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A Study on Technical Indicators in online Share Trading And Its Impact on Profitability Using A Select Stock From Banking Sector in NSE India –A Comparative Approach

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ABSTRACT: *In finance, Technical analysis is a part of Security analysis which analyses the movement of prices of securities in order to determine the trade entry and exit points and also to predict the immediate market trend. The present study is focused in comparing the effectiveness through analyzing the profitability of the most popular technical indicators namely, Moving Average Convergence and Divergence, Relative Strength Index, Stochastic Oscillator, Average Directional Index and Commodity Channel Index. For this purpose, the prices of State Bank of India from the Banking sector of National Stock Exchange (NSE), India has been analyzed for the period of ten years from 1.1.2007 to 31.12.2016. Trading signals for each of the five indicators were noted through Money control website following the unique rules of those indicators*.

Keywords*: Average Directional Index, Commodity Channel Index, Moving Average Convergence and Divergence, Profitability, Relative Strength Index, Security Analysis, Stochastic Oscillator, Technical Analysis, Technical indicators.*

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I. Introduction

The inception of technical analysis was from Joseph de la Vega's accounts of the Dutch markets in the 17th century.The principles of technical analysis derive from the observation of financial markets over hundreds of years. The technical approach to investment is essentially a reflection of the idea that prices move in trends that are determined by the changing attitudes of investors towards a variety of economic, monetary, political, and psychological forces. The art of technical analysis, for it is an art, is to identify a trend reversal at a relatively early stage and ride on that trend until the weight of the evidence shows or proves that the trend has reversed (Pring 2002). So technical analysis involves in analyzing the trend of a stock and also guides the trader when to buy and sell a particular stock. A number of technical indicators in technical analysis have been spawned recently for this purpose.This research work is focused in comparing the effectiveness of the five of the most popular technical indicators.

II. Literature review

Bernd (2002) The study focused on investigating the profitability of one of the chartists trading rules namely head and shoulder rule in foreign exchange markets. Data used for the empirical analysis includes daily spot exchange rates for US Dollar, the German Mark, the British Pound, the Swiss Franken and the Japanese Yen. The study concluded that using this head and shoulder trading rule leads to 50% positive mean returns to the traders.

Mitra (2010) This research paper analyses the profitability of moving average based trading rules in the Indian stock market using four stock index series. The study found that most technical trading rules are able to capture the direction of the market movements reasonably well and gave significant positive returns both in the long and short positions.

Antoniou et al. (2010) The researchers have used 63 stocks traded on Istanbul Stock Exchange in the period of five years for proving the return predictability of technical analysis. The results reveal that technical analysis on volume can aid the prediction of returns which cannot be predicted by the analysis of past returns in isolation.

Pinakin (2013) Comparative analysis between MACD and Stochastic oscillator was made in this study. The researcher focused on choosing the method giving highest signal, best profit and highest average return. Number of signals given by both the indicators was assessed and the best out of it was MACD as it gives more signals than stochastic oscillator.

MassoudMetghalchi et al. (2013) The researchers applied several well-known and popular technical indicators to the daily data for the Vietnam Ho Chi Minh stock index (VSI). Moving average rules, Relative Strength index, Parabolic Stop and Reverse, Directional movement system, Stochastic and Moving Average Convergence and Divergence were applied and the results strongly support the predictive power of these technical trading rules.

III. Need for the study

Many studies have been conducted so far to determine the predictive power of technical analysis, some of the studies were also focused on measuring the profitability of trading rules but comparative study between the technical indicators available has not been done in this perspective. This research paper attempts to make a comparative study among the five of the most popular technical indicators of technical analysis using a single stock.

IV. Objectives of the study

- To study the price movement of select stock in Banking sector of NSE India.
- To study technical indicators applied in technical analysis of stocks.
- To compare and analyze the profitability of trading using MACD, RSI, Stochastic Oscillator, ADX and CCI.
- To give suggestions to investors for taking proper trading decisions.

V. Research Mehodology

One company stock namely State Bank of India from the Banking sector of NSE India was taken for the study based on convenient sampling method. The prices of the said stock were taken for the period of ten years from 1.1.2007 to 31.12.2016. The study uses Secondary data which was collected through money control website where buy and sell signals are perceived for each of the five indictors. The five technical indicators used for the study purpose were Moving Average Convergence and Divergence, Relative Strength Index, Stochastic Oscillator, Average Directional Index and Commodity Channel Index.

VI. Concepts

6.1 Moving Average Convergence Divergence(MACD)

The Moving Average Convergence Divergence (MACD) is an oscillator developed by Gerald Appel which comprises two lines. The MACD line and signal line. The MACD line is the difference between a 12 and a 26 period Exponential Moving Average (EMA) of price. The signal line is a 9 period EMA of the MACD line. The interpretation of the MACD oscillator is to buy when the MACD line crosses above the signal line the trend is upwards, bullish and positive and to sell when the MACD line crosses below the signal line here the trend is downwards, bearish and negative.

6.2 Relative Strength Index (RSI)

The Relative Strength Index (RSI) is a momentum indicator developed by Welles Wilder a great technical analyst which compares the magnitude of recent gains and losses over a specified time period to measure speed and change of price movements of a security. This indicator is primarily used to identify overbought and oversold conditions in the trading of a stock.

6.2.1 Interpreting RSI in Ranging Markets:

- Buy when RSI falls below the 30 level and rises back above it.
- If there is a bullish divergence where the first trough is below 30 then go long i.e. buy.
- Sell when RSI rises above the 70 level and falls back below it.
- Go short if there is bearish divergence where the first peak is above 70.

6.2.2 Interpreting RSI in Trending Markets:

- Up trend: Buy when RSI falls below 40 and rises back above it.
- Down trend: Sell when RSI rises above 60 and falls back below it.
- Trading should be made along with the trend using a trend indicator.

6.3 Stochastic Oscillator:

The stochastic oscillator was developed in the late 1950s by George Lane. It is a momentum indicator which analyzes the location of the closing price of a stock in relation to the high and low range of the price of the stock over a period of time, typically a 14-day period.

Stochastic Oscillator ranges from 0 to 100. The level of 20 is considered as the oversold threshold and 80 is considered as the overbought threshold. However, the levels are adjustable to fit security characteristics and analytical needs.

6.3.1 Interpreting Stochastic Oscillator in Ranging Markets:

- Up trend: Buy when Slow Stochastic Oscillator falls below 0 and rises back above it.
- Down trend: Sell when Slow Stochastic Oscillator rises above 80 and falls back below it.

6.3.2 Interpreting Stochastic Oscillator in Trending Markets

- Up trend: Buy when Slow Stochastic Oscillator falls below 20 and rises back above it.
- Down trend: Sell when Slow Stochastic Oscillator rises above 80 and falls back below it.

6.4 Average Directional Movement Index:

The Average Directional Movement Index (ADX) is a technical analysis indicator which discerns whether the price of the stock is trending or not trending. The Average Directional Index (ADX), Plus Directional Movement Indicator (+DMI) and Minus Directional Movement Indicator (-DMI) represent a group of directional movement indicators that form a trading system developed by Welles Wilder. ADX when combined with the DMI+ and DMI- generate potential buy and sell signals.

6.4.1 Interpretation:

A strong trend is present when ADX is above 25 and no trend is present when below 20. There appears to be a gray zone between 20 and 25.

- Go long when +DMI is greater than – DMI
- Go short when - DMI is greater than +DMI

6.5 Commodity Channel Index:

Commodity Channel Index (CCI) is developed by Donald Lambert a versatile indicator that can be used to identify a new trend or warn of extreme conditions. Lambert originally developed CCI to identify cyclical turns in commodities, but the indicator can be successfully applied to indices, ETFs, stocks, and other securities.

6.5.1 Interpretation:

Buy when:

- Commodity Channel Index (CCI) is below the oversold line (-100).
- CCI then crosses above the oversold line.

Sell when:

- Commodity Channel Index (CCI) is above the overbought line (+100).
- CCI then crosses below the overbought line.

VII. Analysis And Interpretation:

Table 7.1 - Profitability in using MACDIndicator

Year	No. of Buy Signals	No of Sell Signals	Average Sell	Profit	Profit %
1.1.2007 - 31.12.2007	5	5	162.17	69.99	43.16
1.1.2008 - 31.12.2008	8	8	146.61	-20.86	-14.23
1.1.2009 - 31.12.2009	8	8	169.57	56.35	33.23
1.1.2010 - 31.12.2010	7	7	266.44	57.55	21.60
1.1.2011 - 31.12.2011	6	6	218.09	-17.42	-7.99
1.1.2012 - 31.12.2012	5	5	224.46	123.51	55.02
1.1.2013 - 31.12.2013	4	4	188.86	-45.20	-23.93
1.1.2014 - 31.12.2014	4	4	258.48	159.81	61.83
1.1.2015 - 31.12.2015	8	8	271.37	-65.80	-24.25
1.1.2016 - 31.12.2016	7	7	217.36	-3.50	-1.61
Total	**62**	**62**	**2123.40**	**314.43**	**14.81**

Interpretation: The above table shows that MACD indicator gives 62 buy signals and 62 sell signals. The profit percentage on average sell is 14.81%.

Table 7.2 - Profitability in using RSIIndicator:

Year	No. of Buy Signals	No of Sell Signals	Average Sell	Profit	Profit %
1.1.2007 - 31.12.2007	3	3	158.52	86.00	54.25
1.1.2008 - 31.12.2008	2	2	135.32	-15.57	-11.51
1.1.2009 - 31.12.2009	2	2	154.57	55.57	35.95
1.1.2010 - 31.12.2010	2	2	251.99	-4.37	-1.73
1.1.2011 - 31.12.2011	2	2	232.04	32.68	14.08
1.1.2012 - 31.12.2012	1	1	222.36	28.30	12.73
1.1.2013 - 31.12.2013	2	2	204.16	-10.41	-5.10
1.1.2014 - 31.12.2014	2	2	251.48	99.66	39.63
1.1.2015 - 31.12.2015	5	5	266.69	37.75	14.16
1.1.2016 - 31.12.2016	2	2	251.80	96.10	38.17
TOTAL	**23**	**23**	**2128.92**	**405.71**	**19.06**

Interpretation: The above table shows that RSI indicator gives 23 buy signals and 23 sell signals. The profit percentage on average sell is 19.06%.

Table 7.3 – Profitability in using Stochastic Oscillator Indicator:

Year	No. of Buy Signals	No. of Sell Signals	Average Sell	Profit	Profit %
1.1.2007 - 31.12.2007	4	3	149.45	14.76	9.88
1.1.2008 - 31.12.2008	4	5	163.59	37.33	22.82
1.1.2009 - 31.12.2009	6	5	160.93	46.93	29.16
1.1.2010 - 31.12.2010	6	7	263.62	100.05	37.95
1.1.2011 - 31.12.2011	5	4	225.32	12.16	5.40
1.1.2012 - 31.12.2012	4	5	226.75	136.53	60.21
1.1.2013 - 31.12.2013	5	4	196.02	-26.99	-13.77
1.1.2014 - 31.12.2014	3	3	246.26	28.59	11.61
1.1.2015 - 31.12.2015	6	6	268.83	60.05	22.34
1.1.2016 - 31.12.2016	4	5	222.67	-3.60	-1.62
TOTAL	**47**	**47**	**2123.43**	**405.81**	**19.11**

Interpretation: The above table shows that Stochastic Oscillator indicator gives 47 buy signals and 47 sell signals. The profit percentage on average sell is 19.11%

Table 7.4 - Profitability in using Average Directional Movement Index:

Year	No. of Buy signals	No. of Sell Signals	Average Sell	Profit	Profit %
1.1.2007 - 31.12.2007	7	6	155.88	65.71	42.16
1.1.2008 - 31.12.2008	4	5	174.93	-44.74	-25.58
1.1.2009 - 31.12.2009	5	5	167.27	54.41	32.53
1.1.2010 - 31.12.2010	5	5	274.01	96.93	35.37
1.1.2011 - 31.12.2011	5	5	227.69	-20.46	-8.99
1.1.2012 - 31.12.2012	5	5	222.36	79.41	35.71
1.1.2013 - 31.12.2013	5	5	220.87	4.16	1.88
1.1.2014 - 31.12.2014	4	4	267.46	135.09	50.51
1.1.2015 - 31.12.2015	5	5	242.08	-35.15	-14.52
1.1.2016 - 31.12.2016	1	1	251.65	246.65	98.01
TOTAL	**46**	**46**	**2204.19**	**582.01**	**26.40**

Interpretation: The above table shows that ADX indicator gives 46 buy signals and 46 sell signals. The profit percentage on average sell is 26.40%

Table 7.5 - Profitability in using Commodity Channel Index

Year	No. of Buy Signals	No. of Sell Signals	Average Sell	Profit	Profit %
1.1.2007 - 31.12.2007	4	3	152.48	52.29	34.29
1.1.2008 - 31.12.2008	3	4	160.73	21.96	13.66
1.1.2009 - 31.12.2009	7	7	173.72	70.35	40.50
1.1.2010 - 31.12.2010	2	2	307.17	30.92	10.07
1.1.2011 - 31.12.2011	5	5	221.06	-64.75	-29.29
1.1.2012 - 31.12.2012	5	5	217.59	57.52	26.43
1.1.2013 - 31.12.2013	4	4	190.36	-14.08	-7.40

1.1.2014 - 31.12.2014	3	3	263.87	127.38	48.27
1.1.2015 - 31.12.2015	2	2	296.48	-40.10	-13.53
1.1.2016 - 31.12.2016	4	4	232.55	8.9	3.83
TOTAL	**39**	**39**	**2216.00**	**250.39**	**11.30**

Interpretation: The above table shows that Commodity Channel Index indicator gives 39 buy signals and 39 sell signals. The profit percentage on average sell is 11.30%.

VIII. Summary Of Findings:

Table 8.1 – Comparative Analysis on Profitability of Five Technical Indicators:

Indicators	No. of Buy signals	No. of Sell Signals	Average Sell	Profit	Profit %
MACD	62	62	2123.40	314.43	14.81
RSI	23	23	2128.92	405.71	19.06
Stoc.Oscillator	47	47	2123.43	405.81	19.11
ADX	46	46	2204.19	582.01	26.40
CCI	39	39	2216.00	250.39	11.30

Inference:

- From the table above, it is clear that the most profitable technical indicator is Average Directional Movement Index (ADX) which gives a return of 26.4% which is relatively high compared to other four indicators for trading.
- The next profitable indicator for trading is Stochastic Oscillator which gives 19.11% return on the average selling price for the period of ten years of the stock.Third profitable indicator is Relative Strength Index which gives a return of 19.06% which has slight decrease compared to Stochastic Oscillator.
- The next profitable indicator is MACD where the return percentage is 14.81% which is higher than the other indicator.The last profitable indicator among the five indicators studied is CCI which gives 11.3 % return on the average selling price of the stock for the period of ten years.
- As far as number of buy and sell signals are concerned, MACD generate more number of signals which may involve more transaction cost and brokerage cost and the least number of buy and sell signals were given by RSI.

IX. Suggestion

Investors have to interpret using the technical indicators properly for the trading signals. Following the standard techniques and discipline in trading will help investors earn substantial profits. If the traders use Stop loss technique in trading, they can even cut off the losses to minimum. So, there is a chance of increase in the profits earned by traders using these indicators. The study suggests using ADX indicator for better results with more number of trades, but if the trader is concerned with broking charges and transaction costs, RSI is the best one.

X. Conclusion

We can conclude from the result that technical indicators can play useful role in the trade entry and exit and the Average Directional Movement Index (ADX) leads among the five technical indicators studied using a single stock namely State Bank of India from the Banking sector of NSE, India. By applying technical indicators brokers or investors enjoys substantial profit. However to have maximum effect fundamental analysis of stocks should also be made. Therefore, the small investors and traders should not blindly make an investment rather they should analyze using the various tools to check if the scrip is technically strong.

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