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Performance and Risk-Return Dynamics of Top Indian Mutual Fund Schemes across Market Capitalizations: An Empirical Evaluation

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Abstract: *In a complex financial environment, investors face continuous trade-offs between risk, return, and portfolio volatility across asset management companies (AMCs). While traditional bank fixed deposits offer capital safety, equity-oriented mutual funds have emerged as the primary engine for long-term wealth creation in India due to active professional management and portfolio diversification. This empirical study evaluates the risk-return performance of top equity-oriented mutual fund schemes across Large-Cap, Mid-Cap, and Small-Cap categories offered by the top five Indian AMCs by Assets Under Management (AUM): SBI Mutual Fund, ICICI Prudential Mutual Fund, HDFC Mutual Fund, Kotak Mahindra Mutual Fund, and Aditya Birla Sun Life Mutual Fund. Utilizing key quantitative risk metrics—Standard Deviation (sigma), Beta (beta), Sharpe Ratio, Treynor Ratio, and Jensen's Alpha—this paper measures risk-adjusted performance alongside expense ratios across market capitalizations. The findings provide actionable insights for retail and institutional investors constructing goal-aligned portfolios under the evolving regulatory framework governed by the Securities and Exchange Board of India (SEBI).*

Keywords: *Mutual Funds, Asset Management Companies (AMCs), Equity Schemes, Market Capitalization, Sharpe Ratio, Treynor Ratio, Risk-Adjusted Returns, Market Volatility, Expense Ratio.*

I. INTRODUCTION

The Indian mutual fund industry has undergone rapid structural transformation, with total Industry Assets Under Management (AUM) scaling to record highs driven by Systematic Investment Plans (SIPs), digital onboarding, and expanding financial literacy across Tier-2 and Tier-3 cities. Equity mutual funds have gained substantial traction among retail investors seeking inflation-beating long-term growth compared to traditional bank fixed deposits or post office savings. However, the proliferation of available schemes introduces decision-making complexity. Investors must navigate trade-offs between historical returns, portfolio volatility, expense ratios, and fund management styles. The top five Asset Management Companies in India—SBI MF, ICICI Prudential MF, HDFC MF, Kotak Mahindra MF, and Aditya Birla Sun Life MF—control a dominant share of total market AUM and offer diverse equity product suites. Evaluating equity schemes requires a multi-dimensional approach that looks beyond absolute trailing CAGR returns. Assessing risk-adjusted performance through financial metrics (such as the Sharpe and Treynor ratios) allows investors to determine whether higher scheme returns stem from manager skill or excessive risk exposure. This study conducts an empirical comparative analysis across market capitalizations (Large-Cap, Mid-Cap, and Small-Cap) to identify category-wise performance trends, risk efficiency, and cost structures.

II. LITERATURE REVIEW

Extensive literature examines mutual fund performance, risk metrics, and manager efficiency in the Indian capital market:

- 1) Nimalathan & Gandhi (2012): Evaluated public and private bank-sponsored mutual funds across open-ended tax-saving and mid-cap categories using risk-adjusted measures (Sharpe, Treynor, and Jensen ratios), finding that private fund managers exhibited higher portfolio efficiency.
- 2) Prajapati & Patel (2012): Analyzed daily NAVs of Indian equity mutual funds relative to market indices, confirming that actively managed equity schemes generated positive risk-adjusted outperformance over long-term market cycles.
- 3) Kandpal (2013): Investigated 18 equity-diversified mutual fund schemes, highlighting that private sector AMCs consistently outperformed public sector counterparts due to proactive portfolio construction, lower operational drag, and superior asset allocation.
- 4) Goyal (2015): Evaluated top equity schemes against the S&P CNX Nifty benchmark using absolute and relative metrics, concluding that active equity management generated positive Jensen's Alpha.

- 5) Ayaluru (2016): Evaluated scheme-level risk-return profiles, identifying distinct risk-return dynamics across specialized market-cap categories and sector-specific holdings.
- 6) Sathish & Sakthi Srinivasan (2016): Evaluated 20 mutual fund schemes over a five-year horizon using regression models, Beta, and Sharpe metrics, emphasizing that benchmark alignment is crucial for evaluating fund manager skill.
- 7) Choudhary et al. (2020): Examined annual returns, average maturity, and Yield-to-Maturity (YTM) of debt schemes, establishing the utility of risk-adjusted frameworks across non-equity asset classes.
- 8) Safiuddin & Hasan (2022): Conducted a meta-analysis of 30 research studies on equity funds, concluding that market volatility, investment horizons, and diversification drive retail investor return expectations.

III. RESEARCH METHODOLOGY

A. Research Design

This paper uses a quantitative descriptive and analytical research design. Secondary financial data was compiled to evaluate equity schemes across the top five AMC's in India.

B. Data Sources & Sample Selection

Data was gathered from official AMC disclosures, the Association of Mutual Funds in India (AMFI), and financial analytics platforms including Morningstar and Value Research. The sample comprises equity schemes across three market-capitalization categories from the top five AMC's by AUM:

- 1) SBI Mutual Fund
- 2) ICICI Prudential Mutual Fund
- 3) HDFC Mutual Fund
- 4) Kotak Mahindra Mutual Fund
- 5) Aditya Birla Sun Life (ABSL) Mutual Fund

C. Quantitative Evaluation Metrics

- 1) Standard Deviation (σ): Measures the total volatility or dispersion of fund returns around its mean. A higher Standard Deviation indicates greater portfolio return volatility.
- 2) Beta (beta): Measures systematic risk or sensitivity relative to the market benchmark. $\beta = 1$ indicates benchmark-matching volatility; $\beta < 1$ indicates lower market sensitivity; $\beta > 1$ indicates higher market sensitivity.
- 3) Sharpe Ratio: Measures risk-adjusted return per unit of total risk (σ):
- 4) Treynor Ratio: Measures risk-adjusted return per unit of systematic risk (β):
- 5) Total Expense Ratio (TER): Reflects the annual percentage fee charged by the AMC to manage the fund.

IV. EMPIRICAL DATA TABLES & STATISTICAL ANALYSIS

The following tables present comparative performance, risk, and expense metrics across Large-Cap, Mid-Cap, and Small-Cap schemes for the selected five AMC's.

Table 1: Empirical Comparative Metrics – Large-Cap / Large & Mid-Cap Category
(Data Sources: Scheme Annual Reports, AMFI, Value Research Data)

Asset Management Company (AMC)	Scheme Name	3-Year Return (%)	5-Year Return (%)	TER (%) (Regular)	Standard Deviation (σ)	Beta (β)	Sharpe Ratio	Treynor Ratio
SBI Mutual Fund	SBI Magnum Midcap Fund	18.2	19.5	1.68	14.8	0.82	0.91	16.4
ICICI Prudential MF	ICICI Prudential Midcap Fund	19.1	20.3	1.62	16.4	0.91	0.88	15.8
HDFC Mutual Fund	HDFC Mid-Cap Opportunities Fund	24.76	22.8	1.37	15.3	0.88	0.98	17.1
Kotak Mahindra MF	Kotak Emerging Equity Fund	18.9	20.1	1.58	14.6	0.83	0.92	16.2
ABSL Mutual Fund	ABSL Midcap Fund	16.4	16.8	1.78	16.1	1.04	0.71	11

Interpretation – Table 2:

- Return Performance: HDFC Mid-Cap Opportunities Fund delivered stronger 3-year (24.76%) and 5-year annualized returns, supported by high fund AUM and sector conviction.
- Systematic Risk: ABSL Midcap Fund registered a Beta greater than 1 ($\beta = 1.04$), reflecting higher sensitivity to underlying mid-cap market swings.
- Risk-Adjusted Ratios: HDFC Mid-Cap Opportunities Fund led the category with a Sharpe Ratio of 0.98 and Treynor Ratio of 17.10, confirming efficient risk management alongside active alpha creation.

Table 3: Empirical Comparative Metrics – Small-Cap Category
(Data Sources: Scheme Annual Reports, AMFI, Value Research Data)

Asset Management Company (AMC)	Scheme Name	3-Year Return (%)	5-Year Return (%)	TER (%) (Regulator)	Standard Deviation (σ)	Beta (β)	Sharpe Ratio	Treynor Ratio
SBI Mutual Fund	SBI Small Cap Fund	20.1	22.4	1.54	15.2	0.78	0.98	19.1
ICICI Prudential MF	ICICI Prudential Smallcap	22.3	24.1	1.65	16.8	0.84	0.95	18.9
HDFC Mutual Fund	HDFC Small Cap Fund	25.4	25.8	1.58	17.1	0.89	1.02	19.6
Kotak Mahindra MF	Kotak Small Cap Fund	19.8	21.2	1.6	15.6	0.81	0.92	17.8
ABSL Mutual Fund	ABSL Small Cap Fund	21.5	20.8	1.72	17.4	0.92	0.86	16.3

Interpretation – Table 3:

- Return Highlights: HDFC Small Cap Fund delivered robust long-term returns (25.40% across 3 years). ABSL Small Cap Fund also recorded competitive long-term returns.
- Cost Factor: SBI Small Cap Fund maintained a competitive expense ratio (1.54%), minimizing fee drag in a high-turnover category.
- Risk Ratios: Small-cap schemes showed higher absolute risk levels (Standard Deviation ranging from 15.20% to 17.40%). HDFC Small Cap Fund maintained a strong Sharpe Ratio (1.02), while SBI Small Cap Fund offered downside protection with a lower Beta ($\beta = 0.78$).

V. FINDINGS AND DISCUSSION

- 1) Risk-Return Relationship: The empirical metrics align with standard financial theory—higher total risk (σ) and systematic market risk (β) generally corresponded with higher potential gross returns across small-cap and mid-cap classifications.
- 2) Category Selection Guidelines for Investors:
 - Large-Cap Segment: Investors seeking stability and lower fee drag benefit from Kotak Equity Opportunities Fund or SBI Large & Mid Cap Fund due to lower volatility. Investors seeking risk-adjusted performance gain efficiency through ICICI Prudential Large & Mid Cap Fund's higher Sharpe Ratio.
 - Mid-Cap Segment: HDFC Mid-Cap Opportunities Fund demonstrates strong overall alpha generation, holding a balanced Sharpe-Treynor combination. SBI Magnum Midcap Fund offers a steady alternative with lower standard deviation and competitive expense structures.

- Small-Cap Segment: HDFC Small Cap Fund generated stronger capital growth, while SBI Small Cap Fund provided lower volatility (beta = 0.78) and a competitive expense ratio, serving as a suitable entry point for conservative retail investors.

VI. LIMITATIONS OF THE STUDY

- 1) Sample Boundary: Analysis is restricted to the top five AMCs by AUM, excluding boutique, emerging, or quantitative-focused fund houses.
- 2) Historical Data Horizon: Past performance and risk ratios evaluated over 3-year and 5-year windows may vary during different macroeconomic, interest rate, or market volatility cycles.
- 3) Secondary Source Dependence: Findings rely on disclosed secondary metrics, subject to regular portfolio rebalancing by respective fund managers.

VII. CONCLUSION

Selecting equity mutual funds requires evaluating risk-adjusted efficiency metrics (Sharpe and Treynor ratios) and total expense structures rather than relying solely on trailing returns. While aggressive market-cap categories (Mid-Cap and Small-Cap) offer substantial wealth-creation opportunities, they entail higher portfolio volatility. Mainstream investors benefit from diversifying across market capitalizations while aligning scheme selection with personal risk tolerance, target investment horizons, and financial goals.

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