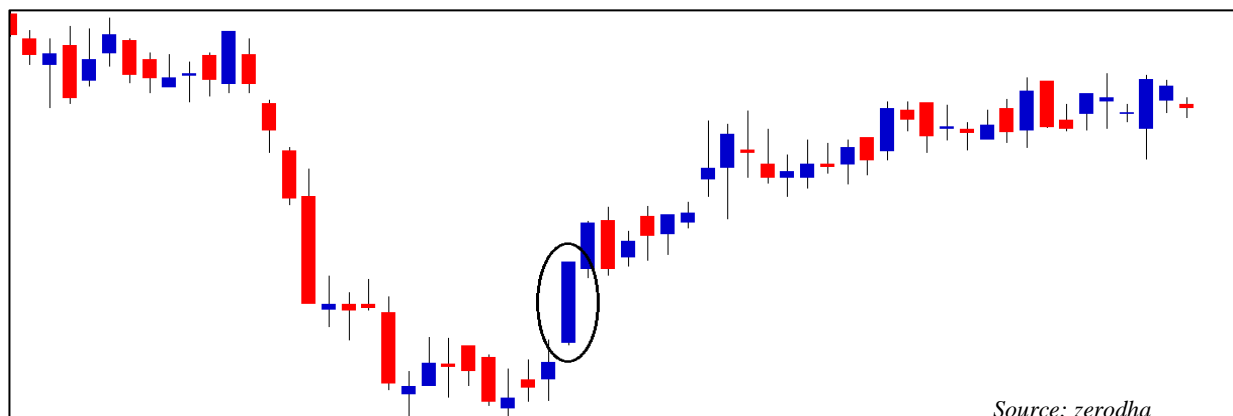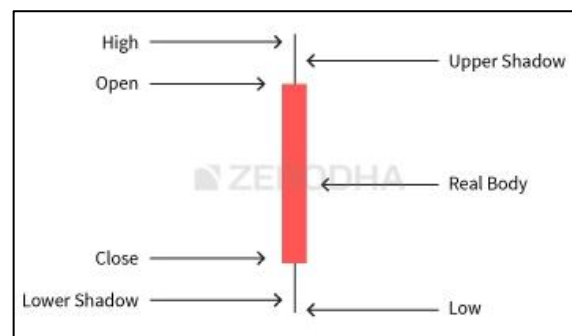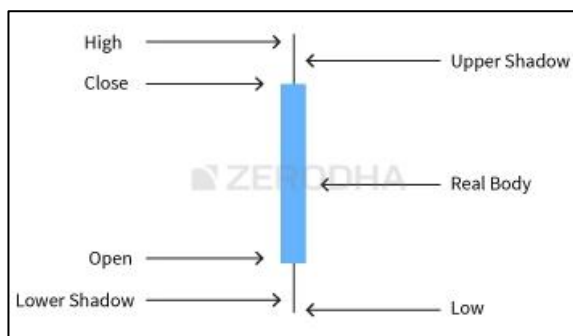
Figure 5: Types of Candlestick, Illustration of Candlestick Chart

7. Indicators are quantitative tools that are majorly comprised of formulas and statistics which portray market depth, market breadth, market sentiment, advances and decline, etc. used by traders to interpret and forecast stock price movements. These indicators indicate the buy and sell signals and explain current gains and losses in order to earn maximum profit and bare minimum risk.

There are a number of market indicators which are divided into five categories:

i. Moving Average Indicators
   a) Simple Moving Average (SMA)
   b) Exponential Moving Average (EMA)
   c) Weighted Moving Average (WMA)
   d) Volume Weighted Moving Average (VWMA)
   e) Double Exponential Moving Average (DEMA)

ii. Trend Indicators
   a) Moving Average Convergence Divergence Indicators(MACD)
   b) Average Directional Index (ADX)
   c) Traders Dynamic Index (TDI)
   d) Aroon Indicator
   e) Vertical Horizontal Filter (VHF)

iii. Momentum Indicators
   a) Stochastic Indicator
   b) Relative Strength Index(RSI)
   c) Stochastic Momentum Indicator (SMI)
   d) Williams Percentage Range (WPR)
   e) Chande Momentum Indicator (CMO)
   f) Commodity Channel Index Indicator (CCI)

iv. Volatility Indicators
   a) Bollinger Bands
   b) Average True Range (ATR)
   c) Dochain Channel

v. Volume Indicators
   a) On-Balance Volume(OBV)
   b) Money Flow index (MFI)
   c) Chaikin Money Flow(CMF)

All these tools of technical analysis are based the four factors:

Price: The changes in the price of the stock are always driven by the two forces of demand and supply.

Time: The degree of price movement is a function of time. High price changes are observed when a stock takes long time for trend reversal.

Volume: The degree of price movement reflects on the number of transactions i.e. the volume.

Width: The width is the measure of changes in the price of the stock determining whether it reflects across most sectors or just on a few stocks for a trend to set.

II.   OBJECTIVES

1. To study about the market indicators used for Technical Analysis using the historical data of three banks.
2. To employ the importance of various technical indicators to analyse the price movements.
3. To research about how traders and investors use indicators to develop strategies that relates to their trading style and risk appetite and tolerance.
4. To monitor the efficiency and combinations of the market indicators in predicting the price movements of the stocks.

III.   LITERATURE REVIEW

(Sharmila Vaiz, M Ramaswami 2016) used a decision tree algorithm to study the technical indicators in predicting the stock price movement of six companies with highest market capitalization on NSE. The study used an efficient data mining technique used with 22 technical indicators derived from historical data which helped the investors to build a decision on when to buy or sell stocks.

(Valarmathi A, Kowsalya P 2016) researched about the usefulness of technical analysis and the important role it plays in the analysis of stock trading in the secondary market. the study of technical analysis of stock was done based on historical prices of IT stocks using market indicators like Exponential Moving average and Relative Strength Index.

(Pushpa BV, Sumithra C.G, Madhuri Hegde 2017) the study aimed at the use of technical analysis of selected companies which came under Nifty 50 from different sectors and how the stocks analysed showed a technically very strong position. The indicators used for analysis were Moving Averages, Relative Strength Index, Bollinger Bands and Moving Average Convergence Divergence which helped in identifying trends and predict future stock price to formulate buying or selling strategy.

(Issac Kofi Nti, Adebayo Felix Adekoya, Benjamin Subam Weyori 2019) attempted to undertake a systematic review of 122 research works over 11 years on stock market prediction using machine learning. The techniques identified from the research were technical, fundamental and a combination of both analyses.

(Aman Bhatia 2021), aimed to find out how the Japanese candlesticks and traditional tools work on mid-cap and small-cap companies and whether these tools of technical analysis are relyble or not. The study found that 16 patterns, 11 candlesticks patterns had 72% and 5 classic price patterns has 80% success rate.

IV.   DATA AND METHODOLOGY

In this report the stock price movement of three companies from the banking sector is studied for the year 2020-2021 using the most common market indicators, the Moving Averages, Stochastic Indicator and Relative Strength Index. The sample selected for the study is based on market capitalization, HDFC Bank, Canara Bank and IDFC First Bank each from a small-cap, mid-cap and large-cap market sector respectively.

Company Background

1. HDFC Bank: HDFC Bank Limited is one of India's largest private sector bank established in 1994 as a subsidiary of Housing Development Finance Corporation headquartered in Mumbai. It is the third largest bank by market capitalisation on the Indian Stock Exchange as of 2021. In 1995, HDFC Bank listed a 50 Cr. Rupees of initial public offer drawing a record 55 times oversubscription. HDFC Bank was officially listed on the Bombay Stock Exchange in May 1995 and on the National Stock Exchange November 1995. The ADRs of the bank are listed on New York Stock Exchange and the GDRs are listed on Luxembourg Stock Exchange.

2. Canara Bank: Established in 1906, Bangalore, Canara Bank is India's largest Nationalised banked owned by the Ministry of Finance, GOI. The bank merged with Syndicate Bank in 2020 making it the third

largest public sector bank and amongst the top in the Mid-Cap Sector. Canara Bank established its international branches in London, Hong Kong, Moscow, Bahrain, Doha, Sarjah and New York by 2014. The bank listed an IPO of Rs. 385 crore on the National and Bombay Stock exchange in November 2002.

3. IDFC First Bank: The bank formerly known as IDFC Bank, headquartered in Mumbai started its operations in 2015. The bank was launched through a demerger from IDFC Limited with an approval from Reserve Bank of India in 2014. The bank was listed on BSE and NSE in July 2015.

To perform the technical analysis the stock price historical data of HDFC Bank, Canara Bank, and IDFC First Bank for a period of September 2019 to December 2020 was selected. Moving Average, Stochastic Indicator, Relative Strength Index and MACD indicators were used on this data to study about the usefulness for traders and investors and how these indicators generate signals.

Moving Average

The moving average is the most commonly used technical indicator by traders and investors. Most often the price of the stocks moves up and down and sometimes surges up and plumps down increasing the potential for false signals. The moving average helps to filter out the false signals, random price movements and smooth out the average value. Generally moving averages are used identify trends and confirm reversals. Referring to the below figure, when the prices are above the moving average line it is considered as an upward trend. Conversely if the prices are below the moving average line the, it is considered a down trend. The breaking of the moving average line is considered as trend reversal.

Figure 6: Illustration of Trend Reversal using SMA

Moving average is based on past prices and is also known as a lagging indicator. Therefore this indicator does not warn the trader in advance but it confirms when the trend change has taken place. Traders and investors get their buy signal when the price crosses and move above the moving average line and when it crosses below the moving average line they take it as a sell signal.

Figure 7: Illustration of Buy and Sell Signal using SMA

Types

1. Simple Moving Average (SMA): It is a technical indicator used to indicate the price trends of a stock using the closing prices over a period of time. Simple Moving averages completely depend on the historical data of the stock. It is customizable indicator as it can use for calculating the averages over different time periods.

Calculations:

SMA is calculated using the formula,

$$SMA = \frac{P_1 + P_2 + \cdots + P_n}{n}$$

where, P_n = Closing price of Stock at period n
        n = number of total period

For a look back time of 10days, a SMA of n=10 includes the average of the closing prices for last 10 days. This calculation gives equal weigh to each day. In this calculation, the oldest price is dropped each time a new period is available. In this way ensuring that the average is based on the last x number of days in this case 10 days.

It is important to note that a longer SMA look back period gives a lagged result and the slower it is to react to the most recent price movement. As equal weight is given to all period considered in the calculation the simple moving average is slower to respond to rapid price changes that might be important to traders and investors. This can be countered by using another moving average.

2. Exponential Moving Average (EMA): It is a weighted moving average of the recent period's prices which uses exponentially decreasing weight for each previous period. Unlike SMA, EMA gives the most recent prices more weight than the past. The EMA reacts faster to price movement and reflect a quicker shift in sentiment which can be due to changes in supply and demand or important news events that impact the stock.

Calculations:

EMA is calculated using the formula,

$$EMA_{today} = \left(\left(\frac{2}{n+1}\right) * Closing\ Price_{today}\right) + EMA_{yesterday} * \left(1 - \left(\frac{2}{n+1}\right)\right)$$

Where,   n = number of total period
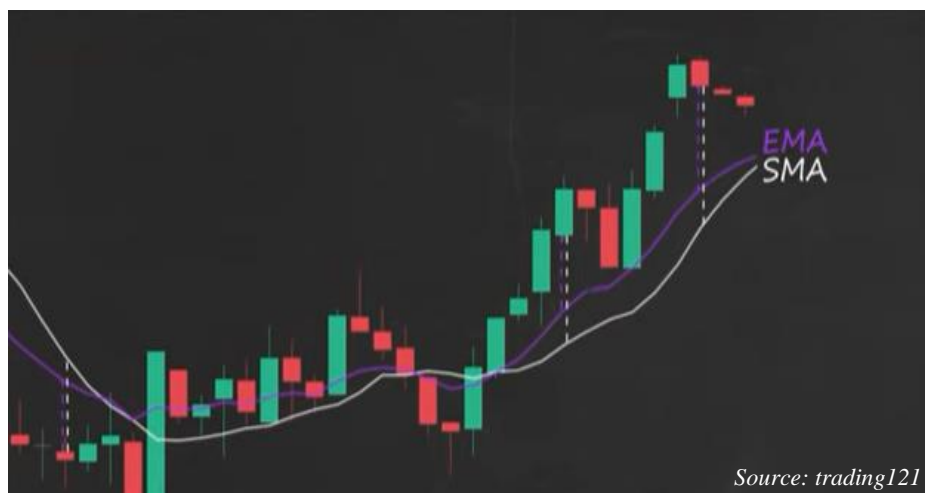 $EMA_{yesterday}$ = SMA at n^{th} day

Figure 8: Illustration of EMA and SMA indication

Simple Moving Averages is useful when traders and investors want to hold a stock position for longer period of time. Whereas, Exponential Moving Average is beneficial when looking for a short time frame.

3. Stochastic Oscillator: It is a trading indicator which focuses on price momentum useful for identifying overbought and oversells levels of a stock and predicting trend reversals. This oscillator measures the momentum i.e. the rate at which price movements takes place. The stochastic oscillator always shows the change in momentum of a stock before its actual price movement. Traders and investors use this indicator along with moving averages to help improve trading accuracy.

Calculations:

The stochastic indicator is calculated using the formula,

$$\%K = \frac{(Closing\ Price - Lowest\ Low)}{(Highest\ High - Lowest\ Low)} * 100$$

Where,   Lowest Low is the lowest price of low for n look back period
Highest high is the highest price of high for n look back period

$$\%K_{smooth} = 3day\ SMA\ of\ \%K$$

This indicator focuses on the stock's closing price with respect to the high-low range of the price over a time period. By comparing the closing price of the stock to the previous price movement, the indicator predicts trend reversal. It is a two-line indicator which fluctuates between 0 and 100. The first line depicts %K$_{smooth}$ (Slow stochastic) and the second line depicts the 3 day SMA of %K which is denoted by %D (Fast stochastic).

High level of stochastic oscillator indicates that the stock price closed close to the highest (upward trending market) of the time period whereas a low level indicates that it closed at the lowest (downward trending market) of the time period.
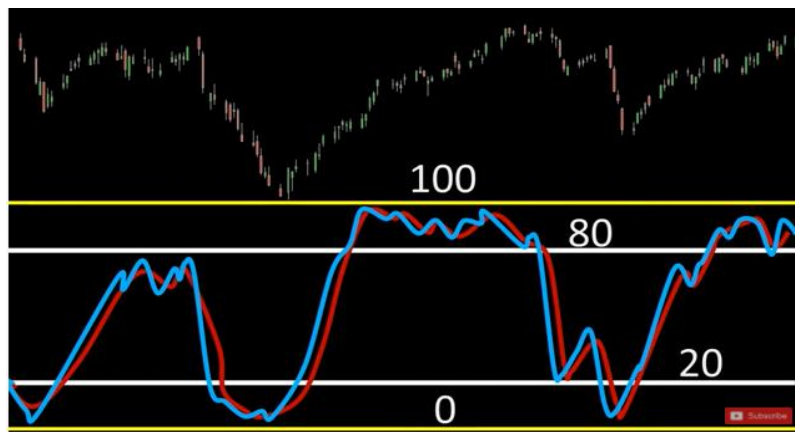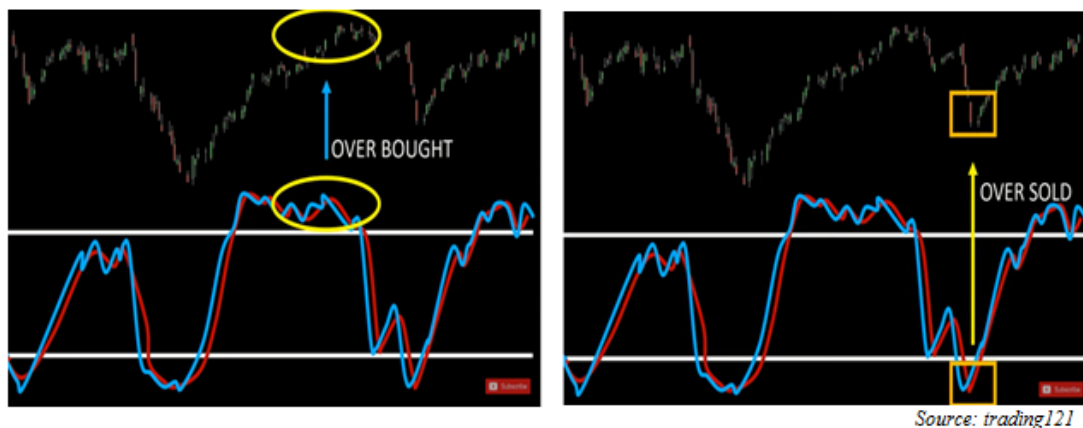

Figure 9: Illustration of Stochastic Oscillator

For the stochastic oscillator the default overbought reading is 80 and the default oversold reading is 20. A %K or %D reading above 80 indicates that the stock is trading near the top of its high low range and is overbought, below 20 indicates that the stock is trading near the bottom of its high low range and is oversold. Reading falling from above 80 to below 50 indicates that the prices are lowering and readings raising from below 20 to above 50 signals that the price are going high.

Figure 10: Illustration of Stochastic Oscillators Overbought and Oversold region

Using this indicator traders and investors can identify trade entry and exit points. Traders and investors look to sell the stock when it is overbought and buy the stock when it is oversold. Many traders and investors follow the stochastic crossover strategy where when the increasing %K line crosses above the %D line below 20, it generates a buy signal and when a decreasing %K line crosses below the %D line above 80, a sell signal is generated.

4. Relative Strength Indicator (RSI): It is one of the most commonly used momentum oscillators which designed to measure both speed and size of price movements. Many investors use this indicator to help identify whether a stock is overbought or oversold. Using this information can help them determine potential entry and exit trading signals. The readings of RSI fluctuate between 0 to 100 similar to the stochastic oscillator.

Calculations:

The formula for RSI is as follows,

$$Relative\ Strength\ (RS) = \frac{Average\ Gains}{Average\ Loss}$$

Where,

Average Gain = total of Gain divided by the time period

Average Loss = total of Loss divided by the time period

Gain or Loss = Difference between today's closing price and yesterday's closing price

Therefore,

$$RSI = 100 - \left[\frac{100}{(1 + RS)}\right]$$

The RSI readings are plotted on line graph which helps investor's measure momentum in relative terms with the stock's current price to past price. This comparison makes it easier for traders and investors to identify when a stock might reverse its prevailing trend. To identify potential trend changes, there are two ranges of the indicator: overbought which refers to a stock that has increased rapidly in short period of time and may reverse lower. Conversely, oversold refers to a stock that has decreased sharply in a short period of time and may reserve higher.

Traditionally, the RSI considers signal overbought when the readings go above 70 and oversold when the readings go below 30. If the RSI is consistently reaching the 70 or 30 marks without correct forecasts, then this level can be changes to 80 and 20 to get more reliable trading signals. When RSI crosses above 30 from below, it generates a potential buy or entry signal. Exit or sell signals are generated when the RSI reading go above 70.

Figure 11: Illustration of RSI Indicator

A trend reversal may be confirmed by RSI when it shows a divergence. A divergence occurs when a stock price moves one way and RSI moves in the opposite direction. A bullish divergence occurs when stocks make lower lows, but RSI makes higher lows. This can be a signal that a downward momentum is

waiting and a bullish reversal may follow. After identifying a bullish divergence, traders and investors can cross over 30 and enter the market. A bearish divergence occurs when a stock shows higher highs but RSI shows lower highs this shows a bearish reversal may occur and is the right time for exiting.

One of the main risks of using RSI is that its signals aren't always accurate. RSI cannot factor events that influence a stock price such as the economic news, fundamentals, etc. Moreover, the indicator can remain overbought and oversold for a long period of time, even if the divergence suggest otherwise.

5. Moving Average Convergence Divergence (MACD): Moving average convergence divergence (MACD) is a trend-following momentum indicator that shows the relationship between two moving averages of a security's price. The MACD is calculated by subtracting the 26-period exponential moving average (EMA) from the 12-period EMA.

The result of that calculation is the MACD line. A nine-day EMA of the MACD called the signal line, is then plotted on top of the MACD line, which can function as a trigger for buy and sell signals. Traders may buy the security when the MACD crosses above its signal line and sell or short the security when the MACD crosses below the signal line. Moving average convergence divergence (MACD) indicators can be interpreted in several ways, but the more common methods are crossovers, divergences, and rapid rises/falls.

Calculations:

The formula for MACD is as follows,

$$MACD = 12 \, period \, EMA - 26 \, Period \, EMA$$

MACD is calculated by subtracting the long-term EMA (26 periods) from the short-term EMA (12 periods). An exponential moving average (EMA) is a type of moving average (MA) that places a greater weight and significance on the most recent data points. The exponential moving average is also referred to as the exponentially weighted moving average. An exponentially weighted moving average reacts more significantly to recent price changes than a simple moving average (SMA), which applies an equal weight to all observations in the period.

The MACD has a positive value (shown as the blue line in the lower chart) whenever the 12-period EMA (indicated by the red line on the price chart) is above the 26-period EMA (the blue line in the price chart) and a negative value when the 12-period EMA is below the 26-period EMA. The more distant the MACD is above or below its baseline indicates that the distance between the two EMAs is growing. In the following chart, it is seen how the two EMAs applied to the price chart correspond to the MACD (blue) crossing above or below its baseline (dashed) in the indicator below the price chart.

Source: investopedia

Figure 12: Illustration of MACD Indicator

MACD is often displayed with a histogram which graphs the distance between the MACD and its signal line. If the MACD is above the signal line, the histogram will be above the MACD's baseline. If the MACD is below its signal line, the histogram will be below the MACD's baseline. Traders use the MACD's histogram to identify when bullish or bearish momentum is high.

Figure 13: MACD Indicator Bearish Trend

When the MACD falls below the signal line, it is a bearish signal that indicates that it may be time to sell. Conversely, when the MACD rises above the signal line, the indicator gives a bullish signal, which suggests that the price of the asset is likely to experience upward momentum. Some traders wait for a confirmed cross above the signal line before entering a position to reduce the chances of being "faked out" and entering a position too early.
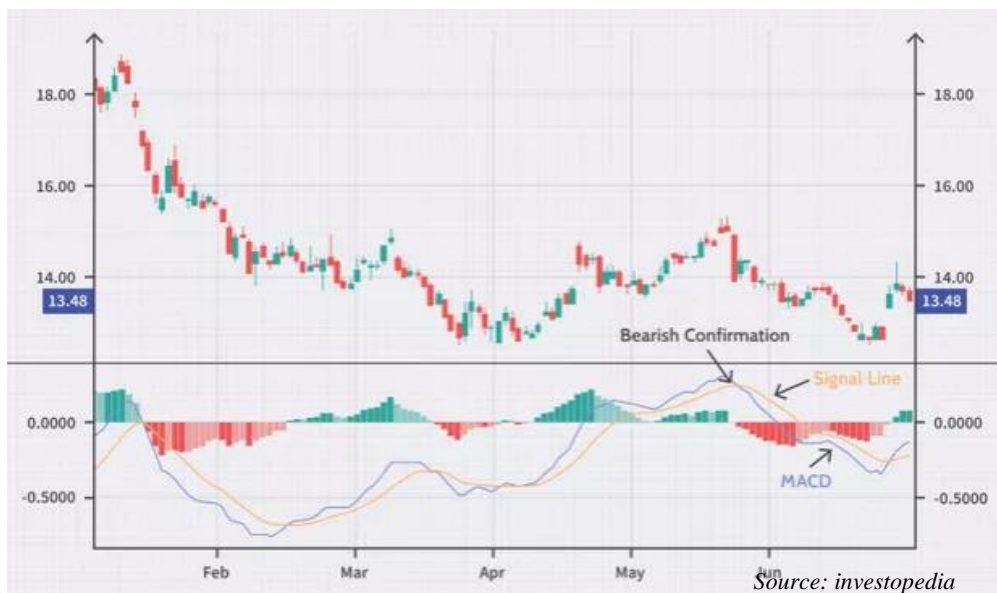

Figure 14: MACD Indicator Bearish Trend

Crossovers are more reliable when they conform to the prevailing trend. If the MACD crosses above its signal line following a brief correction within a longer-term uptrend, it qualifies as bullish confirmation. If the MACD crosses below its signal line following a brief move higher within a longer-term downtrend, traders would consider that a bearish confirmation.

V. ANALYSIS AND INTERPRETATION

The below charts are prepared in Apache eCharts using java script library. The code is written in Python flask and posted on Google Cloud. The charts shows a 9 months, 14 days Stochastic Oscillator chart of HDFC Bank, Canara Bank and IDFC First Bank.

Figure 15: Stochastic Oscillator for HDFC Bank

In the month of January, the HDFC Stock was trading at a good price. From the end of February till the end of March the stock stayed in the region of oversold which meant that the momentum is not very strong. As the market recovered, the month of June showed a very high momentum in the stock price, indicating that the trend was strong and the prices were able to close near the top range of the price.

Figure 16: Stochastic Oscillator for Canara Bank

In the above chart of Canara Bank, the %K line crossed below %D line generating a sell signal and stayed in the oversold region for a long period of time, indicated the market if in a downtrend and is likely to continue for a period of time.

Figure 17: Stochastic Oscillator for IDFC First Bank

The strategy of implementing cross over signal can be generated during non-trending conditions. The %K line crossed above %D line below 20 in the Month of May which generated a buy signal, which observed that price of the stock rose thereafter.

Figure 18: Stochastic Oscillator for HDFC Bank

In the above chart, the %K crossed above the %D line sharply at 20 which showed an upward trend and generated a buy signal.

Figure 19: Stochastic Oscillator for Canara Bank

Stochastic Oscillator is useful when used to check divergences. These occur when the price action differs from the indicator action. The market momentum is not reflected in the price. This indicates trend reversal. From the above chart it is observed that the price movement from mid-February to mid-March is showing a lower low trend but conversely the indicators is showing a higher low indicating a possible buy. The chart shows in the mid-May, that the price is forming a higher high whereas the indicators formed a lower high indicating a possible sell. When a divergence occurs, there is a potential change in the price directions which is observed in the chart.

Figure 20: Stochastic Oscillator for IDFC First Bank

The %K line crossed below %D above 80, indicated a sell signal and the price movement was observed to be going downwards.

The below charts shows a 14 days SMA/EMA chart of HDFC Bank, Canara Bank and IDFC First Bank for 18 months.

Figure 21: SMA and EMA for HDFC Bank

Examining a stock closing price with the SMA or EMA helps investors or traders understand potential buy signals or sell signals. For a moving average when price breaks above the moving average line it indicates a buy signal. When price breaks below the moving average line it indicates a sell signal. In the above chart, the buy (green triangle) and sell (red triangle) is shown.

Figure 22: SMA and EMA for Canara Bank

From the above chart it is observed that the closing price line crossed below which generated a sell signal. It is also observed that when the market is trading below the moving average line there are more red candles than green i.e. weakness in the market whereas when the market is trading above the moving average lines there are more green candles than red candles i.e. strength in the market(shown in a black circle).

Figure 23: SMA and EMA for IDFC First Bank

The current price line is always closer to the EMA price line SMA price line as the EMA deals with the most recent price and more weightage is given to it which helps with a better prediction about the strength and weakness in the market. The EMA also reacts to price change before the SMA and gives an early indication of the movement.

Figure 24: SMA and EMA for IDFC First Bank

When observing a moving average chart, another buy signal could be a support bounce. This is when the stocks moving average acts as support level for the price. From the above chart it is observed that at the end of May the price touched the moving average and bounced back up giving a buy signal for short term.

Similarly when the stocks moving average acts as a resistance level for the price it gives a sell signal for short term trading.

The below charts shows a 14 days RSI chart of HDFC Bank, Canara Bank and IDFC First Bank for 18 months.

Figure 25: RSI for HDFC Bank   *Source: Author*

From the chart above it can be observed that a high RSI occurs when the market is increasing rapidly whereas a low RSI occurs when the market decreases rapidly. For a lower timeframe the RSI is very volatile and reaches highs and lows frequently.

Figure 26: RSI for Canara Bank

From the above chart it is observed that the RSI hit 81 levels above 70 and the price was trading at resistance level which also coincided with an area of breakout. This generated a sell signal and the price movement observed continued to go in the downward direction.

Figure 27: RSI for Canara Bank

From the above chart a buy opportunity can be observed where the RSI was oversold i.e. reached the 30 level and the price met the support. This indicated a good buy signal and the price movement went up there after.

Figure 28: RSI for HDFC Bank

In the above chart the price is forming a double top but the RSI is showing a higher low. A profitable sell signal will be generated when the price would break the lower trend line of the upward trend. The price rallied downward after the price broke the trend line creating a bullish divergence.

Figure 29: RSI for IDFC First Bank

Sometimes investors and traders follow the 50 level signals for entry and exit. When the RSI crosses above 50, a buy signal is generated and when the RSI crosses below 50 a sell signal is generated. This crossover will catch good signal only when the markets are trending and might give a poor signals when they are not.

VI.   LIMITATIONS AND SUGGESTIONS

1. For a stochastic oscillator, when the selected period is short over which the fast stochastic is calculated, it often creates false signals as it is more susceptible to volatility. This impact of false signals can be reduced by using it with a combination of simple moving average.

2. For over a long period, it easy to use %K and SMA indicator for price movement prediction or identification of changes in trend. But as the SMA gives equal weightage to all the prices of that particular period therefore it lags behind the actual price change observed. This can be corrected by assisting the stochastic with a specific investment strategy and by adjusting the time period, therefore adjusting SMA.

3. It is major misunderstanding amongst the investors and traders that the stochastic creates buy and sell signal, rather it indicates momentum and changing trends. Using the fast and slow stochastic crossover gives and additional assurance of changing trends.

4. Simple Moving Average give a smooth line and gives better result for a long during which is less prone to temporary price swings and fluctuations and provides a sable support and resistance level but is slower to respond to fast price movement and gives delayed market reversal indications.

5. Exponential Moving average gives better results when trading for a shorter period of time as it a sensitive to getting false signals. This indicator provides good entry and exit points as it responds faster to any price change. A combination of SMA and EMA can generate better signals.

6. RSI's signals compares upward and downward momentum, it can stay in the overbought and oversold region for a longer period of time. Therefore this oscillator is most useful in a fluctuating market and gives reliable results when used for a long period of time.

7. RSI is a momentum indicator and a lagging indicator, it does not give buy or sell signal. It can only give a confirmation about the trend. Combining RSI with price action (some pattern or support resistance level) and latest global news i.e. fundamental analysis gives potential signals.

8. In a trending market, the 50 level offers good signals with RSI. But this does not work for a non-trending market. Increase in RSI above 50 level considered to have an upward momentum and gives better buying opportunities. Conversely crossover of RSI below 50 would develop a bearish market trend and a good exit signal.

9. Adding a moving average line offers a smooth RSI signal. The crossovers of RSI and moving average gives better signals in a trending marking and might not work in a non-trending market.

10. Stochastic and RSI both measure price momentum but they have different working principle. RSI focuses on the overbought and oversold position using the average gains and losses whereas stochastic focuses on the current prices. A combination of both would give powerful signals reducing the chances of false signals.

11. Pairing of the stochastic oscillator and the MACD works well together because the stochastic is comparing a stock's closing price to its price range over a certain period of time, while the MACD is the formation of two moving averages diverging from and converging with each other.

12. The RSI aims to signal whether a market is considered to be overbought or oversold in relation to recent price levels. The RSI is an oscillator that calculates average price gains and losses over a given period of time.

13. MACD measures the relationship between two EMAs, while the RSI measures price change in relation to recent price highs and lows. These two indicators are often used together to provide analysts a more complete technical picture of a market. These indicators both measure momentum in a market, but, because they measure different factors, they sometimes give contrary indications.

14. Stocks generally takes a longer time to line up in the best buying position, the actual trading of the stock occurs less frequently, so it is always advisable to have a larger basket of stocks to watch.

15. The use of market indicators needs a thorough study and experience for gaining profitable results.

VII. CONCLUSION

The study incorporates the technical analysis using the Moving Average indicators, Stochastic Oscillator, Relative Strength Index and MACD on the three banks. The banks selected were according to the market capitalization and the analysis of the tools work good on all three stocks.

The market provides the traders and investors with good opportunities to gain profits using the technical analysis charts. The above study provided the evidences of reliable tool for better investment decisions. The study showed that these charts hold good for both short and long investments.

Each market indicators are based on different principles and logic and provide traders and investors with varying results. Therefore, a combination of indicators would give powerful signals reducing the chances of false signals.

The RSI and Stochastic oscillators gives strong signals of momentum, divergences, and trend reversals, overbought/oversold and also provides with entry and exit signals. The use of SMA and EMA together gives smooth and rapid buy and sell signals. The various signals generated by MACD are easily interpreted and can be quickly incorporated into any short-term trading strategy.

Investors and Traders can develop specific strategies according to their risk appetite and trading style by lengthening, shortening and customizing these indicators. Technical analysis and use of market indicators utilized well keeping in mind the limitations, it can a great tool for investment and gaining returns.

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