"A STUDY ON TECHNICAL ANALYSIS OF S&P CNX NIFTY INDEX COMPANIES"

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Abstract
In the present days of financial markets, investment activity has become an art as well as science. Analysis of investment options always looks into the maximum returns with minimum risk. A number of factors, both internal and external to the business units can cause changes in the returns of the securities. So study of these factors and their impact on security returns generated considerable interest to all the stakeholders of the capital market. Time is the most important factor to be considered for making an investment decision. It doesn't mean timing the market, but time in the market. Prices of shares will fall or rise as time varies. The success of an investment activity depends upon the knowledge and ability of investors to invest the right amount, in the right type of investment and at the right time. With the lure of earning extraordinary returns in a short period of time, people at large get mesmerized at attractive technical calls. Teams of experts, technical analysts, brokers, research houses put out series of such recommendations on almost all stocks in all market situations. Transactions on the basis of such calls might result in handsome profit or sometimes such transactions might be seemed as resulted into losses and payment of brokerage. This creates a need to study the transactions which are based on such calls. Consequently, as per the need of studying the transactions based on technical calls, title of the topic is framed, "A Study on Technical Analysis of S & P CNX Nifty Index Companies".

Introduction:

Finance has a vital role to play in the modern economy. Financial institutions, instruments and markets together act as the circulatory system to channelize finance into the entire body of the economy, making possible the flow of coherent energy among the many units of monetary activity. Activity of transfer of resources from those with idle resources to others who have a productive need for them is one of the central apprehensions of modern market led economies. This goal of financial intermediation is most efficiently achieved through the security market. The security market provides channels for allocation of surplus funds through a wide range of securities which encourages investment activities among all the sectors of economy.

In the present days of financial markets, investment activity has become an art as well as science. Analysis of investment options always looks into the maximum returns with minimum risk. A number of factors, both internal and external to the business units can cause changes in the returns of the securities. So study of these factors and their impact on security returns generated considerable interest to all the stakeholders of the capital market. Time is the most important factor to be considered for making an investment decision. It doesn't mean timing the market, but time in the market. Prices of shares will fall or rise as time varies. The success of an investment activity depends upon the knowledge and ability of investors to invest the right amount, in the right type of investment and at the right time. A well-planned investment alone can ensure regular income, capital appreciation and can meet the financial requirements of the investors. Forecasting of stock prices may benefit investors to invest the right amount, in the right type of investment, and at the right time. However, forecasting the prices of a stock, which requires study of price and volume behavior of stocks has been a subject of controversy among academicians and stock market professionals. Efficient Market Hypothesis (EMH), Fundamental analysis, Behavioral Finance and Technical analysis are the important school of thoughts which study stock price behavior. Among all these schools of thoughts, technical analysis concentrates on forecasting of stock prices on the basis of their past behavior.

EFFICIENT MARKET HYPOTHESIS

The concept of stock market efficiency acts as a central paradigm in explaining the behavior of share prices, which is governed by rational, emotional, economic, geographical and psychological factors. Predicting the behavior of the stock market is considered as one of the most challenging tasks performed by the researchers. Even so, for decades, investors, whether individual or institutional, have always been interested in finding an answer to the question of how securities are priced. However, it is believed that a security price moves in such a manner where market price and its worth are in convergence. However worth of a security largely depends upon financial and other factors. Information relating to financial and other relevant factors influence worth of a security and ultimately its market price. The term market efficiency is used to explain the relationship between information and share prices in the capital market literature as it is perhaps the most important concept especially in terms of understanding of the working of capital markets. It gained

greater importance as the quantum of investment is accelerating in the market because of technological and regulatory reforms and removal of other barriers to the international equity investments.

According to the assumption of EMH theory an efficient stock market must ensure rapid information access, so that it can instantaneously process the information to reflect into security prices. Theory implies that stock prices reflect everything known about a company, an industry, or the economy as a whole which gives very little scope for earning 5 extraordinary returns than market returns. There are three forms of EMH based on efficiency of market to access and reflect required information instantaneously.

According to Weak EMH, prices of financial instruments which are in trading (e.g., stocks, bonds, or property) already reflect publicly available historical information .So only investors of new public information and inside information can develop strategies to earn extraordinary income. According to Semi-strong EMH, prices reflect publicly available all information and instantly change to reflect new public information. So only the investors of inside information can develop strategies to earn extraordinary income. Strong EMH: prices instantly reflect even hidden or insider information. So investors with privileged information also cannot use that information to develop strategies to earn extraordinary income.

FUNDAMENTAL ANALYSIS

Fundamental analysis generally refers to the study of the economic and non-economic factors relevant to the price movement of securities. It suggests that every stock has an intrinsic value, which should be equal to the present value of the future income to be earned on the stock. Estimate of real worth of a stock is made by considering the earning potentials of a company. However, earning potentials of a company depends on the factors relating to a specific company like competitiveness, quality of management, operational efficiency, profitability and capital structure and dividend policy. Importance of fundamental analysis is unchallengeable. Decisions based on fundamental analysis can alert investors about the real value of shares, especially in case of market bubbles.

BEHAVIORAL FINANCE

Behavioral finance integrates psychology and economics in finance theory. It is a new exemplar of finance, which supplements the existing theories of finance by introducing a study of impact of behavioral forces on financial decisions. It offers a clarification for why investors make irrational decisions. (www.bookboon.com) It proposes psychology-based theories to elucidate stock market anomalies on the premises that investors are subject to behavioral biases; it means their financial decisions can be less than fully rational. Evidence of these biases has typically come from cognitive psychology literature which has been applied in a financial context. Examples of biases include overconfidence, over optimism, conservatism, mental accounting, etc. Thus, behavioral finance assumes that it is not the fundamentals or the technical patterns that drive the market price but it is the reaction of the investors and traders to the events that determine market.

TECHNICAL ANALYSIS

Contrary to the fundamental analysis, technical analysis is a study of market

actions, primarily through the use of charts, for the purpose of forecasting future price trends. It is a study of trend, its strength, its pattern, continuation, momentum and its reversal to take profitable entry and exit positions on the basis of charts. Technical analysis includes chart pattern study and study of technical indicators. Chart Pattern study discovers numerous buying and selling opportunities based on understanding of momentum of volume (market turnover) and trend. (Arnold Curtis M., 2001) Additionally, technical indicators can also be used to generate trading signals (recommendations for buying and selling a particular stock). These signals are of crossover and divergence in nature. Divergence signals show disagreement between the indicator and the stock price. The divergence in uptrend occurs when price makes a higher high, but the indicator does not make a higher high which gives a signal of down trend. In a downturn, divergence occurs when price makes a lower low, but the indicator does not make a lower low which gives a signal of up movement in future. However, the main problem of divergence indicators is that it shows disagreement between the indicator and price, but the degree of disagreement at which buy or sale signal should be assumed as confirmed is at the sole discretion of the user.

Literature Review and Hypothesis Formulation:

According to **Fama Eugene F (1998)** although stock price behavior may have long-term anomalies, however, these anomalies are apparent overreaction or under reaction of stock prices to the information which are common and self-adjusting in nature. According to him, most prominently, these anomalies are fragile and tend to disappear. Thus, according to him the evidence of stock market anomalies does not suggest that the concept of market efficiency should be abandoned.

Bhatt Babaraju K and Chauhan Apurva A (2014) argued that the presence of the strong EMH in the stock market is not possible. They claimed that investors are not always acting in a rational manner due to the cognitive and psychological errors which they have to deal with. Thus, behavioral factors are important in financial markets as they influence the investors who make the financial decisions. It makes the existence of EMH almost impossible.

Contrary to the theory of EMH, **Malkiel Burton G. (2003)** put forward that as long as stock market exists, some market participants are noticeably less than rational. As a result, pricing irregularities and even predictable patterns in stock returns can appear over the time and even continue for short periods. Finally, he discarded existence of EMH in the scenario of irrational price behavior.

Stefan Iulia (2009) stated that any study of the EMH cannot be generalized in the market as a whole at any given time, as the EMH manifests itself differently in different circumstances, also he found that riskier stocks attend major price volatility at a given level of information than less risky stocks. During a crisis, investors' expectations affect stock prices differently 29 than during a boom. Often prices change even when no news is announced. Thus, he confirmed that impact of information is not a sole factor to decide stock price movements.

Abarbanell Jeffery S and Bushee Brian J (1998) put forward that accounting-based signals (ratios/indicators) reflected in corporate reports can be used to predict future abnormal returns. Among the collection of signals, relative changes in

inventories, changes in gross margin and selling expenses, capital expenditures and effective tax rates appear to capture information which can be used for forecasting future earnings / risk associated with investment decisions.

Khanifar Hussein, Jamshidi Nasser and Mohammadinejad Mohammadbagher (2012) analyzed national, industrial and company's fundamental factors in their study. They noticed that a company related factors have the highest importance on analysts' decisions; which shows that analysts consider a special priority for financial statements and midterm reports. Among financial statement elements, EPS has the highest importance. On the other hand, the importance of market and industry related factors have lower importance on analysts' decisions.

Lutey Matt, Crum Michael and Rayome David (2013) articulated possibility for investors to generate better than average returns with actively managed portfolio in S&P 500 stocks. 31 They emphasized on the use of completely automatic scanning technique of stocks for user defined investing criteria i.e. CAN SLIM strategy. CAN SLIM strategy suggests selection of stocks for investment on the basis of Current earnings, Annual Earnings, New product or services, Supply and demand position of a stock, Leader or laggard, Institutional stake in the stock and Market index's movement criteria) Finally they uttered that use of such strategies which are based on fundamental analysis can give opportunities to beat the average returns of buy and hold strategy.

Cohen Gil, Kudryavtsev Andrey and Hon Snir Shlomit (2011) studied the possibility of integration of fundamental and technical analysis for producing better results. They mentioned that common misbelief arguing that fundamental and technical tools cannot be combined for taking investment decisions stands invalid in practice. They found significant differences between professional and non-professional investors in terms of how frequently they use fundamental and technical investment tools. They also found that non-professional investors who use more fundamental tools such as analysts' recommendations when they buy stocks and more technical tools such as "support and resistance lines" when they sell stocks. Their study indicates that investors use financial statements and support and resistance lines together as primary tools of their decisions.

According to Pruden Henry O., Paranque Bernard ,Baets Walter, Paranque Bernard and Baets Walter (2004) approach of both behavioral finance and technical analysis deal with the market behavior to identify patterns of human behavior that uncover opportunities for profit as both theories are rooted in the assumption that man acts for behavioral reasons in irrational ways. Thus, they conclude that there is integration between Technical analysis and Behavioral finance.

Baker Malcolm and Wurgler Jeffrey (2007) outlined a "top down" approach to behavioral finance and the stock market. They stated that it is quite possible to measure investors' sentiments, and that waves of sentiments have clear evident and regular effects on individual firms and on the stock market as a whole. According to

Ritter Jay R. (2003) it is very difficult to locate trading opportunities that reliably make money, but it does not mean that financial markets are informationally efficient. Evidence of rational behavior of prices is very rare scenario which proves

existence of behavioral forces in the form of irrational behavior of investors affecting the market prices in irrational manner.

Ross, Stephen A., (1989) argued that price behavior depends upon the response of the market players to the flow of information. Study revealed that stock prices get changed with response of the market players to the flow of information. However, response of the market players to the new information can be different due to the different behavioral forces affecting the decisions. Hence, movement of prices in a rational manner in respect of flow of information is difficult and rarely possible.

Objectives of the Study:

To study technical analysis and profile of S & P CNX Nifty Index companies.
To study the view of respondents about short term investment and technical analysis assumptions.

Problems of the Study:

EMH, behavioral finance, fundamental analysis and technical analysis are the theories which include study of price behavior of stocks. These theories are interwoven as well as contradictory to each other. As per the EMH theory, due to the instantaneous response of prices towards the relevant information, there is a little scope for earning extraordinary returns. Contrary to it, behavioral finance assumes the existence of irrational and psychological forces have brought anomalies in stock behavior. Whereas Fundamental analysts assume that a study of financial, political and other concerned factors can determine the intrinsic value of a stock. On the basis of intrinsic price and current market price buy, hold or sell signals can be given to earn handsome amount of profit. Lastly Technical analysts assume that price actions are repetitive in nature, they move in a trend and generate patterns. Thus, the study of past price actions is useful to forecast future move and hence extraordinary returns can be generated.

Hypothesis of the Study:

Null Hypothesis (H_0): Average rates of return earned by applying technical indicators are not significantly greater than average rates of return arrived by the price change over the same period.

Alternative Hypothesis (H1): Average rates of return earned by applying technical indicators are significantly greater than average rates of return arrived by the price change over the same period.

Research Design:

A research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. In fact, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. The design includes an outline of what the researcher plans and frames the research work. It explains how samples are selected, sample size is determined, how data is collected and which statistical methods are used for data analysis. The study makes use of a quantitative research

approach. This research method was chosen because quantitative research allows the researcher to examine relationships and differences among the variables. In order to carry out research effectively data is collected from primary as well as from secondary sources.

PRIMARY DATA:

Quota sampling has been followed for primary data collection as independent quota enables to draw inferences about specific subgroups that may be lost in a more generalized random sample. Quota sampling is a non-probabilistic version of stratified sampling. In quota sampling, a population is first segmented into mutually exclusive sub-groups (called as quotas), just as in stratified sampling. **(www.wikipedia.org).** Thus entire sample is first divided into two quotas (groups) i.e. trading/investment experience not less than three years (i.e. Three years or more) and trading/investment experience less than three years. After defining quotas, 80 % of target respondents have been decided to cover from first quota and rest from the second quota of trading/investment experience less than three years. More weightage is given to the quota of experienced respondents as their experience would benefit to make the results more useful for research work. Collection of primary data is more time consuming, but it is likely to yield a more accurate picture than a study based on secondary data alone. Primary data has been collected through structured questionnaires. In order to carry out data collection exercise more meticulously, a questionnaire was pre-tested with fifty respondents. Thereafter, changes were made to the questionnaire with specific reference to wording, sequence and language. The area selected for the collection of primary data is restricted to Mumbai (City and Suburban), Navi Mumbai, Thane and Palghar districts. However, as the collection of primary data has geographical limitation, to collect the response from the respondents whom researcher may not be able to meet personally due to time and cost constraints, questionnaires were sent by email and information was collected.

SECONDARY DATA:

The major part of secondary data is historical daily price data of sample companies for the period commencing from 1/4/2010 up to 31/3/2020 that is for ten years. As data analysis is majorly based on secondary data, there is a need to choose a reliable source for the same. The researcher has downloaded historical daily price data of sample companies from www.nseindia.com website for the period from 1/4/2010 to 31/3/2020 as data available in this site is uploaded by National Stock Exchange itself which made data authentic and genuine. Various books, journals, newspapers have been referred for understanding stock price behavior models, technical analysis, application of indicators and use of some financial ratios for investment appraisal.

Population: Fifty stocks included in S & P CNX Nifty Index as of 1st December 2020 is a population. S & P CNX Nifty (which is currently known as CNX Nifty) is a well-diversified fifty stocks' index accounting for 23 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds. The index is owned and managed by India Index Services and Products Ltd. (IISL). IISL is India's first specialized company focused upon the index as a core product. From June 26, 2015, CNX Nifty is computed

based on free float methodology. Stocks of CNX Nifty Index represents about 66.85% of the free float market capitalization of the stocks listed on NSE as on June 30, 2020.The total traded value for the last six months ending June 2020 of all index constituents is approximately 50.39% of the traded value of all the stocks on the NSE. Impact cost of the CNX Nifty for a portfolio size of Rs.50 lakhs is 0.07% for the month June 2020.

Following is a list of fifty companies included in S & P CNX Nifty Index as on 1st December 2020.

Table 1.1   List of companies included in S & P CNX Nifty Index as on 1st December 2020

Sr. No.	Company Name	Industry	Symbol
1	ACC Ltd.	Cement & Cement Products	ACC
2	Ambuja Cements Ltd.	Cement & Cement Products	AMBUJACEM
3	Asian Paints Ltd.	Consumer Goods	ASIANPAINT
4	Axis Bank Ltd.	Financial Services	AXISBANK
5	Bajaj Auto Ltd.	Automobile	BAJAJ-AUTO
6	Bank of Baroda	Financial Services	BANKBARODA
7	Bharat Heavy Electricals Ltd.	Industrial Manufacturing	BHEL
8	Bharat Petroleum Corporation Ltd.	Energy	BPCL
9	Bharti Airtel Ltd.	Telecom	BHARTIARTL
10	Cairn India Ltd.	Energy	CAIRN
11	Cipla Ltd.	Pharma	CIPLA
12	Coal India Ltd.	Metals	COALINDIA
13	DLF Ltd.	Construction	DLF
14	Dr. Reddy's Laboratories Ltd.	Pharma	DRREDDY
15	GAIL (India) Ltd.	Energy	GAIL
16	Grasim Industries Ltd.	Cement & Cement Products	GRASIM
17	HCL Technologies Ltd.	IT	HCLTECH
18	HDFC Bank Ltd.	Financial Services	HDFCBANK
19	Hero MotoCorp Ltd.	Automobile	HEROMOTOCO
20	Hindalco Industries Ltd.	Metals	HINDALCO

21	Hindustan Unilever Ltd.	Consumer Goods	HINDUNILVR
22	Housing Development Finance Corporation Ltd.	Financial Services	HDFC
23	I T C Ltd.	Consumer Goods	ITC
24	ICICI Bank Ltd.	Financial Services	ICICIBANK
25	IDFC Ltd.	Financial Services	IDFC
26	IndusInd Bank Ltd.	Financial Services	INDUSINDBK
27	Infosys Ltd.	IT	INFY
28	Jindal Steel & Power Ltd.	Metals	JINDALSTEL
29	Kotak Mahindra Bank Ltd.	Financial Services	KOTAKBANK
30	Larsen & Toubro Ltd.	Construction	LT
31	Lupin Ltd.	Pharma	LUPIN
32	Mahindra & Mahindra Ltd.	Automobile	M&M
33	Maruti Suzuki India Ltd.	Automobile	MARUTI
34	NMDC Ltd.	Metals	NMDC
35	NTPC Ltd.	Energy	NTPC
36	Oil & Natural Gas Corporation Ltd.	Energy	ONGC
37	Power Grid Corporation of India Ltd.	Energy	POWERGRID
38	Punjab National Bank	Financial Services	PNB
39	Reliance Industries Ltd.	Energy	RELIANCE
40	Sesa Sterlite Ltd.	Metals	SSLT
41	State Bank of India	Financial Services	SBIN
42	Sun Pharmaceutical Industries Ltd.	Pharma	SUNPHARMA
43	Tata Consultancy Services Ltd.	IT	TCS
44	Tata Motors Ltd.	Automobile	TATAMOTORS
45	Tata Power Co. Ltd.	Energy	TATAPOWER
46	Tata Steel Ltd.	Metals	TATASTEEL
47	Tech Mahindra Ltd.	IT	TECHM
48	UltraTech Cement Ltd.	Cement & Cement Products	ULTRACEMCO
49	Wipro Ltd.	IT	WIPRO

50	Zee Entertainment Enterprises Ltd.	Media & Entertainment	ZEEL

Source: www.nseindia.com

Sample: Out of fifty stocks of S & P CNX Nifty Index, twenty stocks have been selected as sample by following **Simple Random Sampling method**. Following is a list of twenty stocks included in the sample for the purpose of this study.

Table 1.2 List of sample companies

Sr. No.	Company Name	Industry	Symbol
1	ACC Ltd.	Cement & Cement Products	ACC
2	Ambuja Cements Ltd.	Cement & Cement Products	AMBUJACEM
3	Asian Paints Ltd.	Consumer Goods	ASIANPAINT
4	Bank of Baroda	Financial Services	BANKBARODA
5	Bharat Heavy Electricals Ltd.	Industrial Manufacturing	BHEL
6	Bharti Airtel Ltd.	Telecom	BHARTIARTL
7	Cipla Ltd.	Pharma	CIPLA
8	Dr. Reddy's Laboratories Ltd.	Pharma	DRREDDY
9	HCL Technologies Ltd.	IT	HCLTECH
10	Hero MotoCorp Ltd.	Automobile	HEROMOTOCO
11	Hindustan Unilever Ltd.	Consumer Goods	HINDUNILVR
12	ICICI Bank Ltd.	Financial Services	ICICIBANK
13	IndusInd Bank Ltd.	Financial Services	INDUSINDBK
14	Jindal Steel & Power Ltd.	Metals	JINDALSTEL
15	Maruti Suzuki India Ltd.	Automobile	MARUTI
16	Punjab National Bank	Financial Services	PNB
17	Reliance Industries Ltd.	Energy	RELIANCE
18	Sesa Sterlite Ltd.	Metals	SSLT
19	State Bank of India	Financial Services	SBIN
20	Tata Steel Ltd.	Metals	TATASTEEL

Source: Table is prepared by researcher on the basis of Table1.1

STATISTICAL ANALYSIS

Statistical analysis of data can be defined as the act of transforming data with the aim of extracting useful information and facilitating conclusions. Depending on the type of data, statistical methods are chosen. Statistical analysis is categorized as descriptive analysis and inferential analysis, which is often known as statistical analysis.

DESCRIPTIVE ANALYSIS

This part of study is mainly focused on verifying main objectives of the study. Researcher used statistical tools like mean, median, mode, standard deviation and graphs for analysis of data. Along with these tools, technical indicators are used as tools for drawing the indicator line on graphs for the purpose of recognizing buying and selling entries based on Price/Indicator line crossover signals. There are fifteen technical indicators which give Price/Indicator line crossover signals in Amibroker technical charting software. For selecting the indicators for applying them in research work, survey is conducted. It enabled researcher to **understand the preference of respondents for selection of technical indicators and their view about the application of different technical indicators.** ADX, CCI, Ichimoku, MACD, Moving average, Parabolic SAR, Price oscillator, RMI, ROC, RSI, RWI, Stochastic oscillator, Time series, TRIX and William %R are the fifteen indicators with buy and sell signals were given in the questionnaire for ranking them on the basis of preference of respondents for short term investment decisions. Furthermore, opinion of respondents is sought about the application of technical indicators based on various parameters. Based on recommendations given by respondents , out of these fifteen indicators, ADX, Moving average, MACD, Parabolic SAR, RMI, ROC, RSI, stochastic oscillator, TRIX and William %R are the first ten indicators which have better mean and median ranking positions than other indicators. Mean and median values are calculated based on frequency of one to ten ranks. This revealed that the majority of respondents prefer these ten indicators more than other given indicators. Among these ten indicators, following seven technical indicators are selected as a sample for the purpose of research by following Simple Random Method.

Table 1.3 List of technical indicators used in data analysis

Sr. No.	Name of technical indicator
1	Average Directional (Movement) Index (14 days)
2	MACD (Fast12, Slow 26, Signal 9)
3	Parabolic SAR (Acceleration 0.02, Maximum Acceleration 0.2)
4	RMI (20 Days, 5 Momentum)

5	ROC / Momentum Indicator (15 Days)
6	RSI (15 Days)
7	Stochastic Oscillator (15 Days, 3 Days Moving Average)

Source: prepared by researcher

INFERENTIAL ANALYSIS

Inferential analysis is used to generalize the results obtained from the sample which was drawn for the purpose of study. In the present study researcher used this analysis for hypothesis testing. For testing the hypothesis or test of significance following tests are performed

i. One factor ANOVA Test
ii. Independent group test of unequal variances at 95% confidence level

For the purpose of analysis researcher used statistical package SPSS version 22. In addition to this, excel add-in Mega Stat is also used

Data Analysis and Results:

Prior to test significant difference between the **average rate of return** earned by applying different indicators and rate of return arrived by the price change over the same period **among different companies**, significant difference between the **rate of return** earned by applying seven technical indicators and rate of return arrived by the price change **in each company individually** is tested.

Thus here null hypothesis "Rates of return earned by applying technical indicators are not significantly greater than rates of return arrived by the price change over the same period in each CNX Nifty Index companies" is tested for each company individually before testing of second null hypothesis of the study. For testing purpose, parametric test of independent sample 't' test is used (it is comparison between two independent group, namely the rate of return earned by applying technical indicator and rate of return arrived by the price change over the same period and data values of large sample of 10 years is taken into consideration). The details of which are given in the following table.

Table 1.4 Details of independent sample't' test for twenty companies with seven indicators for hypothesis

Sr no	Company name	ADX P Value	MACD P Value	Parabolic SAR P Value	RMI P Value	ROC P Value	RSI P Value	Stochastic P Value
1	ACC	0.86	0.901	0.9214	0.777	0.9191	0.8631	0.9975

		38			5			
2	Ambuja Cement	0.9871	0.9509	0.9554	0.8327	0.9392	0.9274	0.9908
3	Asian Paints	0.973	0.9695	0.933	0.9719	0.9688	0.9664	0.9918
4	Bank of Baroda	0.8334	0.8804	0.8175	0.7783	0.8875	0.6717	0.968
5	Bharati Airtel	0.965	0.9606	0.9648	0.7245	0.9592	0.8932	0.9985
6	BHEL	0.7542	0.8393	0.8614	0.8564	0.7989	0.8028	0.9683
7	CIPLA	0.8842	0.8937	0.9343	0.7737	0.9314	0.7096	0.9806
8	Dr. Reddy's Laboratories	0.8831	0.9251	0.9093	0.873	0.8928	0.8546	0.9738
9	HCL Technologies	0.9518	0.9653	0.9635	0.943	0.944	0.9458	0.9876
10	Hero Motocorp	0.9555	0.9552	0.9645	0.841	0.9863	0.9052	0.9958
11	Hindustan Unilever	0.9025	0.9664	0.9828	0.8806	0.9563	0.8768	0.9911
12	ICICI Bank	0.8989	0.9615	0.9388	0.8117	0.9539	0.8887	0.9715
13	Indusind Bank	0.8591	0.9174	0.8925	0.868	0.8318	0.8899	0.9371
14	Jindal Steel & Power	0.8462	0.9146	0.8814	0.9277	0.875	0.9072	0.94
15	Maruti Suzuki India	0.8179	0.8615	0.9467	0.7014	0.8103	0.7209	0.9949
16	Punjab National Bank	0.7969	0.5702	0.6978	0.6618	0.8054	0.7201	0.9334
17	Reliance Industries	0.9813	0.9603	0.9588	0.8857	0.9697	0.8935	0.9976
18	SBI	0.67	0.8987	0.9653	0.895	0.8421	0.9171	0.9908

		06			9			
19	Sesa Sterlite	0.8463	0.8729	0.843	0.9332	0.843	0.9177	0.9443
20	Tata Steel	0.7237	0.735	0.8227	0.8647	0.717	0.781	0.8945

Interpretation:
In all cases p value is greater than level of significance α = 0.05. Hence the null hypothesis cannot be rejected. Hence it can be concluded that the rates of return earned by applying technical indicators are not significantly greater than the rates of return arrived by the price change over the same period in every sample company.

However for comparing, average rate of return earned by applying technical indicators with average rates of return arrived by the price change over the same period or not among different companies :- average rates of return (average of rates of return of ten years) of each indicator in each company is calculated and all average rates of return earned by applying these seven indicators among all twenty companies are considered with average rates of return arrived by the price change over the same period among all twenty companies . A parametric test of independent sample't' test was used to test the second null hypothesis.

The details of which are given below

Table 1.5 Descriptive parameters for second hypothesis

Strategy	Mean	S.D.	N
ROR arrived by price change	29.0122	69.079	200
ADX	1.229	31.56	200
MACD	-1.4429224	21.22	200
Parabolic SAR	-2.74	30.60	200
RMI	3.569	19.59	200
ROC	-0.126	28.01	200
RSI	3.59	16.74	200
Stochastic Oscillator	-19.01	24.67	200

Table 1.6   't' test of two independent samples for second hypothesis

Particulars	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F Value	p value	d. f.	t value	p value
Between ROR arrived by price change and ADX	4.79	0.00	398	-5.17	1.00
Between ROR arrived by price change and MACD	10.59	0.00	398	-5.96	1.00
Between ROR arrived by price change and Parabolic SAR	5.10	0.00	398	-5.94	1.00
Between ROR arrived by price change and RMI	12.43	0.00	398	-5.01	1.00
Between ROR arrived by price change and ROC	6.08	0.00	398	-5.53	1.00
Between ROR arrived by price change and RSI	17.03	0.00	398	-5.06	1.00
Between ROR arrived by price change and Stochastic Oscillator	7.84	0.00	398	-9.26	1.00

Interpretation:

Levene's Test for Equality of Variances:

In all cases, the p value is 0.00 which is less than α = 0.01 (5% level of significance) Hence null hypothesis of two groups having equal variance is rejected. Thus it is inferred that two groups are having unequal variance.

t-test for Equality of Means:
For testing equality of means t- test with unequal variance is applied. From table no 5.70, it is observed that in all the cases p value is 1.00 which is greater than α = 0.05 (5% level of significance). Hence null hypothesis cannot be rejected. Hence it can be concluded that the average rates of return earned by applying technical indicators are not greater than average rates of return arrived by the price change over the same period.
These tests prominently reveal two things:

Performance of the indicators **is not greater than rate of return arrived by the price change over the same period in each company individually. Furthermore the** performance of the indicators is also **not greater than rate of return arrived by the price change over the same period among the all twenty CNX Nifty index companies.**

Conclusions:

RMI and RSI have generated higher average rates of return than other indicators in sample companies. It shows that among all indicators RMI and RSI are the outperformers. Stochastic Oscillator has generated lowest average rate of returns than other indicators in sample companies. It shows that among all indicators Stochastic Oscillator is underperformer. Conclusion with respect to the average rate of returns earned by different technical indicators with the average rate of returns arrived by the price change over the same period None of the indicator gave a higher average rate of return than average rate of return arrived by the price change over the same period This fact makes clear that indicators trading is not profitable than the buy and hold strategy.

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