

IS TECHNICAL ANALYSIS FRUITFUL: IN CONTEXT OF INDIAN STOCK MARKET

Name of Author:

Udayan Karnatak

Assistant Professor

Amity Business School

Amity University Rajasthan.

Abstract:

Investor's objective is to get good returns from their investments. This objective can be fulfilled if they make the investment by doing proper analysis of their option where they can invest. Technical analysis provides a cue to time the investment so well that the extraordinary returns can be assured. The idea behind writing this paper is to find the effectiveness of technical analysis in context of Indian stock market. The results are in favour of technical analysis and confirm its effectiveness as a tool to implement.

Key words: Investor, stock markets, technical analysis.

CHAPTER 1: INTRODUCTION TO SECURITY ANALYSIS

Introduction to Security Analysis

There are many securities in the market like convertible debentures, deep discount bonds, zero coupon bonds, floating rate bonds, GDR's and euro currency. From this vast group of securities the investor has to choose those securities which he considers worthwhile to be included in his investment basket. This calls for a detailed analysis of the available securities.

Security Analysis is the initial stage of Portfolio Management process. This consists of examining of risk-return characteristics of a security. A simple strategy in Securities investment is to buy under priced securities and sell overpriced securities. But the problem is how to identify underpriced and overpriced securities or in other words 'misprices' securities. This is what Securities Analysis is all about.

There are two alternative approaches to Securities Analysis

1. Fundamental Analysis

"Value Investing is buying shares of a business as though you were buying the business itself.. Value investors emphasize the intrinsic value of assets and current and future profits, and pay a price equal to or less than that value." (Peter J. Sander, 2008)

This concentrates on the fundamental factors that affect the company like the EPS of the company, the dividend pay-out ratio, the competition faced by the company, the market share and the quality of management.

Technical analysis follows EIC approach i.e. the fundamental analyst studies the fundamental factors of 'Economy Industry Company'. The fundamental analyst works out the true worth or intrinsic value of the security based on its fundamentals. If the CMP is higher than the intrinsic value the stock is said to be overpriced and vice versa.

2. Technical Analysis

A technical analyst believes that share price movements are systematic and exhibit certain consistent patterns. They study past movements in price of share to identify trends

and patterns and then predict the future price movements. The CMP is compared to the future predicted price to determine the extent of mispricing. This is an approach that concentrates on price movements and ignores the fundamentals of the shares.

Comparison between Fundamental Analysis and Technical analysis

Technical analysis mainly seeks to predict short term price movements, whereas Fundamental analysis tries to establish long-term values.

The focus of technical analysis is mainly on internal market data, particularly price and volume data. The focus of fundamental analysis is on fundamental factors relating to the economy, the industry and the company.

Technical analysis appeals mostly to short term traders, whereas Fundamental analysis primarily appeals to long term investors.

Chapter 2

LITERATURE REVIEW

As we know there are two ways to trade in stock market – Technical Analysis and Fundamental Analysis. Technical Analysis is aggressive, while Fundamental Analysis is defensive.

Technical analysis involves the prediction of asset price movements from inductive analysis of past movements. We establish a number of stylized facts, including that technical analysis is widespread in the stock exchange market and that it may be profitable.

Technical Analysis has gained importance over time. Technical Analysts say they can beat the market; they try to earn more profits than the market. Efficient Market Hypothesis suggests that nobody can beat the market. This hypothesis implies that Technical Analysis is without merit. In an efficient market, the current price reflects all available information including the past history of price and trading volume.

“I used fundamentals for nine years and got rich as a technician” Martin S. Schwartz.

“Is technical analysis profitable on a stock market which has characteristics that suggest it may be inefficient?” This paper by Ben R. Marshall & Rochester H. Cahan suggests that Technical analysis is no longer profitable in New Zealand. (Ben R. Marshall, Rochester H. Cahan, 2005)

Ben R. Marshall, Sun Qian and Martin Young suggest in their paper “Is technical analysis profitable on US stocks with certain size, liquidity or industry characteristics?” that Moving Average are rarely profitable on a subset of the US stocks with certain size, liquidity and industry characteristics during the period 1990 to 2004, however they are profitable for smaller, less liquid stocks. They do not produce statistically significant profits on a stock. (Ben R. Marshall, Sun Qian, Martin Young, 2009)

Cheol-Ho Park and Scott H. Irwin indicate in their paper “WHAT DO WE KNOW ABOUT THE PROFITABILITY OF TECHNICAL ANALYSIS?” that technical trading strategies are profitable in foreign exchange markets and futures market but not in stock markets (Early Studies). Modern studies indicate that technical trading strategies consistently generate economic profits in a variety of speculative markets at least until the early 1990s. Among a total of 95 modern studies, 56 studies find positive results regarding technical trading strategies, 20 studies obtain negative results, and 19 studies indicate mixed results. Despite the positive evidence on the profitability of technical trading strategies, most empirical studies are subject to various problems in their testing procedures, e.g. data snooping, *ex post* selection of trading rules or search technologies, and difficulties in estimation of risk and transaction costs. (Cheol-Ho Park, Scott H. Irwin, 2007)

AW Lo and AC MacKinlay tested in their paper “Stock market prices do not follow random walks: evidence from a simple specification test” the random walk hypothesis for weekly stock market returns by comparing variance estimators derived from data sampled at different frequencies. The random walk model is strongly rejected for the entire sample period (1962-1985) and for all sub periods for a variety of aggregate returns indexes and size-sorted portfolios. Although the rejections are due largely to the behavior of small stocks, they cannot be attributed completely to the effects of infrequent trading or time-varying volatilities. (AW Lo, AC MacKinlay, 1988)

Wing-Keung Wong, Meher Manzur and Boon-Kiat Chew focused in their paper “How rewarding is technical analysis? Evidence from Singapore stock market” the role of technical analysis in signaling the timing of stock market entry and exit. Test statistics are introduced to test the performance of the most established of the trend followers, the Moving Average, and the most frequently used counter-trend indicator, the Relative Strength Index. Using Singapore data, the results indicate that the indicators can be used to generate significantly positive return. It is found that member firms of Singapore Stock Exchange (SES) tend to enjoy substantial profits by applying technical indicators. This could be the reason why most member firms do have their own trading teams that rely heavily on technical analysis. (Wing-Keung Wong, Meher Manzu,Boon-Kiat Chew, 2010)

Terence Tai-Leung Chong and Wing-Kam Ng examined two oscillators in their paper “Technical analysis and the London stock exchange: testing the MACD and RSI rules using the FT30” – the Moving Average Convergence–Divergence (MACD) and the Relative Strength Index (RSI) – to see if these rules are profitable. Using 60-year data of the London Stock Exchange FT30 Index, it is found that the RSI as well as the MACD rules can generate returns higher than the buy-and-hold strategy in most cases. (Terence Tai-Leung Chong, Wing-Kam Ng, 2008)

I propose to test the hypothesis that “Is Technical analysis fruitful? (In context to Indian Market)”

On the basis of some tools like RSI indicator, Moving Average Intersection.

Relative strength index (RSI) A technical indicator used to determine if a market is in an overbought or oversold condition. This indicator was developed by Welles Wilder Jr. to help determine market reversals. (PERSON, 2004)

The RSI compares the magnitude of a stock’s recent gains to the magnitude of its recent losses. This indicator is very helpful to gauge overbought and over sold conditions. The higher the number is the overbought the stock is, and the lower the number is, the more oversold the stock is.

$$RSI = 100 - \frac{100}{1+RS}$$

The RSI is calculated using a two-step process. First, the average gains and losses are identified for a specified time period. For instance, if you want to calculate the 14-day RSI— you can consider any time period, but the 14-day RSI is the most commonly used—suppose the stock went up on nine days and fell on five days. The absolute gains (stock's closing price on a given day — closing price on the previous day) on each of these nine days are added up and divided by 14 to get the average gains. Similarly, the absolute losses on each of the five days are added up and divided by 14 to get the average losses. The ratio between these values (average gains / average losses) is known as relative strength (RS). To make sure that the RSI always moves between 0 and 100, the indicator is normalized later by using the formula given below:

$$\text{RSI} = 100 - 100 / (1 + \text{RS}^*) * \text{RS} = \text{Average gains} / \text{Average losses}$$

Overbought/oversold levels: The RSI value will always move between 0 and 100; the value will be 0 if the stock falls on all 14 days, and 100, if the price moves up on all the days). This implies that the RSI can also be used to identify the overbought/oversold levels in a counter. As suggested by J Welles Wilder, the developer of this indicator, most technical analysts consider the RSI value above 70 as 'overbought zone' and below 30 as 'oversold zone'.

However, investors and traders need to adjust these levels according to the inherent volatility of the scrip. For instance, volatile stocks like Reliance Power may hit the overbought and oversold levels more frequently than stable stocks like Hindustan Unilever, if the 70 and 30 levels are maintained.

Failure swings: The main problem faced by the short-term traders who use indicators is that the stock may continue to move up despite the indicator hitting the overbought zone, or continue to go down even after the indicator hits the oversold zone. This is the reason Wilder developed a new concept called 'failure swing' for the RSI. A 'bearish failure swing' occurs when the RSI enters the overbought zone (goes above the 70 level) and comes below 70 again. In other words, a short position can be taken only when the RSI cuts the 70 lines from the top. Similarly, a 'bullish failure swing' occurs when the RSI enters the oversold zone and comes out. Both the positive and negative failure swings can be clearly seen in the chart on Reliance.

Wilder also explains the possibility of a failure swing above 70. In this case, the RSI needs to make a lower bottom above 70. As an example, consider the RSI hits 76 and then pulls back to 72, before jumping again to 78. In this case, the 'failure swing above 70' occurs when the RSI

goes below 72. So, there is no need for the traders to wait for the RSI to fall below 70. Similarly, a failure swing can take place if the RSI makes a higher top below the 30 level.

Divergence: This rule is similar to the divergence rule for other indicators as explained in the earlier issues. A positive divergence occurs when the RSI makes a higher bottom despite lower trending by share price. Similarly, a negative divergence occurs when the RSI starts falling and makes a lower top despite the share price moving higher. **Trend direction:** 'Trend is your friend' is a cardinal rule of technical analysis and the investors/traders can benefit by trading in the direction of the trend. The RSI is also used for determining and confirming the trend.

For example, it rarely falls below 40 in the case of a stock that is in a strong uptrend, and usually moves between 40 and 80 levels. This type of situation can be seen in the HCL Tech chart. In such a case, when the RSI approaches 40, it can be used as a buy signal, and when it comes close to 80, it can be a square-off signal. So, traders should not go short on a counter that is in a strong uptrend. Similarly, the RSI in a stock facing a strong downtrend usually moves between 60 and 20, and if it comes close to 60, it can be used for selling short.

Moving Averages

Technical trading rule analysis assumes that there are patterns in the market prices that will recur in the future and that these patterns can be used for predictive purposes. One popular rule for deciding when to buy and sell in the market is the moving average rule. This basically involves the calculation of a moving average of the raw price data. The simplest version of this rule indicates a buy signal whenever the price climbs above its moving average and sell signal when it drops below. The underlying notion behind this rule is that it provides a means of determining the general direction or trend of the market by examining its recent history.

For instance an n-period moving average is computed by adding together the n most recent periods of data, then dividing them by n. the average is recalculated each period by dropping the oldest data and adding the most recent, so the average moves with the data but does not fluctuate so much.

A typical moving average rule can be written as

$$m_t = \left(\frac{1}{n}\right) \sum_{i=0}^{n-1} p_{t-i}$$

According to this equation a buy signal is generated when the current price level p_t is above m_t ; otherwise a sell signal is generated. There are other variations to this rule. One is to replace the price series with a short moving average such that a buy signal is generated when the short moving average rises above the long moving average and a sell signal is generated otherwise.

Abeyratna Gunasekarage and David M Power analyzed in their paper “The profitability of moving average trading rules in South Asian stock markets” moving average trading rules using index data for four emerging South Asian capital markets (the Bombay Stock Exchange, the Colombo Stock Exchange, the Dhaka Stock Exchange and the Karachi Stock Exchange) and examines the implications of the results for the weak form of the efficient market hypothesis. The findings indicate that technical trading rules have predictive ability in these markets and reject the null hypothesis that the returns to be earned from studying *moving average* values are equal to those achieved from a naive buy and hold strategy; the employment of these techniques generates excess returns to investors in South Asian markets. (Abeyratna Gunasekarage, 2001)

Ramazan Gençay found in his paper “The predictability of security returns with simple technical trading rules” that Technical traders base their analysis on the premise that the patterns in market prices are assumed to recur in the future, and thus, these patterns can be used for predictive purposes. This paper uses the daily Dow Jones Industrial Average Index from 1897 to 1988 to examine the linear and nonlinear predictability of stock market returns with simple technical trading rules. The nonlinear specification of returns is modelled by single layer feed forward networks. The results indicate strong evidence of nonlinear predictability in the stock market returns by using the past buy and sell signals of the moving average rules. (Gençay, 1998)

Despite voluminous literature, the role of technical analysis is far from clearly understood. Technical analysis of some form is a norm in our financial markets, and consequently, the entire subject of active financial management remains intriguing in the context of market efficiency. We need considerably more work to make things more transparent.

RESEARCH METHODOLOGY

The research is based on secondary data. The objective of the paper was to examine the persistence of Technical Analysis in Indian Stock market using two tools RSI indicator and Variable Moving Average.

Exploratory Research has been carried out using closing prices of top 30 blue-chip companies represented in BSE's benchmark index SENSEX from period 1 January 2013 to 31 December 2013. This period is chosen because it quite stable after the 2008 recession.

Note we have used the most recent data to avoid the effect of 2008 recession and only top 30 companies are chosen so that there can be generality in results.

RSI

The data set is Bombay Stock Exchange benchmark Index SENSEX's top 30 blue chip companies between 1st January 2013 and 31st December 2013.

It was my observation that most of the analysts in their research papers use 70 as over-bought and 30 as over-sold, although some researchers may disagree and take 80 as over-bought and 20 as over-sold, but as convention and by the theory developed by J. Welles Wilder Jr. I will be using 70-OB and 30-OS.

- If RSI value is higher than 70 the decision is a sell signal.
- If RSI value is lower than 30 the decision is a buy signal.

VARIABLE MOVING AVERAGE

The data set is daily closing prices of the Bombay Stock Exchange benchmark Index's 30 companies as represented in SENSEX. We discuss a version of Moving Average, the variable moving average in this paper. A Variable Moving Average consists of comparison of two Simple Moving Averages a longer and a shorter. In this case I would be taking both longer Moving

Averages of 100 days and 200 days to predict the long trend. Signals are generated by the short-term Moving Average crossing above or below the longer-term Moving Average.

Note that changes in price trend are identified by short-term Moving Average crossing its long-term Moving Average, not by the reversal in the direction of the Moving Average.

A buy position is a long position, and a buy signal is indicated when the short moving average exceeds the long moving average;

$$\frac{\sum_{s=1}^S C_{i,t}}{S} > \frac{\sum_{l=1}^L C_{i,t-1}}{L} = \text{BUY}$$

Where,

$C_{i,t}$ is the daily close price of the stock used to compute the short average over the period S (100 days)

$C_{i,t-1}$ is the daily close price of the stock used to compute the long average over the period L (200 days)

S represents short period of 100 days

L represents long period of 200 days

The returns are not adjusted by the inflation. The test is repeatedly daily with the moving average throughout the sample. The buy position is maintained until a sell signal is indicated. With a sell signal the investor is not short, but out of the market.

$$\frac{\sum_{s=1}^S C_{i,t}}{S} < \frac{\sum_{l=1}^L C_{i,t-1}}{L} = \text{SELL}$$

The sell position is maintained until a buy signal is indicated.

Findings

STOCK NAME	BUY DATE	SELL DATE	BUY RATE	SELL RATE	HOLDING PERIOD	REALIZED GAIN/LOSS	ANNUAL RETURN IN PERCENT)
AXIS BANK	2/21/2013	4/23/2013	1402	1443	44	41	24.26
AXIS BANK	6/4/2013	9/17/2013	1404	1050	76	-354	-121.09
AXIS BANK	11/11/2013	12/2/2013	1077	1209	16	132	279.60
BAHRTI AIRTEL	2/8/2013	4/25/2013	320.8	309.7	55	-11.1	-22.96
BAHRTI AIRTEL	5/25/2013	7/16/2013	299.4	319.7	37	20.3	66.89
BAHRTI AIRTEL	9/2/2013	9/17/2013	300	337.2	12	37.2	377.17
BAJAJ AUTO	1/21/2013	4/25/2013	2060	1833	69	-227	-58.29
BAJAJ AUTO	6/6/2013	7/1/2013	1746	1920	18	174	202.08
BAJAJ AUTO	8/7/2013	9/6/2013	1779	1916	23	137	122.21
BHEL	1/28/2013	4/29/2013	228.3	191.7	66	-36.6	-88.66
BHEL	6/10/2013	7/12/2013	185.5	187.4	25	1.9	14.95
BHEL	7/26/2013	9/5/2013	158.3	136.9	30	-21.4	-164.48
BHEL	10/28/2013	11/28/2013	136.5	150.1	24	13.6	151.53
CIPLA LTD	1/24/2013	3/15/2013	391.5	387.8	37	-3.7	-9.32
CIPLA LTD	4/6/2013	6/21/2013	375.1	381.4	55	6.3	11.15
CIPLA LTD	7/8/2013	9/6/2013	400	438.4	45	38.4	77.87
COALINDIA	1/23/2013	5/28/2013	347.7	325.9	90	-21.8	-25.43
COALINDIA	10/24/2013	11/9/2013	301.8	293.2	12	-8.6	-86.67
COALINDIA	6/17/2013	12/6/2013	279.2	290.1	125	10.9	11.40

DR. REDDY	2/15/2013	4/8/2013	1836	1934	37	98	52.66
GAIL LTD	2/6/2013	4/25/2013	337.6	343.4	57	5.8	11.00
GAIL LTD	5/25/2013	7/3/2013	323.1	329.4	28	6.3	25.42
GAIL LTD	7/31/2013	9/17/2013	301.6	315.8	35	14.2	49.10
GAIL LTD	11/13/2013	12/5/2013	326.5	343.9	17	17.4	114.42
HDFC	1/1/2013	2/20/2013	834.6	817.4	37	-17.2	-20.33
HDFC	4/8/2013	4/26/2013	758.3	871.9	15	113.6	364.53
HDFC	6/5/2013	9/17/2013	843.9	805	75	-38.9	-22.43
HDFC							
BANK	1/9/2013	2/19/2013	667	676	30	9	16.42
HDFC							
BANK	3/1/2013	4/12/2013	622	642.5	31	20.5	38.81
HDFC							
BANK	6/7/2013	7/11/2013	677.5	686.5	25	9	19.39
HDFC							
BANK	7/31/2013	9/17/2013	610.5	643	35	32.5	55.52
HDFC							
BANK	11/13/2013	12/10/2013	635	696	20	61	175.31
HERO							
MOTOCORP	1/9/2013	4/25/2013	1847	1616	77	-231	-59.29
HERO							
MOTOCORP	6/17/2013	7/11/2013	1629	1709	19	80	94.34
HERO							
MOTOCORP	11/22/2013	12/9/2013	1980	2160	12	180	276.52
HINDALO	1/21/2013	4/25/2013	122.7	97.6	69	-25.1	-108.21
HINDALO	4/6/2013	8/23/2013	101.9	104.1	100	2.2	7.88
HINDALO	10/28/2013	11/18/2013	107.6	118.6	16	11	233.21
HUL	1/11/2013	3/26/2013	498.3	471.7	53	-26.6	-36.76
HUL	8/6/2013	9/10/2013	605	652.5	26	47.5	110.22
ICICI BANK	2/15/2013	4/17/2013	1124	1105	44	-19	-14.02

ICICI BANK	6/10/2013	9/6/2013	1104	960	65	-144	-73.24
ICICI BANK	11/22/2013	12/11/2013	1024	1147	14	123	313.16
INFOSYS LTD	3/26/2013	5/13/2013	2868	2339	35	-529	-192.35
INFOSYS LTD	9/30/2013	10/9/2013	3014	3104	8	90	136.24
ITC LTD	1/11/2013	1/25/2013	273.5	299.4	11	25.9	314.23
ITC LTD	2/20/2013	3/18/2013	298.8	304.1	19	5.3	34.07
ITC LTD	4/9/2013	4/26/2013	286.8	319.1	14	32.3	293.62
ITC LTD	6/18/2013	7/10/2013	330	346.5	17	16.5	107.35
ITC LTD	8/6/2013	9/17/2013	330.9	338.5	31	7.6	27.04
L &T	1/17/2013	3/18/2013	1019	1005	43	-14	-11.66
L &T	4/5/2013	4/25/2013	900	1013	15	113	305.52
L &T	6/4/2013	7/12/2013	936	993.3	29	57.3	77.05
L &T	9/4/2013	9/11/2013	708	816	6	108	927.97
M&M	1/18/2013	4/25/2013	883.3	909.3	70	26	15.35
M&M	7/18/2013	9/18/2013	884	845	45	-39	-35.78
MARUTI SUZUKI	2/14/2013	4/11/2013	1490	1425	41	-65	-38.84
MARUTI SUZUKI	3/6/2013	7/1/2013	1567	1603	84	36	9.98
MARUTI SUZUKI	7/16/2013	9/17/2013	1418	1380	46	-38	-21.26
NTPC	2/6/2013	2/17/2013	151.2	154	8	2.8	84.49
NTPC	3/18/2013	4/25/2013	145.4	154	29	8.6	74.44
NTPC	6/19/2013	9/16/2013	145.5	142.8	64	-2.7	-10.58
ONGC	2/7/2013	5/2/2013	317.8	328.1	61	10.3	19.39
ONGC	6/11/2013	9/18/2013	308.3	282	72	-26.3	-43.25
ONGC	10/10/2013	10/21/2013	274.4	285.3	8	10.9	181.24
ONGC	11/21/2013	12/2/2013	272	292.8	8	20.8	348.90

RELIANCE	2/7/2013	5/16/2013	868	839.1	71	-28.9	-17.12
RELIANCE	8/5/2013	9/11/2013	850.2	887.1	28	36.9	56.58
RELIANCE	9/30/2013	10/17/2013	824	894.7	14	70.7	223.70
RELIANCE	11/8/2013	12/11/2013	877.3	878.7	24	1.4	2.43
SBIN	2/6/2013	4/17/2013	2336	2237	51	-99	-30.33
SBIN	5/30/2013	9/18/2013	2084	1683	80	-401	-87.79
SBIN	9/10/2013	10/29/2013	1630	1720	36	90	55.98
STERLITE IND.	1/22/2013	4/30/2013	113.1	95.7	71	-17.4	-79.09
STERLITE IND.	6/7/2013	7/12/2013	87.7	88.4	26	0.7	11.21
STERLITE IND.	7/30/2013	8/26/2013	72.4	90.1	20	17.7	446.17
SUN PHARMA	1/21/2013	2/7/2013	305.2	373.3	14	68.1	581.74
SUN PHARMA	6/18/2013	7/3/2013	486.2	511.1	12	24.9	155.77
SUN PHARMA	8/20/2013	9/11/2013	506.7	557.3	17	50.6	214.41
TATA MOTORS	1/30/2013	4/24/2013	298.9	286	61	-12.9	-25.82
TATA MOTORS	6/19/2013	9/10/2013	291.4	339.8	60	48.4	101.04
TATA POWER	2/6/2013	7/17/2013	98.3	90.7	116	-7.6	-24.33
TATA POWER	8/6/2013	9/26/2013	73.7	81.9	38	8.2	106.87
TATA POWER	11/21/2013	12/4/2013	77.2	81.1	10	3.9	184.39
TATA	1/22/2013	5/6/2013	410.9	322.8	75	-88.1	-104.34

STEEL							
TATA STEEL	5/23/2013	8/22/2013	302.6	275.2	66	-27.4	-50.08
TATA STEEL	10/1/2013	11/13/2013	278.1	361.1	32	83	340.42
TCS	4/5/2013	5/16/2013	1493	1456	30	-37	-30.15
TCS	6/20/2013	7/11/2013	1405	1544	16	139	225.69
TCS	9/25/2013	10/4/2013	1955	2063	8	108	252.05
TCS	11/5/2013	12/26/2013	2097	2102	38	5	2.29
WIPRO LTD	4/15/2013	5/16/2013	318.3	346.7	24	28.4	135.69
WIPRO LTD	5/21/2013	6/20/2013	338.7	346.7	23	8	37.48
WIPRO LTD	11/11/2013	12/10/2013	481.3	511.3	22	30	103.41

TABLE: NET RETURN ON STOCKS (IN FIGURES)

STOCK NAME	TOTAL GAIN/LOSS	REALIZED
AIRTEL	46.4	
AXIS BANK	-181	
BAJAJ AUTO	84	
BHEL	-42.5	
CIPLA	41	
COAL INDIA	-19.5	
DR. REDDY	98	
GAIL	43.7	
HDFC	57.5	
HDFC BANK	132	
HERO	29	

MOTOCORP	
HINDALCO	-11.9
HUL	20.9
ICICI BANK	-40
INFOSYS	-439
ITC	87.6
L&T	264.3
M&M	-13
MARUIT	
SUZUKI	-67
NTPC	8.7
ONGC	15.7
RELIANCE	80.1
SBIN	-410
STERLITE	
IND.	1
SUN PHARMA	143.6
TATA	
MOTORS	35.5
TATA POWER	4.5
TATA STEEL	-32.5
TCS	215
WIPRO	66.4
NET RETURN	218.5

TABLE: VARIABLE MOVING AVERAGE

STOCK NAME	BUY DATE	SELL DATE	BUY RATE	SELL RATE	HOLDING PERIOD	REALIZED GAIN/LOSS	ANNUAL RETURN IN PER CENT)
AIRTEL	1/29/2013	7/3/2013	298	303	112	5	5.47

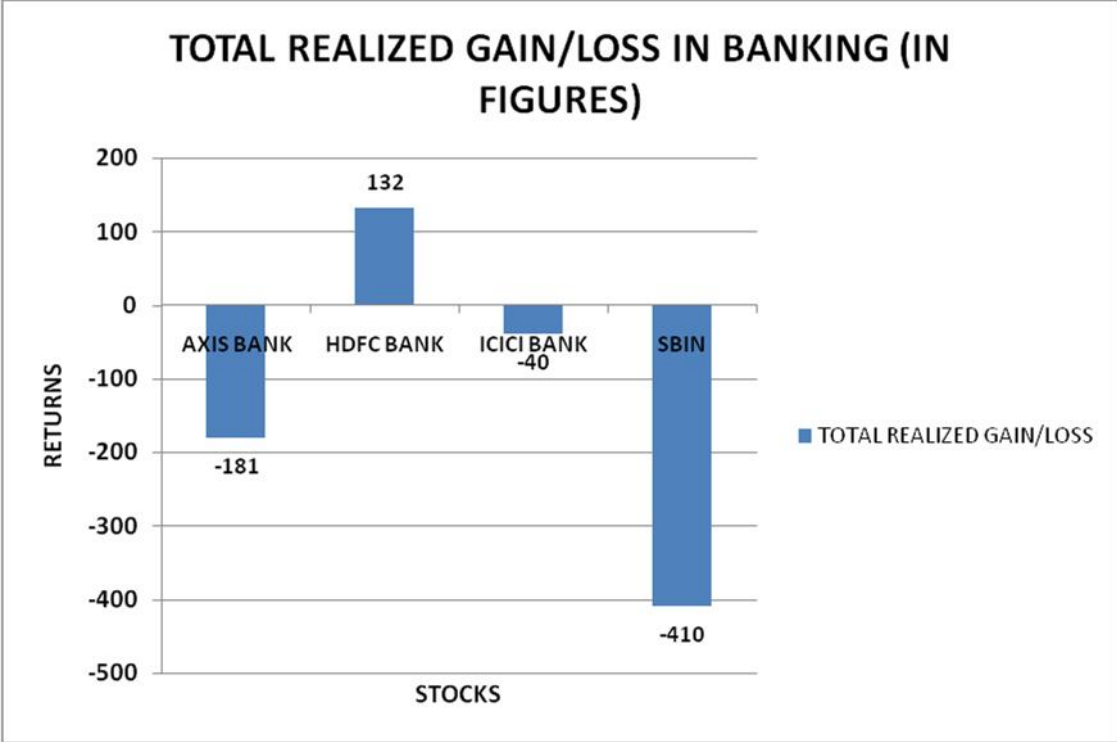
HINDALCO	1/24/2013	3/6/2013	118.3	116.3	30	-2	-20.57
INFOSYS	1/14/2013	8/7/2013	2415	2571	148	156	15.93
WIPRO	2/6/2013	7/2/2013	380.5	381	105	0.5	0.46

**NOTE- Only 4 stocks out of 30 generated buy and sell signal.

SECTOR-WISE RETURNS

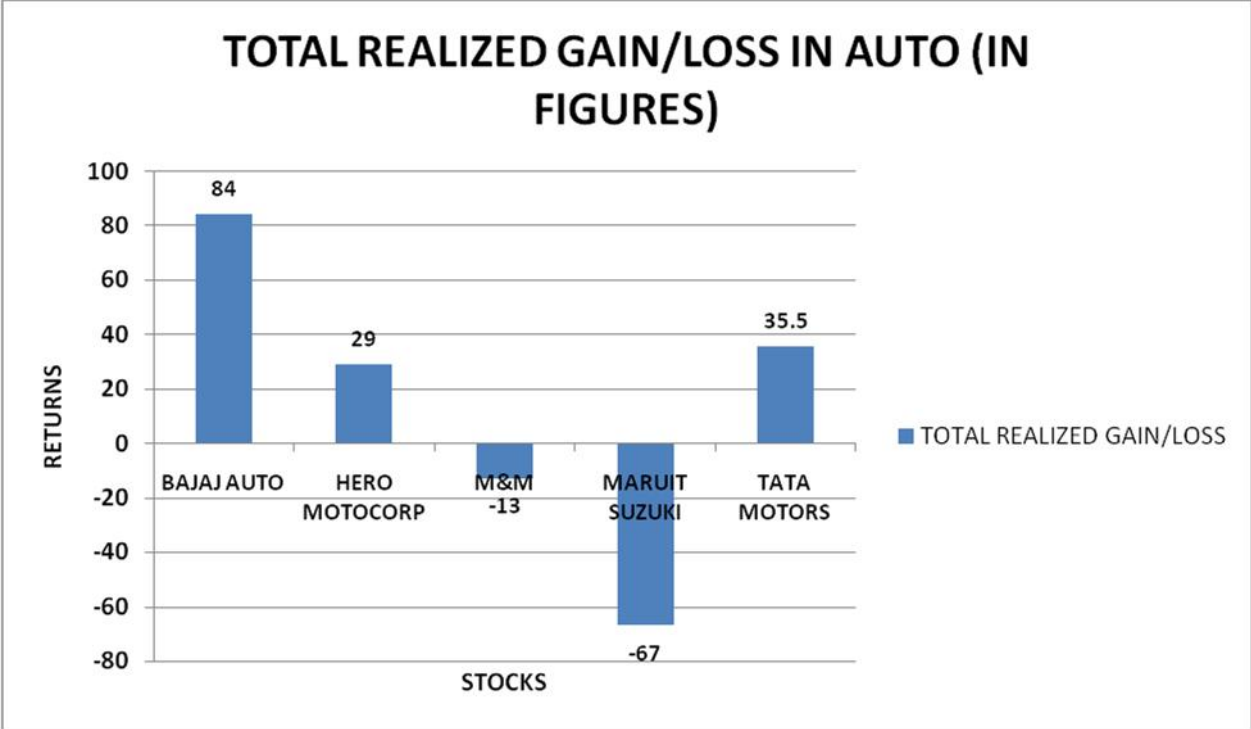
BANKING

STOCK NAME	TOTAL REALIZED GAIN/LOSS
AXIS BANK	-181
HDFC BANK	132
ICICI BANK	-40
SBIN	-410
TOTAL	-499



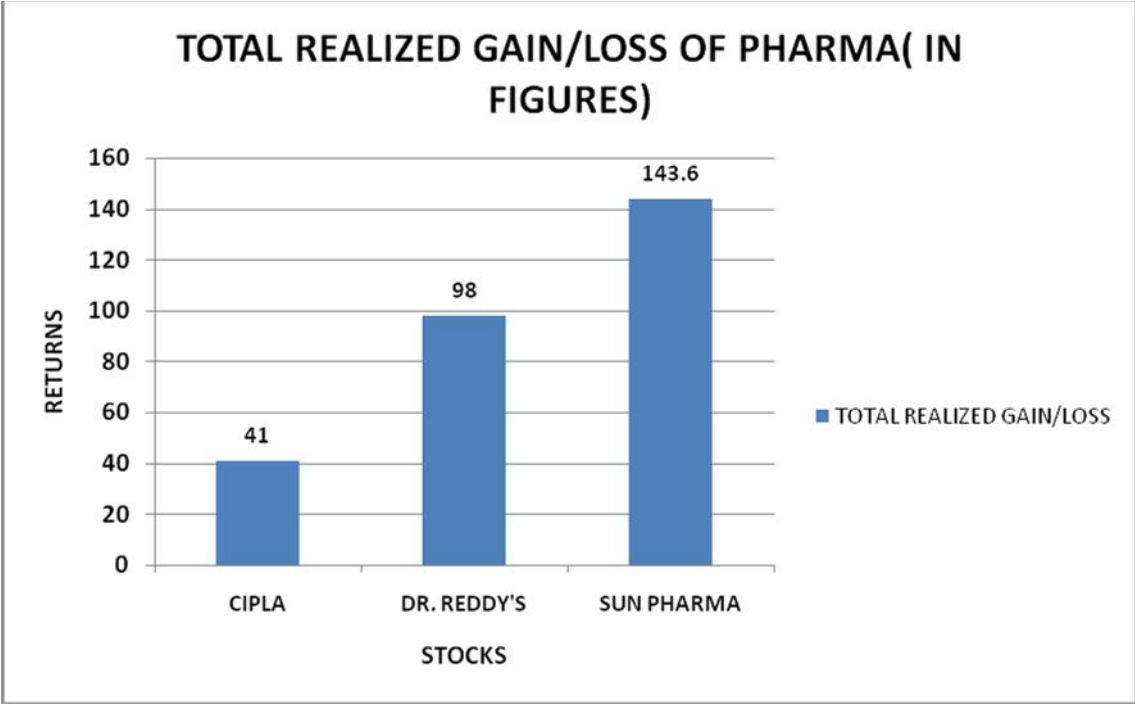
AUTO

STOCK NAME	TOTAL REALIZED GAIN/LOSS
BAJAJ AUTO	84
HERO MOTOCORP	29
M&M	-13
MARUIT	
SUZUKI	-67
TATA MOTORS	35.5
TOTAL	68.5



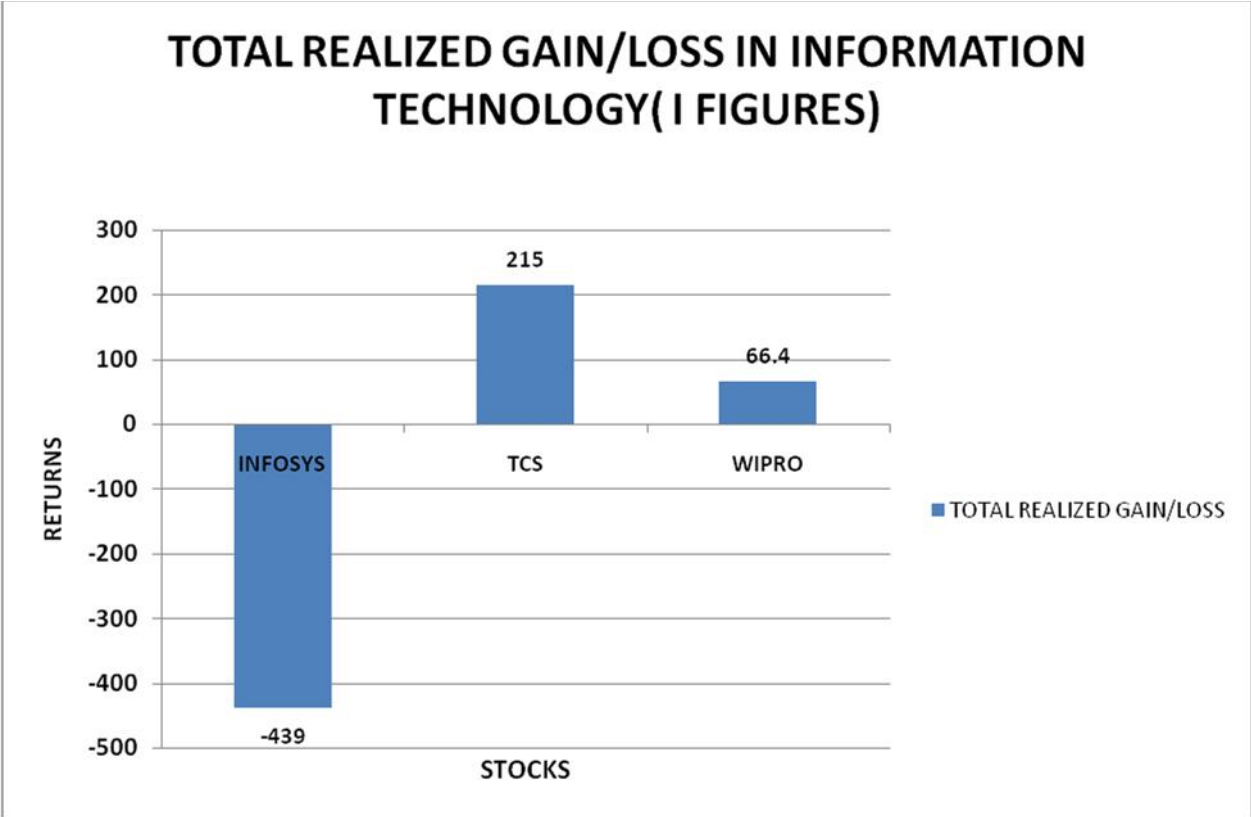
PHARMA

STOCK NAME	TOTAL REALIZED GAIN/LOSS
CIPLA	41
DR. REDDY	98
SUN PHARMA	143.6
TOTAL	282.6



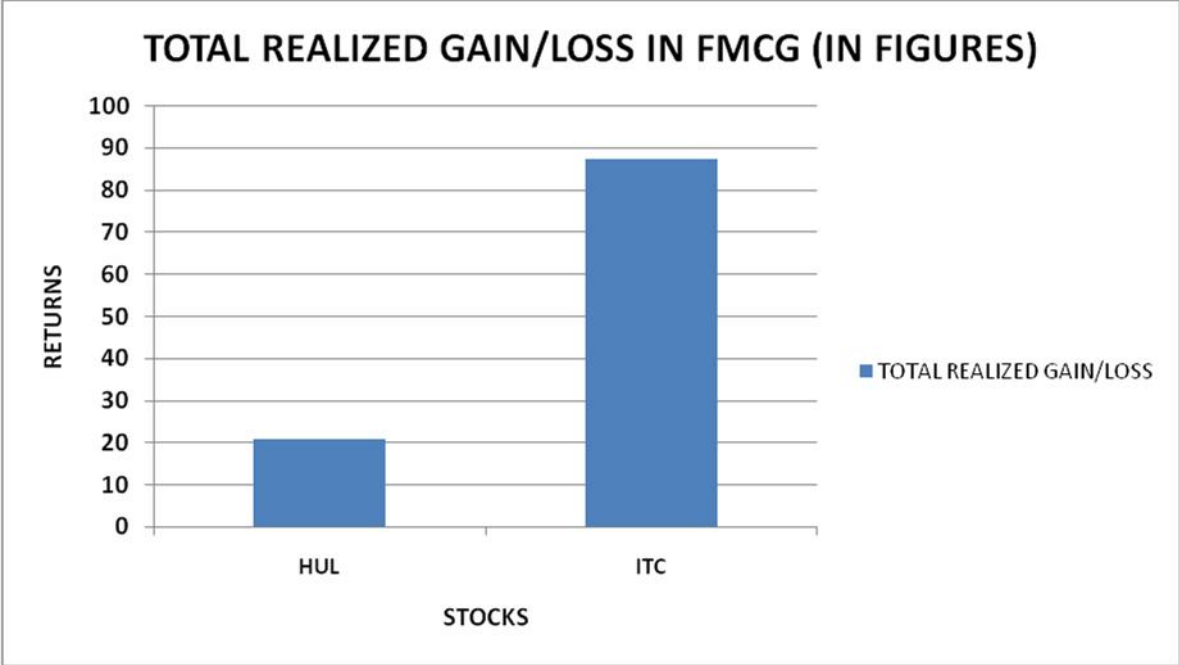
INFORMATION TECHNOLOGY

STOCK NAME	TOTAL REALIZED GAIN/LOSS
INFOSYS	-439
TCS	215
WIPRO	66.4
TOTAL	-157.6



FMCG

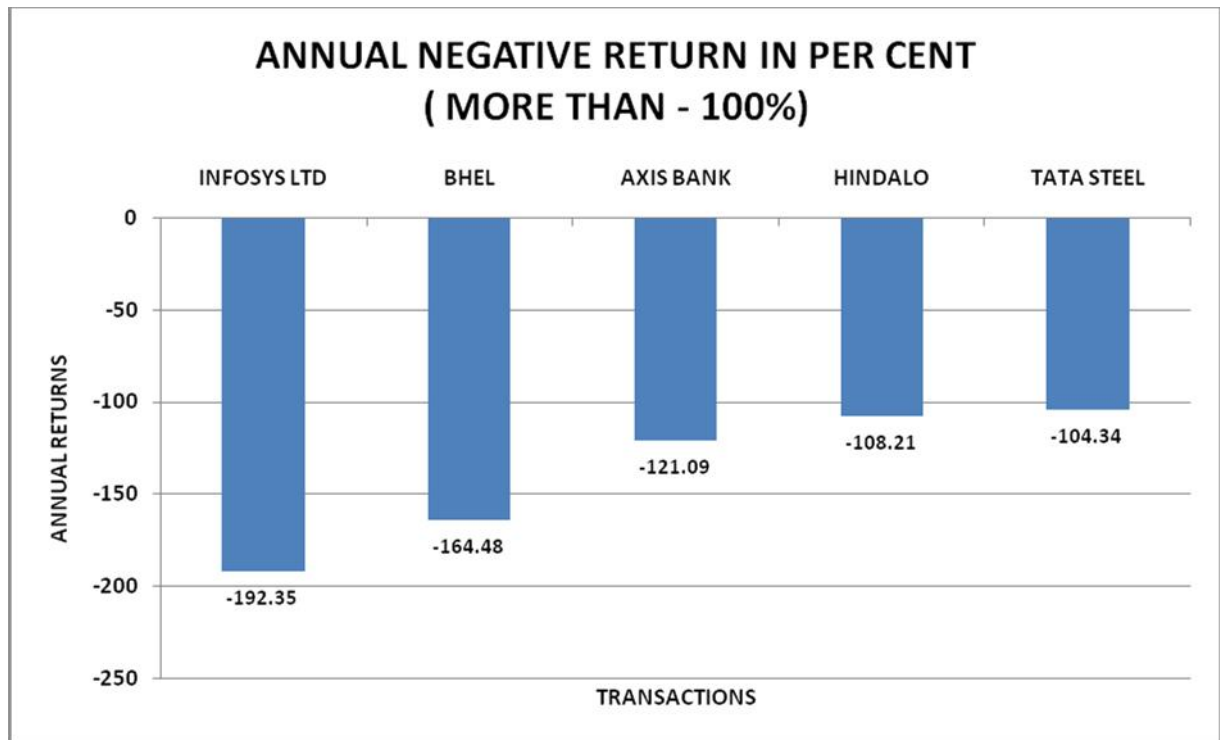
STOCK NAME	TOTAL REALIZED GAIN/LOSS
HUL	20.9
ITC	87.6
TOTAL	108.5



Negative Returns more than -100%

STOCK NAME	ANNUAL RETURN(IN PER CENT)
INFOSYS LTD	-192.35
BHEL	-164.48
AXIS BANK	-121.09
HINDALO	-108.21

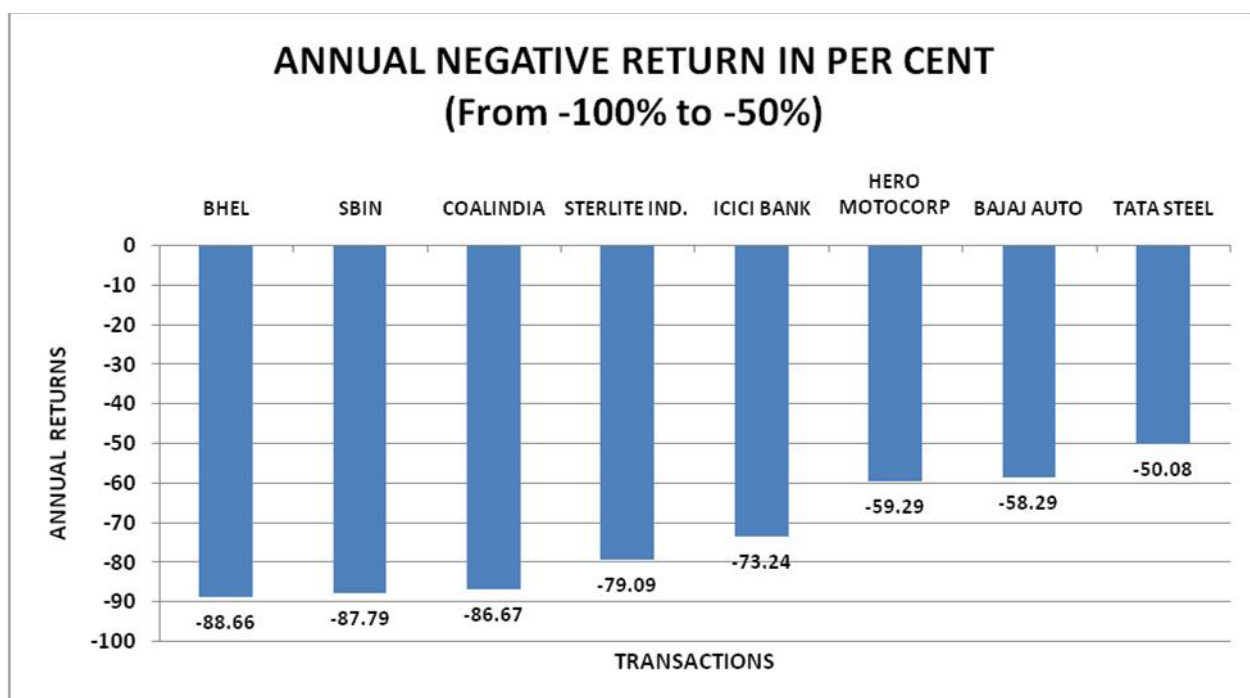
TATA STEEL	-104.34
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Negative Returns (From -100% to -50%)

STOCK NAME	ANNUAL RETURN(IN PER CENT)
BHEL	-88.66
SBIN	-87.79
COALINDIA	-86.67
STERLITE IND.	-79.09

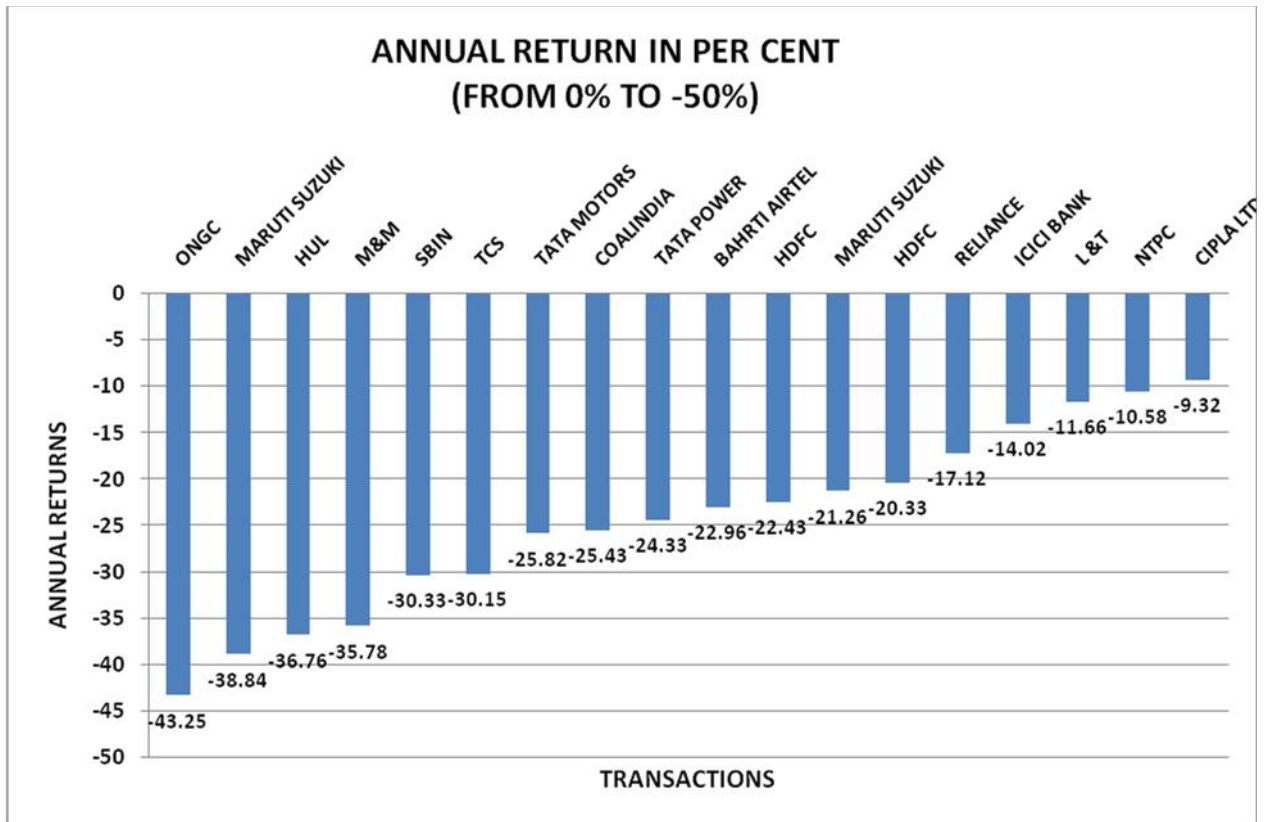
ICICI BANK	-73.24
HERO	
MOTOCORP	-59.29
BAJAJ AUTO	-58.29
TATA STEEL	-50.08



Negative Returns (From -50% to 0%)

STOCK NAME	ANNUAL RETURN(IN PER CENT)
ONGC	-43.25
MARUTI SUZUKI	-38.84

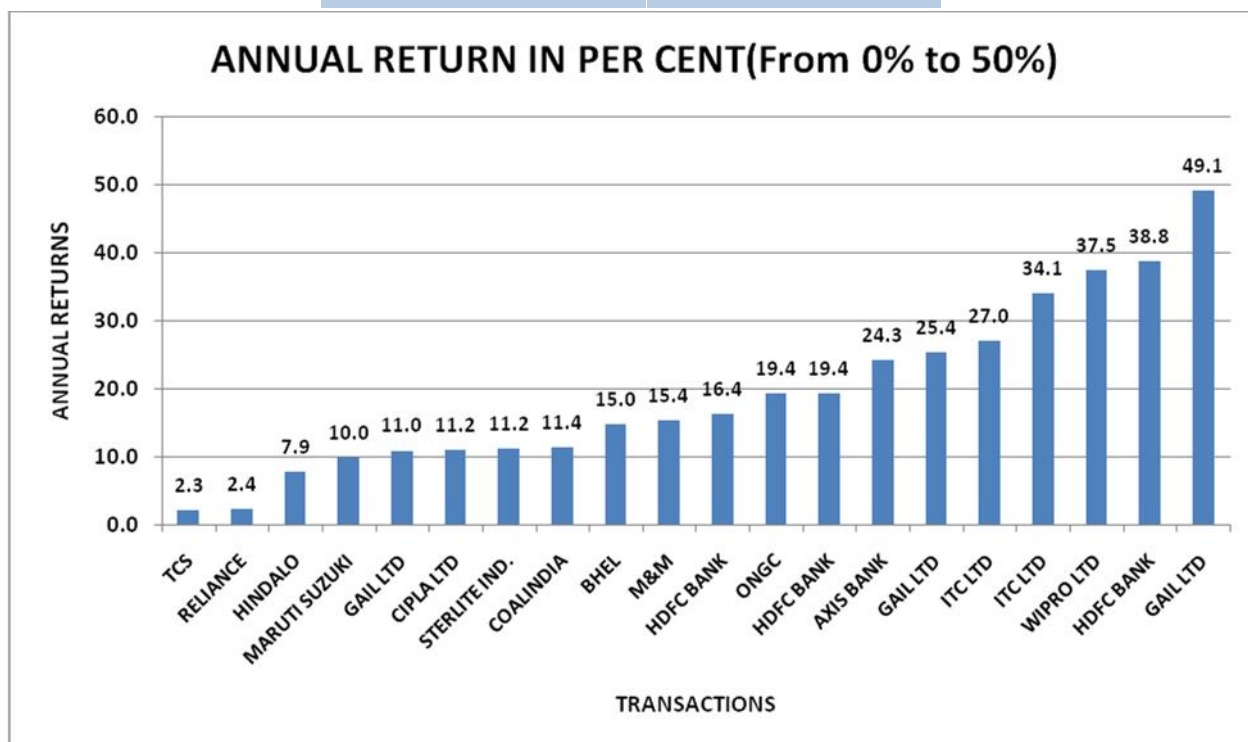
HUL	-36.76
M&M	-35.78
SBIN	-30.33
TCS	-30.15
TATA MOTORS	-25.82
COALINDIA	-25.43
TATA POWER	-24.33
BAHRTI AIRTEL	-22.96
HDFC	-22.43
MARUTI SUZUKI	-21.26
HDFC	-20.33
RELIANCE	-17.12
ICICI BANK	-14.02
L &T	-11.66
NTPC	-10.58
CIPLA LTD	-9.32



Positive Returns In Per cent (From 0% to 50%)

STOCK NAME	ANNUAL RETURN(IN PER CENT)
TCS	2.3
RELIANCE	2.4
HINDALO	7.9
MARUTI SUZUKI	10.0
GAIL LTD	11.0
CIPLA LTD	11.2
STERLITE IND.	11.2
COALINDIA	11.4
BHEL	15.0

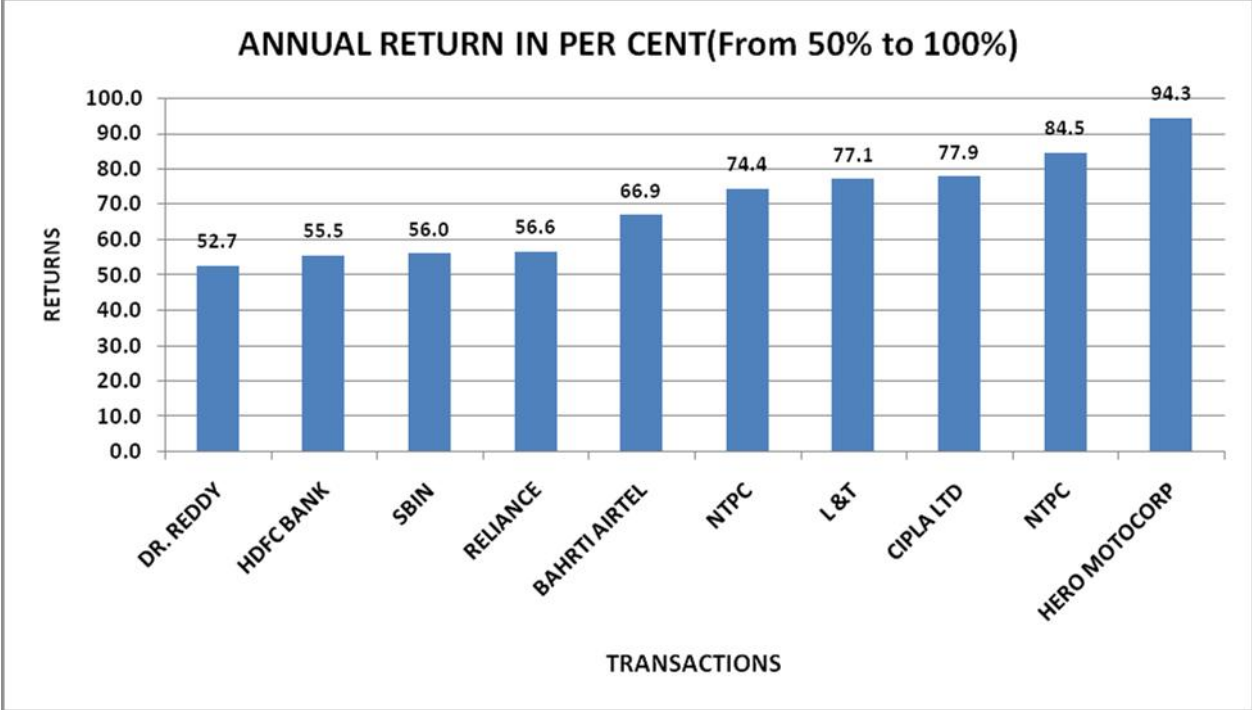
M&M	15.4
HDFC BANK	16.4
ONGC	19.4
HDFC BANK	19.4
AXIS BANK	24.3
GAIL LTD	25.4
ITC LTD	27.0
ITC LTD	34.1
WIPRO LTD	37.5
HDFC BANK	38.8
GAIL LTD	49.1



Positive Returns In Per cent (From 50% to 100%)

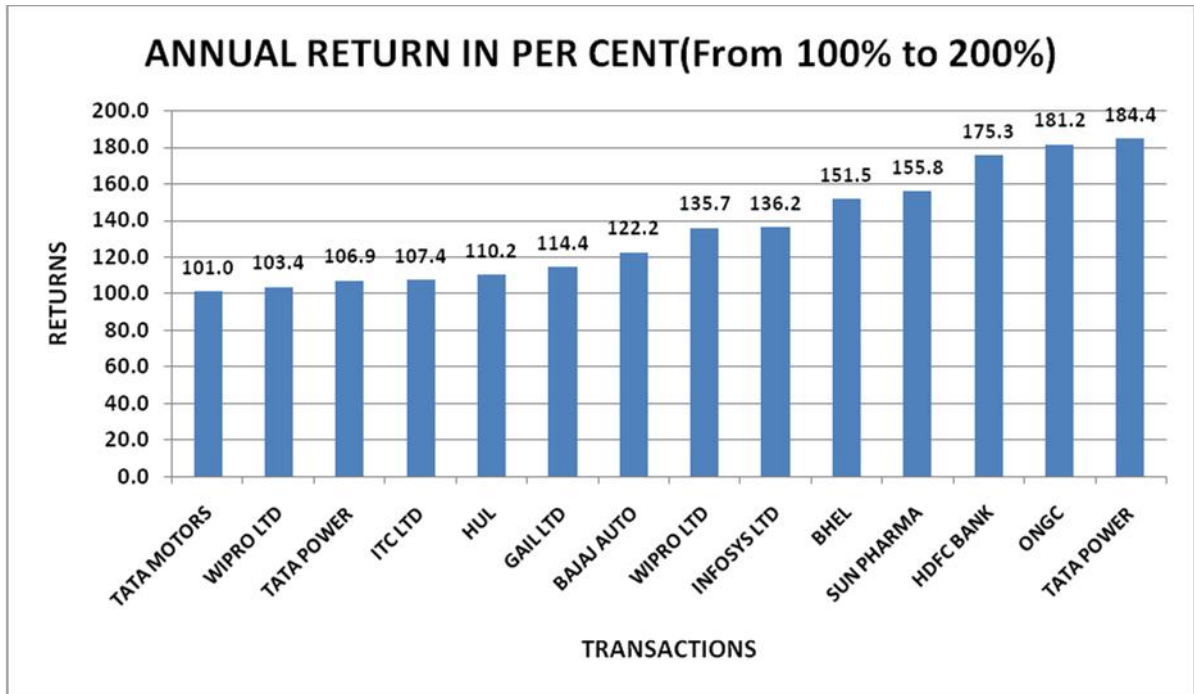
STOCK NAME	ANNUAL RETURN(IN PER
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	CENT)
DR. REDDY	52.66
HDFC BANK	55.52
SBIN	55.98
RELIANCE	56.58
BAHRTI	
AIRTEL	66.89
NTPC	74.44
L &T	77.05
CIPLA LTD	77.87
NTPC	84.49
HERO	
MOTOCORP	94.34



Positive Returns In Per cent (From 100% to 200%)

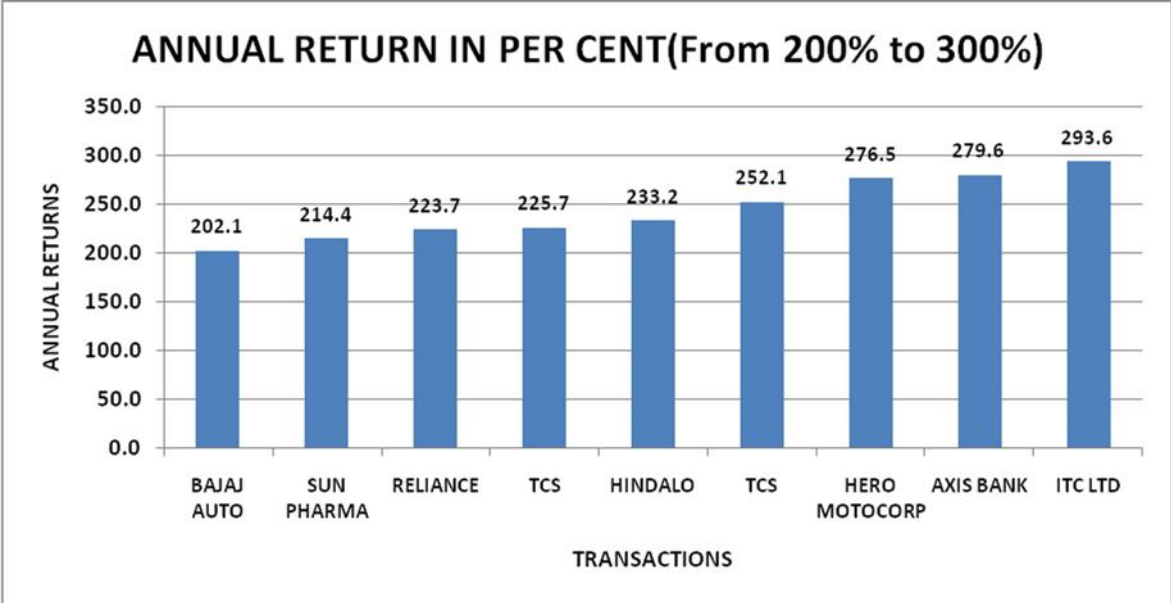
STOCK NAME	ANNUAL RETURN(IN PER CENT)
TATA MOTORS	101.0
WIPRO LTD	103.4
TATA POWER	106.9
ITC LTD	107.4
HUL	110.2
GAIL LTD	114.4
BAJAJ AUTO	122.2
WIPRO LTD	135.7
INFOSYS LTD	136.2
BHEL	151.5
SUN PHARMA	155.8
HDFC BANK	175.3
ONGC	181.2
TATA POWER	184.4



Positive Returns In Per cent (From 100% to 200%)

STOCK NAME	ANNUAL RETURN(IN PER CENT)
BAJAJ AUTO	202.1
SUN PHARMA	214.4
RELIANCE	223.7
TCS	225.7
HINDALO	233.2
TCS	252.1
HERO MOTOCORP	276.5
AXIS BANK	279.6

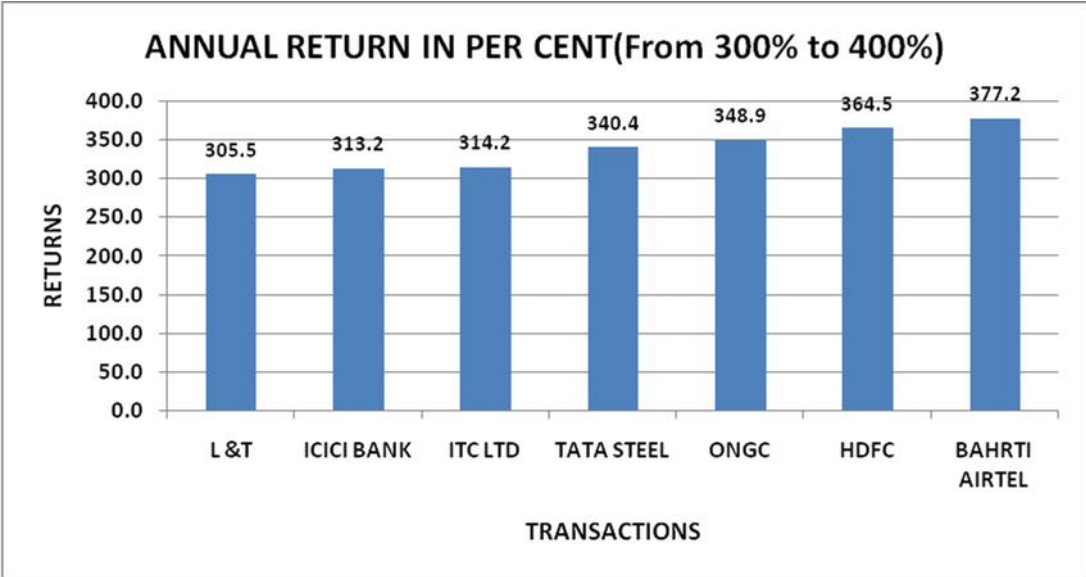
ITC LTD	293.6
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Positive Returns In Per cent (From 100% to 200%)

STOCK NAME	ANNUAL RETURN(IN PER CENT)
L &T	305.5
ICICI BANK	313.2
ITC LTD	314.2

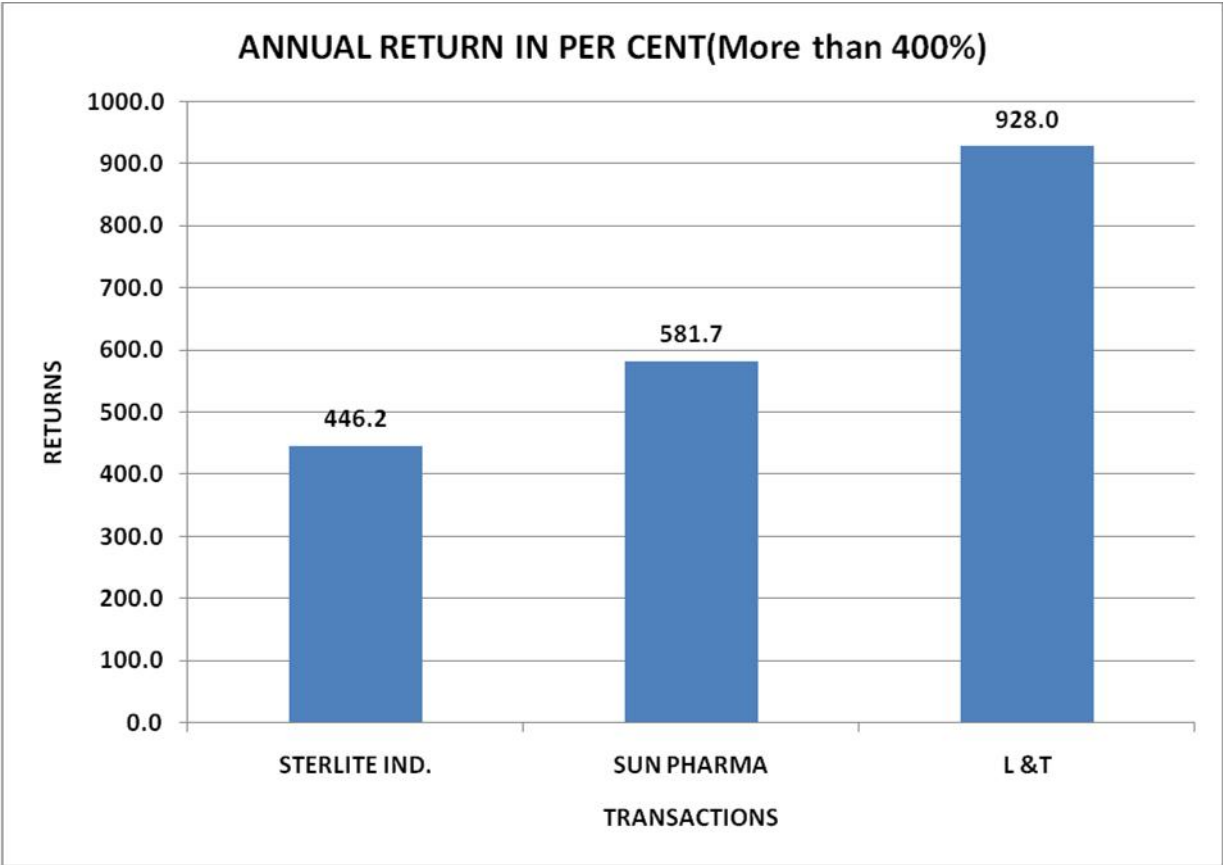
TATA	
STEEL	340.4
ONGC	348.9
HDFC	364.5
BAHRTI	
AIRTEL	377.2



Positive Returns In Per cent (More than 400%)

STOCK NAME	ANNUAL RETURN(IN PER
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	CENT)
STERLITE IND.	446.17
SUN PHARMA	581.74
L &T	927.97



LIMITATIONS OF RESEARCH

1. The time frame is of one year only.
2. The transaction costs like brokerage were ignored while calculating the returns calculating the returns.
3. Only two technical indicators were used in the research.
4. Indicators were applied on only S&P BSE 30 companies; it could be applied to indexes too.

CONCLUSION

The total return generated by using the RSI indicator is Rs.218.5. The most profitable sector was Pharmaceutical. Other sectors that gave positive return were FMCG and AUTO.

Banking and IT gave negative returns. Out of 94 transactions 31 transactions gave negative return and 73 transactions fetched positive returns.

The variable moving average generated very few signals because we were using 100 days and 200 days moving average.

RSI is a better indicator than Variable moving average as it generated more returns. The overall returns generated are positive so it proves that technical analysis is fruitful in Indian Stock Market.

In general one can conclude that technical indicators can play a useful role in timing stock market entry and exits. By applying technical indicators member firms of BSE can earn substantial profits. It is thus not surprising that most member firms do have their own trading team that relies heavily on technical analysis.

Note that the result is based on normality assumption invoking the law of large number. When the test is small, the normality assumption may not be valid.

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