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A Study on Portfolio Management with Reference to Selected Industries

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Abstract: Portfolio is a combination of securities that have Return and Risk characteristics of their own. It is a combination of various assets and instruments of investment with a combination of different features of risk and return. Portfolio may or may not have aggregate characteristics; it is a collection of financial or real assets such as equity shares, debentures, bonds, treasury bills, and property etc.

The Objective of portfolio management is security, stability of income, capital growth, marketability, liquidity, diversification and favourable tax status. The investors who are risk averse can invest their funds in the portfolio combination ICICI &HDFC, Infosys & Tech Mahindra, in calculated proportions. The investors who are slightly risk averse can invest their funds in Cipla & Dr Reddys laboratories as these combinations bear slightly high risk compared to other combinations.

I. INTRODUCTION

A Portfolio is a collection of assets, the assets may be physical or financial like shares, bonds, debentures, etc. The individual investor or a fund manager would not like to put all his money old maxim that one should not put all the eggs into one basket. By doing so, he can achieve objective to maximize portfolio return and at the same time minimizing the portfolio risk by diversification.

1) Portfolio management is the management of various financial assets which comprise the portfolio.
2) Portfolio management is a decision support system that is designed with a view to meet the multi faced needs of investors.
3) According to Securities Exchange Board Of India Portfolio Manager is defined as: "Portfolio means the total holdings of securities belonging to any person".
4) Portfolio manager means a person who exercises or may, contract relating to portfolio management exercises any degree of discretion as to the investments or management of the portfolio of securities or the funds of the client.

A. Functions Of Portfolio Management
1) To frame the investment strategy and select an investment mix to achieve the desired investment objectives.
2) To provide a balanced portfolio which not only can hedge against the inflation but can also optimize returns with the associated degree of risk.
3) To make timely buying and selling of securities.
4) To maximize the after tax returns by investing in various tax saving investment instruments

B. Scope of The Study
This study covers the Markowitz model. The study covers the calculation of correlations between the different securities in order to find out at what percentage funds should be invested among the companies in the portfolio. Also the study includes the calculation of individual standard deviation of securities and calculation of weights of individual securities involved in the portfolio. These percentages help in allocating the funds available for investment based on risky portfolios. Time period considered for the study is two months.

C. Objective of The Study
1) To understand the participation of the companies in the share market.
2) To observe and compare the performance of selected companies by calculating their average return, variance, standard deviation, and covariance and correlation of coefficient.
3) To compare and evaluate portfolio risk with individual risk of portfolio security.
4) To draw conclusion whether selected portfolio is yielding a satisfactory return.

D. *Research Methodology*
1) The data collection method includes secondary data method, it includes data collected from magazines and different books and Organizational records, sites and database.
2) The standard deviation and other statistical methods is used to know the risk involved in the returns.
3) Sample is collected from listed companies by NSE and BSE.

E. *Limitations*
1) Construction of portfolio is restricted to two companies based on Markowitz model.
2) Very few and randomly selected companies are analysed.
3) Data collected is strictly confined to secondary source, No primary data is associated with the project.
4) Detailed study of the project was not possible due to limited size of the project.
5) There was constraint with regard to the time allocation for the research study.

II. LITERATURE REVIEW

A. Dr. John Linter (1983) of Harvard University was thoroughly researched and published Dr. John Linter professionally managed futures. It was one of the most uncorrelated and independent investments versus stocks are futures. Linter wrote that "combined portfolios of stocks after including judicious investments in leveraged managed futures accounts show substantially less risk at every possible level of expected return than portfolios of stocks alone"
B. ValeryPolkovinchenko(2005) has studied about Household Portfolio Diversification, this study comprises generalized expected utility model of choice under uncertainty, it explained the behaviour of people that people purchase lottery tickets which indicates risk taking preference and insurance are implying risk aversion.
C. P Chandra (2008) wrote a book "Investment and Portfolio Management", this helps the investor to be sophisticated professional. The book discuss the techniques and principles useful in systematic and rational investment management.
D. Donald E Fisher and Ronald J Jordan(1995) provided a comphrensive introduction to the area of security analysis and portfolio management. It explored the debt and equity which are primary categories of investment, then about bond strategies like active and passive. Portfolio is the combination of securities may or may not have aggregate characteristics of their individual parts and efficiency must be evolved from such combination.
E. Dr. G.P.Jakhotia and Mrs.M.G.Jjakhotiya (2001) in their book "Finance for one all" elaborated the techniques of investment management for individual investors. It includes the factors deciding optional portfolio investment are rate of return, degree of risk, rate of growth, speculative interest, risk coverage and volume of fund required.
F. Efe Aksuyek Zurich (2008) in his study Information theory and portfolio management, tries to understand the link of information theory to the theory of optimal investments in a stock market. It considers two scenarios, first investigating optimal portfolio construction problem in a stock market with known distributions of stock returns. Then, examining a universal approach for portfolio consideration in stock market without knowledge of distributions of stock returns.

III. DATA ANALYSIS AND INTERPRETATION

A. *Calculation of Average Return of Companies*

Average return = $\sum R/N$

Date	Opening share price (P0)	Closing share price(P1)	(P1-P0)	(P1-P0)/P0*100

Using the above formulae average return of companies

Table 1

S.no	Companies	Return
1	ICICI Bank	0.347
2	HDFC Bank	0.332
3	WIPRO	0.134
4	TECHMAHINDRA	(0.180)
5	CIPLA	(0.051)
6	DR REDDYS LABORATORIES	0.085

1) *Interpretation:* per the analysis from table 1, average return of banking sector for the month of February and March are yielding positive returns where as companies tech Mahindra and cipla are yielding negative returns.

B. *Calculation of Standard Deviation*

Standard deviation = √ variance

Variance = 1/n-1*($\sum$ d^2)

Date	Return (R)	Avg. Return(R1)	d (R-R1)	d^2

Table 2

S.no	Companies	Risk
1	ICICI Bank	1.248
2	HDFC Bank	0.660
3	WIPRO	1.35
4	TECHMAHINDRA	1.279
5	CIPLA	1.09
6	DR REDDYS LABORATORIES	1.49

1) *Interpretation:* Above table analyses the individual risk of the companies, comparing to all the companies HDFC has less risk, in banking sector. As techmahindra and cipla companies have negative returns, though they have lesser risky it is suggest able to invest in wipro and Dr reddys laboratories.

C. *Calculation of Correlation Between Two Companies*

Covariance (Covab) =1/(n-1) ($\sum$dx.dy)

Correlation of coefficient = Covab/$\sigma a * \sigma b$

Date	dx	dy	dx*dy

Table 3

S.no	Companies	Correlation coefficient
1	ICICI and HDFC Bank	0.422
2	WIPRO and TECHMAHINDRA	0.673
3	CIPLA and DR REDDYSLABORATORIES	0.102

1) *Interpretation:* Correlation coefficient analyses the combination of portfolios, if correlation coefficient is 0.7 to 1.0 it is said to be strong correlation, 0.4 to 0.6 is moderate and below 0.2 is said to be weak correlation. From table 3, banking sector evaluates moderate correlation where as IT sector has strong correlation and Pharmaceutical industry has weak correlation.

D. *Calculation of Portfolio Weights*
During the minimum risk portfolio, the following formula is used
Wa = $(\sigma b)2 - rab (\sigma a)(\sigma b)/(\sigma a)2 + (\sigma b)2 - 2rab(\sigma a)(\sigma b)$
Where,
Xa is the proportion of security A
Xb is the proportion of security B

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σ_a is the standard deviation of security A

σ_b is the standard deviation of security B

Rab is correlation coefficient between A and B

1) ICICI and HDFC Bank

Xa = $(0.660)^2$-0.422(1.248)(0.660)/ $(1.248)^2$+$(0.660)^2$-2(0.422)(1.248)(0.660)

Xa = 0.068

Xb = 1- Xa

1-0.068

Xb = 0.93

2) WIPRO and Tech Mahindra

Xa =$(1.279)^2$-0.673(1.35).(1.279)/$(1.35)^2$+$(1.279)^2$-2(0.673)(1.35)(1.279)

Xa = 0.42

Xb = 1-042 =0.58

E. CIPLA and Dr Reddy Laboratories

Xa = $(1.49)^2$-0.102(1.09)(1.49)/$(1.09)^2$+$(1.49)^2$-2(0.102)(1.09)(1.49)

Xa = 0.67

Xb = 1-0.67 = 0.33

F. Calculation of Portfolio Return

$R_P = W_1R_1+W_2R_2$ for two securities

W_1, W_2 are the weights of the securities

$R_1 R_2$ are expected return of the securities

1) ICICI and HDFC BANK

R_P = (0.068)(0.347)+(0.93)(0.308)

     = 0.332

2) WIPRO and TECH Mahindra

R_P = (0.42)(0.134)+(0.58)(0.179)

     = 0.047

3) CIPLA and Dr Reddy Laboratories

R_P = (0.67)(0.051)+(0.33)(0.085)

     = 0.0621

G. Calculation Of Portfolio Risk

1) For Two Securities

$$\sigma p = \sqrt{(\sigma a)2 * (Xa)2 + (\sigma b)2*(Xb)2+2rab * \sigma a * \sigma b * Xa * Xb}$$

Where, $\sigma p = Portfolio risk$

Xa = proportion of the investment in security A

Xb = proportion of investment in security B

rab = correlation coefficient between security A&B

$\sigma a = standard\ deviation\ of\ security\ A$

$\sigma b = standard\ deviation\ of\ security\ B$

a) ICICI and HDFC Bank

σp =√$(0.068)^2$*$(1.248)^2$+$(0.660)^2$*$(0.93)^2$+(0.422)(1.248)(0.660)(0.068)(0.93)

 = √0.0072+0.376+0.0439

= √0.42716 = 0.65

b) *WIPRO and TECH Mahindra*

$$\sigma p = \sqrt{(1.35)^2(0.45)^2 + (1.279)^2(0.58)^2 + 2*(0.675)(1.35)(1.279)(0.45)(0.58)}$$

$= \sqrt{0.369 + 0.550 + 0.608}$

$= \sqrt{1.527} = 1.23$

IV. FINDINGS

A. The prime objective of this combination is to reduce risk of portfolio, least preference is given to the portfolio returns, As per the calculations ICICI bears a proportion of 0.068 where as HDFC bears 0.93. Standard deviation of the companies are 1.248 for ICICI and 0.660 for HDFC.

B. The proportion of investment for WIPRO and TECH MAHINDRA are 0.42 and 0.58 respectively. Standard deviation of the companies are 1.35 and 1.279

C. As per the calculations CIPLA and DR REDDYS LABS has the proportions of 0.67 and 0.33. The standard deviations of companies are 1.09 and 1.49 respectively.

D. Hence, it is recommended to invest in HDFC, in order to reduce the portfolio risk.

E. Correlation between ICICI and HDFC bank are 0.422 which indicates moderate correlation, this indicates combination of these portfolio yield moderate retuns.

F. Similarly, correlation between WIPRO and TECH MAHINDRA bears 0.673, which indicates strong correlation, this may lead to satisfactory return.

G. CIPLA and DR REDDYS LABORATORIES has 0.102 implying weak correlation

V. SUGGESTIONS

A. Select your Portfolio investment on economic grounds.

B. Buy stocks in companies with potential.

C. "Putting all the eggs in one basket"will never help to maximize their return rather choose combination of portfolio that will reduce the risk in long term.

D. The investor must select the right advisory body which has sound knowledge about the product which they are offering.

E. Take advantage of volatility before reaching a new equilibrium.

VI. CONCLUSION

Project portfolio selection evidently contributes to success of project portfolio management and more importantly to achievement of corporate strategy. In order to ensure fruitful outcome resulted from effective and efficient selection of project portfolio, organisations need to develop or adopt a systematic approach to portfolio selection. This systematic approach includes integration of three important factors of selection committee, methods or models, process or frameworks. This research results complex process or frame works of project portfolio selection recommended by academics. This practice may fail to support these corporations to realize their corporate strategy in the long run when competition becomes fiercer in the dynamic changing of business environment.

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