

# Comparison Of Moving Average Based Tools Of Technical Analysis Of Stock Market: An Empirical Study

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**Abstract-** *In the finance world stock market appears to be one of the profits making area. In the secondary stock market's cash segment is preferred by stock investors and traders for long term and short term respectively. Complexity of stock market and stock trading warrants traders to use technical analysis for accomplishment of profit optimization objective. There are various technical analysis tools, out of them moving average based indicator tools are popular. The present study is aimed at to academically find out appropriate moving average based indicator tool and a combination of moving average based indicators. For this one of highest market capitalization based Reliance Industries Ltd. was taken as sample for the 12 months study period starting from June 1<sup>st</sup> 2020 to May 31<sup>st</sup> 2021.*

**Keywords:** *Stock Market, Stock Trading, Technical Analysis, Moving Average Based Indicators.*

## 1. INTRODUCTION

Companies invite public through Initial Public Offering (IPO) to collect some money against issue of shares for the company so that the company can run its business efficiently and in return investors get a share of whatever profit the company make and distribute. The first time a company offers its shares to the public, is called an IPO. Securities and Exchange Board of India (SEBI), the Indian Stock Market Regulator, has laid out a few rules and regulations for a company to list its IPO on exchanges which they have to comply with before being eligible for listing (<https://groww.in/p/stock-market-basics/>). The public at large can also buy and sell shares into the open market preferably through the recognized stock exchanges in order to receive dividend income and realize capital appreciation. For doing trading of securities on regular basis, investors need to go through fundamental, technical, company analysis, etc. For short duration, technical analysis holds its worthiness.

### 1.1. Stock

The term stock describes a share in the ownership of the company. Each share is worth a certain amount based on the overall worth of the company. When buy shares of a certain company, it also represents ownership of small portion of that company. When the value of the company rises, the value of the investment in the shares also rises (<https://www.edelweiss.in>). A stock represents the equity of the company whereas are the pieces of a company (<https://www.elearnmarkets.com/blog/>).

### 1.2. Stock Market

Stock market is referred to the collection of markets and exchanges where regular activities of buying, selling, and issuing of shares of public companies take place. These financial activities are

conducted through institutionalized formal structured market places called stock exchanges which operate under a defined set of regulations. There may be multiple stock trading venues/ exchanges in a country or a region which allow transactions in stocks and other forms of securities. Moreover, there may be an apex regulatory body (<https://www.investopedia.com/terms/s/stockmarket.asp>). Stock markets are vital components of a free-market economy because they enable democratized access to trading and exchange of capital for all types investors. They perform and facilities efficient price discovery, efficient dealing and other several functions in the capital market (<https://www.investopedia.com/>).

### **1.3. Indian Stock Market and Regulation**

There are primarily two stock exchanges in India, the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). Companies list their shares for the first time on a stock exchange through an IPO. Investors then trade in these shares through the secondary market. Indian Stock Market is regulated and supervised by the Securities and Exchange Board of India (SEBI) which was formed as an independent identity under the SEBI Act of 1992 having the power to conduct inspections of the stock exchanges (<https://cleartax.in/s/stock-market-explained>).

### **1.4. Trading**

In financial markets, trading refers to the buying and selling of securities on the floor and/or through the stock exchange (<https://www.investopedia.com/terms/t/trade.asp>). The objective of stock trading is to earn profit on account of capital appreciation or from favorable price difference. To earn profit on regular basis from stock trading it requires knowledge, experience and expertise which are helped out by different types of analysis especially technical analysis.

### **1.5. Technical Analysis**

Technical analysis is a method used by traders to forecast future price movements of stocks by analyzing past trading activity. Chart patterns and statistical numbers are used extensively by the experts in the technical analysis (<https://www.edelweiss.in/investology/technical-analysis-2c8d50/what-is-technical-analysis-in-stock-market->). Technical analysis is the study of historical market data, with the help of price and volume. Using insights from the market psychology, behavioral economics, and quantitative analysis, technical analysts aim to use past performance to predict future market behavior. The two most common forms of technical analysis are chart patterns and technical (statistical) indicators, the two common tools of technical analysis. Technical analysis attempts to predict future price movements, providing traders with the information needed in making profit. Traders apply technical analysis tools to chart in order to identify entry and exit points for potential trades (<https://www.investopedia.com/terms/t/technical-analysis-of-stocks-and-trends.asp>). The price movement of a stock or even of the market can seem quite random; but over a period of time, trends and price patterns might emerge up. Technical analysts try to exploit these patterns in order to make huge gains out of the stock market. Technical analysis method is mainly used by investors for short term trading or long term position buying (<https://www.edelweiss.in/investology/technical-analysis-2c8d50/what-is-technical-analysis-in-stock-market->). Technical analysis is well developed science which has underlying theories, principles and related assumptions.

### **1.5.1. Underlying Theory, Principles and Assumptions**

Technical analysis has always focused on practical application, with technicians more focused on what works than why a particular strategy works. This distinction has been true since Charles Dow, informally known as the “grandfather of technical analysis,” wrote editorials in the *Wall Street Journal* that would become the basis of Dow Theory, a trend-following tool that is still widely used. Dow Theory was developed in the 1900s and derived solely from Dow’s insights into the relationship between stock prices and the economy (Scott, Carr and Cremonie, 2016). There are three key principles of technical analysis for stock market: all relevant information about a stock is already reflected in the stock price; stock prices move in trends and; history tends to repeat itself (<https://www.edelweiss.in/investology/technical-analysis-2c8d50/what-is-technical-analysis-in-stock-market->). On the basis of the theories, principles and assumptions various technical analysis tools have been evolved and developed which works as indicators.

### **1.5.2. Technical Analysis Indicators**

Long ago stock trading was a simple game of buying and selling; but right now, technical analysis is working as an art and science of predicting stock future prices from the past price movements, provides investors and traders different technical analysis indicators, out of them are also indicators based on moving average.

#### **1.5.2.1. Moving Average Based Indicators**

A moving average is a technical indicator that is used to determine the trend, direction, fluctuations and/or oscillations of the securities. Moving average is calculated by adding up all the data points during a specific period and dividing the sum by the number of time periods to arrive at moving average numbers. Moving averages help technical traders to generate trading signals. The three forms of moving averages are as follows:

##### **1.5.2.1.1. Simple Moving Average (SMA)**

The SMA is a straightforward technical analysis indicator which is obtained by summing the recent data points in a given set and dividing the total by the number of time periods. Traders use the SMA indicator to generate signals on when to enter or exit a security and or market (<https://corporatefinanceinstitute.com/resources/knowledge/other/moving-average/>).

##### **1.5.2.1.2. Exponential Moving Average (EMA)**

The exponential moving average is designed to improve on the idea of SMA by giving more weight to the most recent price data, which is considered to be more relevant than the older data. Since new data carries greater weight, the EMA responds more quickly to price changes than the SMA (<https://www.investopedia.com/ask/answers/122314/what-exponential-moving-average-ema-formula-and-how-ema-calculated.asp>).

##### **1.5.2.1.3. Moving Average Convergence Divergence (MACD)**

The MACD is a trend following indicator and momentum indicator which shows the relationship between two moving averages of a security’s price. For this, normally, 12 period exponential

moving averages of the closing price are calculated. Further, 26 periods exponential moving averages of the closing price are also calculated. By subtracting 26 period moving averages from the 12 period moving averages Fast MACD Line is obtained. Furthermore, by calculating 9 period exponential moving averages of the Fast MACD Line, Slow or Signal MACD line is calculated. (<https://www.elearnmarkets.com/blog/top-technical-analysis-indicator/>).

## 2. LITERATURE REVIEW

Stock markets are among the largest avenues for investments (<https://cleartax.in/s/stock-market-explained>). Technical analysis helped the investors in analyzing scrip based on technical oscillators to earn upon fruitful investments (Sudheer, 2015). Technical analysis is renowned worldwide due to its importance; the strongest advocates of fundamental analysis also admitted its significance because technical analysis attempts to do away with the complexities by assuming and basing everything including all the economic analysis on the price actions shown by the market. The experience and judgments of traders is the key to success in using technical analysis and its tools (Thomas, 2014). Technical Analysis is all about learning the *art of making profits in all market conditions* whether rising or falling. Knowledge of the stock markets is key ingredient to the success and emphasis should be on managing trading risk while technical analysis can help the investors to control. Technical analysis provides unbiased solutions in a biased world. There is only one side to the stock market and it is not the bull side or bear side but it is the right side; technical analysis can be used to decide when to buy and when to sell the scrip (Sudheer, 2015).

In majority of the cases, irrational financial behavior like, greed and fear rules the market breaking the efficiency of technical analysis and its tools in predicting market movements at least temporarily. The relevance of all the technical tools lies only in an inefficient market; amazingly almost all markets are inefficient (Thomas, 2014). On reviewing fundamental analysis and technical analysis to analyze the worthiness of the individual securities needed to be acquired for portfolio construction, technical analysis detected the most appropriate time to buy or sell the security. Technical analysis aimed to avoid the pitfalls of wrong timing in the investment decisions. The modern portfolio literature suggested 'beta' value as the most acceptable measure of risk of the scrip. The securities having low P should be selected for constructing a portfolio in order to minimize the risks (Banerjee, 1998).

Investment is generally distinguished from speculation in terms of three factors, namely risk, capital gains and time period. Gambling is the extreme form of speculation. Investors may be individuals or institutions. Both types of investors combine to make investment activity dynamic and profitable. The investors in the financial market have different attitudes towards risk and varying levels of risk bearing capacity. Some investors are risk averse, while some may have an affinity to risk. The risk bearing capacity of an investor, on the other hand, is a function of his income. A person with higher income is assumed to have a higher risk bearing capacity. Each investor tries to maximize his welfare by choosing the optimum combination of risk and return in accordance with his preference and capacity. It is highly essential for the investor to do both fundamental and technical analysis for deciding the suitable stock. In stock market, trend is considered to be a man's best friend (Suresh, 2013). The technical analysis aimed at identifying trend reversals in the early stages and rising trend until the confidence level indicated that the trend has reversed (Pring, 1991). Market action can be judged through the use of charts for the purpose of forecasting upcoming price (Murphy, 1999). The rules of the moving average and the moving

average convergence divergence for the Athens stock market provided strong support for selected technical strategy (Vasiliou, Eriotis and Papathanasiou, 2006).

### **3. OBJECTIVES OF THE STUDY**

To find out appropriate moving average method of technical analysis.

To find out appropriate combination of moving average methods for technical analysis.

### **4. Research Methodology**

#### **4.1. The Study and Period**

Research Design of the study was based on descriptive and analytical research. The study being based on secondary data collected from stock exchange websites, books, journals, magazines, financial newspapers, blogs, etc. The study period is 1<sup>st</sup> June 2020 to 31<sup>st</sup> May 2021.

#### **4.2. The Sample and Basis**

Out of several tools and techniques of technical analysis only commonly used averages based indicators have been considered. Daily closing prices were taken as sample price. Sample of Reliance Industries Ltd., the top company having highest market capitalization at Bombay Stock Exchange (BSE) for the financial year 2020-21 was under taken (<https://www.bseindia.com/markets/equity/EQReports/MostActiveScripts.aspx>). Market capitalization is the aggregate valuation of the company based on its current share price and the total number of outstanding stocks (<https://tradebrains.in/top-10-companies-in-india-by-market-capitalization/>).

#### **4.3. Statistical Tools Used**

The data analysis was carried out by Simple Moving Average (SMA), Exponential Moving Average (EMA), and Moving Average Convergence Divergence (MACD) Technique.

#### **4.4. Limitations**

For doing the technical analysis only the three methods of moving average were considered. The technical analysis was carried out for one year only limiting its scope for short run decision making only. The results of the three methods have been academically discussed and analyzed without considering other tools of technical analysis as complimentary, supportive and confirmative method. Discussion, interpretation and conclusions have been presented on the assumptions and within the premises of short term technical analysis. Since the daily closing prices were considered hence results cannot be considered for intraday trading. Only cash segment of the market was considered.

## 5. DATA ANALYSIS AND INTERPRETATION

### 5.1. Simple Moving Average(SMA)



(Source: Self-created with the help of investing.com)

As per the above chart of SMA based on 7 Days SMA Line and 21 Days SMA Line, it is apparent that for the period under study, 7 Days SMA Line has crossover 21 Days SMA Line from above to below indicated the share prices of the company started to be bearish (20 August 2020). It continued till 8 September 2020. Then, 7 Days SMA Line crossed 21 Days SMA Line from below to above indicated the share price of the company started to be bullish (29 September 2021). Then 7 Days SMA Line crossed 21 Days SMA Line from above to below showing oscillation explaining bearishness (9 December 2020). Further 7 Days SMA Line crossed over from below to above to 21 Days SMA Line indicated the starting of upward momentum (UM) (5 January 2021). It continued till next crossover from above to below indicated starting of downward momentum(DM) (19 January 2021). Then 7 Days SMA Line crossed over from below to above to 21 Days SMA Line indicated the starting of upward momentum (29 January 2021). It continued till next crossover from above to below indicated starting of downward momentum (10 February 2021). Then 7 Days SMA Line crossed over from below to above to 21 Days SMA Line indicated the starting of upward momentum (18 March 2021). It continued till next crossover from above to below indicated starting of downward momentum (30 April 2021). Then 7 Days SMA Line crossed 21 Days SMA Line from below to above showing very short term oscillation explaining bullishness (7 May 2021). The 7 Days SMA Line further showed crossover to 21 Days SMA Line from below to above indicated starting up bullish momentum into the share prices of the company (18 May 2021). Table of Momentum for SMA is as below:

**Table of Momentum for SMA**

S. No	Date	SMA				
		UM	DM	Days	UM to UM	DM to DM
1.	1/6/2020			-		
2.	20/8/2020		DM <sub>1</sub>	81		
3.	8/9/2020	UM <sub>1</sub>		19		
4.	29/9/2020		DM <sub>2</sub>	21		40
5.	9/12/2020	UM <sub>2</sub>		71	92	
6.	5/1/2021		DM <sub>3</sub>	27		98
7.	19/1/2021	UM <sub>3</sub>		14	41	
8.	29/1/2021		DM <sub>4</sub>	10		24
9.	10/2/2021	UM <sub>4</sub>		12	22	
10.	18/3/2021		DM <sub>5</sub>	36		48
11.	30/4/2021	UM <sub>5</sub>		43	79	
12.	7/5/2021		DM <sub>6</sub>	07		50
13.	18/5/2021	UM <sub>6</sub>		11	18	
14.	31/5/2021			13		
	Total	6	6	365	Simple Average = 50.4 days	Simple Average = 52 days

(Source: Self-created)

From the above table, it is obvious that total 12 short term fluctuations have been captured by SMA. The minimum crossover period is 7 days and maximum crossover period is 81 days under the study period. Minimum duration of upward momentum is 18 days and whereas maximum upward momentum duration was 92 days, resulting into average period of upward momentum of 50 days approximate. Minimum duration of downward momentum is 24 days and whereas maximum downward momentum duration was 98 days, resulting into average period of upward momentum of 52 days approximate.

## 5.2. Exponential Moving Average (EMA)



(Source: Self-created with the help of investing.com)

As per the above chart of EMA based on 7 days and 21 days EMA, it is apparent that for the period under study, 7 days EMA has crossover 21 days EMA line from above to below indicated the prices of the company started to remain bearish (16 October 2020). It continued till 15 January 2021. Then 7 days EMA line crossed 21 days EMA line from below to above indicated the price of company started to remain bullish (15 January 2021). Then 7 days EMA line crossed 21 days EMA line from above to below showing very short term oscillation explaining bearishness (27 January 2021). Further 7 days EMA line crossed over from below to above to 21 days EMA line indicated the starting of upward momentum (10 February 2021). It continued till next crossover from above to below indicated starting of downward trend (18 March 2021). The 7 days EMA line further showed crossover to 21 days EMA line from below to above indicated starting up bullish trend into the prices (18 May 2021). The Table of Momentum for EMA is as below:

**Table of Momentum for EMA**

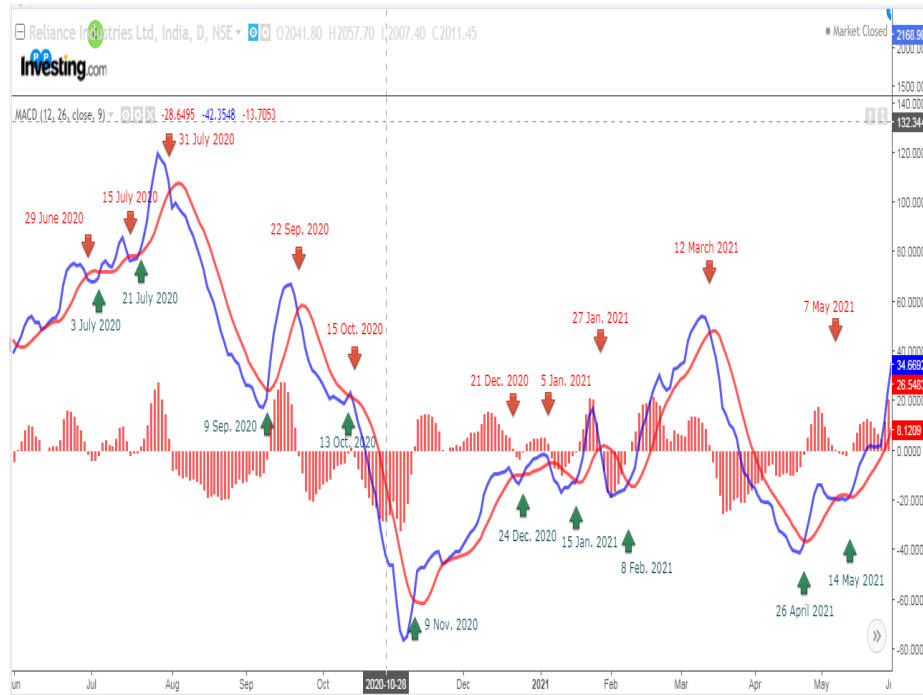
S. No	Date	EMA				
		UM	DM	Days	UM to UM	DM to DM
1.	1/6/2020					
2.	16/10/2020		DM <sub>1</sub>	138		
3.	15/1/2021	UM <sub>1</sub>		91		
4.	27/1/2021		DM <sub>2</sub>	12		103
5.	10/2/2021	UM <sub>2</sub>		14	26	
6.	18/3/2021		DM <sub>3</sub>	36		50
7.	18/5/2021	UM <sub>3</sub>		61	97	
8.	31/5/2021			13		
	Total	3	3	365	Simple Average = 61.5 days	Simple Average = 76.5 days

(Source: Self-created)

From the above table, it is obvious that total 6 short term fluctuations have been captured by EMA. The minimum crossover period is 12 days and maximum crossover period is 138 days under the study period. Minimum duration of upward momentum is 26 days and whereas maximum upward momentum duration was 97 days, resulting into average period of upward momentum of 61 days approximate. Minimum duration of downward momentum is 50 days and whereas maximum downward momentum duration was 103 days, resulting into average period of upward momentum of 76 days approximate.



### 5.3. Moving Average Convergence Divergence (MACD)



(Source: Self-created with the help of investing.com)

It is apparent from the chart of MACD of Reliance Industries Ltd. that it had total 20 oscillations from 9 days EMA central or signal line on the dates shown on the chart for the study period. The first bearish crossover took place on 29<sup>th</sup> June 2020 where 12 days short period EMA line crossed over from above to below the 26 days long period EMA line but on 3<sup>th</sup> July 2020 it reversed and the 12 days EMA line crossed from below to above the 26 days EMA line showing bullish momentum to continue till the next crossover that took place on 15<sup>th</sup> July 2020. On 21<sup>st</sup> July 2020 the momentum started to go down till 31<sup>th</sup> July 2020 showing bearish momentum till 9<sup>th</sup> September 2020 where it started upward momentum. The upward momentum continued till 22<sup>nd</sup> September 2020 and started showing downward momentum till 13<sup>th</sup> October 2020 and went up till 15<sup>th</sup> October 2020 slightly and started to show downward momentum and by crossing the central 9 days EMA line: it went further down till 9<sup>th</sup> November 2020. From 9<sup>th</sup> November 2020 is started upward momentum 21<sup>st</sup> December 2020. From 21<sup>st</sup> December 2020 it showed very short term downward momentum till 24<sup>th</sup> December 2020. From 24<sup>th</sup> December 2020 it showed upward momentum till 5<sup>th</sup> January 2021. Then the momentum went down till 15<sup>th</sup> January 2021 when it started upward momentum till 27<sup>th</sup> January 2021 moreover, it crossed up central line. Then it started downward momentum even by crossing down central line that continued till 8<sup>th</sup> February 2021. By crossing the signal line again, but showed upward momentum that continued till 12<sup>th</sup> March 2021. Then, by crossing the central signal line the downward oscillation continued till 26<sup>th</sup> April 2021 and started upward momentum till 7<sup>th</sup> May 2021. From 7<sup>th</sup> May 2021 it showed downward momentum till 14<sup>th</sup> May 2021 and from 14<sup>th</sup> May 2021 and it continued to going upward by crossing up central signal line under the remaining study period. The Table of Momentum of MACD is as below:

Table of Momentum for MACD

S. No.	Date	MACD				
		UM	DM	Days	UM to UM Days	DM to DM Days
1.	1/6/2020			-		
2.	29/6/2020		DM <sub>1</sub>	29		
3.	3/7/2020	UM <sub>1</sub>		4		
4.	15/7/2020		DM <sub>2</sub>	12		16
5.	21/7/2020	UM <sub>2</sub>		6	18	
6.	31/7/2020		DM <sub>3</sub>	10		16
7.	9/9/2020	UM <sub>3</sub>		40	50	
8.	22/9/2020		DM <sub>4</sub>	13		53
9.	13/10/2020	UM <sub>4</sub>		21	34	
10.	15/10/2020		DM <sub>5</sub>	2		23
11.	9/11/2020	UM <sub>5</sub>		25	27	
12.	21/12/2020		DM <sub>6</sub>	42		67
13.	24/12/2020	UM <sub>6</sub>		3	55	
14.	5/1/2021		DM <sub>7</sub>	12		15
15.	15/1/2021	UM <sub>7</sub>		10	22	
16.	27/1/2021		DM <sub>8</sub>	12		22
17.	8/2/2021	UM <sub>8</sub>		12	24	
18.	12/3/2021		DM <sub>9</sub>	32		44
19.	26/4/2021	UM <sub>9</sub>		45	77	
20.	7/5/2021		DM <sub>10</sub>	11		56
21.	14/5/2021	UM <sub>10</sub>		7	18	
22.	31/5/2021			17		
	Total	10	10	365	Simple Average = 36.11 days	Simple Average = 34.67 days

(Source: Self-created)

From the above table, it is obvious that total 20 short term fluctuations have been captured by MACD. The minimum crossover period is 2 days and maximum crossover period is 45 days under the study period. Minimum duration of upward momentum is 18 days and whereas maximum upward momentum duration was 77 days, resulting into average period of upward momentum of 36 days approximate. Minimum duration of downward momentum is 16 days and whereas maximum downward momentum duration was 67 days, resulting into average period of upward momentum of 35 days approximate.

## 6. DISCUSSION

For better and comparative understanding of the methods the results are discussed in The Combined Table of Momentums as below:

**Combined Table of Momentums**

S. No.	Date	SMA		EMA		MACD		Remarks
		UM	DM	UM	DM	UM	DM	
1.	1/6/2020							
2.	29/6/2020						DM	Captured only by MACD
3.	3/7/2020					UM		Captured only by MACD
4.	15/7/2020						DM	Captured only by MACD
5.	21/7/2020					UM		Captured only by MACD
6.	31/7/2020						DM	Captured only by MACD
7.	20/8/2020		DM					Captured only by SMA
8.	8/9/2020	UM						Captured by SMA and MACD (By 1 day difference)
9.	9/9/2020					UM		
10.	22/9/2020						DM	Captured only by MACD
11.	29/9/2020		DM					Captured only by SMA
12.	13/10/2020					UM		Captured only by MACD
13.	15/10/2020						DM	Captured by EMA and MACD (By 1 day difference)
14.	16/10/2020				DM			
15.	9/11/2020					UM		Captured only by MACD
16.	9/12/2020	UM						Captured only by SMA
17.	21/12/2020						DM	Captured only by MACD
18.	24/12/2020					UM		Captured only by MACD
19.	5/1/2021		DM				DM	Captured by SMA and MACD
20.	15/1/2021			UM		UM		Captured by EMA and MACD
21.	19/1/2021	UM						Captured only by SMA
22.	27/1/2021				DM		DM	Captured by EMA and MACD
23.	29/1/2021		DM					Captured only by SMA
24.	8/2/2021					UM		Captured by SMA, EMA and MACD (By 2 days difference)
25.	10/2/2021	UM		UM				
26.	12/3/2021						DM	Captured only by MACD
27.	18/3/2021		DM		DM			Captured by SMA and EMA
28.	26/4/2021					UM		Captured by SMA and MACD (By 4 days difference)
29.	30/4/2021	UM						
30.	7/5/2021		DM				DM	Captured by SMA and MACD
31.	14/5/2021					UM		Captured by SMA, EMA and MACD (By 4 days difference)
32.	18/5/2021	UM		UM				
33.	31/5/2021							

(Source: Self-created)

It is clear from the above table that there seems to be conceptual similarity among all the three moving averages methods as they all captured similar movements within the difference ranging from two days to four days under the study period. There is a similarity between SMA and MACD as both methods captured momentums 4 times together with difference of 0 day to 4 days whereas

SMA and EMA could capture momentums only one time together with a difference of 0 day. As for as similarity between EMA and MACD is concerned, both methods captured momentum 3 times together with difference of 0 day to 1 day. The Comparative Table of Momentum is as below:

**Comparative Table of Momentum**

Momentum / Methods	SMA	EMA	MACD	Total
Captured Momentum Independently	5	0	11	16
Captured Momentum by SMA with EMA	1			1
Captured Momentum by SMA with MACD	4			4
Captured Momentum by EMA with SMA		1		1
Captured Momentum by EMA with MACD		3		3
Captured Momentum by MACD with SMA			4	4
Captured Momentum by MACD with EMA			3	3
Captured Momentum together	2	2	2	6
Total	12	6	20	38

(Source: Self-created)

MACD captured highest momentums (20) followed by SMA (12) so, MACD appears to be best methods out of the three moving average based methods. When only one method is to be considered MACD captured highest momentum (11) followed by SMA. Further when two methods are to be considered simultaneously MACD and SMA captured momentum together highest momentum (4) followed by momentum captured by MACD and EMA (3).

## 7. CONCUSSION

MACD is best moving average method out of the three methods based on moving average methods of technical analysis. Combination of MACD and SMA is preferable.

## 8. SUGGESTIONS

MACD methods should be used along with SMA for better understanding of momentums. The results of MACD and SMA should be conformed with other technical analysis tools for greater envision of the market in short term in cash segment. Investors must also take into account various factors like union budget, company performance, political and social events, climatic condition, etc., before taking a decision of investing in stocks. The scrip should also be fundamentally good. Therefore, it is advisable for a trader to make technical analysis of stocks for better returns of investment (Chitra, 2011).The Sutte indicators are preferable to predict stock movements. When compared with other indicators method (SMA and MACD) from MSE, MAD and MAPE, Sutte indicators had greater reliability (Ahmar, 2017).

## 9. IMPLICATIONS

It is implicated that a combination of different technical analysis tools should be used in real life situation to optimize the short term risk. Short term trading is different than long term investment and intraday trading as per technical analysis.

## 10. SCOPE FOR FURTHER STUDIES

MACD individually and MACD with SMA may be applied on other and larger sample base of companies and indices with other technical analysis tools specially with or without trading volume for further validation.

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