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A Study on Portfolio Management

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Annotation:
Portfolio Management is a very generic term used to refer to the management of different assets. In the financial markets, there are many assets available, such as stocks, bonds, and Treasury bill, commodities, currencies. etc., The main objective of portfolio management is to maximize the return and minimize the risk for that one should do the process of selection of portfolio, analysis of portfolio, revision of portfolio and evaluation of portfolio from time-to-time. India is developing country in which stock market is growing day by day. Indian stock markets have attracted huge Foreign Institutional Investors (FII) that is nearly 40% of investment. The study is to analysis risk, return of the selected to stocks, showing the best combination of portfolio using beta, sharp index value.

KEYWORDS: *Risk, Return, Beta & Sharp Value*

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INTRODUCTION

Indian stock market Industry plays a positive role in the growth of the economy and prevents economic disasters of the country. In India most of the trading takes place only in two stock exchanges, those are Bombay stock exchange (BSE) and the National stock exchange (NSE). Portfolio Management is defined as the art and science of making decisions about the investment mix.

In general the portfolio is constructed based on the selection of different sectors stocks that yield high return and reduce the risk.

The companies selected for study

1. Reliance
2. SBI
3. TCS
4. L&T CO.,
5. DrReddy's LAB

Need of the study:
The study is to analyze the portfolio from time to time and reviewed and adjusted if needed. The evaluation of portfolio is to be done in terms of targets set for risk and returns.

Scope of the study:
The study covers the calculation of risk, return of securities in order to find out the best portfolio to investor. For a period of 3 years data. i.e. from January 2017 to December 2019.

Objectives of the study:

- To analyze the Return of DrReddy's Lab, TCS, L&T, SBI &Reliance.
- To study the Risk of DrReddy's Lab, TCS, L&T, SBI &Reliance.
- To Rank the portfolio based on the returns and risk.

Research methodology:
The study is based on the secondary data collected from the internet, www.nseindia.com,www.moneycontrol.com

Limitations of the study;
Construction of Portfolio is restricted to two companies based on Markowitz model.

Very few and randomly selected scripts / companies are analyzed from NSE Listings.

- **HYPOTHESIS**

H_0: There is no significant relationship between risk and return.
H_1: There is significant relationship between risk and return.

Data Analysis
The rate of return on any stock is calculated as,
R= (p1-p0)/p0

Whereas;
R = expected rate of return during period t.
P1 = price of closing
P0= price of opening.

SCRIPTS	AVG.RETURN
RELIANCE	9.17
SBI	3.19
L&T	3.13
TCS	5.68
DrREDDYS LAB	0.048

From, the above returns Reliance 9.17, TCS 5.68 with lowest is DrReddys lab 0.048

The rate of risk is calculated by standard deviation.
Standard Deviation = √variance

Variance = $1/n\,(R-R)^2$

SCRIPTS	RISK
RELIANCE	12.66
SBI	15.42
L&T	8.63
TCS	11.3
DrREDDYS LAB	9.34

From, the above table, sbi has highest risk15.42, reliance 12.66 & l&t 8.63.

Beta: Beta is a measure of a stock's volatility in relation to the overall market. Beta with more than 1(>1) shows that the stock will move twice as much as the market. Beta with less than 1(<1) shows that the stock movement is less than the market movements. Beta with equals to 1(=1) shows that the stock will moves along with the market.

Scripts	Beta β
RELIANCE	1.79
SBI	2.44
L&T	0.21
TCS	0.76
DrREDDYS LAB	0.011

Correlation analysis is done by using Pearson's correlation. The formula is

$$r = \frac{n(\sum xy)-(\sum x)(\sum y)}{\sqrt{[n\sum x2-(\sum x)2]\,[n\sum y2-(\sum y)2]}}$$

Where;
x = returns of individual stocks **A**.
y = returns of individual stocks **B**.

Correlation analysis is a technique used to find out the relationship between two individual stocks The Pearson correlation is done in the SPPS software. The bivariate correlation is done in SPSS and the output is show below.

PARTICULARS	CORRELATIONS
DR REDDY LAB-TCS	-0.077
DR REDDY LAB-L&T	-0.636
DR REDDY LAB- SBI	-0.262
DR REDDY LAB-RELIANCE	0.38
TCS-L&T	-0.369
TCS-SBI	0.284
TCS-RELIANCE	0.194
L&T-SBI	-0.023
L&T-RELIANCE	-0.229
SBI-RELIANCE	0.254

CALCULATION OF PORTFOLIO WEIGHTS
$Wa = \sigma b\{\sigma b-(nab*\sigma a)\}/\sigma a^2+\sigma b^2-(2nab)(\sigma a)(\sigma b)$
$Wb = 1-Wa$

CALCULATION OF PORTFOLIO RISK
$Rp = \sqrt{(\sigma a*Wa)^2+(\sigma b*Wb)^2+2*\sigma a*\sigma b*Wa*Wb*nab}$

CALCULATION OF PORTFOLIO RETURN
RK = (RA*WA)+(RB+WB)

PORTFOLIO RETURN &RISK		
COMPANY	RETURNS	RISK
DR REDDY LAB-TCS	2.37	6.92
DR REDDY LAB-L&T	1.66	3.83
DR REDDY LAB- SBI	1.03	6.95
DR REDDY LAB-RELIANCE	2.50	8.71
TCS-L&T	4.16	5.47
TCS-SBI	4.95	10.23
TCS-RELIANCE	9.19	0.19
L&T-SBI	3.14	7.46
L&T-RELIANCE	5.07	7.05
SBI-RELIANCE	5.40	10.92

The TCS & RELIANCE portfolio has highest returns i.e., 9.19 and with lowest risk with 0.19. SBI & RELIANCE has highest risk i.e., 10.92 and moderate return of 5.40. TCS – L&T has the moderate return and risk of 4.16 &5.47 respectively.

SHARPE' INDEX SP = (RP – T)/SD					
COMBINATION	RETURN OF P	T(RISK FREE RATE/N)	S.D	SHARPE RATIO	RANK
DR REDDY LAB-TCS	2.37	0.54	6.92	0.2648	8
DR REDDY LAB-L&T	1.66	0.54	3.83	0.2938	7
DR REDDY LAB- SBI	1.03	0.54	6.95	0.0705	10
DR REDDY LAB-RELIANCE	2.50	0.54	8.71	0.2247	9
TCS-L&T	4.16	0.54	5.47	0.6608	2
TCS-SBI	4.95	0.54	10.23	0.4308	5
TCS-RELIANCE	9.19	0.54	0.19	46.2613	1
L&T-SBI	3.14	0.54	7.46	0.3493	6
L&T-RELIANCE	5.07	0.54	7.05	0.6421	3
SBI-RELIANCE	5.40	0.54	10.92	0.4454	4

From the Sharpe index the Reliance-TCS have high Sharpe ratio when compared with other combination. Then TCS-L&T, L&T-Reliance, and SBI-Reliance are followed respectively.

HYPOTHESIS

H_0: There is no significant relationship between risk and return.

H_1: There is significant relationship between risk and return.

Calculation of hypothesis paired T-Test using spss.

Paired Samples Test

		Paired Differences				t
				95% Confidence Interval of the Difference		
		Mean	Std. Deviation	Lower	Upper	t
Pair 1	RETUERN - RISK	-2.82600	4.50687	-6.05002	.39802	-1.983

In t-test if t(cal) value is greater than t(table) value we reject null hypothesis and accept alternative hypothesis and vice versa. Here, the T (cal) {T (cal) <T (table), (-1.983 < 1.833)} Is less than the T (table) value, Hence we accept Null hypothesis (h_0) i.e., There is no significant relationship between risk and return.

Findings:

Individual returns on the selected stocks are DRREDDYS LAB, TCS, Larsen and Toubro Ltd., SBI & RELIANCE are 0.048%, 5.67%, 3.12%,3.18% & 9.16 respectively.

Individual risks on the selected stocks including DRREDDYS LAB, TCS, Larsen and Toubro Ltd., SBI & RELIANCE are 9.34%,11.3%, 8.63%, 15.42% & 12.66% respectively.

Portfolios Returns &Risk of the TCS & RELIANCE portfolio has highest returns i.e., 9.19 and with lowest risk with 0.19. SBI & RELIANCE has highest risk i.e., 10.92 and moderate return of 5.40. TCS – L&T has the moderate return and risk of 4.16 &5.47 respectively.

On evaluating performance TCS-RELIANCE ranks 1st in Sharpe's index performance.

Suggestions:

Reliance has been the outstanding performer with a return of nearly 9.16%. This indicates that Investors can be assured of good returns in the long run by investing in blue chip companies.

SBI has high risk 15.42% and followed by reliance 12.66% it suggested that the investors should be careful while investing in these securities.

Investors are advised to invest in Portfolios of TCS & RELIANCE portfolio has highest returns i.e., 9.19 and with lowest risk with 0.19.which have given the maximum returns.

SBI & RELIANCE has highest risk i.e., 10.92 and moderate return of 5.40. TCS – L&T

Conclusion:

Portfolio management is a process of encompassing many activities of investment assets and securities. It is a dynamic and flexible concept and involves regular and systematic analysis, judgment, and action. A combination of securities held together will give a beneficial result if they grouped in a manner to secure higher returns after taking into consideration the risk elements.

The main objective of the Portfolio management is to help the investors to make wise choice between alternate investments without a post trading shares. Any portfolio management must specify the objectives like Maximum returns, Optimum Returns, Capital appreciation, Safety etc., in the same prospectus.

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