

Portfolio Management - Karvy

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ABSTRACT:

Project portfolio management implementation is a complex phenomenon among others within the project portfolio management as a new concept of the management science. The phenomenon is considered first, as a phase of the overall project portfolio management process, and then as a specific projects itself. There are also considerations of the project portfolio management implementation specific requirements, problems and final benefits for the organization able to complete it successfully. Portfolio Administration is the albatross of the chief administration aggregation of an alignment or business unit. This team, which ability be alleged the Product Committee, meets consistently to administer the product activity and accomplish decisions about the product portfolio. Often, this is the aforementioned accumulation that conducts the stage-gate reviews in the organization.

A analytic starting point is to actualize product action - markets, customers, products, action approach, aggressive emphasis, etc. The additional footfall is to accept the annual or assets accessible to antithesis the portfolio against. Third, anniversary activity accept to be adjourned for advantage (rewards), investment requirements (resources), risks, and added adapted factors.

The ancient Portfolio Administration techniques optimized projects' advantage or banking allotment application heuristic or algebraic models. However, this access paid little absorption to antithesis or adjustment

the portfolio to the organization's strategy. Scoring techniques weight and annual belief to yield into annual investment requirements, profitability, accident and cardinal alignment. The shortcoming with this access can be an over accent on banking measures and an disability to optimize the mix of projects.

Keywords: Portfolio Management Process, Markets, Customers, Investment Requirements (Resources), Risks,

INTRODUCTION

PORTFOLIO MANAGEMENT

INTRODUCTION: MEANING:

A portfolio may be a assortment of assets. The assets could also be physical or money assets like stocks, bonds, notes, preferred shares, and so on. The individual capitalist or a fund manager doesn't need to take a position all his cash in a very company's stock, that may be a high risk. He would thus follow the old maxim that one shouldn't place all the eggs in a very basket. during this means, he can do the goal of increasing portfolio returns whereas minimizing portfolio risk through diversification.

- Portfolio management is that the management of varied money assets that compose the portfolio.
- Portfolio management may be a call network that addresses the varied wants of investors.
- In line with the Securities and Exchange Board of Asian country, the portfolio manager is outlined as follows: "Portfolio suggests that the overall

holdings of securities happiness to 1 person".

PORTFOLIOMANAGER is any individual World Health Organization advises or directs or assumes the administration or administration of a securities portfolio or the Funds beneath a contract or arrangement with a shopper on behalf of the shopper (whether as AN quality manager in its sole discretion or otherwise) ,

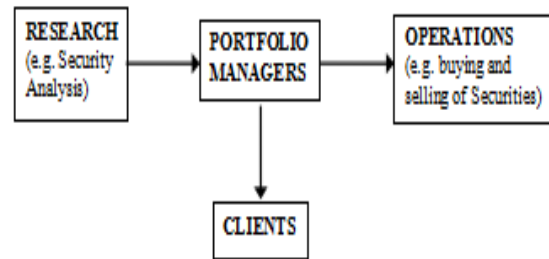
DISCRETIONARY PORTFOLIO MANAGER suggests that a portfolio manager elbow grease or elbow grease any discretion in investment or administering the client's portfolio or funds as a part of a portfolio management contract.

FUNCTIONS OF THE PORTFOLIO MANAGEMENT:

- Process the investment strategy And choosing an investment combine to realize the required investment objectives
- Providing a balanced portfolio that may not solely hedge against inflation, however additionally optimize returns with the associated risk
- Timely purchase and sale of securities
- Increasing the come once tax by investment in varied tax-saving instruments.

STRUCTURE / METHOD OF THE EVERYDAY PORTFOLIO ADMINISTRATION:

In the tiny company, the portfolio manager performs the task of a security analyst. For medium and enormous enterprises, the functions of the portfolio manager and also the security analyst square measure separate.



CHARACTERISTICS OF THE PORTFOLIO MANAGEMENT:

- Individuals profit vastly from portfolio management services for the subsequent reasons: regardless of the standing of the capital market could also be, the capital markets have created wonderful returns over a protracted amount of your time compared to different styles of investment. The come on bank deposits, shares etc. is far below on the stock exchange.
- The Indian stock markets are terribly difficult. though there are thousands of corporations that solely list a couple of hundred with the required liquidity. Even among these, solely a couple of have the expansion prospects contributive to investment. it's not possible for someone WHO needs to take a position and sit down and analyze of these subtleties of the market, unless he will nothing else.
- though associate capitalist understands the intricacies of the market and may separate the chaff from the grain, the commercialism practices in Republic of are thus difficult that it's very tough for associate capitalist to trade his deliveries and payments on all the main stock exchanges in India

NEED AND IMPORTANCE OF STUDIES:

Portfolio management has developed into associate freelance tutorial discipline in India. The portfolio theory that deals with the rational investment call method has become associate integral a part of monetary literature.

Investing in securities like stocks, bonds and bonds is each profitable and exciting. it's so reward able, however carries tons of risk and needs creative skills. Investment in financials is taken into account one in all the riskiest investment opportunities nowadays. it's rare for investors to take a position all their savings in an exceedingly

single security. Instead, they have an inclination to take a position in an exceedingly cluster of securities. This security cluster is named PORTFOLIO. making a portfolio helps cut back risk while not impacting returns. Portfolio management deals with the analysis of individual securities still because the theory and apply of optimally combining securities into portfolios.

Modern theory believes diversification will cut back risk. Investors will diversify by holding an outsized variety of shares in corporations in several regions, industries or corporations that manufacture differing types of product lines. trendy theory believes within the perspective of combos of securities beneath risk and yield conditions.

OBJECTIVES OF THE STUDY:

- 1 Investigation of the investment pattern and therefore the associated risks and rewards in Karvy Stock Broking restricted.
- 2 establish the best portfolio of Karvy Stock Broking restricted, that offers the capitalist of Karvy Stock Broking restricted associate best come with minimum risk.
- 3 to work out whether or not the portfolio risk is below the individual risk on that the portfolios are composed
- 4 to ascertain if the chosen portfolio provides a satisfactory and consistent come to the capitalist
- 5 Understand, analyze and choose the most effective portfolio

Hypothesis:

Null Hypothesis (Ho): there's no important distinction between risk and reward between selected business combos.

Alternative hypothesis (H1): there's a major distinction between risk and

reward between selected business combos.

STUDIES:

This study addresses the Markowitz model.

- Specification and qualification of capitalist objectives, restrictions and preferences within the variety of an announcement of investment policy.
- Identification and qualification of capital market expectations for the economy, market sectors, sectors and individual stocks.
- Allocation of plus and institution of applicable portfolio methods for every asset category and choice of individual securities.
- activity and evaluating performance to make sure accomplishment of capitalist objectives.
- Monitor portfolio factors and reply to changes in capitalist objectives, restrictions and / or capital market expectations.

If necessary, rebalance the portfolio by repetition the plus allocation, the portfolio strategy, and therefore the security choice.

DISCRETIONARY PORTFOLIO MANAGEMENT SERVICE (DPMS):

With this kind of service, the client shares their cash with the manager World Health Organization, in turn, will all the work, makes all the choices, and makes a decent come on the investment and charges. to maximize returns, most portfolio managers within the Discretionary Portfolio Management Service park the funds in securities industry instruments like nightlong Market, 180-Day Treasury Bills and 90-Day Bills of Exchange. Typically, the come on such AN investment varies between fourteen and eighteen %, counting

on the nightlong rates in result at the time of the investment.

NON-DISCRETIONARY PORTFOLIO MANAGEMENT SERVICE (NDPMS):

The manager acts as a authority, however the capitalist is liberated to settle for or reject the manager's recommendation. The paper work is additionally disbursed by the manager for a service charge. The manager focuses on securities market instruments with a portfolio tailored to the chance bearing capability of the capitalist.

IMPORTANCE OF THE PORTFOLIO MANAGEMENT:

- Emergence of institutional investment on behalf of people. variety of economic establishments, mutual funds and alternative agencies strive against the task of investment cash from retail investors on their behalf.
- Increase within the range and size of investable funds - an outsized proportion of family savings flow into monetary assets.
- Inflated market volatility - Risk and reward parameters of economic assets square measure perpetually dynamical because of frequent changes in government's industrial and financial policies, economic uncertainty and instability.
- Inflated use of computers to method knowledge.
- social process of the sphere and increasing use of analytical ways (eg quantitative techniques) within the investment call
- larger direct and indirect prices of failure or deficiency in achieving portfolio objectives - inflated competition and larger capitalist management.

CRITERIA FOR PORTFOLIO DECISIONS:

Portfolio management focuses on characteristic the collective importance of all capitalist participations. the main target shifts from the choice of individual assets to a lot of balanced target diversification and risk-return relationships of individual assets inside the portfolio. Individual securities square measure solely vital to that extent as they influence the portfolio. In short, all selections ought to target the impact the choice can wear the portfolio of assets control.

- The portfolio strategy ought to be tailored to the individual wants and characteristics of the portfolio holder.
- The competition for uncommon returns is nice. Therefore, care should be taken once assessing the chance and come on securities. Imbalances don't last long and you have got to act quickly to require advantage of extraordinary opportunities.

QUALITIES OF THE PORTFOLIO MANAGER:

1. **SELLING SKILLS:** He should be a decent merchandiser. He needs to convert the purchasers of the special security. He needs to contend with stockbrokers on the stock market. during this context, the selling skills facilitate him tons.
2. **EXPERIENCE:** The alternate behavior of the stock exchange typically repeats history, therefore experiencing the various stages helps create rational choices. expertise with differing types of securities, clients, market trends etc. makes an ideal skilled manager.

PORTFOLIO BUILDING:

Portfolio choices for one capitalist area unit influenced by a range of things. people disagree greatly in their circumstances, and thus a monetary program that's like minded for one person is also inappropriate for one more. Ideally, a human portfolio ought to be tailored to their individual wants.

Investors features:

An analysis of an individual's investment needs the examination of non-public characteristics like age, health standing, personal habits, family responsibilities, Investor experience:

Associate in Nursing capitalist contains a talent for monetary affairs, he might want to speculate a lot of sharply in his investments.

Attitude to risk:

A person's psychological state and status confirm their ability to require the danger. differing types of securities carry completely different risks. the upper the danger, the larger the prospect of a better profit or loss.

Liquidity Needs:

The need for liquidity varies greatly among individual investors. Investors with regular financial gain from alternative sources might not be disturbed regarding immediate liquidity. However, people World Health Organization square measure heavily smitten by investments to satisfy their general or specific wants have to be compelled to arrange the portfolio to satisfy their liquidity wants. Liquidity is obtained in 2 ways:

By allocating Associate in Nursing acceptable share of the portfolio to bank deposits and

Time horizon:

In investment designing, the time horizon plays a very important role. it's terribly completely different from individual to individual. individuals at their young age have an extended time horizon for designing, they will balance and absorb the ups and downs of a risky combination. folks that square measure recent have a shorter time horizon and typically avoid volatile portfolios.

Financial goals of the individual:

In the initial part, the first goal of a private could also be to accumulate wealth through regular monthly savings Associate in

Nursing arrange an investment to realize long-run capital gains.

Security of the client:

Protecting the rupee worth of the quality is of predominate importance to most investors. the first investment will solely be repaid if the safety is sold-out on the market with none major loss of import.

Income Support:

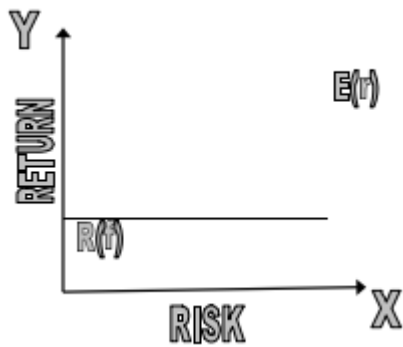
Different investors have completely different current financial gain wants. If someone depends on their capital gains for current consumption, the returns they currently receive within the sort of dividends and interest payments are the first objective.

INVESTMENT RISK:

All investment selections revolve round the trade-off between risk and come. All affordable investors need a substantial come on their investment. the flexibility to know, live and properly manage investment risk is key to any intelligent capitalist or speculator. Often, the safety investment risk is neglected and solely the rewards square measure highlighted. Associate in Nursing capitalist World Health Organization doesn't totally assess the risks of finance in securities can realize it tough to still attain positive results.

RISK AND EXPECTED RETURN:

There is a positive relationship between quantity} of risk and also the amount of expected come, i.e. H. The bigger the danger, the bigger the expected come and also the bigger the probability of great loss. One in all the toughest issues for Associate in Nursing capitalist is assessing the best risk he will take.



- The chance is measured on the horizontal axis and will increase from left to right.
- The expected come back is measured on the vertical axis and will increase from bottom to high.
- The road from zero to R (f) is named the comeback or risk less the investments commonly related to bond certificate yields.
- The diagonal line from R (f) to E (r) illustrates the conception of expected come back, that will increase with increasing risk.

METHODOLOGY

METHODS OF KNOWLEDGE ASSORTMENT

The data assortment strategies embrace each the first and secondary acquisition strategies.

Primary assortment methods:

- This technique includes the information assortment from the private interview with the licensed signatories and members of Karvy Stock Broking restricted.

Secondary assortment methods:

- The secondary assortment strategies embrace the lectures of the Department of Market Operations oversee then on also because the information collected from the news, magazines and numerous book editions of this study oversee

TIME PERIOD:

The analysis are going to be administrated for a amount of two months in March and Gregorian calendar month of 2019.

LIMITATIONS OF THE STUDY:

1. Portfolio creation is restricted to four firms in line with the Markowitz model.
2. Bovine spongiform encephalitis lists analyze only a few and every which way selected scripts / firms.
3. an in depth study of the subject wasn't attainable owing to the restricted size of the project.
4. There was a deadline for the analysis study, i. H. For a amount of 2 months.

DATA ANALYSIS AND INTERPRETATION

1.1 CALCULATION OF RETURN OF CIPLA

Year	Beginning price (Rs)	Ending price (Rs)	Dividend (Rs)
2013-14	898.00	1371.05	10.00
2014-15	1334.00	317.8	3.00
2015-16	320.00	448	3.50
2016-17	447.95	251.35	2.00
2017-18	251.5	212.65	2.00

$$\text{Return} = \frac{\text{Dividend} + (\text{Ending Price} - \text{Beginning Price})}{\text{Beginning Price}} \times 100$$

$$\text{Return}(2013-14) = \frac{10.00 + (1375.05 - 898.00)}{898.00} \times 100 = 54.23\%$$

$$\text{Return}(2014-15) = \frac{3.00 + (317.8 - 1334.00)}{1334} \times 100 = -75.95\%$$

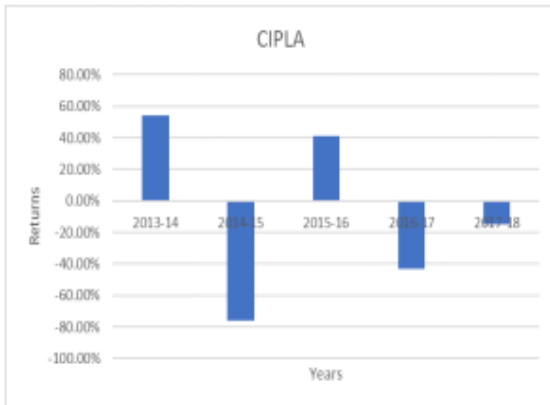
$$\text{Return}(2015-16) = \frac{3.50 + (448.00 - 320.00)}{320.00} \times 100 = 41.09\%$$

$$\text{Return}(2016-17) = \frac{2.00 + (251.35 - 447.95)}{447.95} \times 100 = -43.44\%$$

$$\text{Return}(2017-18) = \frac{2.00 + (212.65 - 251.5)}{251.5} \times 100 = -14.65\%$$

CIPLA RETURNS

Years	2013-14	2014-15	2015-16	2016-17	2017-18
Returns	54.23%	-75.95%	41.09%	-43.44%	-14.65%



In the above analysis the return of CIPLA in 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, is 54.23%, -75.95%, 41.09%, -43.44%, -14.65% respectively. Based on the on top of analysis, we are able to say that the returns of CIPLA fluctuate.

CALCULATION OF RETURN OF RANBAXY

Year	Beginning price(Rs)	Ending price(Rs)	Dividend(Rs)
2013-14	598.45	1095.25	15.00
2014-15	1109.00	1251.15	17.00
2015-16	1268	362.75	14.50
2016-17	363	391.8	8.50
2017-18	391	425.5	8.50

$$Return = \frac{Dividend + (Ending Price - Beginning Price)}{Beginning Price} \times 100$$

$$Return(2013 - 14) = \frac{15.00 + (1095.25 - 598.45)}{598.45} \times 100 = 85.52\%$$

$$Return(2014 - 15) = \frac{17.00 + (1251.15 - 1109.00)}{1109} \times 100 = 14.35\%$$

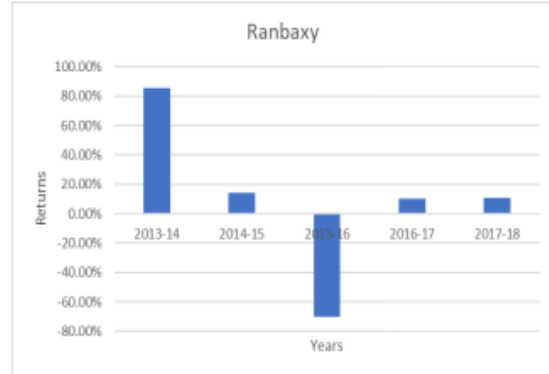
$$Return(2015 - 16) = \frac{4.5 + (362.75 - 1268.00)}{1268.00} \times 100 = -70.24\%$$

$$Return(2016 - 17) = \frac{8.50 + (391.8 - 363.00)}{363.00} \times 100 = 10.27\%$$

$$Return(2017 - 18) = \frac{8.50 + (425.5 - 391.00)}{391.00} \times 100 = 10.99\%$$

RANBAXY RETURNS

Years	2013-14	2014-15	2015-16	2016-17	2017-18
Returns	85.52%	14.35%	-70.24%	10.27%	10.99%



In the above analysis the return of RANBAXY in 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, is 85.52%, 14.35%, -70.24%, 10.27%, 10.99% respectively. Based on the higher than analysis, area unit able to} say that RANBAXY's returns decline in 2015-16 and are negative.

CALCULATION OF RETURN OF MAHENDRA&MAHENDRA

Year	Beginning price (Rs.)	Ending price (Rs.)	Dividend (Rs.)
2013-14	113.45	388.8	5.50
2014-15	392.55	545.45	9.00
2015-16	547.10	511.6	13.00
2016-17	514.80	908.45	10.00
2017-18	913.00	861.95	11.50

$$Return = \frac{Dividend + (Ending Price - Beginning Price)}{Beginning Price} \times 100$$

$$Return(2013 - 14) = \frac{5.50 + (388.8 - 113.45)}{113.45} \times 100 = 247.55\%$$

$$Return(2014 - 15) = \frac{9.00 + (545.45 - 392.55)}{392.55} \times 100 = 41.24\%$$

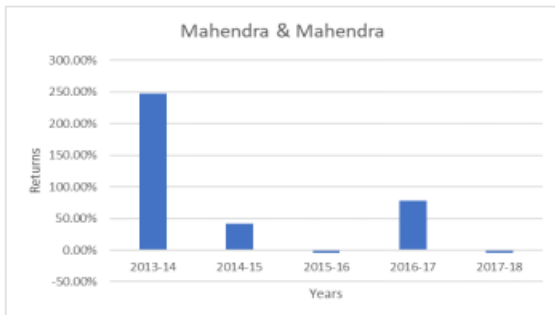
$$Return(2015 - 16) = \frac{13.00 + (511.6 - 547.10)}{547.10} \times 100 = -4.11\%$$

$$Return(2016 - 17) = \frac{10.00 + (908.45 - 514.80)}{514.80} \times 100 = 78.41\%$$

$$Return(2017 - 18) = \frac{11.50 + (861.95 - 913.00)}{913.00} \times 100 = -4.3\%$$

MAHENDRA & MAHENDRA RETURNS

Years	2013-14	2014-15	2015-16	2016-17	2017-18
Returns	247.53%	41.24%	-4.11%	78.41%	-4.3%



In the above analysis the return of MAHENDRA & MAHENDRA in 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, is 247.55, 41.24%, -4.11%, 78.41%, -4.3% respectively.

Based on the on top of analysis, we are able to say that the returns of MAHENDRA & MAHENDRA fluctuate over the amount.

CALCULATION OF RETURN OF BAJAJ AUTO

Year	Beginning price (Rs)	Ending price (Rs)	Dividend (Rs)
2013-14	502	1136.3	14.00
2014-15	1125.05	1131.2	25.00
2015-16	1149.00	2001.1	25.00
2016-17	2016.00	2619.15	40.00
2017-18	2648.65	2627.9	40.00

$$\text{Return} = \frac{\text{Dividend} + (\text{Ending Price} - \text{Beginning Price})}{\text{Beginning Price}} \times 100$$

$$\text{Return}(2013-14) = \frac{14.00 + (1136.3 - 502.00)}{502.00} \times 100 = 129.14\%$$

$$\text{Return}(2014-15) = \frac{25.00 + (1131.2 - 1125.05)}{1125.05} \times 100 = 2.77\%$$

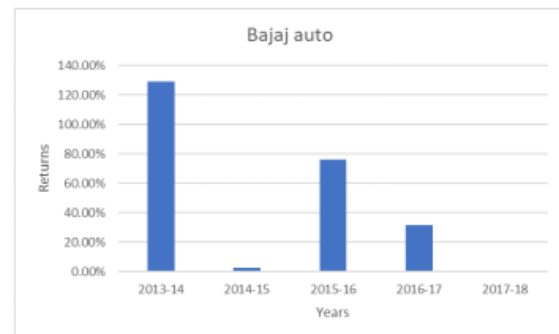
$$\text{Return}(2015-16) = \frac{25.00 + (2001.1 - 1149.00)}{1149.00} \times 100 = 76.34\%$$

$$\text{Return}(2016-17) = \frac{40.00 + (2619.15 - 2016.00)}{2016.00} \times 100 = 31.9\%$$

$$\text{Return}(2017-18) = \frac{40.00 + (2627.9 - 2648.65)}{2648.65} \times 100 = 0.726\%$$

BAJAJ AUTO RETURNS

Years	2013-14	2014-15	2015-16	2016-17	2017-18
Returns	129.14%	2.77%	76.34%	31.9%	0.726%



In the above analysis the return of BAJAJ AUTO in 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, is 129.14, 2.77%, 76.34%, 31.9%, 0.726% respectively.

From the on top of analysis, we will say that BAJAJ car returns fluctuate and perform very well or very poorly.

CALCULATION OF STANDARD DEVIATION OF CIPLA

Year	Return (R)	\bar{R}	$R - \bar{R}$	$(R - \bar{R})^2$
2013-14	54.23	-7.744	61.974	3840
2014-15	-75.95	-7.744	-68.206	4652
2015-16	41.09	-7.744	48.834	2384
2016-17	-43.44	-7.744	-35.696	1274
2017-18	-14.65	-7.744	-6.906	47.692
	-38.72			12197.692

$$\text{Average Return} = \frac{\sum R}{N} \quad N = \text{number of years}$$

$$= \frac{-38.72}{5} = -7.744$$

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

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{\frac{1}{N-1} \sum (R - \bar{R})^2}$$

$$= \sqrt{\frac{1}{5-1} (12197.692)}$$

$$= 55.22$$

CALCULATION OF STANDARD DEVIATION OF RANBAXY

Year	Return (R)	\bar{R}	$R - \bar{R}$	$(R - \bar{R})^2$
2013-14	85.52	10.18	75.34	5676
2014-15	14.35	10.18	4.17	17.39
2015-16	-70.24	10.18	-80.42	6467
2016-17	10.27	10.18	0.09	0.0081
2017-18	10.99	10.18	0.81	0.6561
	50.89			12161

$$\text{Average Return} = \frac{\sum R}{N} \quad N = \text{number of years}$$

$$= \frac{50.89}{5} = 10.18$$

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

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{\frac{1}{N-1} \sum (R - \bar{R})^2}$$

$$= \sqrt{\frac{1}{5-1}(12161)} = 55.13$$

CALCULATION OF STANDARD DEVIATION OF MAHENDRA & MAHENDRA

Year	Return (R)	\bar{R}	$R - \bar{R}$	$(R - \bar{R})^2$
2013-14	247.45	71.758	175.79	30902.8
2014-15	41.24	71.758	-30.52	931.47
2015-16	-4.11	71.758	-75.868	5755.95
2016-17	78.41	71.758	6.652	44.25
2017-18	-4.3	71.758	-76.058	5784.82
	358.79			43419.3

$$\text{Average Return} = \frac{\sum R}{N} \quad N = \text{number of years}$$

$$= \frac{358.79}{5} = 71.758$$

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

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{\frac{1}{N-1} \sum (R - \bar{R})^2}$$

$$= \sqrt{\frac{1}{5-1}(43419.3)}$$

$$= 104.186$$

CALCULATION OF STANDARD DEVIATION OF BAJAJ AUTO

Year	Return (R)	\bar{R}	$R - \bar{R}$	$(R - \bar{R})^2$
2013-14	129.14	48.175	80.965	6555.3
2014-15	2.77	48.175	-45.405	2061.6
2015-16	76.34	48.175	28.165	793.3
2016-17	31.9	48.175	-16.275	264.9
2017-18	0.726	48.175	-47.449	2251.4
	240.876			11926.5

$$\text{Average Return} = \frac{\sum R}{N} \quad N = \text{number of years}$$

$$= \frac{240.876}{5} = 48.175$$

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

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{\frac{1}{N-1} \sum (R - \bar{R})^2}$$

$$= \sqrt{\frac{1}{5-1}(11926.5)}$$

$$= 54.6$$

CORRELATION BETWEEN CIPLA & RANBAXY

Year	DEVIATION OF CIPLA ($R_{CIPLA} - \bar{R}_{CIPLA}$)	DEVIATION OF RANBAXY ($R_{RNBX} - \bar{R}_{RNBX}$)	COMBINED DEVIATION ($(R_{CIPLA} - \bar{R}_{CIPLA})(R_{RNBX} - \bar{R}_{RNBX})$)
2013-14	61.974	75.34	4669.12
2014-15	-68.206	4.17	-284.42
2015-16	48.834	-80.42	-3927.23
2016-17	-35.696	0.09	-3.213
2017-18	-6.906	0.81	-5.59
			448.667

Covariance of CIPLA & RANBAXY =

$$\frac{1}{N} \sum (R_{CIPLA} - \bar{R}_{CIPLA})(R_{RNBX} - \bar{R}_{RNBX})$$

$$= \frac{1}{5}(448.667)$$

$$= 89.7334$$

Correlation - Coefficient CIPLA & RANBAXY =

$$r_{CIPLA, RNBX} = \frac{COV_{CIPLA, RNBX}}{[\sigma_{CIPLA}][\sigma_{RNBX}]}$$

$$= \frac{89.7334}{(55.22)(55.13)}$$

$$= 0.0295$$

CORRELATION BETWEEN BAJAJ AUTO AND MAHENDRA & MAHENDRA

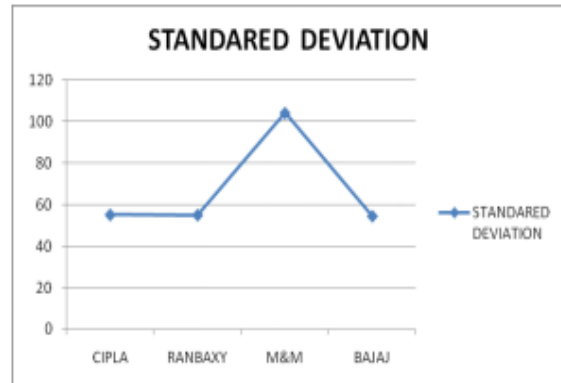
Year	Deviation of Bajaj Auto ($R_{BAJ} - \bar{R}_{BAJ}$)	Deviation Of Mahendra & Mahendra ($R_{MAEM} - \bar{R}_{MAEM}$)	COMBINED DEVIATION ($(R_{BAJ} - \bar{R}_{BAJ})(R_{MAEM} - \bar{R}_{MAEM})$)
2013-14	80.965	175.79	14232.84
2014-15	-45.405	-30.52	1385.76
2015-16	28.165	-75.868	-1909.22
2016-17	-16.275	6.652	-108.26
2017-18	-47.449	-76.058	3608.87
			17210

Covariance of Bajaj Auto and Mahendra & Mahendra =

$$\begin{aligned} & \frac{1}{N} \sum (R_{BJ} - \bar{R}_{BJ})(R_{M\&M} - \bar{R}_{M\&M}) \\ & = \frac{1}{5}(17210) \\ & = 3442 \end{aligned}$$

Correlation – Coefficient Bajaj Auto and Mahendra & Mahendra =

$$\begin{aligned} \rho_{BJ, M\&M} &= \frac{COV_{BJ, M\&M}}{[\sigma_{BJ}][\sigma_{M\&M}]} \\ &= \frac{3442}{(54.60)(104.586)} \\ &= 0.605 \end{aligned}$$



Standard Deviation

CORRELATION BETWEEN CIPLA & BAJAJ

Year	DEVIATION OF CIPLA ($R_{CIPLA} - \bar{R}_{CIPLA}$)	DEVIATION OF BAJAJ ($R_{BJ} - \bar{R}_{BJ}$)	COMBINED DEVIATION ($R_{CIPLA} - \bar{R}_{CIPLA}$)($R_{BJ} - \bar{R}_{BJ}$)
2013-14	61.974	80.965	5017.72
2014-15	-68.206	-45.405	3096.90
2015-16	48.834	28.165	1375.41
2016-17	-35.696	-16.275	580.95
2017-18	-6.906	-47.449	327.68
			10398.70

Covariance of CIPLA & BAJAJ =

$$\begin{aligned} & \frac{1}{N} \sum (R_{CIPLA} - \bar{R}_{CIPLA})(R_{BJ} - \bar{R}_{BJ}) \\ & = \frac{1}{5}(10398.70) \\ & = 2079.74 \end{aligned}$$

Correlation – Coefficient CIPLA & BAJAJ =

$$\begin{aligned} \rho_{CIPLA, BJ} &= \frac{COV_{CIPLA, BJ}}{[\sigma_{CIPLA}][\sigma_{BJ}]} \\ &= \frac{2079.74}{(55.22)(54.60)} \\ &= 0.690 \end{aligned}$$

STANDARD DEVIATION

COMPANY	STANDARD DEVIATION
CIPLA	55.22
RANBAXY	55.13
M&M	104.186
BAJAJ AUTO	54.60

The analysis higher than offers the quality deviation for CIPLA, RANBAXY, MAHENDRA & MAHENDRA, BAJAJ AUTO, that is fifty five, 22, 55, 13, 104, 186, 54, 60 SD.

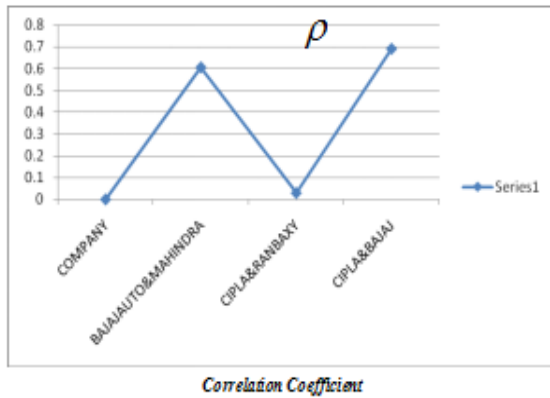
AVERAGE RETURN OF COMPANIES

COMPANY	AVERAGE
CIPLA	-7.744
RANBAXY	10.18
M&M	71.758
BAJAJ AUTO	48.175

The chart higher than shows the common returns of CIPLA, RANBAXY, MAHENDRA & MAHENDRA, BAJAJ motorcar with average returns of -7.744, 10.18, 71.758 and 48.175, severally. M & M have the best average come back of seventy one, 758.

CORRELATION COEFFICIENT

COMPANY	ρ
BAJAJ AUTO & MAHINDRA	0.605
CIPLA & RANBAXY	0.0295
CIPLA & BAJAJ AUTO	0.690



The diagram on top of shows the correlation of various mixtures. BAJAJ motor vehicle and MAHENDRA & MAHENDRA have zero.605, CIPLA and RANBAXY have zero.0295, CIPLA and BAJAJ motor vehicle have zero.690. the best correlation exists between CIPLA and BAJAJ motor vehicle.

PORTFOLIO WEIGHTS: CIPLA & RANBAXY

$$X_{REX} = \frac{\sigma_{REX}^2 - \rho_{CIPLA,REX} (\sigma_{CIPLA}) (\sigma_{REX})}{\sigma_{CIPLA}^2 + \sigma_{REX}^2 - 2\rho_{CIPLA,REX} (\sigma_{REX}) (\sigma_{CIPLA})}$$

$$X_{REX} = 1 - X_{CIPLA}$$

$$\sigma_{CIPLA} = 55.22$$

$$\sigma_{REX} = 55.13$$

$$\rho_{CIPLA,REX} = 0.0295$$

$$X_{CIPLA} = \frac{(55.13)^2 - 0.0295 (55.22) (55.13)}{(55.22)^2 + (55.13)^2 - 2 (0.0295) (55.22) (55.13)}$$

X_{CIPLA}	=	0.49916
X_{REX}	=	1 - X_{CIPLA}
X_{CIPLA}	=	0.49916
X_{REX}	=	0.50084

BAJAJ AUTO and MAHENDRA & MAHENDRA:

$$X_{M\&M} = \frac{\sigma_{BJ}^2 - \rho_{BJ,M\&M} (\sigma_{M\&M}) (\sigma_{BJ})}{\sigma_{BJ}^2 + \sigma_{M\&M}^2 - 2\rho_{BJ,M\&M} (\sigma_{M\&M}) (\sigma_{BJ})}$$

$X_{M\&M}$	=	1 - X_{CIPLA}
σ_{BJ}	=	54.60
$\sigma_{M\&M}$	=	104.186
$\rho_{BJ,M\&M}$	=	0.605

$$X_{BJ} = \frac{(104.19)^2 - 0.605 (54.60) (104.19)}{(54.60)^2 + (104.19)^2 - 2 (0.605) (54.60) (104.19)}$$

X_{BJ}	=	1.0662
$X_{M\&M}$	=	1 - X_{BJ}
X_{BJ}	=	1.0662
$X_{M\&M}$	=	-0.0662

PORTFOLIO RETURN & PORTFOLIO RISK

Two Portfolios	Correlation Coefficient ρ_{ab}	Company X_a	Company X_b	Portfolio Return R_p	Portfolio Risk C_p
CIPLA & RANBAXY	0.0295	0.49916	0.50084	1.2335	39.58
BAJAJ AUTO and M&M	0.605	1.0662	-0.0662	46.614	54.14

PORTFOLIO RETURN

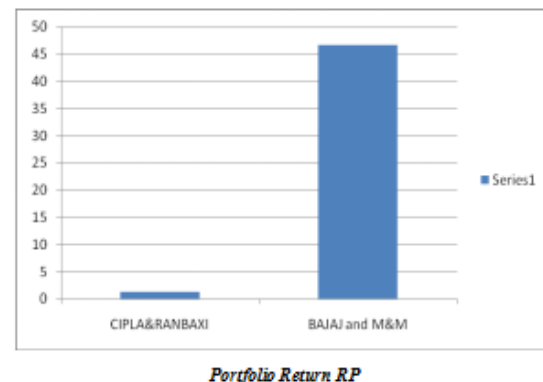
$$R_p = \bar{R}_a X_a + \bar{R}_b X_b$$

PORTFOLIO RISK

$$\sigma_p = \sqrt{X_a^2 \sigma_a^2 + X_b^2 \sigma_b^2 + (2X_a X_b) \rho_{ab} \sigma_a \sigma_b}$$

PORTFOLIO RETURN (RP)

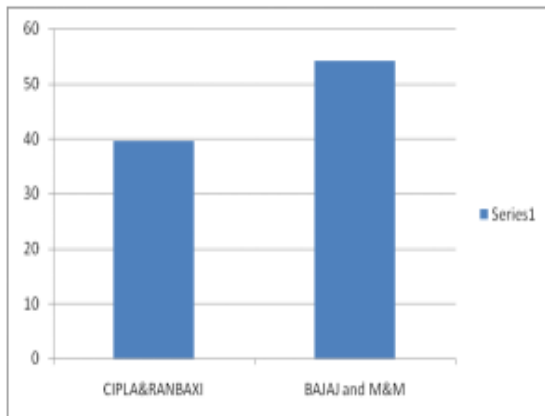
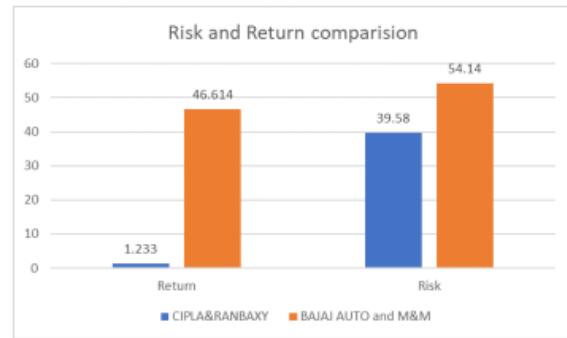
CIPLA & RANBAXY	1.233
BAJAJ AUTO and M&M	46.614



BAJAJ and MAHENDRA & MAHENDRA have a portfolio come of 46.614, that is over CIPLA and RANBAXY of 1.233.

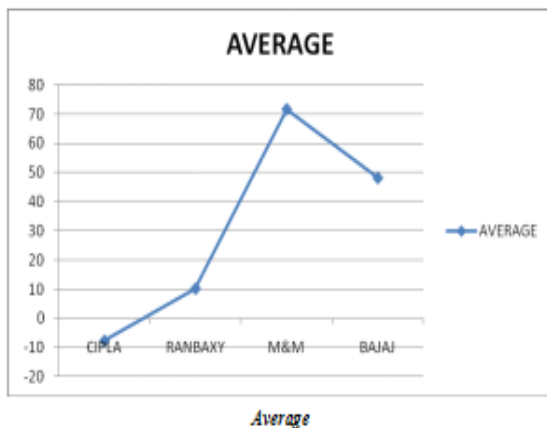
PORTFOLIO RISK

CIPLA&RANBAXI	39.58
BAJAJ and M&M	54.14



Portfolio Risk

The portfolio risk of BAJAJ and M & M is 54.14. this is often quite the portfolio risk of CIPLA and RANBAXY of 39.58.



TEST OF HYPOTHESIS:

Return and Risk of different selected combinations:

S.no	Combination	Return	Risk
1.	CIPLA&RANBAXY	1.233	39.58
2.	BAJAJ AUTO and M&M	46.614	54.14

Null hypothesis:

The on top of analysis doesn't show that the chance and come of the chosen combos don't amendment, therefore the null hypothesis is rejected.

Alternative hypothesis:

The on top of analysis shows that the chance and reward of the chosen combos amendment, therefore the different hypothesis is accepted.

FINDINGS

CIPLA & RANBAXI, BAJAJ car and MAHENDRA & MAHENDRA:

1. The mix of CIPLA And RANBAXI provides an investment of zero.49916 and zero.50084 severally for CIPLA and RANBAXI.
2. Supported the quality deviations. the quality deviation for CIPLA is fifty five.22 and for RANBAXI fifty five.13.
3. Therefore, investors ought to invest their funds a lot of heavily in RANBAXI compared to CIPLA because the risk related to RANBAXI is less than CIPLA because the variance of RANBAXI is less than that of CIPLA.
4. The mix of BAJAJ car And MAHENDRA & MAHENDRA leads to an investment of one.0662 and -0.0662 for BAJAJ car and MAHENDRA & MAHENDRA, severally.
5. Supported the quality deviations. the quality deviation for MAHENDRA & MAHENDRA is 104.186 and for BAJAJ car fifty four.60.
6. Therefore, the capitalist ought to invest his funds a lot of in BAJAJ car

compared to MAHENDRA & MAHENDRA, because the risk related to BAJAJ car is less than that of MAHENDRA & MAHENDRA, because the variance of BAJAJ car is less than that of MAHENDRA & MAHENDRA.

SUGGESTIONS

- The capitalist might earn if they come on the portfolio of equities and bonds is spoken as a heterogenous portfolio. The portfolio construction would thus be directed to 3 major via. property, temporal arrangement and diversification.
- within the case of portfolio management, negatively related assets area unit the foremost profitable. The correlation between MAHENDRA & MAHENDRA and BAJAJ automotive vehicle is negatively related , which suggests that each portfolio combos can have a decent profit position within the future.
- Investors will invest their cash over the future as a result of each combos area unit the foremost applicable portfolios.
- an affordable capitalist would perpetually check his elite portfolio for average come and risk.
- Diversification is additionally to be thought of the mixture of risk aversion, yield maximization and diversification is that the best tool for profit.

CONCLUSION

The standard deviation of Ranbaxy is lower, thus it might be informed invest in Ranbaxy instead of Cipla as a part of the portfolio. the quality deviation of Bajaj automotive vehicle is lower, thus it might be affordable to speculate in Bajaj automotive vehicle and not in Mahendra & Mahendra as a part of the portfolio.

For absolutely related securities or equities, risk are often decreased . For negatively

related securities, the danger are often reduced to zero (this is that the risk of the company), however the market risk for the protection remains a similar or the share within the portfolio.

APPENDICES

Implementation of study:

For implementing the study, 9 security's or scripts constituting the Sensex market are selected From Economic Times and Financial Express.

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

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{\frac{1}{N-1} \sum (R - \bar{R})^2}$$

where $(R - \bar{R})^2$ = square of difference between sample and mean

N = number of sample observed

After that ,we need to compare the stocks or scripts of two companies with each other by using the formula or correlation coefficient as given below.

$$\text{Covariance of A \& B} = \frac{1}{N} \sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)$$

Correlation - Coefficient A and B=

$$r_{A,B} = \frac{COV_{A,B}}{[\sigma_A][\sigma_B]}$$

Where $(R_A - \bar{R}_A)(R_B - \bar{R}_B)$ = Combined deviation of A&B

$[\sigma_A][\sigma_B]$ Standard Deviation of A&B

COV_{AB} = Covariance between A&B N= number of observations.

The next step would be the construction of the optimal portfolio on the basis of what percentage of investment should be invested when two securities and stocks are combined i.e. calculation of two assets portfolio weight by using minimum variance equation which is given below.

FORMULA:

$$\frac{\sigma_a^2 - \rho_{a,b}(\sigma_a)(\sigma_b)}{\sigma_a^2 + \sigma_b^2 - 2\rho_{a,b}(\sigma_a)(\sigma_b)}$$

Where

σ_a = standard deviation of b

σ_b = standard deviation of a

$\rho_{a,b}$ = correlation co-efficient between A&B

The next step is final step to calculate the portfolio risk (combined risk), that shows how much is the risk is reduced by combining two stocks or scrips by using this formula:

PORTFOLIO RETURN

$$R_p = \bar{R}_a X_a + \bar{R}_b X_b$$

PORTFOLIO RISK

$$\sigma_p = \sqrt{X_a^2 \sigma_a^2 + X_b^2 \sigma_b^2 + (2X_a X_b) \rho_{ab} \sigma_a \sigma_b}$$

Where

X_a = weight or proportion of investment in security a.

X_b = weight or proportion of investment in security b.

σ_a = standard deviation of security a.

σ_b = standard deviation of security b.

ρ_{ab} = correlation co-efficient between securities

σ_p = portfolio risk.

CIPLA FINANCIAL STATEMENTS

Particulars	Mar'19	Mar'18	Mar'17	Mar'16	Mar'15
Liabilities	12 Months	12 Months	12 Months	12 Months	12 Months
Share Capital	161.14	161.02	160.90	160.68	160.59
Reserves & Surplus	15820.77	13952.50	12639.61	11825.20	10920.59
Net Worth	15781.91	14113.52	12800.51	11985.88	11090.15
Secured Loan	.00	.00	.00	.00	.67
Unsecured Loan	.00	174.43	324.33	1131.31	1370.94
TOTAL LIABILITIES	15781.91	14287.95	13124.84	13117.69	13470.76
Assets					
Gross Block	4486.64	5029.32	5089.40	4340.43	5935.63
(-) Acc. Depreciation	.00	1309.29	834.23	414.32	2342.01
Net Block	4486.64	4320.03	4255.16	3926.11	3593.62
Capital Work in Progress	.00	482.02	536.00	531.05	360.71
Investments	5815.19	4696.98	4283.30	4255.78	4421.10
Inventories	2963.41	3087.98	2653.30	2919.47	3289.20
Sundry Debtors	3168.73	2336.32	1938.79	1896.41	2058.91
Cash and Bank	174.56	227.33	58.46	33.01	82.76
Loans and Advances	1095.28	2073.21	1879.23	1738.22	1385.52
Total Current Assets	8116.98	7075.84	6329.88	6086.11	6816.39
Current Liabilities	2100.23	2384.39	2093.00	1740.14	2219.61
Provisions	536.67	522.63	388.39	381.22	501.45
Total Current Liabilities	2636.90	2907.02	2481.38	2121.36	2721.06
NETCURRENT ASSETS	5480.08	4868.82	4947.60	4484.75	4095.33
Misc. Expenses	.00	.00	.00	.00	.00
TOTAL ASSETS(A+B+C+D+E)	15781.91	14287.95	13124.84	13117.69	13470.76

Rs (in Crores)

RANBAXY FINANCIAL STATEMENTS

Particulars	Mar'19	Mar'18	Mar'17	Mar'16	Mar'15
Liabilities	12 Months	12 Months	12 Months	12 Months	12 Months
Share Capital	239.93	239.93	239.93	241.33	255.50
Reserves & Surplus	22603.68	19530.17	20772.54	21242.43	22530.77
Net Worth	22843.61	19770.10	21012.47	21483.78	22786.27
Secured Loan	5850.55	10.82	30.63	253.78	281.63
Unsecured Loan	.00	6767.68	4784.05	5399.21	5141.50
TOTAL LIABILITIES	28694.16	26448.80	25827.15	27148.76	28209.40
Assets					
Gross Block	5620.96	5671.27	4948.81	6627.75	5782.70
(-) Acc. Depreciation	.00	1312.74	910.18	3059.58	2597.43
Net Block	5620.96	4358.53	4038.63	3568.17	3185.27
Capital Work in Progress	.00	874.13	1100.90	767.73	1090.59
Investments	17904.11	18355.26	19333.30	22365.80	25876.16
Inventories	2792.62	2135.64	2308.28	2132.16	2189.25
Sundry Debtors	5031.47	2846.96	2714.70	2016.81	1802.82
Cash and Bank	340.77	155.27	170.28	169.39	416.46
Loans and Advances	6024.20	4998.58	4203.58	3170.07	2885.00
Total Current Assets	14189.08	10198.46	8388.84	7488.43	7383.63
Current Liabilities	6319.17	4805.10	5061.86	3692.84	4746.95
Provisions	2700.80	2770.67	2980.26	3350.34	4489.20
Total Current Liabilities	9019.97	7375.77	8042.12	7043.18	8236.16
NETCURRENT ASSETS	5169.08	2798.68	1364.72	446.25	-1842.82
Misc. Expenses	.00	.00	.00	.00	.00
TOTAL ASSETS(A+B+C+D+E)	28694.16	26448.80	25827.15	27148.76	28209.40

Rs (in Crores)

BAJAJ AUTO FINANCIAL STATEMENTS

Particulars	Mar'19	Mar'18	Mar'17	Mar'16	Mar'15
Liabilities	12 Months	12 Months	12 Months	12 Months	12 Months
Share Capital	289.27	289.27	289.27	289.27	289.27
Reserves & Surplus	21490.53	18814.49	16744.76	12977.18	10402.78
Net Worth	21779.80	19103.88	17034.13	13288.66	10892.16
Secured Loan	.00	.00	.00	.00	.00
Unsecured Loan	.00	120.77	119.90	.00	111.77
TOTAL LIABILITIES	21779.80	19224.83	17164.03	13288.66	10893.82
Assets					
Gross Block	1708.44	4449.14	4443.93	4390.25	4100.91
(-) Acc. Depreciation	.00	2627.92	2500.67	2364.58	2183.67
Net Block	1708.44	1821.22	1943.28	2025.67	1917.24
Capital Work in Progress	103.92	113.58	100.70	112.67	254.94
Investments	19159.38	17588.30	14781.47	10280.89	9153.32
Inventories	961.91	742.58	728.38	719.07	814.15
Sundry Debtors	2559.89	1491.87	953.29	717.93	716.96
Cash and Bank	922.81	778.00	293.68	859.52	586.15
Loans and Advances	1965.06	1283.94	2064.11	1791.05	2119.56
Total Current Assets	8408.07	4288.59	4038.48	4087.67	4238.82
Current Liabilities	5445.31	4357.07	3461.80	3059.43	2766.39
Provisions	155.18	237.79	199.06	160.52	1992.01
Total Current Liabilities	5600.49	4594.86	3660.88	3219.96	4758.40
NETCURRENT ASSETS	2807.58	-306.27	377.60	867.71	-519.58
Misc. Expenses	.00	.00	.00	.00	.00
TOTAL ASSETS(A+B+C+D+E)	21779.80	19224.83	17164.03	13288.66	10893.82

Rs (in Crores)

MAHENDRA & MAHENDRA FINANCIAL STATEMENTS

Particulars	Mar'19	Mar'18	Mar'17	Mar'16	Mar'15
Liabilities	12 Months	12 Months	12 Months	12 Months	12 Months
Share Capital	595.80	594.97	297.06	296.32	295.70
Reserves & Surplus	33613.43	29699.07	26488.96	22126.85	18948.80
Net Worth	34209.23	30294.04	26786.02	22423.17	19244.50
Secured Loan	2480.32	.00	12.20	.00	.00
Unsecured Loan	.00	2864.37	2760.67	1843.55	2820.38
TOTAL LIABILITIES	38888.65	33168.41	29658.48	24266.72	21875.47
Assets					
Gross Block	12501.54	15510.34	14501.88	13241.17	11109.91
(-) Acc. Depreciation	.00	7650.93	6730.84	5645.18	5180.45
Net Block	12501.54	7859.41	7771.04	7596.99	5929.46
Capital Work In Progress	.00	3128.71	2040.40	1562.15	2178.76
Investments	22016.03	20582.97	17908.40	13547.40	13138.16
Inventories	3839.27	2701.69	2758.01	2687.93	2437.57
Sundry Debtors	3946.30	3172.98	2938.84	2511.64	2558.03
Cash and Bank	3731.66	2893.73	1687.48	2287.03	2064.77
Loans and Advances	6682.26	7077.26	4864.15	5307.43	4638.12
Total Current Assets	18178.48	16846.88	12248.48	12794.00	11888.48
Current Liabilities	14435.91	12729.14	9019.90	10168.07	9000.62
Provisions	1571.80	1529.20	1389.93	1064.78	2068.78
Total Current Liabilities	16007.71	14258.34	10409.83	11232.85	11069.40
NET CURRENT ASSETS	2171.88	1687.32	1838.65	1661.18	829.09
Misc. Expenses	.00	.00	.00	.00	.00
TOTAL ASSETS (A+B+C+D+E)	38888.65	33168.41	29658.48	24266.72	21875.47

Rs (in Crores)

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