INTERNATIONAL JOURNAL OF ENGINEERING MANAGEMENT AND SOCIAL SCIENCES (IJEMSS)

www.ijemss.com

Vol. 01, Issue 2, June 2026, pp : 803-815

e-ISSN : 3139-065X

editor@ijemss.com

A STUDY ON PORTFOLIO MANAGEMENT WITH REFERENCE TO INDIA INFOLINE LIMITED

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ABSTRACT

Portfolio management is a critical discipline in the domain of financial management, concerned with the optimal selection and oversight of investment assets to maximise returns for a given level of risk. The present study deals with portfolio management with respect to India Infoline Limited based on five companies listed on the NSE. These five companies come from different industries. They include HDFC Bank Limited, Sun Pharmaceutical Industries Limited, Hindustan Unilever Limited, Maruti Suzuki India Limited, and Reliance Industries Limited.

In order to find out how returns and risk measures can be calculated based on monthly prices of stocks in 2025–2026 and how ten two-stock portfolios could be made based on Modern Portfolio Theory, the study uses the example of the above companies. As a result, the study finds out that diversification plays an important role in reducing portfolio risk in cases where stock correlation is low. The most effective combination of stocks is Hindustan Unilever Limited and Reliance Industries Limited.

Keywords: Portfolio Management, Risk-Return Trade-off, Diversification, Correlation Coefficient, Standard Deviation, Modern Portfolio Theory, Equity Portfolio

1. INTRODUCTION

Portfolio management refers to the strategic process of selecting, arranging, and actively managing an assortment of investments — encompassing stocks, bonds, mutual funds, and other financial instruments — in a manner that achieves specific risk-return objectives. At its essence, portfolio management centres on the fundamental interplay between risk and expected reward. Professional portfolio managers endeavour to optimise returns while constraining losses through disciplined diversification across multiple asset types, economic sectors, and geographic regions. The principle underpinning diversification is that unsystematic risk — risk specific to individual securities — can be reduced substantially when securities whose returns do not move in tandem are combined within a single portfolio.

Two broad categories of portfolio management strategy exist in practice. Active portfolio management entails continuous monitoring and periodic rebalancing of the investment portfolio, with the explicit objective of generating returns that exceed a designated market benchmark. This approach typically involves sophisticated research, market timing judgements, and frequent transactional activity. Passive portfolio management, by contrast, seeks to replicate the return profile of a reference index such as the Nifty 50 or the S&P 500, minimising transaction costs and relying on market efficiency to generate long-term wealth accumulation. Each approach carries distinct implications for cost, risk exposure, and expected performance outcomes.

The significance of portfolio management has grown substantially in recent decades, coinciding with the democratisation of capital markets, the expansion of retail investor participation, and the proliferation of complex financial instruments. India's equity markets, anchored by the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE), have witnessed unprecedented growth in terms of market capitalisation, investor base, and product diversity. Against this backdrop, financial intermediaries such as India Infoline Limited (IIFL) play a pivotal role in facilitating disciplined, research-driven portfolio construction for a diverse clientele ranging from retail investors to high-net-worth individuals and institutional participants.

The present study is motivated by the recognition that effective portfolio management is indispensable for securing financial objectives in an environment characterised by considerable market volatility and economic uncertainty. There exist multiple risks inherent to financial asset investments, including market risk, credit risk, liquidity risk,

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and inflation risk. Portfolio management, when executed systematically, serves as a mechanism to ensure that the combination of selected investments maximises returns relative to the risk borne by the investor, taking into account individual income levels, financial requirements, risk appetite, and investment time horizon.

This research contributes to the existing body of empirical literature by examining the risk-return profiles of five diversified NSE-listed equity securities, constructing ten two-stock portfolios, and evaluating the effectiveness of diversification in reducing total portfolio risk. The study is anchored at India Infoline Limited, a prominent financial services conglomerate with deep expertise in portfolio management services (PMS), investment advisory, and wealth management, providing a contextually rich setting for the empirical analysis.

2. REVIEW OF LITERATURE

2.1 Foundational and Theoretical Perspectives

Markowitz (2024) revisited the enduring relevance of Modern Portfolio Theory (MPT) in contemporary financial markets. The study affirms that efficient diversification — the concept of building portfolios that lie on the efficient frontier — remains a foundational principle for investors seeking to minimise risk without compromising expected return. Markowitz underscored the continued applicability of quantitative and mathematical portfolio models as essential instruments for systematic investment decision-making, even as market structures have evolved in complexity.

Eugene F. Fama and Kenneth R. French (2019) critically assessed the multi-factor asset pricing model and its significance for contemporary portfolio management. The authors augmented the traditional Capital Asset Pricing Model (CAPM) with additional explanatory factors including firm size, value characteristics, and profitability to more comprehensively explain cross-sectional variation in portfolio returns. The study demonstrates that diversification across multiple risk factors reduces unsystematic risk and enhances portfolio stability, with factor-based portfolios exhibiting a systematic tendency to outperform traditional market-weighted portfolios over extended investment horizons.

Burton G. Malkiel (2021) provided empirical evidence in support of passive portfolio management strategies. The research contends that financial markets are generally efficient over the long term, making consistent market outperformance through active trading strategies both costly and statistically improbable for most investors. Index-based portfolios offering broad market exposure, lower transaction costs, and reduced management fees were found to deliver more stable and consistent returns over extended periods. The study cautions against frequent trading activity, which demonstrably increases costs and risk without proportionately improving investment performance.

2.2 Risk Management and Behavioural Dimensions

Harvey Campbell R. (2024) examined the centrality of risk management in portfolio decision-making during periods of economic instability. The author introduced the concept of tail risk — referring to extreme and low-probability adverse market events — and highlighted the necessity of downside protection strategies to mitigate portfolio losses during extraordinary economic downturns. Diversification across multiple asset classes emerged as the primary risk mitigation instrument, with defensive positioning recommended as a strategy for capital preservation during volatile market conditions.

Meir Statman (2023) emphasised the role of investor psychology in determining portfolio selection outcomes. The study established that emotional factors — including fear, overconfidence, regret, and social influence — exert a material influence on investment decision-making. Behavioural diversification, defined as the construction of portfolios that satisfy both financial objectives and psychological preferences of the investor, was identified as a more practically realistic framework for portfolio management than purely rational quantitative models.

Kritzman, Mark (2023) investigated the influence of behavioural biases on portfolio management outcomes. The analysis revealed that emotional tendencies such as fear, overconfidence, and loss aversion systematically lead investors to suboptimal portfolio decisions and inadequate diversification, resulting in elevated portfolio risk and diminished returns. The study advocates for the deployment of quantitative and analytical tools to counteract

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e-ISSN : 3139-065X

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cognitive errors and recommends disciplined portfolio rebalancing as a mechanism to preserve the desired risk-return profile over time.

2.3 Quantitative and Factor-Based Approaches

Cliff Asness (2023) evaluated the value of quantitative methods in contemporary portfolio management practice. The research established that rules-based, model-driven investment approaches — grounded in predetermined empirical criteria rather than subjective opinion — generate consistent and reproducible returns for investors across extended time horizons. Factor-based quantitative investment strategies were found to deliver superior risk-adjusted performance, and the study confirmed that diversification must encompass not only assets but also investment methodologies to achieve robust outcomes.

Andrew Ang (2022) examined factor-based portfolio management and its growing significance in institutional investment processes. The study demonstrated that diversified portfolios constructed across multiple systematic factors — including value, momentum, quality, and low volatility — consistently generate superior risk-adjusted performance relative to single-factor or market-weighted approaches. Factor-based investment was found to offer enhanced transparency in the portfolio construction process and lower cost relative to traditional active management.

John C. Bogle (2022) underscored the primacy of cost efficiency in achieving long-term portfolio management success. The research argued that minimising management expenses, transaction costs, and brokerage commissions has a compounding positive impact on investor wealth accumulation that is frequently underestimated. The study recommends participation in low-cost index funds as the most reliable instrument for most investors to achieve market returns, cautioning against the costs associated with frequent speculation and active trading.

2.4 Emerging Markets and Dynamic Portfolio Models

Luboš Pástor (2024) analysed the influence of economic uncertainty on portfolio management processes. The research established that economic shocks — encompassing financial crises, inflationary pressures, and policy uncertainty — exert significant influence on asset prices and portfolio performance. Adaptive portfolio strategies that dynamically alter asset allocation weights in response to evolving market conditions and risk exposures were identified as superior to static portfolio construction approaches.

Elroy Dimson (2022) examined long-term portfolio returns across international financial markets using extensive historical data. The study highlighted the significance of global diversification as a strategy for enhancing portfolio stability and returns, demonstrating that equity risk premiums vary substantially across countries and time periods, making reliance on any single market inadvisable. Evidence-based long-term planning was recommended over investment decisions anchored to short-term performance data.

Shi, Wang and Wu (2026) proposed a novel approach to portfolio management grounded in dynamic link prediction to improve investment decisions. The study demonstrated that algorithms enabling simultaneous optimisation of multiple objectives — including return maximisation, risk minimisation, and portfolio diversification — outperform traditional static frameworks. The inclusion of investor preferences alongside changing market conditions was found to produce more balanced and adaptive asset allocations in complex financial environments.

3. NEED FOR THE STUDY

This study of portfolio management is highly relevant in the present-day scenario, where there is considerable volatility in the financial markets. There are different types of risks associated with investments in financial assets like shares, debentures, mutual funds. It is necessary that through portfolio management, it should be ensured that a selecting the right combination of investment to achieve that returns are maximized by minimizing the risk.

Another need for the study is related to risk-return analysis for different forms of investment options. This will help investors make rational decisions about their investment according to their income levels, financial needs, risk-bearing ability, and investment periods. This is because proper portfolio management will not only help in

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planning but also efficient utilization of funds by the investors. Lastly, the study will increase the awareness of investors regarding systematic investment and management of money.

4. SCOPE OF THE STUDY

The study is based on the understanding of concepts and principles of portfolio management and investment decisions. It includes different investment avenues like equity shares, bonds and mutual funds. It focuses on analysing the relationship between risk and return. The study covers the calculation of correlation between the different Securities in order to find out the best portfolio Among the selected companies. It is based largely on theoretical analysis and secondary data. The results of the study are expected to provide basic insights useful for students and individual investors and may not be applicable to all market condition

5. OBJECTIVES OF THE STUDY

The study is structured around the following interconnected research objectives, each designed to generate empirical evidence pertaining to portfolio management practices at India Infoline Limited:

- To assess the risk and return characteristics of five selected NSE-listed equity securities from diverse sectors over the financial year 2025–2026.
- To evaluate the individual stock performance of HDFC Bank Limited, Sun Pharmaceutical Industries Limited, Hindustan Unilever Limited, Maruti Suzuki India Limited, and Reliance Industries Limited through the computation of average returns and standard deviation.
- To calculate the covariance and correlation coefficient for all possible pairs of selected stocks, establishing the inter-dependence structure of security returns.
- To construct ten two-stock portfolios from the selected securities and compute the risk and return of each portfolio under equal portfolio weight assumptions.
- To identify the most efficient portfolio combination on the basis of the risk-return trade-off, providing actionable guidance for portfolio construction.
- To understand and empirically demonstrate the effect of diversification on total portfolio risk, validating the central proposition of Modern Portfolio Theory in the context of the Indian equity market.
- To analyse and evaluate portfolio management practices with reference to India Infoline Limited, examining the importance of systematic portfolio construction for institutional and individual investors.

6. RESEARCH METHODOLOGY

6.1 Research Design

The present study adopts a descriptive and analytical research design. The descriptive dimension establishes the risk and return profiles of selected equity securities, while the analytical dimension evaluates portfolio performance across multiple stock combinations and examines the role of diversification in risk reduction. The research is quantitative in nature, employing well-established statistical and financial tools to derive empirical insights from secondary market data.

6.2 Sampling Method and Security Selection

A purposive sampling approach is adopted for the selection of securities. Five NSE-listed companies are selected to represent five distinct sectors of the Indian economy, ensuring broad sectoral diversification in the study portfolio. The selected securities are:

- HDFC Bank Limited — Banking and Financial Services
- Sun Pharmaceutical Industries Limited — Pharmaceuticals
- Hindustan Unilever Limited — Fast-Moving Consumer Goods (FMCG)
- Maruti Suzuki India Limited — Automobile
- Reliance Industries Limited — Energy and Diversified

These companies are selected on the basis of their market capitalisation, sectoral representation, and prominence within their respective industries. The selection ensures that the study captures a comprehensive cross-section of the Indian equity market.

6.3 Data Collection

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www.ijemss.com

Vol. 01, Issue 2, June 2026, pp : 803-815

e-ISSN : 3139-065X

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The study relies exclusively on secondary data. Monthly closing price data for the financial year 2025–2026 (April 2025 to March 2026, with March 2025 serving as the base month for return computation) are sourced from the National Stock Exchange of India, financial portals including Money Control and Yahoo Finance, and the official websites of the selected companies. The study period encompasses twelve months of monthly return observations for each security, yielding twelve return data points per stock.

6.4 Analytical Tools and Financial Techniques

The following statistical and financial tools are employed to achieve the research objectives:

(i) Monthly Return Calculation

Monthly returns are computed as the percentage change in the closing price of a security from one month to the next, expressed as:

$$\text{Monthly Return} = (\text{Current Month Close} - \text{Previous Month Close}) / \text{Previous Month Close}$$

(ii) Average Return

$$\text{Average Return } (\bar{R}) = \Sigma R / N$$

(iii) Variance and Standard Deviation (Risk)

Variance captures the dispersion of monthly returns around the mean, and standard deviation (the square root of variance) serves as the primary measure of investment risk:

$$\text{Variance } (\sigma^2) = \Sigma(R - \bar{R})^2 / N \quad | \quad \text{Standard Deviation } (\sigma) = \sqrt{\text{Variance}}$$

(iv) Covariance

Covariance measures the directional relationship between the returns of two securities and is a critical input in portfolio risk computation:

$$\text{Cov}(X,Y) = \Sigma[(Rx - \bar{R}x)(Ry - \bar{R}y)] / (n - 1)$$

(v) Correlation Coefficient

The correlation coefficient normalises the covariance by the product of the individual standard deviations, providing a scale-free measure of co-movement ranging from −1 to +1:

$$\text{Correlation } (\rho xy) = \text{Cov}(X,Y) / (\sigma x \times \sigma y)$$

(vi) Portfolio Return

$$Rp = (RA \times WA) + (RB \times WB)$$

(vii) Portfolio Risk

$$\sigma p = \sqrt{[(Wx^2 \times \sigma x^2) + (Wy^2 \times \sigma y^2) + (2 \times Wx \times Wy \times \rho xy \times \sigma x \times \sigma y)]}$$

All computations are performed using the above formulae applied to the monthly closing price data for FY 2025–2026.

7. DATA ANALYSIS AND RESULTS

This section presents the empirical analysis of risk and return characteristics for the five selected securities, followed by covariance and correlation computations for all stock pairs, and ultimately the risk-return profiles of ten constructed two-stock portfolios. All calculations are based on monthly closing price data for FY 2025–2026.

7.1 HDFC Bank Limited — Risk and Return Analysis

Table 1: Risk and Return Summary — HDFC Bank Limited

FY-2025	Monthly Returns	AVERAGE RETURNS($\bar{X}$)	R-$\bar{X}$	(R-$\bar{X}$)^2
Apr-25	5.53%	-0.03649	0.0917	0.008409
May25	5.29%	-0.03649	0.0893	0.007974
Jun-25	1.03%	-0.03649	0.0467	0.002181
Jul-25	2.91%	-0.03649	0.0655	0.00429
Aug-25	0.83%	-0.03649	0.0447	0.001998

INTERNATIONAL JOURNAL OF ENGINEERING MANAGEMENT AND SOCIAL SCIENCES (IJEMSS)

e-ISSN : 3139-065X

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Vol. 01, Issue 2, June 2026, pp : 803-815

Sep-25	-52.85%	-0.03649	-0.4921	0.242162
Oct-25	-0.06%	-0.03649	0.0358	0.001282
Nov-25	3.82%	-0.03649	0.0746	0.005565
Dec-25	2.06%	-0.03649	0.057	0.003249
Jan-26	-1.63%	-0.03649	0.0201	0.000404
Feb-26	-6.25%	-0.03649	-0.0261	0.000681
Mar-26	-4.47%	-0.03649	-0.0083	6.89E-05
TOTAL				0.278265
VARIANCE				0.025297
STANDARD DEVIATION				0.15905

The monthly returns of HDFC Bank Limited were computed over the period April 2025 to March 2026. The security recorded a total cumulative return of −43.79% over the study period, translating to an average monthly return of −3.65%. A notably extreme negative return of −52.85% was observed in September 2025, which significantly weighed upon the full-year return profile. The variance of monthly returns was computed at 0.025297, with a corresponding standard deviation of 0.15905 (15.91%), indicating exceptionally high levels of volatility and risk for this security during the study period.

7.2 Sun Pharmaceutical Industries Limited — Risk and Return Analysis

Table 2: Risk and Return Summary — Sun Pharmaceutical Industries Limited

FY 2025-2026	Monthly Returns	AVERAGE RETURNS	R-$\bar{X}$	(R-$\bar{X}$)^2
Apr-25	8.88%	0.00929	0.0794907	0.0063187
May-25	5.63%	0.00929	0.0470099	0.0022099
Jun-25	-8.44%	0.00929	-0.09369	0.0087778
Jul-25	-0.11%	0.00929	-0.01039	0.0001079
Aug-25	1.85%	0.00929	0.0092099	0.0000848
Sep-25	-6.57%	0.00929	-0.07499	0.0056235
Oct-25	-0.01%	0.00929	-0.00939	0.0000881
Nov-25	6.05%	0.00929	0.0512099	0.0026224
Dec-25	8.33%	0.00929	0.0740099	0.005477
Jan-26	-6.11%	0.00929	-0.07039	0.0049547
Feb-26	-7.23%	0.00929	-0.08159	0.006656
Mar-26	8.88%	0.00929	0.0795099	0.0063218
TOTAL				4.92E-02
VARIANCE				0.004476769
STANDARD DEVIATION				0.066908659

Sun Pharmaceutical Industries Limited recorded a positive cumulative return of 11.15% over the study period, with an average monthly return of 0.93%. The standard deviation of 6.69% and variance of 0.004477 indicate moderate-to-high volatility, with significant monthly fluctuations including returns of +8.88% (April 2025 and March 2026)

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Vol. 01, Issue 2, June 2026, pp : 803-815

e-ISSN : 3139-065X

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and sharply negative returns of −8.44% (June 2025) and −7.23% (February 2026). The positive average return positions Sun Pharma as a moderate-performance stock appropriate for investors with above-average risk tolerance

7.3 Hindustan Unilever Limited — Risk and Return Analysis

FY 2025-2026	Monthly Returns	AVERAGE RETURNS	R-X̄	(R-X̄)^2
Apr-25	3.13%	0.006410052	0.024910573	0.000620537
May-25	3.69%	0.006410052	0.030489948	0.000929637
Jun-25	0.26%	0.006410052	-0.003810052	1.45165E-05
Jul-25	-2.29%	0.006410052	-0.029310052	0.000859079
Aug-25	9.88%	0.006410052	0.092389948	0.008535902
Sep-25	5.50%	0.006410052	0.048589948	0.002360983
Oct-25	-5.47%	0.006410052	-0.061110052	0.003734438
Nov-25	-1.94%	0.006410052	-0.025810052	0.000666159
Dec-25	0.04%	0.006410052	-0.006010052	3.61207E-05
Jan-26	-6.11%	0.006410052	-0.067510052	0.004557607
Feb-26	2.47%	0.006410052	0.018289948	0.000334522
Mar-26	-1.47%	0.006410052	-0.021110052	0.000445634
TOTAL				0.023095136
VARIANCE				0.002099558
STANDARD DEVIATION				0.045820932

Hindustan Unilever Limited demonstrated a positive cumulative return of 7.69% over the study period, with an average monthly return of 0.64%. The variance of 0.002100 and standard deviation of 4.58% position HUL as the least volatile stock in the study portfolio, reflecting its characteristic defensive profile as an FMCG sector leader with stable demand characteristics. This lower volatility, relative to other selected securities, underlines HUL's suitability as a risk-moderating component in diversified portfolio construction.

7.4 Maruti Suzuki India Limited — Risk and Return Analysis

FY 2025-2026	Monthly Returns	AVERAGE	R-X̄	(R-X̄)^2
Apr-25	-3.55%	0.020652635	-0.056121019	0.003149569
May-25	6.38%	0.020652635	0.043147365	0.001861695
Jun-25	0.51%	0.020652635	-0.015552635	0.000241884
Jul-25	0.66%	0.020652635	-0.014052635	0.000197477
Aug-25	1.68%	0.020652635	-0.003852635	1.48428E-05
Sep-25	17.31%	0.020652635	0.152447365	0.023240199
Oct-25	8.37%	0.020652635	0.063047365	0.00397497
Nov-25	0.98%	0.020652635	-0.010852635	0.00011778
Dec-25	-1.77%	0.020652635	-0.038352635	0.001470925

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e-ISSN : 3139-065X

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Vol. 01, Issue 2, June 2026, pp : 803-815

Jan-26	5.01%	0.020652635	0.029447365	0.000867147
Feb-26	-12.57%	0.020652635	-0.146352635	0.021419094
Mar-26	1.77%	0.020652635	-0.002952635	8.71805E-06
TOTAL				0.0565643
VARIANCE				0.005142209
STANDARD DEVIATION				0.071709198

Maruti Suzuki India Limited produced the highest average monthly return among all selected securities at 2.07% (cumulative: 24.78%), accompanied by a standard deviation of 7.17% and variance of 0.005142. The security exhibited pronounced monthly variability, with a peak positive return of 17.31% in September 2025 and a sharp negative return of −12.57% in February 2026. This high-return, high-risk profile positions Maruti Suzuki as an appropriate holding for risk-tolerant investors capable of withstanding significant short-term price fluctuations in pursuit of above-average longer-term returns.

7.5 Reliance Industries Limited — Risk and Return Analysis

FY 2025-2026	Monthly Returns	AVERAGE RETURNS	R-$\bar{X}$	(R-$\bar{X}$)^2
Apr-25	6.25%	0.014432899	0.048061893	2.31E-03
May-25	10.19%	0.014432899	0.087467101	7.65E-03
Jun-25	1.13%	0.014432899	-0.003132899	9.82E-06
Jul-25	5.61%	0.014432899	0.041667101	1.74E-03
Aug-25	-7.36%	0.014432899	-0.088032899	7.75E-03
Sep-25	-2.37%	0.014432899	-0.038132899	1.45E-03
Oct-25	0.50%	0.014432899	-0.009432899	8.90E-05
Nov-25	8.97%	0.014432899	0.075267101	5.67E-03
Dec-25	5.46%	0.014432899	0.040167101	1.61E-03
Jan-26	0.19%	0.014432899	-0.012532899	1.57E-04
Feb-26	-11.14%	0.014432899	-0.125832899	1.58E-02
Mar-26	-0.11%	0.014432899	-0.015532899	2.41E-04
TOTAL				4.45E-02
VARIANCE				0.004046371
STANDARD DEVIATION				0.063611095

Reliance Industries Limited registered a positive cumulative return of 17.32% with an average monthly return of 1.44%. The variance of 0.004046 and standard deviation of 6.36% reflect a moderate level of volatility. A peak positive return of 10.19% was recorded in May 2025, while a significant negative return of −11.14% was observed in February 2026.

Table 3: Comparative Risk and Return Summary — All Selected Securities

Company	Avg. Monthly Return	Variance	Std. Deviation (Risk)	Risk Profile

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HDFC Bank Ltd.	−3.65%	0.025297	15.91%	Very High
Sun Pharma Ltd.	0.93%	0.004477	6.69%	Moderate-High
Hindustan Unilever Ltd.	0.64%	0.0021	4.58%	Moderate
Maruti Suzuki Ltd.	2.07%	0.005142	7.17%	High
Reliance Industries Ltd.	1.44%	0.004046	6.36%	Moderate-High

7.6 Covariance Matrix

The covariance matrix captures the directional co-movement between returns of each pair of selected securities.

Table 4: Covariance Matrix — All Security Pairs

	HDFC	Sun Pharma	HUL	Maruti	Reliance
HDFC	0.0253	0.00429	−0.002090	−0.006767	0.00336
Sun Pharma		0.00448	0.00015	−0.000605	0.00243
HUL			0.0021	−0.000046	−0.000915
Maruti				0.00514	0.00093
Reliance					0.00405

7.7 Correlation Matrix

The correlation matrix normalises the covariance values, enabling comparison of the strength and direction of co-movement across security pairs irrespective of the absolute magnitude of their individual variances. Values approaching −1.0 indicate near-perfect inverse co-movement, which is theoretically most desirable from a diversification standpoint, while values approaching +1.0 indicate near-perfect positive co-movement, offering minimal diversification benefit.

Table 5: Correlation Matrix — All Security Pairs

	HDFC	Sun Pharma	HUL	Maruti	Reliance
HDFC	1	0.44	−0.287	−0.593	0.363
Sun Pharma		1	0.05	−0.126	0.57

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Vol. 01, Issue 2, June 2026, pp : 803-815

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HUL			1	−0.014	−0.314
Maruti				1	0.203
Reliance					1

7.8 Portfolio Risk and Return Analysis

Ten two-stock portfolios are constructed from the five selected securities, each with equal weighting (50% allocation to each constituent stock). Portfolio return is computed as the weighted average of individual stock returns, while portfolio risk is derived from the standard portfolio risk formula incorporating the individual standard deviations, portfolio weights, and the correlation coefficient between each stock pair.

Table 6: Risk and Return of All Constructed Portfolios

P#	Stock A	Stock B	Correlation	Portfolio Return	Portfolio Risk (SD)
1	HDFC Bank	Sun Pharma	0.44	−1.36%	9.89%
2	HDFC Bank	Hindustan Unilever	−0.287	−1.50%	7.62%
3	HDFC Bank	Maruti Suzuki	−0.593	−0.79%	8.70%
4	HDFC Bank	Reliance Industries	0.363	−1.10%	8.57%
5	Sun Pharma	Hindustan Unilever	0.05	0.79%	4.15%
6	Sun Pharma	Maruti Suzuki	−0.126	1.50%	4.59%
7	Sun Pharma	Reliance Industries	0.57	1.19%	5.78%
8	Hindustan Unilever	Maruti Suzuki	−0.014	1.35%	4.23%
9	Hindustan Unilever	Reliance Industries	−0.314	1.04%	3.28%
10	Maruti Suzuki	Reliance Industries	0.203	1.75%	5.25%

8. DATA INTERPRETATION AND DISCUSSION

The empirical findings of this study generate several substantive interpretive conclusions that advance the understanding of portfolio management in the context of the Indian equity market and the operational environment of India Infoline Limited.

8.1 Individual Stock Risk-Return Profiles

A preliminary observation concerns the pronounced heterogeneity of risk-return profiles across the selected securities. HDFC Bank recorded the most adverse performance during the study period, with a deeply negative average monthly return of −3.65% and the highest standard deviation of 15.91%. The extreme September 2025 drawdown — a negative monthly return of 52.85% — was the primary driver of this outcome and reflects the sensitivity of banking sector equities to systemic financial events. Maruti Suzuki India Limited recorded the highest positive average monthly return at 2.07%, though this was accompanied by the second-highest standard deviation (7.17%), epitomising the high-risk, high-return characteristic typically associated with cyclical automobile sector investments.

INTERNATIONAL JOURNAL OF ENGINEERING MANAGEMENT AND SOCIAL SCIENCES (IJEMSS)

www.ijemss.com

Vol. 01, Issue 2, June 2026, pp : 803-815

e-ISSN : 3139-065X

editor@ijemss.com

Hindustan Unilever Limited emerged as the most stable security in the study, with a modest but consistent average return of 0.64% and the lowest standard deviation of 4.58%. This outcome is consistent with the theoretical expectation that FMCG sector securities, characterised by relatively inelastic demand and stable revenue streams, exhibit lower equity volatility than cyclical sectors. Reliance Industries Limited and Sun Pharmaceutical Industries Limited occupied intermediate positions on the risk-return continuum, with average monthly returns of 1.44% and 0.93% and standard deviations of 6.36% and 6.69%, respectively.

Taken collectively, these findings validate the theoretical proposition that higher expected returns are typically accompanied by higher risk. However, they also demonstrate that risk levels vary substantially even within the category of large-capitalisation NSE-listed equities, underscoring the importance of security selection in portfolio management.

8.2 Covariance and Correlation Analysis

The covariance matrix reveals a heterogeneous co-movement structure among the selected securities, with several pairs exhibiting negative or low positive covariance values. Notably, the covariance between HDFC Bank and Maruti Suzuki (−0.006767) and between HDFC Bank and Hindustan Unilever (−0.002090) are both negative, indicating that these pairs tend to move inversely. Similarly, Hindustan Unilever and Reliance Industries exhibit a negative covariance of −0.000915. These negative covariance relationships are of particular significance for portfolio construction, as they imply meaningful diversification benefits when the respective securities are combined.

The correlation matrix confirms these patterns with greater analytical clarity. The correlation between HDFC Bank and Maruti Suzuki is strongly negative at −0.593, representing the most powerful diversification pairing in the study. The correlation between Hindustan Unilever and Reliance Industries is −0.314, the second most negative pair. Conversely, the correlation between Sun Pharmaceutical Industries and Reliance Industries is a relatively high positive 0.570, indicating limited diversification potential in that pairing. The correlation between Hindustan Unilever and Maruti Suzuki is very low at −0.014, approaching zero co-movement, which also provides meaningful diversification benefits.

These findings are consistent with established portfolio theory: securities from different economic sectors with distinct demand and revenue drivers tend to exhibit lower or negative correlations, enabling portfolio managers to reduce total portfolio risk through intelligent cross-sector diversification.

8.3 Portfolio Performance Analysis

The analysis of ten two-stock portfolios reveals a consistent and theoretically coherent pattern: portfolios incorporating securities with negative or low correlations exhibit substantially lower portfolio risk than the individual stock risks would suggest, demonstrating the practical efficacy of diversification.

Portfolios 1 through 4, all incorporating HDFC Bank as a constituent, recorded negative portfolio returns reflecting the drag of HDFC Bank's deeply negative average return during the study period. Nevertheless, even among these, the risk-reducing impact of diversification is evident: Portfolio 2 (HDFC Bank + HUL), benefiting from a negative correlation of −0.287, recorded a portfolio standard deviation of 7.62%, considerably below HDFC Bank's standalone risk of 15.91%.

Among the positive-return portfolios (Portfolios 5 through 10), Portfolio 9 — comprising Hindustan Unilever Limited and Reliance Industries Limited — emerges as the most efficient combination, recording a portfolio return of 1.04% with the lowest portfolio risk of 3.28%. This superior performance is attributable to the negative correlation of −0.314 between these two securities, which enables substantial risk cancellation when the securities are combined. Portfolio 9's risk of 3.28% is markedly below both Hindustan Unilever's standalone risk of 4.58% and Reliance's standalone risk of 6.36%, providing a compelling empirical demonstration of the diversification effect.

Portfolio 10 (Maruti Suzuki + Reliance) generated the highest positive portfolio return of 1.75%, though at a higher portfolio risk of 5.25% compared to Portfolio 9, reflecting the moderate positive correlation of 0.203 between these two securities. Portfolio 8 (HUL + Maruti Suzuki) presented a risk of 4.23% with a return of 1.35%, offering an

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www.ijemss.com

Vol. 01, Issue 2, June 2026, pp : 803-815

e-ISSN : 3139-065X

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intermediate risk-return profile. These results collectively illustrate the risk-return frontier that emerges from different two-stock portfolio combinations in the study.

A critical interpretive conclusion is that portfolio risk is not simply a weighted average of the constituent individual stock risks. The mathematical portfolio risk formula, which incorporates the correlation coefficient as a key parameter, demonstrates that the risk-reducing impact of diversification is most powerful when constituent securities exhibit negative or low positive correlations. This finding empirically validates the central proposition of Modern Portfolio Theory as originally articulated by Markowitz and reinforces the academic literature's consistent conclusion that diversification across uncorrelated assets is the most effective instrument for risk reduction available to portfolio managers.

9. FINDINGS

- HDFC Bank was characterized by negative average returns (-3.65%) and very high volatility mainly caused by high negative returns realized in September 2025, meaning high risk.
- Sun Pharmaceutical Industries Limited demonstrated moderate positive returns, while exhibiting relatively higher volatility and therefore recommended for investors who can take moderate to high risks.
- Hindustan Unilever Limited was characterized by positive average returns and relatively lower standard deviation, showing that the firm is truly defensive in nature.
- Maruti Suzuki India Limited was characterized by highest average monthly return of 2.07%, but very high volatility, which shows that it had high risk–high return.
- Reliance Industries Limited provided moderate average returns and moderate risk because of diversified nature of its operations.
- Most covariance values of stock pairs were either low or negative showing efficient diversification.
- Correlation results indicated several combinations having negative or weak correlations that greatly minimized the total risk of investment portfolio.
- Portfolios comprised of FMCG, pharmaceuticals, and energy firms realized relatively lower risks compared to those containing risky banking and automobiles firms.
- The study proves that portfolio risk is not the average risk of stocks, but determined by correlation among stocks.
- Diversified portfolios had better risk-adjusted performance than individual stock investments.

10. SUGGESTIONS

On the basis of the empirical findings, the following recommendations are advanced for investors, portfolio managers, and financial intermediaries engaged in equity portfolio construction in the Indian market:

- Investors must form portfolios by combining assets of diverse sectors to minimize risks
- stocks with negative or zero correlations should be selected for portfolio optimization.
- performance of portfolios should be monitored regularly to adjust investments according to the prevailing trends in the market.
- Investors must know their risk-taking capacity before choosing the securities.
- Optimal portfolio management techniques like optimal weights may be used rather than investing equally in all stocks.
- Long-term investment planning should be practiced to combat short-term market movement

11. CONCLUSION

The present study on Portfolio management with respect to India Infoline Limited, has been undertaken to analyse the risk-return characteristics of selected NSE listed companies and to evaluate the effectiveness of diversification in portfolio construction. The stocks from different sectors like Banking, FMCG, automobile, Pharmaceuticals and Energy have been studied by using statistical tools like average returns, variance and standard deviation.

In this research about portfolio management, the significance of diversification and asset allocation is evident in making the best out of the investment. From the observation of ten different portfolios, it has become

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www.ijemss.com

Vol. 01, Issue 2, June 2026, pp : 803-815

e-ISSN : 3139-065X

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clear that for the portfolio to be less risky despite having volatile stocks, then the stock should have either low or negative correlation. This has been consistent with the modern portfolio theory, whereby it shows that for successful portfolio management, it is dependent on how the stocks relate to each other rather than on their own merits.

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