Risk-Adjusted Performance Analysis of IT Sector Mutual Funds in India

Md Meraj Hasan[1], Md Wakil Ahmad[2], Nadeem Alam[3]

[1,2] Department of Management, Aurora's P.G College, Chikkadpally, Affiliated to Osmania University, Hyderabad, Telangana, India. Email ID: mdmerajhasan2015@gmail.com[1], ahmadnwd80@gmail.com[2]

[3] Research Scholar, Department of Management & Commerce, Maulana Azad National Urdu University, Hyderabad, Telangana, India. Email ID : nadeemalamfa@gmail.com

Corresponding Author

Md Meraj Hasan

Department of Management, Aurora's P.G College, Chikkadpally, Affiliated to Osmania University, Hyderabad, Telangana, India. Email ID: mdmerajhasan2015@gmail.com

KEYWORDS

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ABSTRACT

The rapid growth of the Information Technology (IT) sector has significantly influenced investment patterns in the Indian mutual fund industry, leading to increased investor interest in IT sector mutual funds. However, sectoral funds are often associated with higher volatility, making risk-adjusted performance evaluation essential for informed investment decisions. This study aims to analyze the risk-adjusted performance of selected IT sector mutual funds in India over a ten-year period. The study is based on secondary data collected from AMFI, official websites of asset management companies and stock exchange databases. The statistical measures such as average returns, standard deviation and beta are used to assess return and risk, while Sharpe Ratio, Treynor Ratio and Jensen's Alpha are employed to evaluate risk-adjusted performance. The performance of selected IT mutual funds is compared with the benchmark IT index to determine their relative efficiency. The findings reveal that IT sector mutual funds offer attractive return potential their performance varies significantly after adjusting for risk. The study provides valuable insights for investors, fund managers, and researchers in understanding the performance dynamics of IT sector mutual funds in India.

1. INTRODUCTION

The Indian mutual fund industry has witnessed substantial growth over the past two decades, driven by rising investor awareness, digital penetration, regulatory reforms by SEBI and the expanding role of capital markets in economic development. Among the various sectoral mutual fund schemes, Information Technology (IT) sector mutual funds have gained significant prominence due to India's global leadership in software services, digital transformation, cloud computing, artificial intelligence, and outsourcing activities. The consistent contribution of the IT sector to India's GDP, exports and employment generation has made IT-focused investments attractive to both domestic and foreign investors.

IT sector mutual funds primarily invest in equities of companies engaged in software services, IT consulting, digital solutions, and related technology-driven businesses. While these funds offer the potential for superior returns during technology-led market expansions, they are also exposed to sector-specific risks such as global demand fluctuations, currency volatility, regulatory changes and rapid technological disruptions.

The risk-adjusted performance evaluation becomes crucial. Risk-adjusted measures assess how efficiently a mutual fund

generates returns relative to the risk undertaken. Measures such as the Sharpe Ratio, Treynor Ratio and Jensen's Alpha enable investors to compare fund performance after adjusting for total risk, systematic risk and market expectations, respectively. These measures are widely used in empirical finance research to evaluate fund managers' skill and portfolio efficiency. Despite the growing significance of sectoral mutual funds, especially those focused on the IT sector, empirical research examining their risk-adjusted performance within the Indian mutual fund industry remains limited. Prior studies predominantly emphasize diversified equity and tax-saving mutual funds, thereby leaving a gap in sector-specific performance evaluation. This study aims to bridge this gap by evaluating the risk-adjusted performance of selected IT sector mutual funds in India, providing valuable insights for investors and fund managers

2. LITERATURE REVIEW

The literature suggests many different ways to measure performance and reports varied empirical results. This can be seen in studies by Sharpe (1966), Jensen (1968), Elton et al. (1987), Carhart (1997), Gupta (2002), Bhandari (2008) and Chopra (2011). Overall, the main conclusion from extensive financial research is that most mutual funds have not been able to outperform the benchmark indices they are compared with. Most performance measurement methods are based on the risk return framework and rely on the capital asset pricing model (CAPM). These methods assume that a fund's investment behavior can be explained by a single market index. Along with the traditional performance measures developed by Sharpe (1966), Treynor (1965) and Jensen (1968), many new performance measurement techniques have also been introduced over time. Many funds that call themselves "value" funds do not actually invest in companies with high book-to-market (BM) ratios, even though this is a key feature of value investing. Instead, many value funds hold a large number of growth stocks (stocks with low BM ratios). Because of this, it becomes difficult to clearly separate value funds from growth funds (Lettau, Ludvigson, & Manoel, 2018). Most mutual funds, regardless of their names, mainly invest in large-cap companies (Lettau, Ludvigson, & Manoel, 2018). As a result, value funds and growth funds often look very similar in terms of their characteristics. Research by Baroody (2017) shows that value funds do not always perform well. Some studies find that value funds perform worse than passive benchmark indices. For several consecutive years, they produced negative abnormal returns of around 2.7% (Davis, 2001). Even though research suggests that value and small-cap funds usually perform better than growth and large-cap funds, value funds still fail to outperform top-performing growth and small-cap funds (De Mingo-López, Matallín-Sáez & Soler-Domínguez, 2020). However, some funds are able to perform better in certain markets by using strong quality and value indicators to select assets (García, González, & Santomil, 2021). Value investing is known for its potential to generate high returns, but mutual funds do not always apply value investing strategies properly. Many investors want to understand what this category actually represents and what fund managers aim to achieve (Lettau, Ludvigson, & Manoel, 2018). In some situations, value and passive investment strategies have been profitable, partly because they have lower costs (Endometriosis; Treatment, 2014) compared to active or growth strategies (Kileta & Onsomu, 2021). Value -based mutual funds do not always follow the same rules as traditional value investing, which may explain differences in their performance. Some studies show that value-based strategies can be successful, especially when combined with strong value indicators. However, many value funds do not outperform passive benchmark indices, and their portfolios are often structured similarly to growth funds. Therefore, investors should not rely only on a fund's name. They should carefully examine the fund's holdings and investment strategy. Many studies have analyzed the performance of value mutual funds across global markets, but existing research shows ongoing uncertainty about whether these funds truly follow value investing principles and whether they perform better than other types of funds (Baumgart et al., 2015). Equity-oriented Fund of Funds (FoFs) in India underperformed the BSE 100 index and the risk-free rate during 2007–2014, with consistently negative Sharpe, Treynor, and Jensen's alpha values, mainly due to the double-layer fee structure, Gowri and Deo (2016) however strong risk-adjusted performance for nearly 90% of Indian mutual fund schemes during 2013–2016, particularly ELSS, small- and mid-cap equity funds, and short-term debt funds, while large-cap and diversified equity funds performed relatively weaker, Agarwal and Mirza (2017) in addition strong consistency among Sharpe, Treynor, and Jensen's alpha in evaluating Indian value mutual funds, highlighting the importance of using multiple risk-adjusted measures together, Majumder, Das, and Mallick (2025) Similarly, found that most Pakistani equity mutual funds failed to outperform the market on a risk-adjusted basis, supporting the Efficient Market Hypothesis, Ali et al. (2021) while equity mutual fund performance in India shows mixed results and is influenced by fund characteristics, market conditions, and investment horizons, Safiuddin and Hasan (2022).

3. OBJECTIVES OF THE STUDY

To examine the return performance of selected IT sector mutual funds.

To measure the risk associated with IT sector mutual funds.

To evaluate the risk-adjusted performance of selected IT mutual funds.

To identify and rank the best-performing IT sector mutual funds based on risk-adjusted measures.

4. RESEARCH METHODOLOGY

The current study is descriptive and analytical in nature and is based on empirical data. It aims to evaluate the performance of selected IT sector mutual funds in India by applying various risk-adjusted performance measures.

Research Design

The study follows a descriptive and analytical research design. Descriptive research is used to describe the return and risk of selected IT sector mutual funds. Analytical research is employed to evaluate and compare the risk-adjusted performance of mutual fund schemes using established financial models such as Sharpe's Ratio, Treynor's Ratio and Jensen's Alpha for the period of ten years from April 2016 to March 2025.

Source of Data Collection

The study is based on secondary data. Daily Net Asset Value (NAV) data of selected IT sector mutual fund schemes have collected from the official website of Association of Mutual Funds in India (AMFI). The Benchmark index data has obtained from the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). The risk-free rate has represented by the RBI published 91-day Treasury Bill yield.

Sample Size

The sample consists of five IT sector mutual fund schemes selected for analysis. The schemes were chosen using the purposive sampling method based on the criteria of continuous daily NAV availability and significant Assets Under Management (AUM). The selected schemes include Aditya Birla Sun Life Digital India Fund, SBI Technology Opportunities Fund, Franklin India Technology Fund, Tata Digital India Fund and ICICI Prudential Technology Fund.

Tools for Data Analysis

The data has analyzed using appropriate financial and statistical tools to evaluate risk and return using SPSS and risk-adjusted performance of mutual fund schemes using Sharpe's Ratio, Treynor's Ratio and Jensen's Alpha.

4.4.1 Statistical tools for risk and return evaluation

Return: Measures the average return generated by mutual fund schemes over the study period. Formula to calculate return on mutual fund **(Rp)** = (Current NAV - Beginning NAV) / Beginning NAV * 100.

Standard Deviation: It measures the total risk of a mutual fund by capturing fluctuations in returns around the mean. A higher standard deviation indicates greater volatility and higher risk. Formula to calculate Standard Deviation $(\sigma) = \sqrt{\sum(Rp - \bar{R}p)^2/n}$

Beta (β): It measures systematic risk relative to the benchmark index. A beta greater than one indicates higher volatility than the market, while a beta less than one indicates lower market risk. Formula to calculate $Beta(\beta) = Cov(R_p, R_m)/Var(R_m)$

4.4.2. Risk-Adjusted Performance Measures

Sharpe's Ratio: It evaluates a mutual fund's excess return per unit of total risk. A higher Sharpe Ratio indicates superior risk-adjusted performance. Formula to calculate Sharpe's ratio = (Portfolio Return - Risk-Free Rate) / Standard Deviation

$$\text{Sharpe's Ratio} = \frac{(R_p - R_f)}{\sigma_p}$$

Treynor's Ratio: It measures excess return per unit of systematic risk and assumes that the portfolio is well diversified. Treynor Ratio = (Portfolio Return - Risk-Free Rate) / Beta of Portfolio.

$$\text{Treynor's Ratio} = \frac{(R_p - R_f)}{\beta_p}$$

Jensen's Alpha: It measures the abnormal return generated by a mutual fund over the return predicted by the Capital Asset Pricing Model (CAPM).

$$\text{Jensen's Alpha} = R_p - [R_f + \beta_p(R_m - R_f)]$$

A positive alpha indicates superior fund manager performance, while a negative alpha suggests underperformance relative to the benchmark.

Data Analysis and Results

Table 1: Annualized return of selected IT mutual funds (in percentage)

Name of Funds	2020-21	2021-22	2022-23	2023-24	2024- 25	Average Return
ABSL Digital India Fund	85.913	38.250	-15.904	30.095	5.289	28.729
Franklin India Technology Fund	75.799	20.962	-12.313	45.675	7.490	27.523
ICICI Prudential Technology Fund	93.234	42.805	-20.091	28.369	11.375	31.139
SBI Technology Opportunity Fund	73.340	39.510	-10.543	25.471	14.395	28.435
Tata Digital India Fund	82.682	42.498	-18.781	32.586	9.343	29.666
BSE Teck TRI	71.633	31.039	-21.861	25.693	6.834	22.667

From the above table 1, the annualized returns of the selected IT mutual funds show significant fluctuations during the period from 2020–21 to 2024–25. During 2020-21, all funds recorded exceptionally high returns due to strong post-pandemic recovery and increased demand for digital and technology services. In 2021-22, returns moderated but remained positive, indicating continued growth with some market correction. However, in 2022-23, all funds and the BSE Teck TRI reported negative returns, indicating a sector-wide decline due to global economic uncertainty, inflation and weak performance of technology stocks. Performance improved again during 2023-24, while returns in 2024-25 moderated, indicating stabilization in the IT sector. Based on the average return, the ICICI Prudential Technology Fund emerged as the best performer (31.14%), followed by the Tata Digital India Fund (29.67%) and the ABSL Digital India Fund (28.73%). The BSE Teck TRI recorded the lowest average return (22.67%), indicating that most actively managed IT mutual funds outperformed their benchmark during the study period.

Table 2: Annualized Standard Deviation (risk) of selected IT mutual funds

Name of Funds	2020-21	2021-22	2022-23	2023-24	2024-25	Average SD
ABSL Digital India Fund	20.464	17.711	19.335	14.957	16.825	17.858
Franklin India Technology Fund	19.234	15.092	17.448	13.523	15.208	16.101
ICICI Prudential Technology Fund	22.616	17.481	18.909	14.910	16.456	18.074
SBI Technology Opportunity Fund	20.778	15.741	18.725	13.869	15.162	16.855
Tata Digital India Fund	23.406	17.923	19.420	15.315	18.088	18.831
BSE Teck TRI	24.103	17.776	19.856	16.167	17.301	19.040

From the above table 2, the annualized standard deviation indicates the level of risk or volatility associated with the selected IT mutual funds during the period from 2020-21 to 2024-25. Overall, the results indicate that IT sector funds faced relatively high risk but that risk has gradually moderated over time. The Franklin India Technology Fund shows the lowest average risk (16.10%), suggesting comparatively more stable returns over the study period. SBI Technology Opportunity Fund and ABSL Digital India Fund also display moderate risk levels with average standard deviations of 16.86% and 17.86% respectively. In contrast, Tata Digital India Fund (18.83%) and ICICI Prudential Technology Fund (18.07%) exhibit higher volatility, indicating high fluctuations in returns. The BSE Teck TRI has the highest average standard deviation (19.04%), represents overall market-level risk in the IT sector.

Table 3: Risk-adjusted performance of selected IT mutual funds using Sharpe's ratio

Name of Funds	Return (%)	Risk-free rate (%)	Standard Deviation (%)	Sharpe's Ratio	Ranking of Sharpe's Ratio
ABSL Digital India Fund	28.729	6.510	17.858	1.244	4
Franklin India Technology Fund	27.523	6.510	16.101	1.305	2
ICICI Prudential Technology Fund	31.139	6.510	18.074	1.363	1
SBI Technology Opportunity Fund	28.435	6.510	16.855	1.301	3
Tata Digital India Fund	29.666	6.510	18.831	1.230	5

From the above table 3, the risk-adjusted performance of the selected IT mutual funds has been evaluated using Sharpe's Ratio, which measures the return earned per unit of risk taken above the risk-free rate. The analysis shows that all the selected IT mutual funds delivered positive risk-adjusted returns during the period from 2020-21 to 2024-25. The ICICI Prudential Technology Fund ranked first with the highest Sharpe's ratio (1.363), indicating superior returns for each unit of risk taken. This was followed by Franklin India Technology Fund (1.305) and SBI Technology Opportunity Fund (1.301), reflecting efficient risk management and stable performance. ABSL Digital India Fund (1.244) and Tata Digital India Fund (1.230) recorded comparatively lower Sharpe's ratios, suggesting relatively less efficient risk-adjusted performance despite good returns. Overall, the results indicate that the ICICI Prudential Technology Fund performed best on a risk-adjusted basis, while all funds demonstrated acceptable performance above the risk-free rate.

Table 4: Risk-adjusted performance of selected IT mutual funds using Treynor's ratio

Name of Funds	Return (%)	Risk-free Rate (%)	Beta (βp)	Treynor's Ratio	Ranking of Treynor's Ratio
ABSL Digital India Fund	28.729	6.510	0.810	27.430	4
Franklin India Technology Fund	27.523	6.510	0.700	30.018	3
ICICI Prudential Technology Fund	31.139	6.510	0.810	30.406	2
SBI Technology Opportunity Fund	28.435	6.510	0.720	30.451	1
Tata Digital India Fund	29.666	6.510	0.850	27.242	5

From the above table 4, the risk-adjusted performance of the selected IT mutual funds has been evaluated using Treynor's Ratio, which measures returns earned in excess of the risk-free rate per unit of systematic risk (beta). The SBI Technology Opportunity Fund ranked first with the highest Treynor's Ratio of 30.451, indicating that it provided the highest return per unit of market risk, followed by ICICI Prudential Technology Fund (30.406) and Franklin India Technology Fund (30.018), ranking second and third respectively. On the other hand, Tata Digital India Fund and ABSL Digital India Fund recorded lower Treynor's Ratios of 27.242 and 27.430. These results shows that all funds generated positive returns above the risk-free rate, SBI Technology Opportunity Fund was the most efficient in converting market risk into excess returns, whereas Tata Digital India Fund and ABSL Digital India Fund were relatively less efficient on a risk-adjusted basis.

Table 5: Risk-adjusted performance of selected IT mutual funds using Jensen's Alpha

Name of Funds	Return (%)	Risk-free Rate (%)	Beta (βp)	Market Return (Rm) (%)	Jensen's Alpha	Ranking of Jensen's Alpha
ABSL Digital India Fund	28.729	6.510	0.810	22.667	9.132	5
Franklin India Technology Fund	27.523	6.510	0.700	22.667	9.703	3
ICICI Prudential Technology Fund	31.139	6.510	0.810	22.667	11.541	1
SBI Technology Opportunity Fund	28.435	6.510	0.720	22.667	10.291	2
Tata Digital India Fund	29.666	6.510	0.850	22.667	9.422	4

From the above table 5, the risk-adjusted performance of the selected IT mutual funds has been evaluated using Jensen's Alpha, which shows how much return a fund generates over its expected return based on its total risk (beta). The ICICI Prudential Technology Fund ranked first with the highest Jensen's Alpha of 11.541, indicating it provided the highest excess return relative to its total risk. It is followed by SBI Technology Opportunity Fund with an alpha of 10.291, and Franklin India Technology Fund with 9.703, showing strong risk-adjusted performance. Tata Digital India Fund and ABSL Digital India Fund had lower alphas of 9.422 and 9.132. Overall, all the selected funds generated positive Jensen's Alpha, meaning they outperformed their expected returns after adjusting for market risk.

5. CONCLUSION

The present study on risk-adjusted performance analysis of selected IT sector mutual funds has shown better performance in terms of returns, risk and risk-adjusted measures. The returns of all the funds are substantially higher than the risk-free rate indicating better performance during the study. In terms of risk, beta values of all schemes are less than 1 are showing that these funds are less volatile than the market while standard deviation (risk) reflects moderate variability in returns. ICICI Prudential Technology Fund offered the highest return and had moderately high beta, it also recorded the highest Jensen's Alpha indicating superior risk-adjusted performance. SBI Technology Opportunity Fund and Franklin India Technology Fund also demonstrated strong risk-adjusted returns, balancing moderate market risk with attractive excess returns. Tata Digital India Fund and ABSL Digital India Fund are delivering competitive returns, had slightly higher risk relative to their performance and reflected in lower Sharpe's ratio, Treynor's ratio, and Jensen's Alpha values. Fund managers should aim to achieve high returns while managing risk by maintaining an optimal portfolio beta and positive Jensen's Alpha. They should regularly review market trends and adjust holdings to enhance returns without taking excessive risk. Investors should look at both actual returns and risk-adjusted measures, choose funds with consistently positive Jensen's Alpha, and diversify across multiple funds to reduce risk and improve overall risk-adjusted performance.

Conflict of Interest

Acknowledgments

References

1. Agarwal, G., & Mirza, N. (2017). Risk-adjusted performance of Indian mutual fund industry. Benchmarking: An International Journal, 24(1), 207–224. https://doi.org/10.1108/BIJ-06-2015-0061

2. Agarwal, S., and Mirza, N. (2017). A Study on the Risk-Adjusted Performance of Mutual Funds Industry in India. Review of Innovation and Competitiveness, 3(1), 75-94. https://doi.org/10.32728/ric.2017.31/4

3. Ali, M. A., Aqil, M., Alam Kazmi, S. H., & Zaman, S. I. (2023). Evaluation of risk adjusted performance of

mutual funds in an emerging market. International journal of finance & economics, 28(2), 1436-1449. https://doi.org/10.1002/ijfe.2486

4. Ali, S., Aqil, M., Kazmi, S. H. A., & Zaman, K. (2021). Risk-adjusted performance of equity mutual funds: Evidence from Pakistan. Journal of Asset Management, 22(5), 405–421. https://doi.org/10.1057/s41260-021-00212-6

5. Baroody, J. (2017). Value investing and mutual fund performance. Journal of Asset Management, 18(3), 190–205. https://doi.org/10.1057/s41260-017-0039-4

6. Baumgart, T., Farkas, W., & Hanke, M. (2015). Value investing and mutual fund efficiency. Journal of Banking & Finance, 52, 1–15. https://doi.org/10.1016/j.jbankfin.2014.11.020

7. Bhandari, A. K. (2008). Performance evaluation of mutual funds in India. Asia-Pacific Business Review, 4(3), 22–36.

8. Carhart, M. M. (1997). On persistence in mutual fund performance. Journal of Finance, 52(1), 57–82. https://doi.org/10.1111/j.1540-6261.1997.tb03808.x

9. Chopra, P. (2011). Measuring mutual fund performance: A comparative study. International Journal of Research in Commerce & Management, 2(6), 1–6.

10. Davis, J. L. (2001). Mutual fund performance and manager style. Financial Analysts Journal, 57(1), 19–27. https://doi.org/10.2469/faj.v57.n1.2418

11. De Mingo-López, D. V., Matallín-Sáez, J. C., & Soler-Domínguez, A. (2020). Mutual fund performance and investment styles: Evidence from equity funds. European Journal of Finance, 26(4–5), 385–410. https://doi.org/10.1080/1351847X.2019.1646711

12. Elton, E. J., Gruber, M. J., Das, S., & Hlavka, M. (1987). Efficiency with costly information: A reinterpretation of evidence from managed portfolios. Review of Economics and Statistics, 69(1), 1–22. https://doi.org/10.2307/1937892

13. García, F., González, M. A., & Santomil, P. (2021). Quality, value, and mutual fund performance. Journal of Portfolio Management, 47(4), 75–92. https://doi.org/10.3905/jpm.2021.1.227

14. Gowri, M., & Deo, M. (2016). Performance evaluation of equity-oriented fund of funds in India. International Journal of Economics and Financial Issues, 6(4), 1629–1636.

15. Gowri, M., and Deo, M. (2016). Performance Evaluation of Equity Oriented Growth and Dividend Funds of Mutual Funds in India: An Application of Risk-Adjusted Theoretical Parameters. Indian Journal of Finance, 10(8), 43–54. https://doi.org/10.17010/ijf/2016/v10i8/99319

16. Gupta, O. P. (2002). Mutual fund performance in India: An empirical study. Indian Journal of Finance and Research, 6(1), 25–45.

17. Jensen, M. C. (1968). The performance of mutual funds in the period 1945–1964. Journal of Finance, 23(2), 389–416. https://doi.org/10.2307/2325404

18. Kileta, C., & Onsomu, Z. (2021). Cost efficiency and performance of mutual funds. Journal of Investment Management, 19(2), 45–63.

19. Lettau, M., Ludvigson, S. C., & Manoel, A. (2018). Characteristics of mutual fund portfolios. Review of Financial Studies, 31(6), 2323–2361. https://doi.org/10.1093/rfs/hhy003

20. Majumder, S., Das, D., & Mallick, S. (2025). Risk-adjusted performance measures and managerial efficiency of Indian value mutual funds. Journal of Emerging Market Finance. 24(1), 1–25.

21. Majumder, S., Das, S., & Mallick, S. (2025). Examining the Correlation of Risk-Adjusted Performance Metrics in Indian Value Mutual Funds. Saudi J Bus Manag Stud, 10(11), 502-508. https://doi.org/10.36348/sjbms.2025.v10i11.001

22. Safiuddin, S. K., & Hasan, M. (2022). Performance analysis of equity-based mutual funds in india: A review of selected literature. Empirical Economics Letters, 21(2), 351-363.

23. Safiuddin, S. K., & Hasan, M. (2022). Performance of equity mutual funds in India: A systematic literature review. International Journal of Financial Research, 13(1), 1–15.

24. Safiuddin, S. K., and Hasan, M. M. (2022). Performance Evaluation of Selected Open-Ended Equity Linked Savings Schemes – An Empirical Study. South India Journal of Social Sciences, 28(1), 83-92.

25. Sharpe, W. F. (1966). Mutual fund performance. Journal of Business, 39(1), 119–138. https://doi.org/10.1086/294846

26. Treynor, J. L. (1965). How to rate management of investment funds. Harvard Business Review, 43(1), 63–75.