The Performance Of Exchange Traded Fund And Index Fund With Special Reference To Nippon India Mutual Fund, Calicut

Ms. Ganga Madanan, Mr. Aswin S, Mr. Kiran M, [2]Dr. K. Rajarajeswari, [3]Ms. S. Shanthi,

M. Com Finance And Control, School Of Commerce, Nehru Arts And Science College, Nehru Gardens, Thirumalayalampalayam, Coimbatore – 641105, Email: Madananganga@Gmail.Com

Associate Professor, School Of Commerce, Nehru Arts And Science College, Nehru Gardens, Thirumalayalampalayam, Coimbatore – 641105, Email: Nascrajarajeswari@Nehrucolleges.Com

Assistant Professor, School Of Commerce, Nehru Arts And Science College, Nehru Gardens, Thirumalayalampalayam, Coimbatore – 641105. Email: Nascshanthi@Nehrucolleges.Com

Abstract:
This paper investigates a comparative analysis of the performance of exchange-traded funds (etfs) and index funds over the period from april 1, 2018, to march 31, 2023. The study utilizes a sample comprising two etfs and three index funds, all of which are designed to track the same index, the nifty 50. It estimates the average returns and mean risk levels of these financial instruments, revealing that they produce remarkably similar results. Furthermore, it performs a regression analysis of the returns of both etfs and index funds against the returns of their underlying indices, finding no evidence of excess returns relative to their benchmarks. Lastly, it identifies the primary sources of costs associated with etfs and index funds, demonstrating a significant positive relation between the etfs and their portfolio ratios, a relationship that is only briefly observed in the case of index funds.

Key words*: etf, index fund, nifty 50, benchmark, underlying indices, excess return*

Introduction

The mutual fund industry in india, established in 1963, involves pooling the savings of investors with a common financial goal. The money collected is invested by the fund manager in various securities. The introduction of derivative trading in india has expanded investment opportunities horizontally, with market instruments including index futures, index options, index mutual funds, and etfs. Exchanged traded funds (etfs) have gained popularity in the investment community, with high growth in the number of etfs and net assets. Etfs hold assets like stocks, commodities, or bonds and trade close to their net asset value (nav) throughout the day. They can track specific indexes, industry sectors, or foreign stock markets. Both classical etfs and index funds track benchmark indices, with the dividend received from investments being reinvested and converted into units, resulting in higher navs.

Objectives of the study

- ❖ To compare the performance of exchange traded fund (etf) and index funds with their benchmarks.
- ❖ To examine risk adjusted return performance of etfs and index funds and examine if there is a statistically significant difference between the two.

- ❖ To examine the use of sharpe ratio, treynor ratio and jensen measure for evaluating the performance of selected etf and index funds.

Scope of the study

the scope of the present study is limited to exchange traded funds and index mutual funds operating in india which tracks the two most popular indices i.e. S&p cnx nifty and sensex. There are other etfs and index funds which track other indices like bank index, nifty junior index etc. But since lesser number of etfs and index funds are listed on these indices, the research study will be delimited to exclude those indices. Since, our primary goal is to compare and analyse the characteristics of two passive investment strategies and to find out whether they replicate their benchmark indices hence the researcher has not included other equity mutual funds and other etfs like commodity (gold etfs).

Significance of the study

This research examines the effectiveness of etfs and index mutual funds within the indian capital market. It analyzes the risk-adjusted return performance of etfs and index funds and determines whether there is a notable difference between the two. The research additionally examines the variations in the performance of index funds and etfs. As investors gain confidence in lower risk, etfs are predicted to keep expanding. The indian capital market is anticipated to witness the launch of additional indices to reflect various sectors of the industry. Given that etfs are relatively new instruments, investors might face a dilemma regarding whether to invest in them. The research seeks to boost investor confidence in etfs by delivering an in-depth insight into etfs and their tracking error. The research analyzes the performance of nifty bees, bank bees, and the index funds of nippon india, sbi, and hdfc mutual funds.

Statement of the problem

The indian capital market is expanding, offering new investment opportunities. However, many investors lack the specialized skills for active portfolio strategies, making passive portfolio management more effective. Etfs and index funds are suitable for this purpose. To fully benefit from etfs, investors need to understand and use them correctly. Institutional money managers and fund managers can assist new investors. Investors need to know their risk appetite and investment objectives for better decision-making. This study aims to understand investors' investment patterns towards etfs and index funds, examining their characteristics**.**

Research methodology

Descriptive research is to be used, which involves gathering data that describe events and then organises, tabulates, depicts, and describes the data collection. In descriptive research, the researcher must use the facts and information already available and analyse these to make the critical evaluation of the material. Appropriate mathematical, statistical, and financial tools are utilized for this study. Among these tools the sharpe ratio, treynor ratio, jensen's alpha are the tools employed for analytical testing.

Limitations of the study

- ➢ Extensive study was not possible due to time constraints.
- ➢ Much of the data collected is secondary in nature.

- Sample size was reduced considerably due to the non-availability of data.
- The study has not considered factors like exchange rate, inflation and political risks which could have impacted the performance of funds.

Review of literature

Rokade (2021) analysed the performance of 15 mutual fund equity schemes run by top five mutual fund companies on the basis of risk and return during the period 2009-2019. Large cap funds with growth option were taken for the study. Sharpe ratio, treynor's measure and jensen's alpha were used for analysis of the schemes. On the basis of sharpe ratio, hdfc top 200 was assigned the first rank followed by birla top 100, icici top 100 and reliance top 200. On the basis of treynor measure, hdfc top 200 was assigned the first rank followed by birla top 100, icici top 100 and reliance top 200. On the basis of jenson's

Alpha, hdfc top 200 again remain on top followed by birla top 100, reliance top 200 and icici top 100.

Karunamoorthy (2022) carried out her research to make a comparative study between public sector companies and private sector companies and to understand the variation between the returns under different groups. Further the risk and return analysis was carried out with the help of treynor's index, sharpe's index and jenson's alpha. Further an attempt was made to identify the investor's attitude towards investment, their risk tolerance capacity and their level of preferences towards selection of mutual fund company with respect to willingness to take risk. The study shows that investors evaluate important aspects such as service quality, fund quality, the core of the product and other variables while investing in mutual fund products. Further, it was found that all the schemes under study were performing well. It was also revealed that private sector mutual fund companies were able to earn superior returns than their public sector counterparts but the investors prefer public sector mutual funds due to safety concern.

Data analysis and interpretation

Two etf (nifty bees and bank bees) and three index funds (nippon india index fund, sbi index fund and hdfc index fund) were taken for analysis. Nifty 50 was taken as benchmark index.

- **Return analysis**
  Yearly return in percentage is as follows:
  Yearly return = $\frac{Value\ at\ year\ end - Value\ at\ the\ beginning}{Value\ at\ the\ beginning}$

Table 1: funds returns annualised

Funds	Average return per annum (rp)
Nippon india index fund	13.5722
Sbi index fund	12.3465
Hdfc index fund	13.6849
Nifty bees	13.1608
Bank bees	16.0515
Nifty 50	12.7070

When comparing nippon india index fund and nifty bees with nifty 50, nippon india mutual fund is out performing and nifty bees gives higher return than benchmark. Bank bees have higher returns and sbi index fund gives lower return than its benchmark nifty 50.

- **Risk analysis**

Alpha
alpha is a measure of an investment's performance on a risk-adjusted basis. It takes the volatility (price risk) of a security or fund portfolio and compares its risk-adjusted performance to a benchmark index. The excess return of the investment relative to the return of the benchmark index is its "alpha."

Beta
beta, also known as the "beta coefficient," is a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole.

$$B=\frac{Cov\ (R_{s,\,R_m})}{Var(R_{m})}$$

Where,
R_s = return of the stock

R_m = return of the market (nifty 50)

$Cov\ (R_{s,\,R_m})$ = covariance between stock and market returns

$Var(R_m)$ = variance of market returns

Table 2: beta of funds

Fund	Beta value
Nippon india index fund and nifty 50	0.991044164
Sbi index fund and nifty 50	0.99229846
Hdfc index fund and nifty 50	0.987774664
Nifty bees and nifty 50	1.00010835
Bank bees and nifty50	1.358398136

In the comparison of the nippon india index fund and nifty bees with the nifty 50, it has been observed that nifty bees exhibits a higher level of systematic risk. Overall, bank bees possess the highest beta, whereas the nippon india index fund demonstrates the lowest beta. This suggests that conservative investors may consider the nippon india index fund as a suitable option, as it is associated with a lower risk profile.

Standard deviation

standard deviation measures the dispersion of data from its mean. In finance, standard deviation is applied to the annual rate of return of an investment to measure its volatility (risk).

$$\Sigma_{yearly} = \Sigma_{periodic} \times \sqrt{n}$$

Σ_{yearly} = annualised standard deviation

$\Sigma_{periodic}$ = standard deviation of periodic returns

N = number of periods in a year (for monthly returns = 12)

Table 3: standard deviation per annum of funds

Funds	Standard deviation per annum
Nippon india index fund and nifty 50	17.5344
Sbi index fund and nifty 50	17.4358
Hdfc index fund and nifty 50	17.3500
Nifty bees and nifty 50	17.5848
Bank bees and nifty50	27.4891

The nifty bee etf has a higher standard deviation per annum compared to the nippon india index fund, while the hdfc index fund has a lower standard deviation.

Portfolio evaluation tools

We have three sets of performance measurement tools to assist us with our portfolio evaluations. The treynor, sharpe and jensen alpha combine risk and return performance into a single value, but each is slightly different.

1. **Sharpe ratio**
   The sharpe ratio, a measure of portfolio performance by william sharpe, is a reward-to-variability ratio, useful for evaluating under diversified portfolios.

The sharpe ratio can be easily defined as:

(portfolio return – risk-free rate) / standard deviation

The variability of return or risk as measured by the standard deviation of return. If the portfolios are not well diversified then this ratio is an appropriate measure of portfolio evaluation.

$$\textbf{sharpe ratio (sr)} = \frac{r_p - r_f}{\sigma_p}$$

Where; r_p = realized return on the portfolio

r_f = risk free rate of return

σ_p = standard deviation of portfolio return

Table 4: performance of securities according to sharpe ratio

Portfolio	Rp	Rf	(rp-rf)	σp	(rp-rf)/ σp

Nippon india index fund	12.0828	7.23	4.8528	16.8336	0.2882
Sbi index fund	12.1998	7.23	4.9698	16.9581	0.2930
Hdfc index fund	13.8329	7.23	6.6029	17.0829	0.3865
Nifty bees	12.0509	7.23	4.8209	16.8338	0.2863
Bank bees	15.0030	7.23	7.7730	26.5560	0.2927

When comparing nifty bees and nippon india index fund, it is seen that sharpe ratio is higher for index fund than etf. By applying sharpe ratio, the risk adjusted rate of return is maximum for hdfc index fund (0.38) and minimum for nifty bees (0.286).

2. **Treynor ratio**

Jack treynor developed the treynor ratio, a performance measure that compares the reward premium to the volatility of return, aiming to apply to all investors regardless of risk preferences. He introduced the security market line, which defines the

Relationship between portfolio returns and market rates of returns, with a higher slope indicating better risk-return trade-off.

The treynor measure, also known as the reward to volatility ratio, can be easily defined as:

(portfolio return – risk-free rate) / beta

The higher the treynor measure, the better the portfolio.

$$\textbf{treynor ratio (tr)} = \frac{r_p - r_f}{\beta_p}$$

R_p = realized return on the portfolio
R_f = risk free rate of return
B_p = portfolio beta

Table 5: performance of securities according to treynor

Portfolio	Rp	Rf	(rp-rf)	Bp	Rp-rf/βp
Nippon india index fund	12.0828	7.23	4.8528	0.991044164	4.8967
Sbi index fund	12.1998	7.23	4.9698	0.993403399	5.0028
Hdfc index fund	13.8329	7.23	6.6029	0.987476857	6.6867
Nifty bees	12.0509	7.23	4.8209	0.999815721	4.8218

Bank bees	15.0030	7.23	7.7730	1.370491036	5.6717

When comparing nifty bees and nippon india index fund, treynor ratio is higher for index fund than etf. By applying treynor ratio, the reward to volatility rate is maximum for reliance index fund (**6.68**) and minimum for nifty bees (**4.82**).

3. Jensen alpha

Michael jensen's jensen alpha ratio measures the difference between actual portfolio return and expected return given risk level, aiming to adjust performance.
A portfolio with a consistently positive excess return will have a positive alpha, while a portfolio with a consistently negative excess return will have a negative alpha.
The formula is broken down as follows:

Jenson alpha = portfolio return- benchmark portfolio return

Where,
benchmark return (capm) = risk free rate of return + beta

$$\textbf{Jensen alpha, } \alpha_p = r_p - e(r_p)$$

Where;
A_p = differential return earned (jensen alpha)
R_p = actual return earned on the portfolio
$E(r_p)$ = expected return

Using capm model, expected return of the portfolio can be calculated as follows.

$$e(rp) = r_f + \beta_p (r_m - r_f)$$

Where;
$E(r_p)$ = expected portfolio return
R_f = risk-free rate
R_m = return on market index
B_p = systematic risk of the portfolio

Table 6: performance of securities according to jensen alpha

Portfolio	Rp	Rf	Bp	Rm	(rm-rf)	E(rp)= rf + βp (rm – rf)	Jensen value
Nippon india index fund	12.0828	7.23	0.991044164	11.7723	4.5423	11.7316	0.3512
Sbi index fund	12.1998	7.23	0.993403399	11.8781	4.6481	11.8474	0.3523
Hdfc index fund	13.8329	7.23	0.987476857	12.2143	4.9843	12.1519	1.6810
Nifty bees	12.0509	7.23	0.999815721	11.6332	4.4032	11.6324	0.4184
Bank bees	15.0030	7.23	1.370491036	11.6552	4.4252	13.2947	1.7082

The difference between actual return and expected return is high for index fund than nifty etf. According to jensen measure of differential return of bank bees is superior to other funds. Hdfc index fund is second largest and least value for nifty bees. Nippon india index fund is just above the nifty bees.

Findings

- The nippon india index fund outperforms nifty bees in terms of average return per annum, with bank bees showing higher returns and sbi index fund offering lower returns than the benchmark nifty 50.
- Beta, which represents the trade-off between minimizing risk and maximizing return, indicates that nifty bees have higher systematic risk, while bank bees have higher beta.
- Mutual funds' standard deviation, sharpe ratio, treynor ratio and jensen ratio are important factors to consider when comparing nifty bees and nippon india index funds. The standard deviation per annum is higher for etfs than index funds, while bank bees show more standard deviation and hdfc index fund has less.
- Sharpe ratio is more appropriate for well-diversified portfolios, with the risk adjusted rate of return maximum for hdfc index fund and minimum for nifty bees. Treynor ratio calculates the risk premium per unit of systematic risk, with the highest reward to volatility rate for reliance index fund.
- Jensen ratio measures the portfolio's rate of return attributable to the manager's ability to deliver above-average returns, with nippon india index fund superior to other funds.

Suggestions

Etfs are becoming the most effective investment strategy in india due to the efficient stock market and lack of specialized skills for active portfolio management. Passive portfolio management, such as etfs and index funds, is more effective. However, etfs in india are not popular due to ignorance and passive management. Actively managed etfs could attract more investors and increase their growth. Policymakers should develop better policies to enhance etf growth in india.

Conclusion

The study compared etfs and index funds that tracked the nifty 50 index and examined their performance. It found that while etfs offer better performance possibilities, they are differentiated due to their targeting of different investors. Conservative stock investors and risky mutual fund investors prefer etfs, while institutional investors and traditional individual mutual fund investors avoid etfs. The study also examined the tracking error of etfs and index funds, revealing that index funds performed better than etfs. However, investors should be aware of these innovative financial instruments and change their preconceptions about them.

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