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Research Paper

PORTFOLIO ANALYSIS ON CAPITAL MARKET WITH SPECIAL REFERENCE TO TOP TEN NSE NIFTY COMPANY STOCKS

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ABSTRACT

Capital market includes different investment portfolios which includes both losses and gains and it should be managed and planned based on the investor's expectations. An investor has various alternative avenues of investment. The objectives of the investor are minimizing the risk and maximize the return from the investment. It is important to find the various criteria for investment portfolio risks and its possibility of reduction and to show the effects of changes in market on risks and return. Portfolio analysis is a broadly used concept where investors compare their portfolio investment output to the market to find whether their investment decision has yielded a higher return or not. The stock market plays an important role in capital market. So we took top ten NSE Nifty company stocks in our study to make portfolio analysis. The performance of the company is estimated and compared to get suitable portfolio investment.

KEYWORDS: *Risk, Return, Investor, Portfolio analysis, Stock Price.*

I) INTRODUCTION

The capital market consists of many investment alternatives. Every investor plans to gain future positive returns and reduce various types of risks. It is vital to evaluate the performances of investments to get better future result. Hence selection of portfolio investment is considered an important segment and it affects the rate of return of overall investment. Thus portfolio analysis is vital for the distribution of assets and calculation of risk-return to achieve the investment objectives. The performance of ten companies are calculated and investment have been altered to achieve investment objective.

II) LITERATURE REVIEW

- S.M.Tariq Zafar, D.S.Chaubey, and Shruti Nagar (2010) reveals that every investor has different thinking to invest in stock which may give them maximum return with lesser or no risk. So, they want a portfolio which provides maximum return. The main objective of this paper is to analyze the relationship between risks, return, and diversification effect on portfolio risk with composite of market and non-market risk. For the purpose 25 stock of S&P Nifty have been analyzed on the basis of portfolio beta and portfolio return. The first part of paper gives an insight about the portfolio, risk return and diversification and its various aspects while the second part consists of data and their analysis.
- Kumar Gaurav and Pitabas Mohanty (2013) had studied traditional portfolio theory which assumes that when the returns are not jointly normally distributed then the mean variance efficient portfolio does not maximize the utility of the investor. In addition to mean-variance, the investors also need to consider skewness, the third moment of return distributions. Using nine year's monthly returns data for the NSE 's CNX Nifty stocks, the researcher attempted to create portfolios which maximize returns, minimize variance and maximize skewness at the same time. Results show substantial improvement in portfolio performance when one considers skewness in addition to mean and variance.

III) OBJECTIVES OF THE STUDY

The present study was initiated to attain the following objectives:

- To analyze the portfolio performance of Top Ten NSE Nifty companies.

- To examine the risk and return level of the study companies.
- To give concrete suggestions for the betterment of the portfolio concerned.

IV) NEED AND IMPORTANCE OF THE STUDY

The study helps to identify and adjust the portfolio investment into better fit to current situation. Portfolio management minimizes the risks involved in investing and also increases the chance of making profits. It is important to minimize the risk and maximize the return. It leads to get the best investment strategy.

V) RESEARCH METHODOLOGY

The present research deals with the portfolio investment of Top Ten NSE Nifty companies. It helps to compare the level of risk and return of the companies in a given period of time. The present research is descriptive in nature. The data used in the study is secondary in nature. It is collected with the help of books, web sites and various other sources.

VI) SCOPE OF THE STUDY

The study mainly focuses on evaluating and comparing the investment performance in a given period of time. It tries to find out the risk, return level of Top Ten companies of NSE Nifty. The analysis is made from the past data and it never gives guarantee to the future results.

VII) STATISTICAL TOOLS AND TECHNIQUES

The present study has used Standard Deviation, Correlation, Variance, Co-variance, Average Mean and Multiplication Risk Matrix.

VIII) PERIOD OF THE STUDY

The period for which the study was covered is 5 years from 2013 – 2017 in half yearly basis.

IX) MEANING OF PORTFOLIO

Portfolio means a group of securities which are kept together as an investment. It is a collection of investment held by individual, financial institution, hedge funds and investment companies. Generally, the portfolio is designed by the investor based on the investor's investment objective, risk tolerance and time frame. The primal aim of portfolio is the diversification of investment risks to achieve the investment objective.

X) PORTFOLIO ANALYSIS

Portfolio analysis means evaluating the entire investment to get the best investment plan. After selecting the portfolio avenues, the risk-return of the securities are measured quantitatively through mathematical calculations. Thus it identifies the risk and return level of each investment and helps to modify the same to make better return.

XI)ADVANTAGES OF PORTFOIO ANALYSIS

- It helps to evaluate the investment portfolio in terms of its level of risk and return.
- It analyses and helps to compare the performance of each investment.
- It finds out how the assets have performed in a given period of time.
- The lagging assets can be identified through portfolio analysis and thus it helps to make the modifications and adjustments based on that.

XII) LIMITATIONS OF PORTFOLIO ANALYSIS

The result is made from the past performance. It is never a guarantee for the future results.

- It is difficult to predict when and where the losses will happen.
- The results may not work in future assets.

XIII)ANALYSIS AND INTERPRETATION

Table – 1
Portfolio Plan A

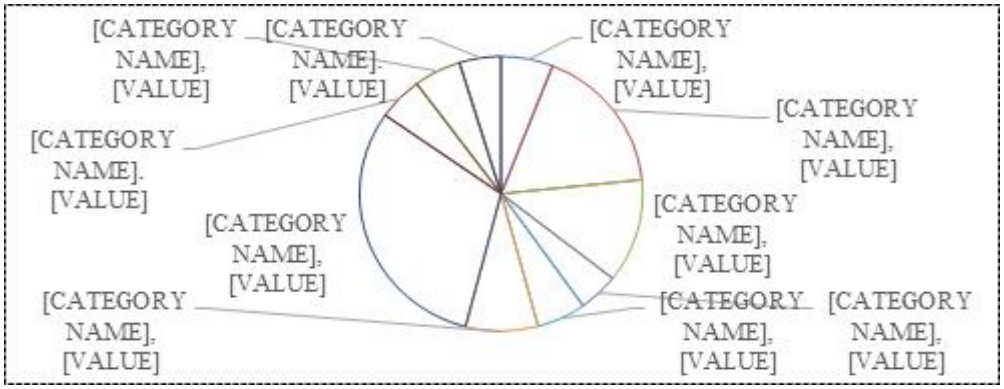
Sl. No.	Company	Symbol	Last Price in 2017	Number of Shares in Portfolio	Position in Rs. in Portfolio	Share in Portfolio
1	Reliance	**REL**	888.46	100	88846	6%
2	Tata Consultancy Services	**TCS**	2620.1	100	262010	17%
3	HDFC Bank Ltd.	**HDF**	1830.7	100	183070	12%
4	ITC Ltd. Tobacco	**ITC**	265.4	260	69004	5%
5	State Bank of India	**SBI**	325	260	84500	6%
6	Hindustan Unilever Ltd.	**HIN**	1239.5	100	123950	8%
7	Maruti Suzuki India Ltd.	**MAR**	8219.4	56	460286	31%
8	Oil & Natural Gas Corp. Ltd.	**ONG**	191.85	400	76740	5%
9	Bharti Airtel Ltd.	**BHA**	541.35	150	81203	5%
10	Coal India Ltd.	**COL**	286.55	250	71638	5%
Total				1776	1501246	100%

Source: Computed from the stock price data given by NSE.

Interpretation: The Table-1 represents the portfolio plan A of an investor who plans to invest with the budget of 15,00,000 in stocks that has good returns and less risk parameters. The investor selected stocks of his interest from a category of large Cap stocks considering steady growth.

Chart – 1

Budget distribution among selected stocks in portfolio Plan A



Source: Computed from the stock price data given by NSE.

Interpretation: The chart-1 shows the budget distribution among stocks in portfolio Plan A. The investor conducts analysis on portfolio plan in the selected NSE nifty companies as above.

Table - 2

Five-year Stock Prices in half yearly basis of Top Ten NSE Companies

Date	REL	TCS	HDF	ITC	SBI	HIN	MAR	ONG	BHA	COL	NSE
Dec12	368.53	1233.4	618.44	181.6	163.5	432.03	1530.3	181.1	332.8	248.6	6034.8
Jan 13	349.98	1395.2	601.42	174	139.5	403.87	1310.4	167.1	317.26	217.96	5693.1
Jun 13	395.34	1684.7	591.31	206.2	141.8	558.38	1283.2	158.2	339.28	204.28	5742
Dec13	370.38	2088.4	609.49	196.2	126.4	529.63	1592.4	154.1	310.02	182.3	6089.5
Jan 14	430.94	2124.6	649.35	197.8	127.2	510.26	1546.4	163	282.82	198.81	6277
Jun 14	470.9	2431.8	815.62	220.8	235.6	596.07	2456.3	225.6	366.53	299.6	7721.3
Dec14	403.4	2348.6	1053.6	228.6	298.4	883.87	3564.9	205.1	368.28	294.02	8808.9
Jan 15	389.47	2524.3	1030.8	244.1	289.7	840.84	3523	189.6	351.19	322.05	8844.6
Jun 15	838.89	2402.7	1087.2	208.3	264.2	882.75	4233.6	162.3	413.58	377.54	8532.9
Dec15	466.5	2303.3	1034.4	204.6	176	788.96	4027.3	138.9	287.83	275.12	7563.6
Jan 16	504.41	2101.8	957.58	188.9	155.3	801.99	3182.3	119.1	314.71	267.43	6987.1
Jun 16	522.28	2555.2	1238	248.7	227.3	900.83	4678	135.8	359.72	308.56	8638.5
Dec16	610.01	2186.7	1278.2	254.3	258	842.31	5835.9	196.1	347.02	290.87	8561.3
Jan 17	650.83	2425.5	1380.9	258.3	266.8	852.64	5863.9	187.4	364.23	302.82	8879.6
Jun 17	797.25	2478.1	1784.4	285.3	312.5	1148.28	7673.3	165.9	416.75	249.1	10077
Nov17	888.46	2620.1	1830.7	265.4	325	1239.5	8219.4	191.9	541.35	286.55	10453

Source: Computed from https://in.finance.yahoo.com/quote/HDFC.NS?p=HDFC.NS

Interpretation: The above table represents the stock prices of top ten NSE 50 companies. The prices are given in half yearly basis. In overall the price of the Maruti Suzuki stock is higher than all other stocks and TCS stock price comes next to it. The stock of oil and natural gas ltd is showing the least price in the above list.

Table - 3

Half Yearly changes of Stocks in Portfolio Plan A

	REL	TCS	HDF	ITC	SBI	HIN	MAR	ONG	BHA	COL	NSE	Portfolio
	Unit %	Unit %	Unit %	Unit %	Unit %	Unit %	Unit %	Unit %	Unit %	Unit %	Unit %	Unit %
Jan13	-5.0	13.1	-2.8	-4.2	-14.6	-6.5	-14.4	-7.7	-4.7	-12.3	-5.7	Start
Jun13	13.0	20.7	-1.7	18.5	1.6	38.3	-2.1	-5.3	6.9	-6.3	0.9	-174.7
Dec13	-6.3	24.0	3.1	-4.9	-10.8	-5.1	24.1	-2.6	-8.6	-10.8	6.1	-165.2
Jan 14	16.4	1.7	6.5	0.8	0.6	-3.7	-2.9	5.7	-8.8	9.1	3.1	-189.7
Jun14	9.3	14.5	25.6	11.7	85.2	16.8	58.8	38.4	29.6	50.7	23.0	1119.5
Dec14	-14.3	-3.4	29.2	3.5	26.7	48.3	45.1	-9.1	0.5	-1.9	14.1	-81.8
Jan15	-3.5	7.5	-2.2	6.8	-2.9	-4.9	-1.2	-7.6	-4.6	9.5	0.4	-105.6
Jun15	115.4	-4.8	5.5	-14.7	-8.8	5.0	20.2	-14.4	17.8	17.2	-3.5	-1300.8
Dec15	-44.4	-4.1	-4.8	-1.8	-33.4	-10.6	-4.9	-14.4	-30.4	-27.1	-11.4	-495.0
Jan 16	8.1	-8.7	-7.4	-7.7	-11.8	1.7	-21.0	-14.2	9.3	-2.8	-7.6	-64.0
Jun16	3.5	21.6	29.3	31.7	46.4	12.3	47.0	14.0	14.3	15.4	23.6	-447.7
Dec16	16.8	-14.4	3.2	2.2	13.5	-6.5	24.8	44.4	-3.5	-5.7	-0.9	-48.6
Jan 17	6.7	10.9	8.0	1.6	3.4	1.2	0.5	-4.4	5.0	4.1	3.7	-81.1
Jun17	22.5	2.2	29.2	10.4	17.1	34.7	30.9	-11.5	14.4	-17.7	13.5	171.8
Nov17	11.4	5.7	2.6	-7.0	4.0	7.9	7.1	15.6	29.9	15.0	3.7	55.2

Source: Computed from Table-1 and Table-2.

Interpretation: In the above table five-year data in a time interval of half yearly period consisting of average expected return of stocks are tabulated The average expected return and the standard deviation for risk for plan A and NSE Nifty has been calculated for portfolio analysis

Formula: Average portfolio return Rp=sum (Re x Ws) :- (Rp - Portfolio return, Re - expected return of stock and Ws - weightage of stock).

Table - 4
Expected return, risk and average portfolio return

Symbol	Portfolio Share Plan A (WS)	Expected Return of stock in 5 years (Re)	Risk (σ) standard Deviation of stock in 5 years	Average Portfolio return (Rp) = E Re*Ws
REL	6%	9.97%	33.43%	
TCS	17%	5.76%	11.67%	
HDF	12%	8.22%	13.26%	
ITC	5%	3.14%	11.58%	
SBI	6%	7.75%	28.54%	
HIN	8%	8.59%	18.28%	8.67%
MAR	31%	14.14%	23.90%	
ONG	5%	1.80%	18.66%	
BHA	5%	4.47%	15.79%	
COL	5%	2.43%	18.58%	
NSE50		4.20%	10.39%	

Source: Computed from Table 1,2 and 3.

Interpretation: The Table - 4 represents the expected return of stock and risk with average portfolio return of plan A. The expected half yearly return of the portfolio is higher than NSE50 index's expected return (4.20%) which states that potentially the portfolio Plan A can outperform index on a monthly basis.

Calculation of the risk for Portfolio:

$$\sigma_p^2 = \sum_i w_i^2 \sigma_i^2 + \sum_i \sum_{j \neq i} w_i w_j \sigma_i \sigma_j \rho_{ij},$$

Where σ - risk of a stock; w - share of the stock in the portfolio; ρ - correlation of the stocks in the portfolio.

Table - 5
Correlation of Expected percentage return of Stocks

Symbol	REL	TCS	HDF	ITC	SBI	HIN	MAR	ONG	BHA	COL
REL	1	-0.191	0.058	-0.276	0.048	0.067	0.122	-0.014	0.515	0.371
TCS	-0.191	1	0.17	0.501	0.262	0.126	0.175	0.014	0.171	0.207
HDF	0.058	0.17	1	0.553	0.785	0.635	0.868	0.258	0.433	0.356
ITC	-0.276	0.501	0.553	1	0.601	0.44	0.455	0.292	0.158	0.178
SBI	0.048	0.262	0.785	0.601	1	0.459	0.82	0.651	0.625	0.734
HIN	0.067	0.126	0.635	0.44	0.459	1	0.477	-0.102	0.423	0.078
MAR	0.122	0.175	0.868	0.455	0.82	0.477	1	0.499	0.425	0.476
ONG	-0.014	0.014	0.258	0.292	0.651	-0.102	0.499	1	0.338	0.536
BHA	0.515	0.171	0.433	0.158	0.625	0.423	0.425	0.338	1	0.701
COL	0.371	0.207	0.356	0.178	0.734	0.078	0.476	0.536	0.701	1

Source: Computed correlation from Table -2.

Interpretation: In Table-5 the correlation of expected percentage return of stock has been calculated.

Table 6
Multiplication Matrix for Risk in Portfolio Plan - A

Symbol	REL	TCS	HDF	ITC	SBI	HIN	MAR	ONG	BHA	COL
REL	0.0004	(0.0001)	0.0000	(0.0000)	0.0000	0.0000	0.0002	(0.0000)	0.0001	0.0001
TCS	(0.0001)	0.0004	0.0001	0.0001	0.0001	0.0000	0.0003	0.0000	0.0000	0.0000
HDF	0.0000	0.0001	0.0003	0.0000	0.0002	0.0002	0.0010	0.0000	0.0001	0.0001
ITC	(0.0000)	0.0001	0.0000	0.0000	0.0001	0.0000	0.0002	0.0000	0.0000	0.0000
SBI	0.0000	0.0001	0.0002	0.0001	0.0003	0.0001	0.0010	0.0001	0.0001	0.0001
HIN	0.0000	0.0000	0.0002	0.0000	0.0001	0.0002	0.0005	(0.0000)	0.0001	0.0000
MAR	0.0002	0.0003	0.0010	0.0002	0.0010	0.0005	0.0054	0.0003	0.0003	0.0003
ONG	(0.0000)	0.0000	0.0000	0.0000	0.0001	(0.0000)	0.0003	0.0001	0.0000	0.0000
BHA	0.0001	0.0000	0.0001	0.0000	0.0001	0.0001	0.0003	0.0000	0.0001	0.0001
COL	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0003	0.0000	0.0001	0.0001

Source: Computed matrix for findings risk.

Interpretation: The Table-6 summarizes the risk percentage. The calculated results of the table are as follows:

a) Risk percentage of Portfolio Plan A is σ = 13.65% b) σ2 = 0.0186.

Table 7
Summary of Portfolio Plan - A with Beta

Symbol	Portfolio Share Plan A (WS)	Expected Return of stock in 5 years (Re)	Risk (σ) standard Deviation of stock in 5 years	Sharpe ratio (SR)	Covariance	Variance	Beta
REL	6%	9.97%	33.43%	0.19	-0.0006	0.0108	-0.06
TCS	17%	5.76%	11.67%	0.17	0.0055	0.0108	0.51
HDF	12%	8.22%	13.26%	0.34	0.0125	0.0108	1.16
ITC	5%	3.14%	11.58%	-0.05	0.0081	0.0108	0.75
SBI	6%	7.75%	28.54%	0.14	0.0265	0.0108	2.46
HIN	8%	8.59%	18.28%	0.26	0.0103	0.0108	0.95
MAR	31%	14.14%	23.90%	0.43	0.0214	0.0108	1.98
ONG	5%	1.80%	18.66%	-0.10	0.0084	0.0108	0.78
BHA	5%	4.47%	15.79%	0.05	0.0088	0.0108	0.82
COL	5%	2.43%	18.58%	-0.07	0.0106	0.0108	0.98
Portfolio	100%	8.67%	13.65%	0.36	0.2621	0.0108	24.29
NSE 50		4.20%	10.39%	0.04			

Source: Computed from Table 1 to 6.

Interpretation: The summary of portfolio analysis has been made in the Table-7. The researcher summarized all the tables with beta and is tabulated in it. The Sharpe ratio for portfolio plan A is lower than NSE50 index which means that the latter provide better relation of risk and return. At the same time the portfolio has Beta equal to 24.29 which means that if the market grows, portfolio plan A shall grow faster.

Formulas for the above table:

a) *Sharp Ratio:* Sharpe ratio (SR) is the excess return over a unit of risk.

(SR) = (Re - Rf) / σ, where Re is the expected asset's return, Rf is a risk-free rate and σ is a standard deviation, or risk of the asset.

$$\text{BETA } \beta_a = \frac{\text{Cov}(r_a, r_p)}{\text{Var}(r_p)}$$

B) *Beta:* It describes the relation of the asset's return to the market return.

where Ra - return of asset; Rp - return of the market (or of the portfolio).

If Beta = 1, the price for the asset changes in the same way as the market index

If Beta = 0, there are no relation between the asset and the market

If Beta = -1, the asset's and the market's price go in opposite directions

If Beta > 1, the price of the asset changes more than by 1% for every market movement by 1%

If Beta >1, the price of the asset falls by more than 1%-every time market goes up by 1%; and it growth more than by 1% every time the market falls by 1%.

The investor tests second option as Plan B and make the following changes:

a) Decrease the share of a stock with the lowest Sharpe ratio
b) Decrease the share of a stock with the lowest Beta (it is because we expect NSE 50 to grow and want to have more stocks which will outpace the index)
c) Increase the share of a stock with a highest Beta
d) Increase the share of a stock with a highest Sharpe ratio. After all changes Plan A Portfolio gets modified and we get Plan B Portfolio in Table - 8.

Table – 8
Portfolio Plan - B

Sl. No.	Company	Symbol	Last Price in 2017	Number of Shares in Portfolio	Position in Rs. in Portfolio	Share in Portfolio
1	Reliance	REL	888.46	40.5	35983	2%
2	Tata Consultancy Services ltd.	TCS	2620.1	40	104804	7%
3	HDFC Bank ltd.	HDF	1830.7	224	410077	27%
4	ITC ltd. Tobacco	ITC	265.4	200	53080	4%
5	State Bank of India	SBI	325	360	117000	8%
6	Hindustan Uniliver ltd.	HIN	1239.5	100	123950	8%
7	Maruti Suzuki India ltd.	Mar	8219.4	56	460286	31%
8	Oil and Gas Natural Corporation ltd.	ONG	191.85	300	57555	4%
9	Bharti Airtel ltd.	BHA	541.35	150	81203	5%
10	coal India ltd.	COL	286.55	200	57310	4%
Total				1671	1501247	100%

Source: Computed from modification of Table 01

Interpretation: In the above table the stocks in plan A portfolio is modified as per plan B. While decreasing the weightage of underperforming stocks and increasing the stock that are better performing are some of the changes done. Also maintaining same investment budget for Portfolio in total.

Table - 9
Summary of Portfolio Plan B with Beta

Symbol	Portfolio Share Plan B (WS)	Expected Return of stock in 5 years (Re)	Risk (σ) standard Deviation of stock in 5 years	Sharpe ratio (SR)	Covariance	Variance	Beta
REL	2%	9.97%	33.43%	0.19	-0.0006	0.0108	-0.06
TCS	7%	5.76%	11.67%	0.17	0.0055	0.0108	0.51
HDF	27%	8.22%	13.26%	0.34	0.0125	0.0108	1.16
ITC	4%	3.14%	11.58%	-0.05	0.0081	0.0108	0.75
SBI	8%	7.75%	28.54%	0.14	0.0265	0.0108	2.46
HIN	8%	8.59%	18.28%	0.26	0.0103	0.0108	0.95
MAR	31%	14.14%	23.90%	0.43	0.0214	0.0108	1.98
ONG	4%	1.80%	18.66%	-0.10	0.0084	0.0108	0.78
BHA	5%	4.47%	15.79%	0.05	0.0088	0.0108	0.82
COL	4%	2.43%	18.58%	-0.07	0.0106	0.0108	0.98
REL	100%	9.05%	15.12%	0.35	0.3404	0.0108	31.54
TCS		4.20%	10.39%	0.04			

Source: Computed from Table 8 and steps followed similar to Plan A Portfolio.

Interpretation: In the above table the Portfolio Analysis for Plan B are calculated similar to analysis done earlier for Plan A and results are tabulated. Beta of Plan B (31.54) which is higher than Plan A (24.29) and expected return of portfolio Plan B (9.05%) which is higher than Plan A (8.67%) and risk cover for Plan A (13.65%) which is lower than Plan B (15.12%).

XIV) CONCLUSION

The portfolio analysis has been made to optimize the return and to minimize the risk. The leading stock market NSE is taken and the top stocks are listed and analyzed to find the investment portfolio in capital market. The investor distributes the investment amount to get high return with low risk. To achieve the investment objective, the investor should always make their portfolio plan after analyzing the past performance of the investment company. For this the investor alters his portfolio plan according to the percentage of expected return. Thus the study made in this chapter is collectively termed as Portfolio analysis where the investor finally gets switched in between Plan A & Plan B for investments that has better returns and lower risk opportunities and better orientation in business.

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