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Multifactor Model For Assessing The Performance Of Mutual Funds

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Abstract: *The mutual fund section has increased dramatically over the past 20 years. The relevance of the Indian equity fund business has benefited from the rise in the no. of schemes and the increased fund mobilisation in recent years. Large funds, mid funds, and small funds are among the several plans offered by mutual funds, making it challenging for investors to select the best plan from the wide range of possibilities. The performance analysis of mid-cap mutual fund schemes, which assist investors in making decisions depends on risk and returns in the present, was the specific emphasis of this study. Several tools, including annual returns, standard deviation, beta, Sharpe's ratio, and Treynor's ratio is used to analyse these mutual funds.*

Keywords: *Standard Deviation, Sharpe's measure, Treynor's measure.*

INTRODUCTION

Market capitalisation is the typical complete market capitalisation (MMC) of the stock in a fully perceived stock trade that is recorded, or as the whole MMC of the stock in a single trade that is recorded. When allocating resources to organisations, store managers adhere to the reserve's speculation purpose, and speculators are skilled at what they do. For instance, resources should be placed in the centre of the reserves' region in a construction constructed speculatively, and the portfolio should reflect this. Speculators benefit from various assets with comparable commands. Because showcase capitalisation is impacted by the stock prices fluctuations, it is hard to maintain a constant portfolio.An organization that invests in various securities by pooling the capital of numerous investors is known as a mutual fund. Investments can be made in negotiable instruments, debentures, shares, or a mix of these. These assets are professionally managed for the advantages of the unit holders, and each investor owns a pro rata part of the portfolio, meaning they are both entitled to any profits from the sale of the securities and vulnerable to any declines in value. Investing in mutual funds has many benefits contains reducing risk, low priced, ease of use, flexibility, liquidity, transparency, and expert investment management. For individual investors who have less time, desire, or capacity to manage their own bond and stock portfolio, mutual funds are the best option.Equity Funds are essential to capital markets because they give people and institutions to choose a large selection of securities. Over the past one decade, the equity fund sector has experienced a dramatic change and shown incredible

development and endurance. Technology has significantly increased innovation and growth in India's mutual fund industry. By combining cutting-edge technologies like data analytics and artificial intelligence (AI) to produce novel investment solutions like robot platforms and theme investing techniques, the emergence of new-age mutual fund businesses stimulated industry innovation. By emphasizing customer-centricity and enhancing user experience, these companies revolutionized the equity fund sector and gave investors innovative ways to diversify their holdings and reach their financial objectives.

REVIEW OF LITERATURE

Aaluri et al., (2024), This paper focus on historical data with sophisticated econometric methods, empirical research explores greatly into this intricate relationship and uncovers more profound trends and dynamics. The study uses statistical modelling and regression analysis to establish causality and calculate the result of mutual fund investments on equities market behavior, building on ideas that indicate strong correlations between mutual fund investment growth and equity market success. The study also looks at how mutual fund performance metrics, including annualized return, affect equity market returns, providing details about how mutual funds influence market outcomes. Singla et al., (2024), examined the application of sophisticated statistical techniques to assess and predict the small-cap equity funds performance in the financial industry. Indian investors can participate in the Indian financial markets in a secure manner via equity funds. When choosing which equity funds to invest is a crucial consideration. This paper main goal is to create an equity fund performance evaluation model using the statistical software platform called as the Statistical Package for the Social Sciences (SPSS). The study's conclusions are planned to advance understanding of the elements affecting small-cap equity fund performance and attach to the ongoing conversation over fund evaluation. Madhavi et al., (2024), is to have a better knowledge of the performance of Indian equity funds with big, mid and small capitalizations during a seven-year period from 2015 to 2022. This paper focuses on understanding the performance of equity funds and instructing investors on how to select the finest equity fund for their financing are the objectives. The study compares the performance of 30 large-cap mutual funds and 30 mid- and small-sized mutual funds in the beginning, third, and fifth years. The outcome of large, mid, and small cap mutual funds over the study period did not differ importantly, according to the analysis. Khurana & Bhatia (2023), From 2018 to 2022, the writers examine large-cap equities funds in India in greater detail. It assesses a no. of risk-return-volatility factors and portfolio compositions using data from fund fact sheets, annual reports, and financial websites using both qualitative and quantitate research. G. Maji et al. (2021), uses a curve fitting/regression method based on data mining to forecast the price of each individual stock. Mathur (2020), A structured asset management system offers full information on the varying impacts of financing in different fund levels as well as the results of making larger investments in one kind while making smaller investments in another. Both the immediate and long-term effects of resource allocation are disclosed by a structured asset management system. Sanjana et. al. (2020), The "Large Funds, Mid Funds and Small MFs available in India" were examined and researched. To analyses the performance of the MFs, they employed a variety of statistical methods, including the Treynor Ratio, Jensen's Ratio, Sharpe Ratio, and others. Das et al., (2020), This paper explains about to evaluate how India's financial services industry is strained by the quick developments in financial technology. The use of financial technologies in the current financial services sectors was the course of a descriptive study. The impact of financial technology on India's current financial system was also examined, as were the dangers and problems officials face when trying to control cutting-edge disruptive innovations.

Statement of problem

The most preferred form to the investors is to target mid-sized businesses while also controlling risk and diversity is to invest in mid-cap funds. The performance, returns and related hazards of the chosen equities mutual funds will all be examined in this study. These funds include the Tata mid-cap and ICICI mid-cap funds, also the HDFC, L&T, SBI, UTI, Aditya Birla, and Axis mid-cap funds. This study aims to provide light on these funds' performance during the preceding 5 years.

Objectives of study

- To understand the mutual fund's risk & return.
- To evaluate the effectiveness of the schemes of mutual fund in terms of the Mid cap funds.

- To advise the investors in choosing better funds as investment avenues.

Scope Of The Study

The objective of this study is to understand how the top 8 Middle Equity Funds are presented using the models of Sharpe and Treynor. The top 8 Middle Equity Fund schemes are considered for the purpose of the study. The performance of the above equity fund schemes is depending on the last 5 years. Generally, the area of the study is limited to measuring the efficiency of equity funds. The subsidiaries' extraordinary exchange of same funds is considered highly unpredictable. An investor may choose to finance in a bank fixed deposit, which carry a low risk and minimal return. In contrast, if the investor chooses to finance in an equity fund or capital-protected fund, the risk is higher and the return is higher. This study assists in asset management and provides students with an understanding of which reserves are outperforming in the market. The scope of the investigation was limited to the executive's eight resource organizations.

Research Methodology:

The research work is constructed by using secondary data and it is empirical in nature. The study evaluates the efficiency of Mid Equity funds of arbitrarily selected 8 Companies and compares the result there off for a period of 5 years i.e. 1st April 2020 to 31st March 2025.

Statistical tools used for Analysis: Alpha, Beta, Standard Deviation, Correlation, Sharpe's measures and Treynor's measures.

i) Alpha: In finance, it is popularly known as the Jensen's Alpha or Jensen's Performance Index. It aims to determine the return of an investment using CAPM (Capital Asset Pricing Model) formula. It is used to compute the efficiency of an investment after adjusting the associated risks.

ii) Beta: denotes the fluctuations of a mutual fund towards the movement of the market. It trials the variations of a mutual fund towards the market forces. In case of equity fund schemes the lower this value the lower is the Volatility and vice-versa.

iii) Standard Deviation: Standard Deviation trails the Deviation or Dispersion of the Data from their respective mean. In case of mutual funds S.D indicates variation from the actual returns of a particular mutual fund to the expected return of that mutual fund.

iv) Correlation: It is the degree to which investments within a portfolio share similar risk and return characteristics. Correlations range on a scale from 1 (perfectly correlated) to -1 (inversely correlated).

v) Sharpe Ratio: The Sharpe Ratio represents the efficiency of a mutual fund scheme after adjusting the associated risks. The Sharpe Ratio is computed by dividing the surplus return of the equity fund scheme by the S.D of the mutual fund scheme. The surplus return is denoted by deducting the risk-free return from the annualized outcome of the mutual fund. The higher the Sharpe Ratio the better is the performance of the mutual fund.

vi) Treynor Ratio: The Treynor Ratio denotes the return that are generated after considering an amount of risk which cannot diversified by the investor. It is also used as a efficiency measure for equity fund portfolios. The Treynor Ratio is computed by dividing the surplus return of the mutual fund by the systematic risk value of the mutual fund. The surplus return can be calculated by subtracting the risk-free rate of return from the annualized outcome of the mutual fund. The higher the Treynor Ratio the better is the efficiency of the mutual fund.

RESULTS

Table No. 7.1: Annualized Returns, Beta, Standard Deviation, Correlation for Mutual Funds

Mid Cap Funds	Annualized Return	Beta	Standard Deviation	Correlation
ICICI	5.626	0.178	6.027	0.884
L&T	8.352	0.221	7.206	0.918
HDFC	6.446	0.190	6.177	0.920

SBI	3.78	0.174	5.961	0.874
UTI	5.768	0.167	5.972	0.838
ADITYABIRLA	3.774	0.189	6.248	0.904
AXIS	15.078	0.041	4.764	0.261
TATA	8.982	0.122	5.846	0.623

The SBI Midcap Fund return is 3.774 which is very less compared to other funds. In contrast to risk of the particular company, L & T fund is having more risk but its return is also more so if investor wants to take high risk, they can invest in L & T fund. If investor wants to take less risk with more return, they can invest in AXIS fund which is providing high return i.e 15.078, beta (systematic risk) is also less 0.041, risk is very less 4.764 & it is positively perfectly correlated. With respect to correlation HDFC fund is more.

Table No. 7.2: Ranking of Mutual Funds using Sharpe's Model

Mid Cap Funds	Sharpe Index	Rank
ICICI	-0.062	6
L&T	0.326	3
HDFC	0.072	4
SBI	-0.372	8
UTI	-0.038	5
ADITYABIRLA	-0.356	7
AXIS	1.905	1
TATA	0.510	2

This table measures the Sharpe Ratio of the selected mutual funds which denotes the efficiency of the mutual funds in terms of risk adjusted returns. It is anticipated that Axis Mid funds are performing better than other funds. The funds like ICICI, HDFC, UTI, TATA, ADITYA Birla, and L and T mid-cap funds is also anticipated to improve.

Table No. 7.3: Ranking of Mutual Funds using Treynor's Model

Mid Cap Funds	Treynor Index	Ranking
ICICI	-2.097	6
L&T	10.619	3
HDFC	2.344	4
SBI	-12.728	8
UTI	-1.384	5
ADITYA BIRLA	-11.777	7
AXIS	217.52	1
TATA	24	2

This table measures the Treynor Ratio of the selected Mutual Funds which denotes the efficiency of the equity funds in terms of returns after adjusting the risks which cannot be diversified. The Axis midcap fund performance is good compared to another fund. The Tata midcap fund performance is better than other funds. Comparison to other funds, L & T midcap funds perform better. ICICI, Aditya Birla, HDFC, UTI are outperformed by midcap funds.

Table No. 7.4: Alpha Values for Mid-Capitalized Funds

Mid- Cap Funds	Alpha Values
ICICI	-2. 631
L&T	-0. 452
HDFC	-1.962
SBI	-4. 428
UTI	-2. 353
ADITYA BIRLA	-4.619
AXIS	8.549
TATA	1.437

The manager's performance is gauged by alpha. More precisely, the manager's proficiency in overseeing the midcap funds. The aforementioned data makes it clear that the Axis fund has an excellent alpha value. Axis company funds is providing investors with a good return. Additionally, Tata Funds outperformed other funds, as seen by their positive alpha value. The expert advisor has a higher probability of managing the fund more successfully if the alpha is positive. This showcases that the fund administration will strengthen the portfolio mix and provide the required alterations to improve returns.

Table No. 7.5: Absolute Return and Cumulative Annual Growth Rate (CAGR)

Mid-Cap Fund	Absolute Return	CAGR
ICICI	37.678	-7.682
L&T	48.552	-9.42
HDFC	33.124	-6.902
SBI	30.998	-6.527
UTI	-5.263	1.36
ADITYABIRLA	72. 167	-12. 7
AXIS	-43. 146	15.162
TATA	-39.667	13.465

The CAGR derived for AXIS and TATA mid-cap fund is 15.162 and 13.465, respectively, as seen in the above table. This indicates that both mid-cap funds is outperforming the other mid-capitalized funds.

SUMMARY OF FINDINGS:

- The annualized returns, Beta, Standard Deviation, Correlation for Axis funds are less compared to other equity funds.
- Axis funds are outperforming all other funds, as per the Sharpe index model. In comparison to ICICI, Aditya Birla, HDFC, UTI, Tata and L& T Medium Cap Funds are likewise performing better.
- Among all the funds, Axis midcap fund is doing better, as per Treynor's index. In contrast to ICICI, HDFC, UTI, & ADITYA BIRLA midcap funds, Tata and L& T Midcap Fund are doing better.
- Alpha is a illustration of the manager's performance. That is, the manager's capacity to foresee the midcap funds. The higher value of alpha Axis Funds indicates that investors are receiving good returns from

these funds.

- The CAGR for AXIS and TATA company funds are better compared to other MF schemes.

DISCUSSIONS:

Angel Brokers can provide awareness to the investors regarding the mutual funds through events, consumer fairs, classes, corporate presentations, etc. Angel Broking is a unique organization that encourages people to trade securities and offers forgiving advice.Investing during times of low NAV is crucial since it enables you to purchase more units and receive a higher dividend. Because of the negative Treynor's and Sharpe's performance indices, investors should restrict from doing an investment at this time. Banks ought to give investors free investment advice. Mutual funds have a high rate of return, so brokers should advise investing in the. The greatest strategy to avoid spending all of your money on a single mutual fund is to diversify your investment portfolio. To get a high rate of return investor should invest in high-risk funds. In order for investors to make decisions depending on their clients' income levels, bankers should inform them of their investment goals.

CONCLUSION:

Since there are varied MF schemes and funds available, investors should conduct due investigation before making an investment. It is advised that investors choose the appropriate mutual fund schemes, evaluate the net asset value (NAV), and determine the risk involved. The timing of the investment and the anticipated rewards should also be taken into account by investors.The study is highly relevant to the present stage of the financial sector market also this could serve as the basement for the future efficiency of the equity fund. The researcher had a better grasp of the market's characteristics, the various mutual fund categories, & the efficient mutual fund from the selected mutual fund pool thanks to this study. This gave the specialist the proficiency for recommending the finest mutual fund company to the retail customer for investment of money. Numerous performance evaluation techniques, such as ranks, average return, standard deviation, sharpe ratio, and Treynor ratio, are utilized to analyze the effectiveness of the mutual funds. The results of evaluating helps the investors to contribute and gain access to the correct mutual fund categories.

REFERENCES:

1. Aaluri S, Pulibandla KP, Ganesh L, Kumar V, Sehgal A. An empirical study on examining the influence of mutual fund investment growth on equity market performance. In MATEC Web of Conferences 2024 (Vol. 392. p. 01047). EDP Sciences.
2. S. Singla, G. Gupta and G. S. Bhathal, "Performance Evaluation of Small-Cap Equity Mutual Fund Using Data Mining Techniques," 2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, 2024, pp. 1–6, doi: 10.1109/ICRITO61523.2024.10522284.
3. Madhavi Latha, C.H., Sreedevi (2024). A Comparative Analysis of Large, Mid and Small Cap Mutual Funds Performance in India. In: Musleh Al-Sartawi, A.M.A., Nour, A.I. (eds) Artificial Intelligence and Economic Sustainability in the Era of Industrial Revolution 5.0. Studies in Systems, Decision and Control, vol 528. Cham: Springer. https://doi.org/10.1007/978-3-031-56586-123.
4. Khurana, A., & Bhatia, A. (2023). A Study on the Performance & Comparison of Large Cap Equity Mutual Funds in Indian Market. MJAR , 3(2), 63-74.
5. Maji G, Mondal D, Dey N, Debnath NC, Sen S. Stock prediction and mutual fund portfolio management using curve fitting techniques. JAIH Computing. 2021 Oct ; 12 (10): 9521–34.
6. M. Ghodake, P. Mathur, T. Tendulkar and S. Hiray, "Mutual Fund Analysis Using Large Language Model," 2020 MIT Art, Design and Technology School of Computing International Conference (MITADTSoCiCon), Pune, India, 2024, pp. 1–5, doi: 10.1109/MITADTSoCiCon60330.2024.10574999.
7. Das KK, Ali S. The role of digital technologies on growth of mutual funds industry: An empirical study. IJRBS (2147-4478). 2020 Mar 22 ; 9 (2): 171–6.