

Research Paper

A PROJECT REPORT ON “A COMPARATIVE STUDY ON PORTFOLIO MANAGEMENT” AT SBI BANK

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ABSTRACT

This research compares the portfolio management practices followed at SBI. Portfolio management helps investors accomplish financial goals by managing risk and return. SBI's investment strategy, risk management, asset allocation, and portfolio performance are compared with those of other financial institutions.

This research evaluates SBI's equity funds, debt instruments, and hybrid portfolios using financial variables including return on investment, the risk-return tradeoff, diversification, and portfolio diversification methodologies. The study also evaluates client preferences, investing behaviour, and satisfaction with respect to SBI's portfolio management services.

The research uses both primary and secondary data. Yearly reports, financial accounts, and government publications provide secondary data, whereas surveys and questionnaires provide primary data. SBI's portfolio management services are evaluated and recommendations are made to improve investment strategies and client service.

The report concludes by outlining the strengths and weaknesses of SBI's portfolio management system and making suggestions to increase portfolio performance and investor satisfaction.

KEYWORDS

Financial Performance, Investor Satisfaction, Comparative Analysis, Portfolio Management, State Bank of India, Investment Strategies, Risk Management, Asset Allocation, Risk-Return Tradeoff, Diversification, Equity Funds, Debt Instruments, Hybrid Portfolios.

I. INTRODUCTION

After the Second World War, when the stock market could ruin the fortunes of individuals, companies, and governments, it was discovered that investing in various securities instead of putting all the money in a single security yielded better returns with lower risk. Harry Markowitz, the Nobel laureate, is credited with this discovery. A merchant banker or portfolio firm may manage an investor's portfolio, whereas a professional investment manager manages the portfolios of others. Personal portfolio management refers to the total securities holdings of an investor.

The aggregate return and risk of a portfolio of securities may not match those of its individual elements. Various assets and investment instruments make up a portfolio, and the combined risk and return may vary from those of the components. Over time, the investor's wealth or income is added to the portfolio to match his return or risk preferences. Since stocks interact and affect each other, portfolio analysis examines the risk-return characteristics of individual securities and how they move together.

Portfolio management involves investing in assets and securities and requires frequent, methodical analysis, judgement, and action. Based on the investor's goals, restrictions, risk and return preferences, and tax liabilities, a portfolio is created. As market circumstances change, the portfolio is evaluated and revised. The contemporary view is that diversification reduces risk, and an investor may diversify by holding several shares of firms operating in different areas, industries, or product lines.

Markowitz Model

Harry M. Markowitz developed the first modern portfolio analysis to optimize asset allocation. To do this, Markowitz constructed reward-risk portfolios. Efficiency is achieved when a portfolio is expected to generate the best return for a given level of risk, or the lowest portfolio risk for a given expected return. One chooses an anticipated return level and replaces assets until the portfolio combination with the minimum variance at that return level is determined, thereby forming an efficient portfolio. Repeating this approach for different predicted returns yields the efficient frontier.

Assumptions of the Model

- Investors see each investment option as a probability distribution of predicted returns over a holding period.
- Investors prioritize one-period anticipated utility, and their utility curves indicate diminishing marginal utility of wealth.
- Individuals judge risk based on the variability of predicted returns.
- Investors rely primarily on predicted returns and variance in making decisions.
- Investors prefer higher returns to lower returns, and lower risk to higher risk, for a given level of return.

According to these assumptions, a single asset or portfolio is described as efficient if no alternative asset or portfolio delivers a better expected return at the same level of risk, or the same expected return at a lower level of risk. Markowitz further observed the impact of diversification on security risk, showing that assets with low or negative correlation reduce risk without lowering return.

II. NEED AND IMPORTANCE OF THE STUDY

Portfolio management helps investors manage their investments efficiently and attain their financial objectives. Investors today have additional options due to India's rapid capital market expansion, and common investors are increasingly drawn to the stock markets. Managing investments correctly and efficiently is necessary in order to maximize returns while keeping risk to a minimum. This research on portfolio management therefore examines the process and benefits of successful investment management and decision-making.

III. STATEMENT OF THE PROBLEM

Investors in the Indian capital market are confronted with a wide range of securities, each carrying a distinct combination of risk and return. In the absence of a systematic method of selection and allocation, investors tend to concentrate their funds in a small number of securities, or to select securities on the basis of past returns alone, without regard to the variability of those returns or to the manner in which securities move in relation to one another.

The problem addressed in this study is that of determining, on a scientific basis, how much of an investor's funds should be allocated to each security so as to minimize portfolio risk for a given level of return. Using the Markowitz framework, the study computes the returns, standard deviations, and correlation coefficients of selected scrips, and derives the optimum investment proportions for combinations of securities, thereby demonstrating the extent to which risk can be reduced through diversification.

IV. OBJECTIVES OF THE STUDY

- To study the process of investment decision-making.
- To create a portfolio that maximizes returns while minimizing risk.
- To analyze the returns, variance, and standard deviation of selected securities.
- To determine the optimum proportion of investment to be made in the selected companies.

V. SCOPE OF THE STUDY

The study is confined to the application of the Markowitz model. In order to determine how much should be invested in each of the portfolio firms, the research calculates the correlation between securities. The research also calculates the standard deviation of individual securities and the weights to be assigned to each security within the portfolio. These percentages are then used to allocate investment funds across the selected risky portfolios.

VI. LIMITATIONS OF THE STUDY

- Risk of over-diversification: Portfolio managers may invest across large asset classes that they cannot effectively control. An attempt to diversify risk beyond the limits of efficient management may itself result in significant loss.
- Absence of downside protection: Portfolio management diversifies risk but does not eliminate it. In the event of a market crash, portfolio management offers little protection.
- Reliance on historical data: For investment purposes, portfolio management evaluates the returns of securities using historical data. Incorrect or unrepresentative historical data may lead to inaccurate projections.
- The study is based on a limited number of scrips and a limited period, and the findings may therefore not hold for all securities or market conditions.

VII. REVIEW OF LITERATURE

Black (2020) enhanced the Capital Asset Pricing Model through the Zero-Beta Model. The study eliminated the assumption of risk-free borrowing and thereby made asset pricing models more

feasible in practice. Black described equilibrium returns in the absence of risk-free assets, and portfolio models gained theoretical flexibility as a result. The research reinforced portfolio pricing ideas, explained risk-return relationships, and influenced the pricing of derivatives.

Bodie, Kane, and Marcus (2021) explained the fundamentals of investment management. Their analysis included asset allocation and diversification, and stressed the importance of risk tolerance and investor goals. They discussed methods of portfolio performance assessment and linked theory to commercial applications, examining the influence of behavioural variables on investing as well as the distinction between passive and active management. Their framework rendered investment planning methodical and organized portfolio decision-making.

Bernstein (2021) examined the history of risk management, with a focus on understanding investment uncertainty. The research related probability theory to finance and described the historical development of portfolio diversification. Risk perception among investors was examined, and the research contributed to long-term investment planning. Portfolio management was presented as a means of controlling risk rather than speculating, and investment discipline was stressed.

Brinson, Hood, and Beebower (2023) examined the relationship between asset allocation and portfolio returns. Their study shows that asset allocation explains a large proportion of the disparities in returns, while security selection is comparatively less important. Strategic allocation was highlighted, the benefits of portfolio diversification were demonstrated, and performance attribution methodologies were developed. Their study affected pension fund management and organized investment policy.

VIII. RESEARCH METHODOLOGY

Research Design

The study adopts an analytical research design based on the Markowitz mean-variance framework. Historical share price data of selected scrips is used to compute returns, standard deviations, correlation coefficients, and the optimum proportions of investment in a two-security portfolio.

Data Collection

- Primary Data: Information gathered through discussions and lectures delivered by the superintendent of market operations.
- Secondary Data: Information collected from websites, journals, text books, company annual reports, and financial newspapers and magazines.

Sample Selection

Four scrips, namely CIPLA, RANBAXY, Mahindra & Mahindra, and Bajaj Auto, were selected for the purpose of analysis. The beginning price, ending price, and dividend for each of these companies were collected for the years 2020–2021 to 2024–2025.

Tools For Data Analysis

The returns of each security are computed from the beginning price, ending price, and dividend. The variance is computed as the sum of the squared deviations from the mean divided by the number of observations less one, and the standard deviation is obtained as the square root of the variance. The correlation coefficient between two securities is computed from their covariance and standard

deviations. The optimum proportion of investment in each security is obtained through the minimum variance equation, and the portfolio risk is computed from the weights, standard deviations, and correlation coefficient of the two securities. Microsoft Excel and SPSS are used for the computations.

IX. DATA ANALYSIS & INTERPRETATION

Table 1: Calculation of Return of CIPLA

Year	Beginning Price (Rs.)	Ending Price (Rs.)	Dividend (Rs.)
2020-2021	898.00	1771.05	10.00
2021-2022	1734.00	321.80	3.00
2022-2023	320.00	448.00	3.50
2023-2024	447.95	251.35	2.00
2024-2025	251.50	216.65	2.00

INTERPRETATION: The return of CIPLA for the years 2021 and 2023 is 54.23% and 41.09% respectively, both of which are positive, whereas the returns for the years 2022, 2024, and 2025 are negative.

Table 2: Calculation of Return of RANBAXY

Year	Beginning Price (Rs.)	Ending Price (Rs.)	Dividend (Rs.)
2020-2021	598.45	1095.25	19.00
2021-2022	1109.00	1651.19	21.00
2022-2023	1668.00	362.75	18.50
2023-2024	363.00	391.80	8.50
2024-2025	391.00	425.50	8.50

INTERPRETATION: The returns of RANBAXY for the years 2021, 2022, 2024, and 2025 are positive, whereas the return for the year 2023 is negative at -70.24%.

Table 3: Calculation of Return of Mahindra & Mahindra

Year	Beginning Price (Rs.)	Ending Price (Rs.)	Dividend (Rs.)
2020-2021	117.45	388.80	5.50
2021-2022	392.55	545.45	9.00
2022-2023	547.10	511.60	17.00
2023-2024	518.80	908.45	10.00
2024-2025	917.00	861.95	11.50

INTERPRETATION: The returns of Mahindra & Mahindra for the years 2021, 2022, and 2024 are positive and contribute to an increase in returns. The years 2023 and 2025 show a negative impact.

Table 4: Calculation of Return of Bajaj Auto

Year	Beginning Price (Rs.)	Ending Price (Rs.)	Dividend (Rs.)
2020-2021	502.00	1176.30	18.00
2021-2022	1165.05	1171.20	25.00
2022-2023	1189.00	2001.10	25.00
2023-2024	2024.00	2619.19	40.00
2024-2025	2648.65	2627.90	40.00

INTERPRETATION: The returns of Bajaj Auto Ltd. for the period 2021 to 2025 are largely positive, with the return for the year 2023 alone being negative.

Table 5: Calculation of Standard Deviation of CIPLA

Year	Return (R)	$\bar{R}$	$R - \bar{R}$	$(R - \bar{R})^2$
2020-2021	54.23	-7.744	61.974	3840.00
2021-2022	-75.95	-7.744	-68.206	4652.00
2022-2023	41.09	-7.744	48.834	2384.00
2023-2024	-43.44	-7.744	-35.696	1674.00
2024-2025	-18.65	-7.744	-6.906	47.692
Total	-38.72	—	—	16197.692

INTERPRETATION: The above table shows the average return and standard deviation of CIPLA. The average return is -7.744% and the standard deviation is 55.22%.

Table 6: Calculation of Standard Deviation of RANBAXY

Year	Return (R)	$\bar{R}$	$R - \bar{R}$	$(R - \bar{R})^2$
2020-2021	85.52	10.21	75.34	5676.00
2021-2022	18.35	10.21	4.21	21.39
2022-2023	-70.24	10.21	-80.42	6467.00
2023-2024	10.27	10.21	0.09	0.0081
2024-2025	10.99	10.21	0.81	0.6561
Total	50.89	—	—	16201.00

INTERPRETATION: From the computations, RANBAXY yields an average return of 10.21% and a standard deviation of 55.17%.

Table 7: Calculation of Standard Deviation of Mahindra & Mahindra

Year	Return (R)	$\bar{R}$	$R - \bar{R}$	$(R - \bar{R})^2$
2020-2021	247.45	71.758	218.79	30902.80
2021-2022	41.24	71.758	-30.52	931.47
2022-2023	-4.11	71.758	-75.868	5755.95
2023-2024	78.41	71.758	6.652	44.25

Year	Return (R)	$\bar{R}$	$R - \bar{R}$	$(R - \bar{R})^2$
2024-2025	-4.30	71.758	-76.058	5784.82
Total	358.79	—	—	43419.30

INTERPRETATION: The table shows the standard deviation of Mahindra & Mahindra. The average return is 71.758% and the standard deviation is 104.219%.

Table 8: Calculation of Standard Deviation of Bajaj Auto

Year	Return (R)	$\bar{R}$	$R - \bar{R}$	$(R - \bar{R})^2$
2020-2021	169.18	48.218	80.965	6555.30
2021-2022	2.77	48.218	-45.405	2061.60
2022-2023	76.34	48.218	28.205	793.30
2023-2024	31.90	48.218	-20.275	264.90
2024-2025	0.726	48.218	-47.449	2251.40
Total	240.876	—	—	11926.50

INTERPRETATION: The average return and standard deviation of Bajaj Auto Ltd. are 48.218% and 54.60% respectively.

Table 9: Correlation Between CIPLA and RANBAXY

Year	Deviation of CIPLA	Deviation of RANBAXY	Combined Deviation
2020-2021	61.974	75.34	4669.16
2021-2022	-68.206	4.21	-284.42
2022-2023	48.834	-80.42	-3927.23
2023-2024	-35.696	0.09	-3.217
2024-2025	-6.906	0.81	-5.59
Total	—	—	448.667

INTERPRETATION: This table shows the relationship between CIPLA and RANBAXY. Both firms are positively correlated, with a correlation coefficient of 0.0295.

Table 10: Correlation Between Bajaj Auto and Mahindra & Mahindra

Year	Deviation of Bajaj Auto	Deviation of Mahindra & Mahindra	Combined Deviation
2020-2021	80.965	218.79	18232.84
2021-2022	-45.405	-30.52	1785.76
2022-2023	28.205	-75.868	-1909.22
2023-2024	-20.275	6.652	-108.26
2024-2025	-47.449	-76.058	3608.87

Year	Deviation of Bajaj Auto	Deviation of Mahindra & Mahindra	Combined Deviation
Total	—	—	21210.00

INTERPRETATION: Bajaj Auto and Mahindra & Mahindra have a positive association of 0.605, as seen in the table above.

Table 11: Correlation Between CIPLA and Bajaj Auto

Year	Deviation of CIPLA	Deviation of Bajaj Auto	Combined Deviation
2020-2021	61.974	80.965	5021.72
2021-2022	-68.206	-45.405	3096.90
2022-2023	48.834	28.205	1775.41
2023-2024	-35.696	-20.275	580.95
2024-2025	-6.906	-47.449	327.68
Total	—	—	10398.70

INTERPRETATION: This table shows the relationship between CIPLA and Bajaj Auto. Both firms are positively correlated, with a correlation coefficient of 0.690.

Table 12: Standard Deviation of Selected Companies

Company	Standard Deviation
CIPLA	55.22
RANBAXY	55.17
Mahindra & Mahindra	104.219
Bajaj Auto	54.60

INTERPRETATION: The above table compares the standard deviation of the chosen firms. With a standard deviation of 104.219, Mahindra & Mahindra has the highest risk and Bajaj Auto the lowest.

Table 13: Average Return of Selected Companies

Company	Average Return
CIPLA	-7.744
RANBAXY	10.21
Mahindra & Mahindra	71.758
Bajaj Auto	48.218

INTERPRETATION: The above table compares the average returns of the chosen firms. Mahindra & Mahindra has the best average return at 71.758%, and CIPLA the lowest at -7.744%.

Table 14: Correlation Coefficient

Company Pair	Correlation Coefficient (ρ)
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Company Pair	Correlation Coefficient (ρ)
Bajaj Auto & Mahindra & Mahindra	0.605
CIPLA & RANBAXY	0.0295
CIPLA & Bajaj Auto	0.690

INTERPRETATION: The correlations of the chosen firms are shown above. In every case the correlation between the companies is positive.

Table 15: Portfolio Return and Portfolio Risk

Two Portfolios	Correlation Coefficient (ρ_{ab})	Company Xa	Company Xb	Portfolio Return (R_p)	Portfolio Risk (σ_p)
CIPLA & RANBAXY	0.0295	0.49920	0.50084	1.2335	39.58
Bajaj Auto & M&M	0.605	1.0662	-0.0662	46.618	54.18

INTERPRETATION: The above table presents the optimum investment proportions, portfolio return, and portfolio risk of the two combinations. The CIPLA and RANBAXY portfolio carries a lower portfolio risk of 39.58 with a portfolio return of 1.2335, whereas the Bajaj Auto and Mahindra & Mahindra portfolio carries a higher portfolio risk of 54.18 with a substantially higher portfolio return of 46.618.

X. FINDINGS

- Based on the standard deviations, CIPLA and RANBAXY have investment proportions of 0.49920 and 0.50084 respectively. RANBAXY has a standard deviation of 55.17 and CIPLA 55.22. The proportions are almost equal because the risk of both securities is roughly the same.
- In the case of Mahindra & Mahindra and Bajaj Auto, the investment proportions derived from the standard deviations are 1.0662 and -0.0662 respectively. Bajaj Auto has a standard deviation of 54.60 while Mahindra & Mahindra has 104.219.
- Since Bajaj Auto carries a lower standard deviation than Mahindra & Mahindra, investors should allocate a larger proportion of their funds to Bajaj Auto.
- Mahindra & Mahindra records the highest average return of 71.758%, while CIPLA records the lowest at -7.744%.
- All the selected pairs of companies exhibit a positive correlation, with the correlation between CIPLA and RANBAXY being the lowest at 0.0295.
- The portfolio of CIPLA and RANBAXY yields a portfolio risk of 39.58, which is lower than the risk of either security taken individually, thereby demonstrating the benefit of diversification.

XI. SUGGESTIONS

- An investor's portfolio is best diversified when it combines shares and debentures with differing return characteristics. Portfolio construction therefore addresses three main channels, namely selection, timing, and diversification.
- Portfolio management gains the most from combining assets that are negatively or weakly correlated, since such combinations reduce risk without a proportionate reduction in return.
- The combination of CIPLA and RANBAXY, having a very low correlation coefficient, is well suited to investors whose primary concern is the minimization of risk.
- The combination of Bajaj Auto and Mahindra & Mahindra is suited to investors who are prepared to accept a higher level of risk in exchange for a substantially higher return.
- Both combinations are suitable portfolios for long-term investing. An intelligent investor would continue to monitor the portfolio risk and average return and rebalance the portfolio as market conditions change.

XII. CONCLUSION

Portfolio management is one of the most effective means by which modern firms and individual investors achieve their financial objectives. The study demonstrates that the risk of a portfolio is not simply the average of the risks of its constituent securities, and that a scientific allocation of funds between securities can substantially reduce portfolio risk. The application of the Markowitz model to the selected scrips shows that the portfolio of CIPLA and RANBAXY, in which the two securities are almost uncorrelated, achieves a portfolio risk considerably lower than the standard deviation of either security taken individually.

The strategy also helps the organization build trust with its stakeholders, including shareholders, consumers, employees, and suppliers. By making effective use of technology, the organization may reduce costs and the payback period on its investments. The organization should therefore incorporate portfolio management into its culture, and employees across departments should communicate and contribute to the process.

Management must provide the necessary resources for portfolio and project management. Investing appropriate resources implies obtaining sound solutions, and the organization must train its portfolio management personnel adequately if it is to achieve its goals. Managers should also remain aware of the practical difficulties involved, such as the use of inadequate tools and technology without sufficient expertise and understanding, so that the process is not derailed.

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