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Risk-Adjusted Performance Evaluation of Selected Equity Mutual Fund Schemes

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Risk-adjusted performance, Equity mutual funds, Financial metrics, Investment decisions, Volatility

ABSTRACT

The present study evaluates the risk-adjusted performance of selected open-ended equity mutual fund schemes in India, focusing on Midcap, Infrastructure, Flexicap, and Smallcap categories. The shift from traditional bank deposits to mutual funds are analyzed and evaluated as investors seek higher returns and a better understanding of risk dynamics. Fund returns were calculated over this five-year period (April 2019 to March 2024) using secondary data sourced from AMFI, SEBI, and NSE, while risk and risk-adjusted returns were analyzed for the one-year period of April 2023 to March 2024. The study employs key financial metrics such as Beta, Standard Deviation, Sharpe Ratio, Treynor's Ratio, and Jensen's Alpha to evaluate fund performance. Key findings revealed that HDFC Midcap Fund demonstrated lower beta values, indicating reduced volatility, and superior risk-adjusted returns in the Midcap category. Similarly, Nippon Power and Infrastructure Fund excelled in the Infrastructure category with high Sharpe and Treynor's ratios, HDFC Flexicap Fund showed strong performance with lower volatility and favorable risk-adjusted returns in the Flexicap category, and Nippon Smallcap Fund outperformed in the Smallcap category with higher Sharpe and Treynor's ratios, signifying superior risk-adjusted returns. This comprehensive evaluation provides valuable insights for investors, emphasizing the importance of risk-adjusted performance metrics in making informed investment decisions in a dynamic financial market. Overall, the infrastructure fund category showed the most consistent outperformance across all risk-adjusted metrics.

1. INTRODUCTION

The Indian financial sector plays a pivotal role in driving economic growth, offering diverse investment opportunities that have seen mutual funds emerge as a preferred choice for both retail and institutional investors, providing a compelling alternative to traditional bank deposits. Increased financial literacy, coupled with a robust regulatory framework established by the Securities and Exchange Board of India (SEBI), has fuelled this shift, as investors seek diversified portfolios and superior risk-adjusted returns. Within the equity mutual fund segment, renowned for its long-term growth potential, Midcap, Smallcap, Flexicap, and Infrastructure funds cater to varying risk appetites and financial objectives. The COVID-19 pandemic, however, introduced unprecedented market volatility and uncertainty, significantly impacting the performance of these equity mutual funds and highlighting the critical need for rigorous risk-adjusted performance evaluation.

This study aims to analyse the risk-adjusted performance of selected open-ended equity mutual fund schemes in India over a five-year period, from April 2019 to March 2024. Specifically focusing on Midcap, Infrastructure, Flexicap, and Smallcap categories, the research employs key financial metrics such as Beta, Standard Deviation, Sharpe Ratio, Treynor Ratio, and Jensen's Alpha to assess return and risk profiles. By evaluating these metrics, the study seeks to offer valuable insights for investors, fund managers, and policymakers, identifying the most efficient mutual fund schemes based on their risk-return trade-offs within India's dynamic financial landscape.

Grounded in a theoretical framework that incorporates diversification, professional management, liquidity, and accessibility, the study utilizes category averages and Net Asset Value (NAV) as benchmarks to evaluate fund performance, thereby contextualizing the research within established financial principles and providing a structured method for interpreting empirical data. This paper is structured to include a literature review, research methodology, data analysis and interpretation, and a conclusion with key findings and recommendations

2. REVIEW OF LITERATURE

The evaluation of mutual fund performance in India has been a subject of extensive research, focusing on various metrics and timeframes to provide insights for investors and fund managers. Studies have consistently utilized risk-adjusted performance measures such as the Sharpe ratio, Treynor ratio, and Jensen's alpha to assess the efficacy of mutual fund schemes against market benchmarks and risk-free rates.

Several studies have focused on the performance of equity mutual fund schemes. Bhagyasree and Kishori (2016) analyzed growth-oriented equity schemes from April 2011 to March 2015, finding that 14 out of 30 schemes outperformed the BSE Sensex, with all schemes demonstrating positive Sharpe ratios. Similarly, Sathish and Srinivasan (2016) evaluated 20 open-ended mutual fund schemes from January 2010 to December 2014, identifying top performers while also noting underperforming funds. Duggimpudi et al. (2015) examined equity diversified mutual funds from 2000 to 2009, revealing a positive correlation between risk and return. Ashraf and Sharma (2015) evaluated ten growth-oriented schemes, reporting that most schemes outperformed risk-free rates, though some lagged behind market benchmarks. Bantwa and Bhuva (2012) assessed equity diversified funds, finding that most schemes outperformed the market due to effective stock selection. Hymavathi and Jasmi (2022) focused on equity mutual fund schemes, emphasizing the importance of standard deviation, NAV, Sharpe ratio, and beta values in performance evaluation.

Sector-specific analyses have also been conducted. Pournima et al. (2011) assessed open-ended equity sector funds, finding that most sectors, except infrastructure, surpassed market performance. Gupta et al. (2013) conducted a comparative study of sectoral mutual fund schemes, indicating positive returns for most funds. The performance of hybrid and balanced funds has also been examined. Chaudhari (2020) analysed hybrid mutual funds, highlighting the impact of market sentiment on aggressive hybrid funds. Kalebar and Shah (2019) assessed balanced mutual funds, noting that most funds exhibited aggressive performance and effective diversification. Naz et al. (2015) evaluated balanced mutual fund schemes in Pakistan, finding that most schemes underperformed.

Studies have also explored the impact of economic events and market conditions. Manjoj and Avinash (2020) compared mutual fund performance before and during the COVID-19 pandemic, highlighting the importance of risk and return evaluation. Bangada (2023) investigated stock selection and market timing during and after the pandemic, finding competence in stock selection but suboptimal market timing. Chakraborty et al. (2019) analysed equity and debt schemes during demonetization and GST implementation.

Researchers have also compared public and private sector mutual funds. Ghosh (2014) found that schemes sponsored by private foreign companies outperformed those sponsored by public and private entities. Venkatesh et al. (2020) assessed open-ended equity funds, noting that most funds exhibited lower volatility but underperformed benchmarks. Veeralakshmi (2020) compared SBI and Birla Sun Life funds, finding no substantial variance in performance between sectors. Furthermore, studies have examined the factors influencing investor behaviour. Arathy et al. (2015) investigated the factors that shape retail investor decisions in mutual funds. Gujrati (2022) indicated that most mutual fund investors experienced profits, suggesting mutual fund investment is effective.

Methodologically, studies have employed various techniques, including financial ratio analysis (Patel, 2022; Chaudhari, 2020), risk-return analysis (Ghosh, 2014; Duggimpudi et al., 2015; Prajapati & Patel, 2011; Gupta et al., 2013), and statistical methods (Sathish & Srinivasan, 2016; Zafar et al., 2015; Maheswari & Dineshkumar, 2019). Comparative analyses have also been conducted across different fund types and market conditions (Zalgiryte & Guzavicius, 2011; Singh & Padmakumari, 2019).

In short, the existing literature provides a comprehensive understanding of mutual fund performance in India, emphasizing the importance of risk-adjusted returns, fund manager competence, and market conditions. These studies collectively contribute to informed investment decisions and enhanced fund management practices.

3. RESEARCH METHODOLOGY

This research utilizes an analytical framework grounded in the evaluation and comparison of 20 selected open-ended equity mutual fund schemes over a five-year period, from April 2019 to March 2024. Relying exclusively on secondary data from authoritative financial sources, including AMFI, SEBI, NSE, RTAs, and mutual fund company websites, the study assesses fund performance through a comprehensive analysis of risk and return characteristics. Employing established financial metrics such as return analysis, standard deviation, beta, Sharpe ratio, Treynor ratio, and Jensen’s Alpha, the research aims

to quantify and compare the historical returns, volatility, market sensitivity, and risk-adjusted performance of the chosen schemes. Specifically, the category average serves as a benchmark for comparative analysis, and financial performance models are used to evaluate risk-return dynamics within each fund category. While the overarching study period spans five years, the calculation of risk-adjusted performance metrics, including Sharpe, Treynor, and Jensen's Alpha, is focused on the most recent year, from April 2023 to March 2024, to reflect current market trends. This structured approach, combining historical data with recent performance indicators, provides a robust evaluation of equity mutual fund performance, ultimately offering valuable insights for investors and financial decision-makers.

4. DATA ANALYSIS

This study analysed the risk, return, and risk-adjusted return of funds from four distinct categories: Midcap, Flexicap, Infrastructure, and Smallcap. For each category, five representative funds were selected. Specifically, the Midcap category included ICICI Midcap Fund, Kotak Midcap Fund, Aditya Birla Midcap Fund, SBI Midcap Fund, and HDFC Midcap Fund. The Flexicap category was represented by SBI Flexicap Fund, Kotak Flexicap Fund, Aditya Birla Flexicap Fund, Axis Flexicap Fund, and HDFC Flexicap Fund. The Infrastructure category comprised Aditya Birla Infrastructure Fund, HDFC Infrastructure Fund, Nippon Power and Infrastructure Fund, ICICI Infrastructure Fund, and SBI Infrastructure Fund. Finally, the Smallcap category consisted of ICICI Smallcap Fund, HDFC Smallcap Fund, SBI Smallcap Fund, Aditya Birla Smallcap Fund, and Nippon Smallcap Fund.

Fund Return Analysis

The return on mutual fund investment, which represents the profit or loss generated over a specific period, was assessed across 1-year, 3-year, and 5-year periods by comparing fund returns to their respective category averages. In the midcap category, ICICI and HDFC funds outperformed the 1-year average. Over 3 years, HDFC demonstrated strong outperformance, and over 5 years, all funds except Aditya Birla surpassed the average, with HDFC leading. For smallcap funds, Nippon was the sole outperformer in the 1-year period. Over 3 years, HDFC and Nippon outperformed, and over 5 years, most funds, excluding Aditya Birla, exceeded the average, with Nippon exhibiting the most significant gains.

Regarding flexicap funds, Kotak and HDFC outperformed the 1-year average. Over 3 years, HDFC and Kotak outperformed, and over 5 years, HDFC, Kotak, and Aditya Birla surpassed the average, with HDFC consistently showing the highest returns. Notably, all infrastructure funds consistently outperformed their category averages across all timeframes, with Nippon India Power and Infra Fund and HDFC Infra demonstrating particularly strong performance, especially in the 1-year analysis. Overall, HDFC consistently displayed strong performance across multiple categories and timeframes, while the infrastructure category demonstrated uniform outperformance.

	Fund Return (1 Year)	Category Average	Fund Return (3 Years)	Category Average	Fund Return (5 Years)	Category Average
Mid Cap Funds						
ICICI	**61.75**		**25.38**		**22.89**	
Kotak	**49.61**		**24.61**		**24.94**	
Aditya Birla	**43.37**	**55.78**	**23.30**	**25.42**	**19.52**	**22.19**
SBI Magnum	**38.74**		**23.88**		**24.19**	
HDFC	**57.44**		**28.93**		**25.55**	
Small Cap Funds						
ICICI	**44.85**		**26.87**		**26.26**	
HDFC	**44.09**		**27.78**		**24.92**	
SBI	**39.16**	**56.51**	**22.96**	**26.9**	**25.95**	**20.13**
Aditya Birla	**43.86**		**19.48**		**17.96**	
Nippon	**58.82**		**33.73**		**31.51**	

Flexi Cap Funds						
SBI	**28.39**		**15.19**		**15.19**	
Kotak	**39.46**		**18.63**		**16.36**	
Aditya Birla	**36.81**	**38.72**	**16.30**	**18.09**	**16.34**	**15.86**
Axis	**32.91**		**13.99**		**15.19**	
HDFC	**45.11**		**25.64**		**19.91**	
Infra Funds						
Aditya Birla	**67.06**		**31.07**		**23.59**	
HDFC	**83.60**		**38.06**		**21.13**	
Nippon India	**86.86**	**63.27**	**39.24**	**26.76**	**27.92**	**20.81**
ICICI	**70.01**		**39.08**		**27.87**	
SBI	**66.71**		**32.70**		**25.19**	

Table No 1: Return of Funds & Category – 1 Year, 3Years, & 5 Years

Risk Analysis: Standard Deviation and Beta

The risk analysis, encompassing total risk (standard deviation) and systematic risk (beta), was conducted for a one-year period. The analysis of standard deviations revealed varying volatility levels across the fund categories. For infrastructure funds, HDFC, Aditya Birla, and Nippon funds exhibited higher volatility than the category average, while SBI and ICICI funds showed lower volatility. In the midcap category, HDFC's volatility matched the category average, ICICI's was slightly higher, and Kotak and SBI showed lower volatility. Regarding flexicap funds, HDFC, SBI, and Axis displayed lower volatility than the category average. For smallcap funds, SBI and ICICI exhibited lower volatility.

The analysis of beta values, which indicate volatility relative to the market, revealed considerable variability across fund categories. For midcap funds, HDFC and ICICI had slightly higher beta values, while Kotak and SBI had lower values. For flexicap funds, HDFC and SBI had lower beta values, and Kotak and Aditya Birla had higher values. Infrastructure funds showed the most significant variation, with ICICI and SBI having substantially lower beta values. For smallcap funds, SBI and ICICI had lower beta values.

	Total Risk (Standard Deviation)		**BETA (Systematic Risk)**	
	Fund Risk	**Category Average**	**Fund Risk**	**Category Average**
Mid Cap Funds				
ICICI	11.84		0.89	
Kotak	12.84		0.79	
Aditya Birla	13.00	12.84	0.89	0.88
SBI Magnum	11.48		0.79	
HDFC	12.80		0.89	

Small Cap Funds				
ICICI	12.12		0.74	
HDFC	13.51		0.86	
SBI	10.97	12.90	0.67	0.80
Aditya Birla	12.78		0.82	
Nippon	13.51		0.86	
Flexi Cap Fund				
SBI	10.63		0.86	
Kotak	11.93		0.97	
Aditya Birla	11.77	11.84	0.95	0.94
Axis	11.40		0.90	
HDFC	11.43		0.90	
Infrastructure Fund				
Aditya Birla	14.30		0.88	
HDFC	13.58		0.70	
Nippon India	13.23	12.78	0.90	0.86
ICICI	12.05		0.61	
SBI	11.37		0.77	

Table No 2: Risk of Funds & Category (Standard Deviation & Beta)

Risk-Adjusted Return Analysis

Sharpe Ratio*:* The analysis of Sharpe Ratios, which measure risk-adjusted returns, revealed significant variations in performance. In the midcap category, HDFC and SBI funds demonstrated Sharpe Ratios exceeding the category average. For infrastructure funds, all funds significantly outperformed the category average. In the flexicap category, only HDFC outperformed the category average. For smallcap funds, SBI, Nippon, and HDFC displayed Sharpe Ratios above the category average.

Treynor's Ratio*:* The analysis of Treynor's Ratio, which measures risk-adjusted returns per unit of systematic risk, revealed varying performance. In the midcap category, HDFC and Kotak funds slightly outperformed the category average. For infrastructure funds, HDFC and ICICI significantly exceeded the category average. In the flexicap category, HDFC slightly outperformed the category average. For smallcap funds, Nippon, ICICI, and HDFC slightly outperformed the category average.

Jensen's Alpha*:* The analysis of Jensen's Alpha, which measures a portfolio's excess return, revealed significant performance variations. In the midcap category, HDFC and SBI funds demonstrated positive alpha. For flexicap funds, HDFC showed remarkably high positive alpha. In the infrastructure category, all funds exhibited high positive alpha. For smallcap funds, Nippon, ICICI, and HDFC showed significant positive alpha. Overall, infrastructure funds demonstrated the strongest performance with consistently high positive alpha, followed by certain smallcap funds, while flexicap funds showed the most consistent underperformance.

	Sharp Ratio		Treynor's Ratio		Jensen's Ratio	
	Fund Ratio	Category Average	Fund Ratio	Category Average	Fund Ratio	Category Average
Mid Cap Funds						
ICICI	**1.31**		**0.19**		**-0.31**	
Kotak	**1.35**		**0.20**		**0.13**	
Aditya Birla	**1.27**	**1.29**	**0.18**	**0.19**	**-1.05**	**-0.26**
SBI Magnum	**1.35**		**0.20**		**0.69**	
HDFC	**1.58**		**0.23**		**2.99**	
Small Cap Funds						
ICICI	**0.88**		**0.27**		**3.75**	
HDFC	**1.63**		**0.26**		**4.50**	
SBI	**1.90**	**1.47**	**0.24**	**0.24**	**2.23**	**2.04**
Aditya Birla	**1.07**		**0.17**		**-3.29**	
Nippon	**1.83**		**0.29**		**6.33**	
Flexi Cap Fund						
SBI	**0.88**		**0.11**		**-1.64**	
Kotak	**0.93**		**0.11**		**-1.36**	
Aditya Birla	**0.85**	**0.99**	**0.11**	**0.13**	**-2.20**	**-0.05**
Axis	**0.66**		**0.08**		**-4.04**	
HDFC	**1.68**		**0.21**		**7.00**	
Infra Fund						
Aditya Birla	**1.62**		**0.25**		**4.03**	
HDFC	**2.03**		**0.42**		**6.66**	
Nippon India	**2.09**	**1.08**	**0.31**	**0.16**	**9.25**	**2.46**
ICICI	**2.41**		**0.47**		**9.20**	
SBI	**2.13**		**0.31**		**8.44**	

Table 3: Risk Adjusted Return (Sharp Ratio, Treynor's Ratio, Jensen's Ratio)

In short, the analysis of fund returns revealed HDFC's consistent outperformance in Midcap and Flexicap categories, while Nippon led in Smallcap and Infrastructure. Infrastructure funds uniformly outperformed across all periods. Risk analysis highlighted varying volatility and market sensitivity, with Infrastructure and Smallcap funds showing the widest range. Risk-adjusted return analysis demonstrated that Infrastructure funds consistently performed strongest, followed by select Smallcap funds, while Flexicap funds generally underperformed. These findings emphasize the importance of considering both return and risk metrics for informed investment decisions.

5. FINDINGS

Fund Return Performance

The analysis of fund returns across midcap, smallcap, flexicap, and infrastructure categories revealed distinct performance trends. In the midcap category, the HDFC Midcap Fund consistently outperformed across all timeframes, achieving returns of 57.44% (1-year), 28.93% (3-year), and 25.55% (5-year), outperforming the category average by 1.66%, 3.51%, and 3.36% respectively. The ICICI Midcap Fund showed strong short-term performance with 61.75% (1-year), while the Aditya Birla Midcap Fund consistently underperformed. In the smallcap category, the Nippon Small Cap Fund emerged as the top performer with returns of 58.82% (1-year), 33.73% (3-year), and 31.51% (5-year), outperforming the category average by 2.31%, 6.83%, and 11.38% respectively. The Aditya Birla Small Cap Fund consistently lagged. For flexicap funds, the HDFC Flexicap Fund demonstrated superior performance with returns of 45.11% (1-year), 25.64% (3-year), and 19.91% (5-year), outperforming the category average by 6.39%, 7.55%, and 4.05% respectively. The Axis Flexicap Fund consistently ranked lowest. In the infrastructure category, the Nippon India Power and Infrastructure Fund consistently led with returns of 86.86% (1-year), 39.24% (3-year), and 27.92% (5-year), outperforming the category average by 23.59%, 12.48%, and 7.11% respectively. All infrastructure funds outperformed their category average across all timeframes. Overall, HDFC funds showed consistent strength in midcap and flexicap categories, while Nippon funds were dominant in the smallcap and infrastructure categories.

Fund Risk Analysis

Standard Deviation*:* The risk analysis, measured by standard deviation, revealed varying volatility across different fund categories. In the Infrastructure Fund category, HDFC Infrastructure Fund exhibited the highest standard deviation of 14.3, significantly above the category average of 12.78, indicating the highest volatility, while SBI Infrastructure Fund showed the lowest volatility with a standard deviation of 11.37. For Midcap Funds, ICICI Midcap Fund had the highest standard deviation of 13, marginally above the category average of 12.84, while Kotak Midcap Fund displayed the lowest volatility with a standard deviation of 11.48. In the Flexicap Funds category, Kotak Flexicap Fund showed the highest standard deviation of 11.93, slightly above the category average of 11.84, while SBI Flexicap Fund had the lowest volatility with a standard deviation of 10.63. For Smallcap Funds, both Nippon and HDFC Smallcap Funds had the highest standard deviation of 13.51, exceeding the category average of 12.9, while SBI Smallcap Fund demonstrated the lowest volatility with a standard deviation of 10.97. Investors seeking higher returns and willing to accept higher risk may prefer HDFC Infrastructure, ICICI Midcap, Kotak Flexicap, and Nippon / HDFC Smallcap Funds. Conversely, those prioritizing stability may opt for SBI Infrastructure, Kotak Midcap, SBI Flexicap, and SBI Smallcap Funds. Funds like Aditya Birla and Axis Flexicap, and ICICI Smallcap, offered a balanced risk profile aligning closely with their respective category averages.

Systematic Risk (Beta): The data analysis revealed varying levels of systematic risk, measured by Beta, across midcap, flexicap, infrastructure, and smallcap mutual funds. In the midcap category, HDFC, ICICI, and Aditya Birla funds exhibited a Beta of 0.89, slightly above the 0.88 category average, indicating moderate volatility. Conversely, Kotak and SBI funds showed a lower Beta of 0.79, suggesting reduced volatility and appeal to conservative investors. For flexicap funds, HDFC and Axis funds had a Beta of 0.9, slightly below the 0.94 category average, offering moderate risk, while SBI funds showed the lowest Beta at 0.86, indicating greater stability. Kotak and Aditya Birla funds had a higher Beta of 0.97, suggesting increased volatility. In the infrastructure category, ICICI funds displayed the lowest Beta at 0.61, indicating minimal volatility, followed by HDFC and SBI funds with Betas of 0.7 and 0.77, respectively. Aditya Birla and Nippon funds had higher Betas of 0.88 and 0.9, respectively, indicating increased volatility. In the smallcap category, SBI funds had the lowest Beta at 0.67, indicating lower risk, while ICICI funds had a Beta of 0.74. Aditya Birla, Nippon, and HDFC funds had Betas of 0.82 and 0.86, indicating slightly higher volatility. Overall, the analysis highlights that ICICI infrastructure funds and SBI smallcap funds presented the lowest systematic risk, while Kotak and Aditya Birla flexicap funds showed the highest.

Risk-Adjusted Return Analysis

Sharpe Ratio*:* The Sharpe Ratio analysis, evaluating risk-adjusted returns, revealed significant performance variations across midcap, infrastructure, flexicap, and smallcap fund categories. In the midcap category, HDFC Midcap Fund stood out with a Sharpe Ratio of 1.58, substantially exceeding the category average of 1.29, indicating superior returns per unit of risk. Kotak and SBI Midcap Funds also outperformed with ratios of 1.35, while ICICI Midcap Fund showed a slight outperformance at 1.31, and Aditya Birla Midcap Fund slightly underperformed at 1.27. For infrastructure funds, ICICI Infrastructure Fund led with a remarkable 2.41, significantly above the 1.08 average, followed by SBI at 2.13, Nippon at 2.09, HDFC at 2.03, and Aditya Birla at 1.62, all indicating strong outperformance. In the flexicap category, HDFC Flexicap Fund outperformed significantly with a 1.68 ratio, compared to the 0.99 average, while Kotak, SBI, Aditya Birla, and Axis funds underperformed, with ratios of 0.93, 0.88, 0.85, and 0.66, respectively. In the smallcap category, SBI Smallcap Fund led with a 1.9 ratio, followed by Nippon at 1.83, HDFC at 1.63, all exceeding the 1.47 average, while Aditya Birla and ICICI funds underperformed at 1.07 and 0.88, respectively. Overall, infrastructure funds demonstrated the strongest risk-adjusted performance, followed by select midcap and smallcap funds, while flexicap funds generally underperformed.

***Treynor's Ratio**:* The analysis of Treynor's Ratio, which measures returns per unit of systematic risk, revealed distinct performance patterns across four mutual fund categories. In the midcap category, HDFC Midcap Fund led with a ratio of 0.23, surpassing the category average of 0.19, indicating the highest returns relative to beta. Kotak and SBI Midcap Funds also outperformed with ratios of 0.20, while ICICI matched the average at 0.19, and Aditya Birla underperformed slightly at 0.18. For infrastructure funds, ICICI Infrastructure Fund demonstrated the strongest performance with a ratio of 0.47, significantly above the 0.16 average, followed closely by HDFC Infrastructure Fund at 0.42. Nippon and SBI Infrastructure Funds showed moderate outperformance at 0.31, and Aditya Birla outperformed modestly at 0.25. In the flexicap category, HDFC Flexicap Fund was the sole outperformer with a ratio of 0.21, compared to the 0.13 average. SBI, Kotak, and Aditya Birla funds matched the average at 0.11, while Axis underperformed at 0.08. For smallcap funds, Nippon Smallcap Fund led with a ratio of 0.29, exceeding the 0.24 average, followed by ICICI at 0.27 and HDFC at 0.26. SBI matched the average at 0.24, and Aditya Birla underperformed at 0.17. Overall, HDFC funds consistently showed strong performance across midcap and flexicap categories, while ICICI and Nippon funds excelled in infrastructure and smallcap categories, respectively.

***Jensen's Alpha**:* The analysis of Jensen's Alpha revealed significant performance variations across four mutual fund categories. In the Midcap category, the HDFC Midcap Fund stood out with a Jensen's Ratio of 2.99, far exceeding the category average of -0.26, followed by the SBI Midcap Fund with 0.69, indicating substantial outperformance. The Kotak Midcap Fund also showed positive alpha at 0.13, while the ICICI and Aditya Birla funds underperformed with ratios of -0.31 and -1.05, respectively. In the Flexicap category, the HDFC Flexicap Fund demonstrated exceptional performance with a Jensen's Ratio of 7, significantly above the -0.05 average; however, all other funds, including SBI (-1.64), Kotak (-1.36), Axis (-4.04), and Aditya Birla (-2.2), displayed negative alpha, indicating underperformance. For Infrastructure funds, all funds outperformed, with Nippon Power and Infrastructure Fund (9.25) and ICICI Infrastructure Fund (9.2) showing the highest alpha, followed by SBI (8.44), HDFC (6.66), and Aditya Birla (4.03). In the Smallcap category, the Nippon Smallcap Fund led with a Jensen's Ratio of 6.33, followed by HDFC (4.5), ICICI (3.75), and SBI (2.23), all showing positive alpha, while the Aditya Birla fund significantly underperformed with a ratio of -3.29. Overall, HDFC funds consistently displayed strong positive alpha across multiple categories, while infrastructure funds showed the most uniform outperformance, and flexicap funds showed the most consistent underperformance.

Across the analyzed categories, several funds demonstrated exceptional performance. HDFC Midcap Fund stood out for its consistent risk-adjusted returns and stability, making it ideal for balanced growth; HDFC Flexicap Fund offered strong, risk-adjusted growth with lower volatility, suitable for both short and long-term investment; Nippon Small Cap Fund consistently outperformed with robust returns and strong risk-adjusted metrics, appealing to aggressive growth seekers despite higher volatility; and HDFC Infrastructure Fund provided stable, risk-adjusted returns with a lower risk profile, making it a reliable choice for conservative investors in the infrastructure sector.

6. DISCUSSIONS & IMPLICATIONS

This study's findings underscore the critical importance of rigorous risk-adjusted performance evaluation in mutual fund selection, aligning with established portfolio theory that emphasizes optimizing returns relative to risk. Theoretically, the consistent outperformance of specific funds, notably within the infrastructure category, supports the notion that sector-specific funds, when managed effectively, can generate superior risk-adjusted returns, challenging the assumption that broader diversification always yields optimal outcomes. Furthermore, the variability in fund performance across different market conditions, particularly post-COVID-19, highlights the need for dynamic portfolio management strategies that adapt to evolving economic landscapes.

Managerially, fund managers should prioritize a data-driven approach, utilizing metrics like Sharpe, Treynor, and Jensen's Alpha to assess and communicate fund performance to investors transparently. The consistent underperformance of certain funds suggests a need for enhanced due diligence and strategic adjustments in portfolio composition. For investors, these findings advocate for a shift from solely return-focused decision-making to a comprehensive evaluation of risk-adjusted returns. Financial advisors should leverage these insights to guide investors towards funds that align with their risk tolerance and investment objectives, emphasizing the long-term benefits of funds with superior risk-adjusted performance. Policymakers, in turn, should reinforce regulatory frameworks that promote transparency and accountability in mutual fund reporting, ensuring investors have access to accurate and comprehensive performance data.

7. CONCLUSIONS

Limitations: This study's findings are inherently limited by its reliance on historical data and a focused selection of Indian mutual funds. Consequently, the predictive power of the analysis for future investment outcomes is constrained. The inherent instability of economic environments, including potential shifts in inflation, interest rates, and regulatory policies, is not fully accounted for. Moreover, the exclusion of transaction costs, taxes, and fees from the analysis presents a potentially incomplete financial picture, impacting the accuracy of net investor return estimations.

Scope for Further Study: Future research could significantly enhance the current study by expanding its scope in several key areas. To better understand long-term trends and fund stability, extending the analysis to cover longer time periods and various market cycles is crucial. Incorporating predictive models would enable estimations of future returns and risks, improving the study's practical application for investment strategies. Conducting in-depth, sector-specific studies, particularly in dynamic sectors like technology and healthcare, would illuminate unique risks and opportunities. Analysing the effects of economic changes, such as fluctuations in inflation and interest rates, would provide valuable insights for adapting investment strategies. Including transaction costs, taxes, and fees in the analysis would offer a more accurate representation of net investor returns. Furthermore, comparing Indian mutual funds with global counterparts would benchmark their competitiveness. Finally, employing advanced risk metrics like Value at Risk and Conditional Value at Risk would provide a more nuanced understanding of fund risk profiles.

This research demonstrates that Indian equity mutual fund performance varies significantly, stressing the necessity of evaluating risk-adjusted returns alongside raw gains. Effective risk management, a cornerstone of financial theory, is essential for superior performance. Skilled fund managers utilizing strategic portfolio management achieve better risk-adjusted returns. Investors must align fund choices with their risk tolerance and investment goals, balancing potential gains against volatility. This study promotes an informed investment approach, considering both historical data and market dynamics

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