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# ANALYSIS ON PORTFOLIO MANAGEMENT WITH REFERENCE TO CEMENT ANDAUTOMOBILE INDUSTRY

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## ABSTRACT

Investors in today's volatile stock market have indicated a preference for portfolio diversification and portfolio extension as a means of lowering overall investment risk and enhancing possible returns. Additionally, investors have shown an interest in diversifying their portfolios as a means of reducing risk and raising potential returns. This article reveals the inner workings of an efficient portfolio, which can be used to build a diversified investment portfolio that yields the maximum return possible with the least amount of risk. This article also discusses the benefits of having a well-balanced portfolio. One approach to diversify a portfolio is to personally test it with various groups, but this is a time-consuming and computationally costly process. One of many possible investment strategies might help you reach your goal. This section of the article delves further into the monthly returns made by the firms in question. The best approach to achieving the market impact and the clustering process's aims was found to be correlation-based dissimilarity measurements. The market effect was reduced due to the use of partial correlation. Prior returns were assessed, and comparisons of returns were made using the central tendency measurement (also known as the standard deviation) as part of the risk and return study of equity portfolios. This was completed in order to complete the analysis. This use of the standard deviation allowed for more accurate comparisons to be made. Another factor taken into account all through the process of the risk assessment was the standard deviation of the returns. It was settled upon as a strategy to invest equally in domestic and international markets. This choice was taken so that the portfolio's results could be measured against those of markets both at home and abroad. The portfolios' empirical findings have been analyzed extensively, and the outcomes are presented.

## INTRODUCTION

Investors' portfolios are collections of assets they own. These combinations could include numerous asset classes such as equity and debt, as well as different issuers such as government bonds and corporate debt, as well as various instruments such as discount bonds, warrants, debentures, and blue chip equities or emerging blue chip scrip's.

Traditional Portfolio Theory tries to choose stocks that are compatible with an investor's asset choices, needs, and preferences. Modern Portfolio Theory states that maximising returns while minimising risk will result in optimal returns, that investor preferences and attitudes are merely a starting point for investing decisions, and that a thorough risk-return analysis is required to maximise returns. The return on portfolio is a weighted average of individual stock returns, with the weights equivalent to the percentages of each stock in the entire portfolio.

Portfolio construction and performance are two aspects of portfolio analysis. All of these are aspects of portfolio management, which is a dynamic notion subject to daily and hourly changes based on information flows, money flows, and economic and non-economic forces at work on the country's markets and assets.

## REVIEW OF LITERATURE

To capture the spirit of modern advances and provide a guided tour of the complicated and intricate world of investing. It provides a complete framework for portfolio management and covers professional methodologies for analysing and appraising investment alternatives as well as portfolio management. Formal strategy methods have been found to be ineffective for shaping strategy, especially in tumultuous situations. Emerging strategies, which are distinct from top-down strategy procedures, are critical for organisational adaptation. The authors investigate strategic control mechanisms at the portfolio level and their impact on emergent and deliberate strategies. Strategic control operations not only help to ensure that desired plans are carried out, but they also provide strategic opportunities by revealing emergent patterns.

As Per Dr Naveen Prasadula A portfolio-wide approach is needed to improve the effectiveness of project portfolio risk management. This article introduces a method based on mathematical optimization for selecting an appropriate set of a priori local and global responses to address risks that threaten a project portfolio while taking into account key factors such as cost, budget, project preference weights, and risk-event probabilities. The proposed method can be employed in project risk because it offers new features when compared to previous methods created for single projects.

## OBJECTIVES OF THE STUDY

- To understand the construction of Portfolio Management.
- To calculate the correlation between different stocks.
- To compute the portfolio returns and portfolio risks.

## SCOPE OF THE STUDY

The research entails calculating correlations between various securities in order to determine what percentage of cash should be invested among the portfolio's companies. The analysis also involves the computation of individual security Standard Deviation and concludes with the weighting of individual stocks in the portfolio. These percentages aid in the allocation of funds available for investment into riskier portfolios.

## METHODOLOGY

The methodology adopted or employed in this study was Mostly on secondary data collection i.e.,

- Companies Annual Reports
- Information from Internet
- Publications

## LIMITATIONS

- Based on the Markowitz approach, portfolio construction is limited to two enterprises.
- The BSE Listings are evaluated for a small number of scripts / companies that are chosen at random.
- The data was gathered solely from secondary sources. The project has no primary data linked with it.
- Due to the project's small scale, a thorough investigation of the subject was not possible.

Domestic vehicle production increased at a 2.36 percent compound annual growth rate (CAGR) from FY16 to FY20, with 26.36 million vehicles manufactured in FY20. Domestic car sales increased at a 1.29 percent compound annual growth rate (CAGR) between FY16 and FY20, reaching 21.55 million vehicles in FY20. In fiscal year 21 (FY21), 22,652,108 passenger automobiles were produced. In August 2021, total passenger vehicle manufacturing, including three-wheelers, two-wheelers, and quadricycles, totaled 1,984,676 units (excluding BMW, Mercedes, Tata Motors, and Volvo Auto).

Two-wheelers and passenger autos are the most popular vehicles in India's domestic market. The majority of passenger automobile sales are made up of small and mid-sized cars. With almost 20.1 million vehicles sold in FY20, two-wheelers and passenger automobiles respectively accounted for 80.8 percent and 12.9 percent of the market share. In August 2021, 1,271,455 units of two-wheelers were sold. In August 2021, a total of 232,224 passenger automobiles were sold.

From FY16 to FY20, total automotive exports climbed by 6.94 percent, reaching 4.77 million units. Two-wheelers accounted for 73.9 percent of all vehicles transported, with passenger vehicles (14.2 percent), three-wheelers (10.5 percent), and commercial vehicles accounting for the remaining 10.5 percent (1.3 percent). From April to June 2021, Indian automotive exports grew to 1,419,430 units, up from 436,500 units in April to June 2020. India's EV finance industry is expected to reach Rs. 3.7 lakh crore (US\$ 50 billion) by 2030, according to NITI Aayog and Rocky Mountain Institute. (RMI). According to a poll conducted by the India Energy Storage Alliance, the EV industry in India is expected to develop at a CAGR of 36 percent until 2026.

## CAPITAL ASSET PRICING MODEL (CAPM)

The basic structure of the Capital Asset Pricing Model was created by Markowitz, William Sharpe, John Lintner, and Jan Mossin. It's a linear general equilibrium return model. Because non market risk can be reduced by diversification and systematic risk quantified by beta, the needed rate return of an asset has a linear relationship with the asset's beta value, i.e. undiversifiable or systematic risk (i.e. market linked risk) under the CAPM theory. As a result, the CAPM, also known as the Security Market Line, can illustrate the link between an asset's return and its systemic risk.

$$R_p = R_f X_f + R_m (1 - X_f)$$

$R_p$  = portfolio return.

$X_f$  = The percentage of funds allocated to risk-free assets.

1-  $X_f$  = The amount of money invested in high-risk assets.

$R_f$  = risk-free rate of return.

$R_m$  = return on risky assets.

The predicted returns can be calculated using a formula for a variety of scenarios, including combining risk-free assets with risky assets, investing solely in risky assets, and combining borrowing with risky assets.

### THE SHARPE'S INDEX MODEL

The investor always prefers to choose a stock combination that offers the most return while also posing the least risk. He wants to keep the reward-to-risk ratio at a reasonable level. Traditionally, analysts focused on the stock's return on investment. Risk is receiving more attention these days, and experts are generating risk and return projections. Sharp has created a simplified portfolio analysis methodology. He assumed that a security's return is proportional to a single index, such as the market index. The market index, strictly speaking, should include all securities traded on the exchange. In the absence of a market index, a popular index can be used as a substitute. Sharpe has developed a methodology for deciding which equities to include in a portfolio.

The selection of any stock is directly related to its excess return – beta ratio

$$R_i - R_f / a_i$$

Where  $R_i$  = expected stock return  $i$

$R_f$  = expected risk-free asset return

$A_i$  = the projected change in the rate of return on stock  $I$  as a function of a one-unit change in the market return.

### SINGLE INDEX MODEL

The majority of stock processes move with the market index, according to causal monitoring of stock values over time. When the S&P 500 rises, so do stock prices, and vice versa. This suggests that the market index and stock prices are both influenced by some underlying factor. The market index is related to stock prices, and this relationship can be used to predict the return on stock. The following equation can be used:

$$R_i = a + a_i R_m + e_i$$

Where  $R_i$  = Projected return on investment in security  $i$

$a$  = straight line intercept or alpha coefficient

$a_i$  = straight line slope or beta coefficient

$R_m$  = The rate of return on a market index .

$e_i$  = error term with a mean of zero and a standard deviation of one standard deviation.

Which of these is a constant?

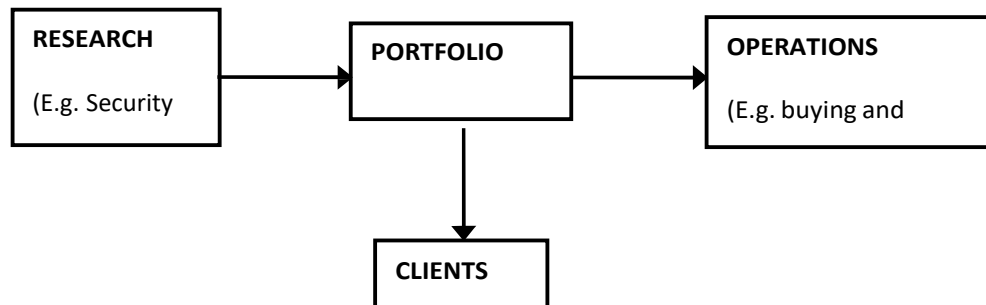
## PORTFOLIO MANAGEMENT

Portfolio management is the management of various financial assets which comprise the portfolio.

- Portfolio management is a decision-making assistance system that is meant to fulfil the diverse needs of investors.
- According to the Stocks and Exchange Board of India, a portfolio manager is someone who manages a person's complete holdings of securities.

## STRUCTURE / PROCESS OF TYPICAL PORTFOLIO MANAGEMENT

In a small business, the portfolio manager also serves as a security analyst. Portfolio manager and security analyst are job functions that are common in medium and big enterprises.



## DATA ANALYSIS & INTERPRETATION

### AUTOMOBILE INDUSTRY:

### CALCULATION OF STANDARD DEVIATION

Standard Deviation =  $\sqrt{\text{Variance}}$

Variance =  $\frac{1}{n} \sum (R_i - \bar{R})^2$

**MARUTI SUZUKI:**

**Table-1:**

Months	Return[R] %	Avg. Return[R] %	(R-R <sup>-</sup> ) %	(R-R <sup>-</sup> ) <sup>2</sup> %
May	-4.6	2.48	-7.08	50.12
June	4.45	2.48	1.97	3.88
July	9.65	2.48	7.17	51.4
August	2.45	2.48	-0.03	0.009
September	-0.85	2.48	-3.33	11.08
October	3.8	2.48	1.32	1.74
				118.229

$$\text{Variance} = 1/n(R-R^-)^2 = 1/6(118.229) = 0.0014$$

$$\text{Standard deviation}(\sigma) = \sqrt{\text{Variance}} = \sqrt{.0014}$$

$$\sigma = 0.037$$

**TATA MOTORS:**

**Table-2**

Months	Return[R] %	Avg. Return[R] %	(R-R <sup>-</sup> ) %	(R-R <sup>-</sup> ) <sup>2</sup> %
May	68.6	79.7	-11.1	123.2
June	87.4	79.7	7.7	59.2
July	82.3	79.7	2.6	6.7
August	72.4	79.7	-7.3	53.2
September	71.1	79.7	-8.6	73.9
October	96.8	79.7	17.1	292.4
				608.6

$$\text{Variance} = 1/n(R-R^-)^2 = 1/6(608.6) = 0.00027$$

$$\text{Standard deviation}(\sigma) = \sqrt{\text{Variance}} = \sqrt{0.00027}$$

$$\sigma = 0.016$$

**HONDA:**

**Table-3:**

Months	Return[R] %	Avg. Return[R] %	(R-R <sup>-</sup> ) %	(R-R <sup>-</sup> ) <sup>2</sup> %
May	3.29	18.73	-15.44	237.1
June	12.23	18.73	-6.5	42.25
July	23.8	18.73	5.07	25.7



August	21.11	18.73	2.38	5.6
September	25.94	18.73	7.21	51.9
October	26.02	18.73	7.29	53.1
				415.6

$$\text{Variance} = 1/n(R-R^-)^2 = 1/6(415.6) = 0.0004$$

$$\text{Standard deviation}(\sigma) = \sqrt{\text{Variance}} = \sqrt{0.0004}$$

$$\sigma = 0.02$$

#### CALCULATION OF CORRELATION:

$$\text{Covariance}(\text{COV } a,b) = 1/n(RA-RA^-)(RB-RB^-)$$

$$\text{Correlation Coefficient} = \text{COV}(a, b) / \sigma_a \sigma_b$$

#### MARUTI(RA) & TATA(RB):

Table-4:

Months	(RA-RA <sup>-</sup> )	(RB-RB <sup>-</sup> )	(RA-RA <sup>-</sup> )(RB-RB <sup>-</sup> )
May	-7.08	-11.1	78.58
June	1.97	7.7	15.16
July	7.17	2.6	18.64
August	-0.03	-7.3	0.21
September	-3.33	-8.6	28.63
October	1.32	17.1	22.57
			163.57

$$\text{Covariance}(\text{COV } a,b) = 1/6(163.57) = 0.001$$

$$\text{Correlation Coefficient} = \text{COV}(a, b) / \sigma_a \sigma_b$$

$$\sigma_a = 0.037; \sigma_b = 0.016$$

$$= 0.001 / (0.037)(0.016) = 1.68$$

#### MARUTI(RA) & HONDA(RB):

Table-5:

Months	(RA-RA <sup>-</sup> )	(RB-RB <sup>-</sup> )	(RA-RA <sup>-</sup> )(RB-RB <sup>-</sup> )
May	-7.08	-15.44	109.03
June	1.97	-6.5	-12.8
July	7.17	5.07	36.3
August	-0.03	2.38	-0.07
September	-3.33	7.21	-24.009
October	1.32	7.29	9.62
			118.07

Covariance(COV a,b)=1/6(118.07)=0.0014

Correlation Coefficient=COV(a, b)/ $\sigma_a, \sigma_b$

$\sigma_a = 0.037$  ;  $\sigma_b = 0.02$

=0.0014/(0.037)(0.02)=1.89

**TATA(RA) & HONDA(RB):**

**Table-6:**

Months	(RA-RA <sup>-</sup> )	(RB-RB <sup>-</sup> )	(RA-RA <sup>-</sup> )(RB-RB <sup>-</sup> )
May	-11.1	-15.44	170.9
June	7.7	-6.5	-50.05
July	2.6	5.07	13.18
August	-7.3	2.38	-17.37
September	-8.6	7.21	-62.006
October	17.1	7.29	124.6
			179.25

Covariance(COV a,b)=1/6(179.25)=0.00092

Correlation Coefficient=COV(a, b)/ $\sigma_a, \sigma_b$

$\sigma_a = 0.016$ ;  $\sigma_b = 0.02$

=0.00092/(0.016)(0.02)=2.87

**CALCULATION OF PORTFOLIO WEIGHTS:**

$W_a = \sigma_b[\sigma_b - (nab * \sigma_a)] / \sigma_a^2 + \sigma_b^2 - 2nab * \sigma_a * \sigma_b$

$$W_b = 1 - W_a$$

### MARUTI & TATA

$$\sigma_a = 0.037, \sigma_b = 0.016$$

$$n_{ab} = 1.68$$

$$W_a = \frac{0.016[0.016 - (1.68 * 0.037)]}{0.037^2 + 0.016^2 - 2(1.68) * 0.037 * 0.016}$$

$$W_a = 2.02$$

$$W_b = 1 - W_a$$

$$W_b = 1 - 2.02 = -1.02$$

### MARUTI & HONDA

$$\sigma_a = 0.037, \sigma_b = 0.02$$

$$n_{ab} = 1.89$$

$$W_a = \frac{0.02[0.02 - (1.89 * 0.037)]}{0.037^2 + 0.02^2 - 2(1.89) * 0.037 * 0.02}$$

$$W_a = 0.97$$

$$W_b = 1 - 0.97 = 0.03$$

### TATA & HONDA

$$\sigma_a = 0.016, \sigma_b = 0.02$$

$$n_{ab} = 2.87$$

$$W_a = \frac{0.02[0.02 - (2.87 * 0.016)]}{0.016^2 + 0.02^2 - 2(2.87) * 0.016 * 0.02}$$

$$W_a = 0.43$$

$$W_b = 1 - 0.43 = 0.57$$

### CALCULATION OF PORTFOLIO RISK

$$R_p = \sqrt{(\sigma_a * W_a)^2 + (\sigma_b * W_b)^2 + 2 * \sigma_a * \sigma_b * W_a * W_b * n_{ab}}$$

### MARUTI & TATA:

$$\sigma_a = 0.037, \sigma_b = 0.016$$

$$nab=1.68$$

$$Wa= 2.02 , Wb= -1.02$$

$$Rp=\sqrt{(0.037*2.02)^2+(0.016*-1.02)^2+2*0.037*0.016*2.02*-1.02*1.68)}$$

$$Rp= 0.04\%$$

### **MARUTI & HONDA**

$$\sigma a=0.037 , \sigma b=0.02$$

$$nab=1.89$$

$$Wa= 0.97, Wb=0.03$$

$$Rp=\sqrt{(0.037*0.97)^2+(0.02*0.03)^2+2*0.037*0.02*0.97*0.03*1.89)}$$

$$Rp= 0.037\%$$

### **TATA & HONDA**

$$\sigma a=0.016, \sigma b=0.02$$

$$nab=2.87$$

$$Wa= 0.43 , Wb=0.57$$

$$Rp=\sqrt{(0.016*0.43)^2+(0.02*0.57)^2+2*0.016*0.02*0.43*0.57*2.87)}$$

$$Rp=0.025\%$$

### **CALCULATION OF PORTFOLIO RETURNS**

$$Rp=( RA*WA)+(RB*WB)$$

$$RA= \text{return of A} , WA= \text{weight of A}$$

$$RB= \text{return of B} , WB= \text{weight of B}$$

### **MARUTI & TATA**

$$RA= 2.48 \quad WA=2.02$$

$$RB=79.7 \quad WB=-1.02$$

$$Rp=( 2.48*2.02)+(79.7*-1.02) =-76.2\%$$

### **MARUTI & HONDA**

$$RA=2.48 \quad WA=0.97$$

$$RB=18.7 \quad WB=0.03$$

$$Rp=( 2.48*0.97)+(18.7*0.03)$$

$$=2.96$$

### TATA & HONDA

$$RA=79.7 \quad WA=0.43$$

$$RB=18.7 \quad WB=0.57$$

$$Rp=(79.7*0.43)+(18.7*0.57)$$

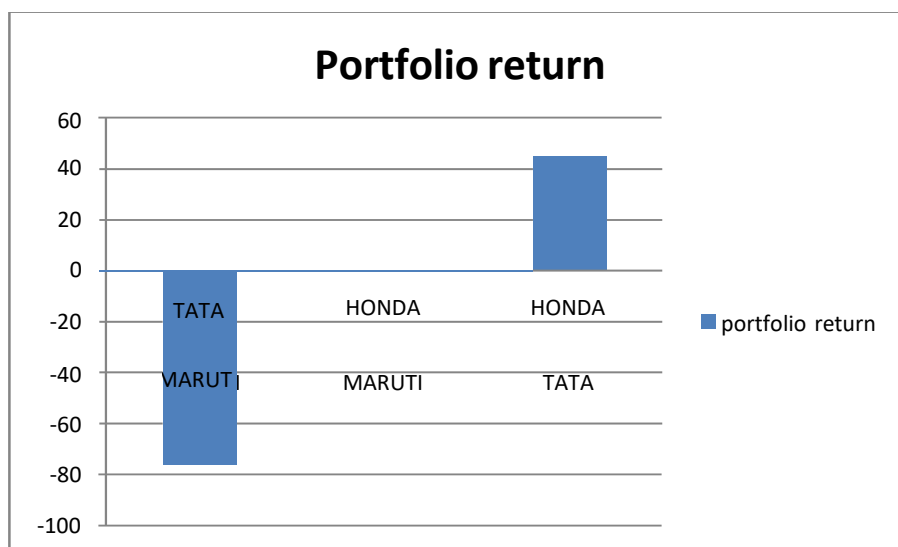
$$=44.93$$

### PORTFOLIO RETURNS & RISKS OF THE SELECTED STOCKS

Table-7:

combination of script A & script B		portfolio return %	portfolio risk %
MARUTI	TATA	-76.2	0.04
MARUTI	HONDA	2.96	0.037
TATA	HONDA	44.93	0.025

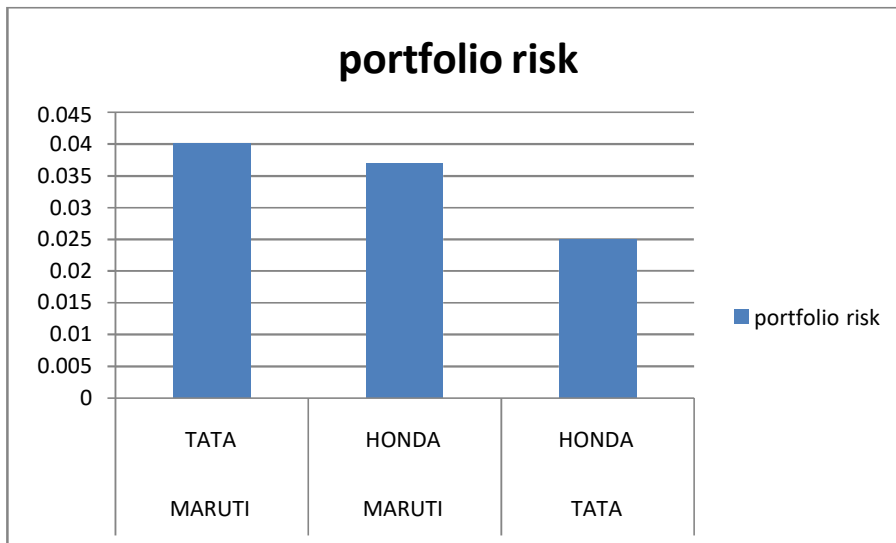
Graph 1:



### INTERPRETATION

Based on above portfolio return of selected scripts TATA & HONDA are earning highest portfolio return and MARUTI & TATA are earning lowest portfolio return.

Graph 2:



## INTERPRETATION

Based on the above calculations portfolio risk of selected scripts MARUTI & TATA having highest and TATA& HONDA having lowest risk.

## CEMENT NDUSTRY:

### CALCULATION OF STANDARD DEVIATION

$$\text{Standard Deviation} = \sqrt{\text{Variance}}$$

$$\text{Variance} = 1/n(R - R^-)^2$$

## ACC CEMENT:

Table-8:

Months	Return[R] %	Avg. Return[R] %	(R-R <sup>-</sup> ) %	(R-R <sup>-</sup> ) <sup>2</sup> %
May	14.74	31.06	-16.32	266.34
June	20.73	31.06	-10.33	106.7
July	19.86	31.06	-11.2	125.44
August	46.54	31.06	15.48	239.63
September	49.26	31.06	18.2	331.24
October	35.26	31.06	4.2	17.64
				1086.99

$$\text{Variance} = 1/n(R - R^-)^2 = 1/6(1086.99) = 0.000153$$

$$\text{Standard deviation}(\sigma) = \sqrt{\text{Variance}} = \sqrt{0.000153}$$

$$\sigma = 0.012$$

# **ULTRATECH CEMENT:**

**Table-9:**

Months	Return[R] %	Avg. Return[R] %	(R-R <sup>-</sup> ) %	(R-R <sup>-</sup> ) <sup>2</sup> %
May	39.38	55.7	-16.32	266.34
June	44.89	55.7	-10.81	116.85
July	47.5	55.7	-8.2	67.24
August	67.74	55.7	12.04	144.96
September	70.48	55.7	14.78	218.44
October	64.26	55.7	8.56	73.27
				887.1

$$\text{Variance} = 1/n(R-R^-)^2 = 1/6(887.1) = 0.000187$$

$$\text{Standard deviation}(\sigma) = \sqrt{\text{Variance}} = \sqrt{0.000187}$$

$$\sigma = 0.013$$

# **AMBUJA CEMENT:**

**Table-10:**

Months	Return[R] %	Avg. Return[R] %	(R-R <sup>-</sup> ) %	(R-R <sup>-</sup> ) <sup>2</sup> %
May	25.91	51.7	-25.79	665.12
June	33.89	51.7	-17.81	317.19
July	41.88	51.7	-9.82	96.43
August	70.24	51.7	18.54	343.73
September	76.25	51.7	24.55	602.7
October	62.26	51.7	10.56	111.51
				2136.68

$$\text{Variance} = 1/n(R-R^-)^2 = 1/6(2136.68) = 0.000078$$

$$\text{Standard deviation}(\sigma) = \sqrt{\text{Variance}} = \sqrt{0.000078}$$

$$\sigma = 0.0088$$

# **CALCULATION OF CORRELATION:**

$$\text{Covariance}(\text{COV } a,b) = 1/n(RA-RA^-)(RB-RB^-)$$

$$\text{Correlation Coefficient} = \text{COV}(a, b) / \sigma_a \sigma_b$$

# **ACC(RA ) & ULTRATECH(RB):**

**Table-11:**

Months	(RA-RA <sup>-</sup> )	(RB-RB <sup>-</sup> )	(RA-RA <sup>-</sup> )(RB-RB <sup>-</sup> )
--------	-----------------------	-----------------------	--

May	-16.32	-16.32	266.34
June	-10.33	-10.81	111.66
July	-11.2	-8.2	91.84
August	15.48	12.04	186.37
September	18.2	14.78	268.99
October	4.2	8.56	35.95
			961.15

Covariance(COV a,b)=1/6(961.15)=0.00017

Correlation Coefficient=COV(a, b)/ $\sigma_a, \sigma_b$

$\sigma_a = 0.012$ ;  $\sigma_b = 0.013$

=0.00017/(0.012)(0.013)=1.089

**ACC(RA) & AMBUJA(RB):**

**Table-12:**

Months	(RA-RA <sup>-</sup> )	(RB-RB <sup>-</sup> )	(RA-RA <sup>-</sup> )(RB-RB <sup>-</sup> )
May	-16.32	-25.79	420.89
June	-10.33	-17.81	183.97
July	-11.2	-9.82	109.98
August	15.48	18.54	286.99
September	18.2	24.55	446.81
October	4.2	10.56	44.35
			1492.99

Covariance(COV a,b)=1/6(1492.99)=0.00011

Correlation Coefficient=COV(a, b)/ $\sigma_a, \sigma_b$

$\sigma_a = 0.012$ ;  $\sigma_b = 0.008$

=0.00011/(0.012)(0.008)=1.145

**ULTRATECH(RA) & AMBUJA(RB):**

**Table-13:**

Months	(RA-RA <sup>-</sup> )	(RB-RB <sup>-</sup> )	(RA-RA <sup>-</sup> )(RB-RB <sup>-</sup> )
May	-16.32	-25.79	420.89
June	-10.81	-17.81	192.52
July	-8.2	-9.82	80.52
August	12.04	18.54	223.22
September	14.78	24.55	362.84
October	8.56	10.56	90.39
			1370.38



$$\text{Covariance}(\text{COV } a,b)=1/6(1370.38)=0.00012$$

$$\text{Correlation Coefficient}=\text{COV}(a, b)/\sigma_a,\sigma_b$$

$$\sigma_a =0.013; \sigma_b =0.008$$

$$=0.00012/(0.013)(0.008)=1.153$$

#### **CALCULATION OF PORTFOLIO WEIGHTS:**

$$W_a = \sigma_b[\sigma_b-(nab*\sigma_a)] / \sigma_a^2+\sigma_b^2-2nab*\sigma_a*\sigma_b$$

$$W_b=1-W_a$$

#### **ACC & ULTRATECH**

$$\sigma_a=0.012, \sigma_b=0.013$$

$$nab=1.089$$

$$W_a = \frac{0.013[0.013-(1.089*0.012)]}{0.012^2+0.013^2-2(1.089)*0.012*0.013}$$

$$W_a =0.033$$

$$W_b=1-0.033=0.967$$

#### **ACC & AMBUJA**

$$\sigma_a=0.012, \sigma_b=0.0088$$

$$nab=1.145$$

$$W_a = \frac{0.0088[0.0088-(1.145*0.012)]}{0.012^2+0.0088^2-2(1.145)*0.012*0.0088}$$

$$W_a =2.13$$

$$W_b=1-2.13= -1.13$$

#### **ULTRATECH & AMBUJA**

$$\sigma_a=0.013, \sigma_b=0.0088$$

$$nab=1.153$$

$$W_a = \frac{0.0088[0.0088-(1.153*0.013)]}{0.013^2+0.0088^2-2(1.153)*0.013*0.0088}$$

$$W_a =3.13$$

$$W_b=1-3.13= -2.13$$

## CALCULATION OF PORTFOLIO RISK

$$R_p = \sqrt{(\sigma_a \cdot W_a)^2 + (\sigma_b \cdot W_b)^2 + 2 \cdot \sigma_a \cdot \sigma_b \cdot W_a \cdot W_b \cdot \rho_{ab}}$$

### ACC & ULTRATECH

$$\sigma_a = 0.012, \sigma_b = 0.013$$

$$\rho_{ab} = 1.089$$

$$W_a = 0.033, W_b = 1 - 0.033 = 0.967$$

$$R_p = \sqrt{(0.012 \cdot 0.033)^2 + (0.013 \cdot 0.967)^2 + 2 \cdot 0.012 \cdot 0.013 \cdot 0.033 \cdot 0.967 \cdot \rho_{ab}}$$

$$R_p = 0.013\%$$

### ACC & AMBUJA

$$\sigma_a = 0.012, \sigma_b = 0.0088$$

$$\rho_{ab} = 1.145$$

$$W_a = 2.13, W_b = 1 - 2.13 = -1.13$$

$$R_p = \sqrt{(0.012 \cdot 2.13)^2 + (0.0088 \cdot -1.13)^2 + 2 \cdot 0.012 \cdot 0.0088 \cdot 2.13 \cdot -1.13 \cdot 1.145}$$

$$R_p = 0.013\%$$

### ULTRATECH & AMBUJA

$$\sigma_a = 0.013, \sigma_b = 0.0088$$

$$\rho_{ab} = 1.153$$

$$W_a = 3.13, W_b = 1 - 3.13 = -2.13$$

$$R_p = \sqrt{(0.013 \cdot 3.13)^2 + (0.0088 \cdot -2.13)^2 + 2 \cdot 0.013 \cdot 0.0088 \cdot 3.13 \cdot -2.13 \cdot 1.153}$$

$$R_p = 0.015\%$$

## CALCULATION OF PORTFOLIO RETURNS

$$R_p = (R_A \cdot W_A) + (R_B \cdot W_B)$$

$$R_A = \text{return of A}, W_A = \text{weight of A}$$

$$R_B = \text{return of B}, W_B = \text{weight of B}$$

### ACC & ULTRATECH

$$R_A = 31.06, W_A = 0.03$$

$$R_B = 55.7, W_B = 0.96$$

$$R_p = (31.06 \cdot 0.03) + (55.7 \cdot 0.96)$$

=54.4

#### ACC & AMBUJA

RA=31.06 WA=2.13

RB=51.7 WB=-1.13

$R_p = (31.06 \times 2.13) + (51.7 \times -1.13)$

=7.73

#### ULTRATECH & AMBUJA

RA=55.7 WA=3.13

RB=51.7 WB=-2.13

$R_p = (55.7 \times 3.13) + (51.7 \times -2.13)$

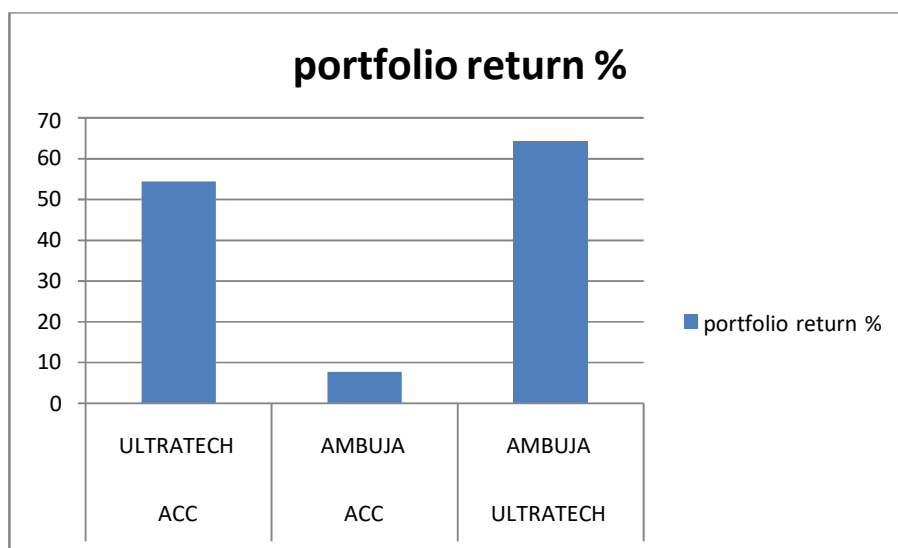
=64.2

### PORTFOLIO RETURNS & RISKS OF THE SELECTED STOCKS

Table-14:

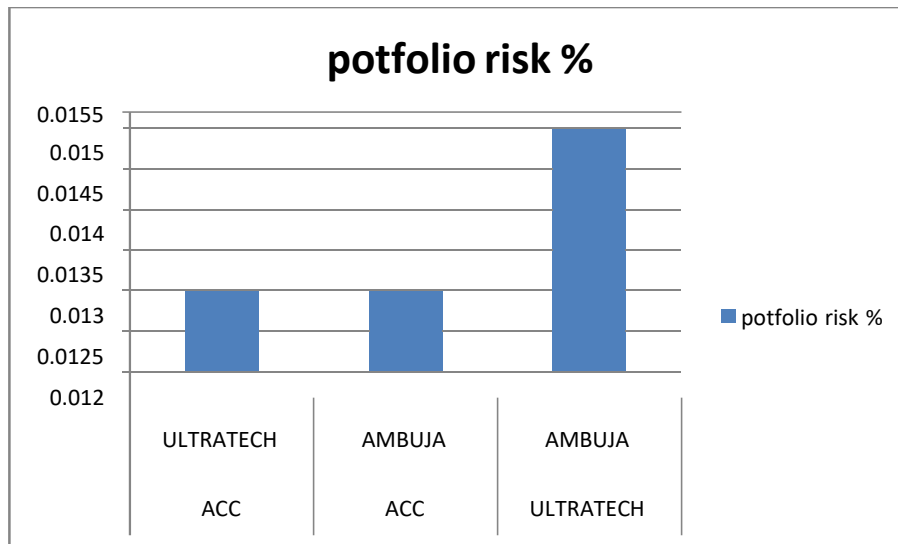
combination of script A & script B		portfolio return %	potfolio risk %
ACC	ULTRATECH	54.4	0.013
ACC	AMBUJA	7.73	0.013
ULTRATECH	AMBUJA	64.2	0.015

Graph-3:



### INTERPRETATION

Based on above portfolio return of selected scripts ULTRATECH & AMBUJA are earning highest portfolio return and ACC & AMBUJA are earning lowest portfolio return.

**Graph-4:****INTERPRETATION**

Based on the above calculations portfolio risk of selected scripts ULTRATECH & AMBUJA having highest risk and ACC & ULTRATECH and ACC & AMBUJA are having medium range of risk.

**FINDINGS**

- Correlation between all the companies is positive which means the combinations of two industry's portfolios are at good position to gain in future.
- Portfolios Returns of TATA & HONDA(44.93%) stood on the top while portfolio returns of MARUTI & HONDA (2.96%) and MARUTI & TATA(-76.2%) stood at the bottom.
- Portfolio Returns of ACC & ULTRATECH (54.4%) followed by ALTRATECH & AMBUJA (64.2%) stood on the top while portfolio returns of ACC & AMBUJA (7.73%) stood at the bottom.
- Comparing of both two industries cement industry earning highest returns and automobile industry earning lowest returns in selected companies.
- And comparing of both two industries automobile industry having medium range of risk and cement industry having low risk.

## SUGGESTIONS

- The investors who require high return with low risk can invest in TATA and HONDA, and ULTRATECH and AMBUJA.
- All the investors who invest in the securities are ultimately benefited by investing in selected scripts of Industries.
- MARUTI and HONDA, and ACC and AMBUJA are good options for investors looking for a low-risk, low-return investment.
- Investing in selected scripts of Industries benefits all investors who invest in securities in the long run.
- All the stocks under consideration have given positive return except MARUTI & TATA which indicates the positive performance of the stock market, specially the SENSEX stocks.
- TATA & HONDA has been the outstanding performer with a portfolio return of nearly 55%. And ULTRATECH & AMBUJA in cement industry has been the outstanding performer with a portfolio return of nearly 65%. This indicates that Investors can be assured of good returns in the long run by investing in companies. Rest of the stocks has given average returns ranging from 24% to 32%.

## CONCLUSION

Portfolio management is a broad term that refers to a variety of activities involving investment assets and securities. It is a dynamic and adaptable idea that entails systematic and regular examination, judgement, and action. If a group of securities is held together in such a way that higher returns are guaranteed after risk factors are taken into account, the result will be favourable. The basic goal of portfolio management is to assist investors in making informed decisions about alternative investments without the need for post-traded shares. In the same

prospectus, every portfolio management must state the objectives, such as maximum returns, optimal returns, capital appreciation, and safety, among others. This service renders optimum returns to the investors by proper selection and continuous shifting of portfolio from one scheme to another scheme or from one plan to another plan within the same scheme.

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