Risk-Return Analysis of ETFs Using Various Analytical Tools

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OPEN ACCESS

Volume: 12

Special Issue: 1

Month: June

Year: 2025

P-ISSN: 2321-788X

E-ISSN: 2582-0397

Citation:
Kuriakose, Antjoe, et al. "Risk-Return Analysis of ETFs Using Various Analytical Tools." *Shanlax International Journal of Arts, Science and Humanities*, vol. 12, no. S1, 2025, pp. 109–17.

DOI:
https://doi.org/10.34293/sijash.v12iS1-June.9125

Abstract
Exchange-Traded Funds (ETFs) are now a widely used investment vehicle because of their distinct structure, adaptability, and ease of use, making them tradable like individual stocks. This research performs a risk-return analysis of ETFs based on different analytical tools. Based on different analytical tools like Beta and Alpha, the analysis detects patterns and differences in performance, providing useful insights for investors. The research identifies the unique characteristics of ETFs. The research further investigates the contribution of ETFs to strategic investment choices, highlighting their value as a vibrant element of contemporary financial markets. In light of the analysis, practical recommendations are submitted to investors and ETF firms to maximize investment strategy and improve performance. By bringing to the fore the changing role of ETFs within the Indian economy, this paper will help further the cause of understanding their use and effectiveness in financial planning, facilitating informed decision-making on the part of stakeholders in a competitive investment environment.

Keywords: Exchange Traded Funds (ETFs), Investment Strategies, Performance Analysis, Financial Planning

Introduction

An exchange-traded fund (ETF) is a collective investment security that can be purchased and sold like an individual stock. They have become one of the favorite investment instruments because of their special structure and ease of use. ETFs are traded similar to the stocks. They provide the investors with the chance to get exposure to diversified portfolio of assets like stocks, bonds or commodities.

The study primarily aims at analyzing the risk-return of different ETF schemes through the investigation of analysis tools like Beta and Alpha so as to determine their performance differences, laying strong grounds for strategic investment decisions. Moreover, actionable recommendations and insights will be provided to investors and ETF

firms to assist stakeholders in determining potential approaches for investing and improvement areas in performance. This review aims to be part of a larger knowledge about ETFs as a changing and developing element in the financial sector.

Objectives

1. To measure the risk-return of ETFs by determining Alpha and Beta of various ETF schemes.
2. To give suggestions and recommendations based on the analysis to investors or stakeholders, implying possible investment opportunities or areas of improvement for ETF companies to improve performance.

Significance of the Study

Analysing ETFs is important for investors, analysts, and policymakers to understand market trends, investor behaviour, and economic health. It helps in making informed investment decisions, assessing regulatory measures, and studying financial markets.

The topic is chosen because it aligns with the interest in finance and offers valuable insights into market trends and investment strategies. Furthermore, this study contributes to the financial sector by highlighting the evolving role of ETFs in portfolio management and strategic investing. The findings will be beneficial for investors seeking cost-efficient diversification, ETF companies aiming to enhance their offerings, and financial analysts exploring market trends. Ultimately, this research aids in deepening the understanding of ETFs' impact on modern investment landscapes

Research Methodology

Based on the topic and objectives of the study the following methodology was adopted to conduct the study.

Nature of the Study

This study follows a descriptive and analytical research approach. It is descriptive as it presents an overview of the risk-return characteristics of Exchange-Traded Funds (ETFs). It is also analytical since various financial tools, such as Alpha and Beta, are used to evaluate the performance of selected ETF schemes.

Sources of Data

As the study relies on numerical & historical financial data, secondary data is used for analysis.

Secondary Data

The research employs Net Asset Value (NAV) and other financial indicators of five ETF schemes of Nippon, Kotak, ICICI, SBI, and LIC. Data has been gathered from different reliable financial sources, such as:

1. Google Scholar
2. Moneycontrol
3. Yahoo Finance
4. Groww

Scope of the Study

The research considers the risk-return performance of the ETFs from large asset management firms in India. It has been undertaken with an objective of presenting insights about the volatility, risk and return of these ETFs to guide investors in their investment decisions.

Data Analysis

The data collected is evaluated using financial parameters such as Alpha and Beta to determine the risk-return profile of ETFs. Statistical and analytical software is utilized to analyze the results and establish meaningful conclusions regarding ETF performance.

Valuation Method

a. Beta: Beta calculates an investment's volatility against the market. It assists in comparing ETFs by showing how sensitive they are to market changes. A beta value greater than 1 implies increased volatility, whereas less than 1 indicates lower volatility, informing investors depending on risk appetite and market direction.

Beta = Covariance (stock returns, index returns) / Variance (index returns)

b. Alpha: Alpha captures an investment's above-average return on its anticipated return according to CAPM. It facilitates the comparison of ETFs by illustrating which ones offer superior returns above market anticipation. A higher alpha indicates superior fund management and performance, facilitating investors in choosing the best-performing ETFs.

Alpha = $R_p - \{R_f + \beta(Rm - R_f)\}$

Literature Review

1. L Alamelu, Nisha Goyal (2023): Exchange Traded Funds (ETFs) are well-known passively managed investment products that offer both retail and institutional investors exposure to a broad and potentially high-performing portfolio of financial assets. This research tests the efficiency of Indian equity ETFs in mimicking the performance of their corresponding benchmark indices on a sample of 27 listed equity ETFs on the National Stock Exchange of India in the pre-pandemic period, January 1, 2015, through December 31, 2019. Utilizing risk-return profiles, risk-adjusted performance measures, tracking error, and multi-factor regression, this study concludes that, although most ETFs under study performed better than their respective benchmarks, they revealed significant tracking errors. Moreover, the findings indicate a robust positive relationship between ETF returns and benchmark returns and an inverse connection between ETF returns and risk and management fees. These revelations hold far-reaching implications for investors to evaluate ETF performance and for fund managers to apply policies to reduce tracking errors, improve price efficiency, and optimize benchmark replication.
2. Pournima Dhume, Anuradha Patil (2019): In India, exchange-traded funds (ETFs), which give investors exposure to a variety of asset classes, have grown to be a very popular investment product. Stock exchanges frequently trade a variety of ETF types, including gold ETFs, liquid ETFs, and equity index ETFs. Features like low costs, tax efficiency, and portfolio diversification are what make them so popular. Along with an increase in average assets under management (AUM), the Indian ETF market has expanded significantly, from a single fund in December 2002 to 57 schemes as of December 2015. This study assesses the performance of Equity ETFs, Bank ETFs, and Gold ETFs listed on the National Stock Exchange (NSE), using a sample of 22 funds from these categories. Traditional performance metrics are applied to evaluate their effectiveness. The findings indicate that ETFs consistently outperform their respective benchmark indices, including the Nifty 50, Nifty Next 50, Nifty Bank, Nifty Infrastructure, Nifty PSU Bank, Nifty 50 Shariah Index, and S&P BSE Sensex.
3. Merlin K Joseph, Jency Francis (2019): Mutual Funds (MFs) operate as trusts that pool capital from investors with shared financial goals and allocate these funds into asset classes aligned with the scheme's investment objectives. They comprise a diversified mix of stocks, bonds,

securities, and even real estate, managed by professional fund managers who curate portfolios for optimal returns. Exchange Traded Funds (ETFs) function as a subset of mutual funds but trade on stock exchanges like regular stocks, with most ETFs tracking an index. Their appeal lies in low costs, tax efficiency, and stock-like liquidity. This study aims to analyze the trends and growth of ETFs in India while evaluating the performance of selected funds using key performance metrics such as Sharpe ratio, Treynor ratio, and Jensen's alpha. Additionally, it compares the performance of various ETFs against the S&P CNX Nifty Index and ranks mutual funds based on their outstanding performance.

4. Yasmeen Bano, S Vasantha (2019): A mutual fund is an expertly managed investment fund that brings together savings of several investors, both retail and institutional, having similar financial objectives. It opens up professionally managed portfolios of equities, bonds, and other securities to small or individual investors. This research is centered on analyzing the performance of Index Funds empirically for the period 2012-2017. The main aim is to analyze their performance based on three important parameters: active returns, tracking error, and Jensen's alpha. Data for this research has been gathered from secondary sources to provide a complete analysis of Index Fund performance.
5. Dr Bhupendra Kumar (2016): An Exchange Traded Fund (ETF) is a diversified portfolio of securities that trades on an exchange in real time, similar to individual stocks. Unlike traditional open-ended mutual funds, ETFs can be bought and sold throughout the trading day at market prices. While they share similarities with index funds, ETFs may either replicate the entire index or invest in a representative sample of its securities. First introduced in the USA in 1993, ETFs provide investors with a convenient way to gain broad market exposure through a single trade, offering diversification, liquidity, and flexibility.

Results and Discussions A. Beta

Nippon

	Returns	Beta
Nippon ETF PSU bank BeES	0.7675236	3.36
Nippon ETF junior BeES	0.6186953	2.70
Nippon ETF Infra BeES	0.5504336	2.41
Nippon ETF dividend opportunities	0.4963243	2.17
Nippon ETF consumption	0.3758076	1.64

Interpretation

Nippon ETF PSU Bank BeES has the highest beta at 3.36, indicating the highest volatility, while Nippon ETF Consumption has the lowest beta at 1.64, suggesting the least market risk.

KOTAK

	Returns	**Beta**
Kotak PSU bank ETFs	0.7672084	3.35
Kotak Nifty 50 value 20 ETF	0.3430427	1.50
Kotak nifty ETF	0.2517708	1.10
Kotak Nifty 50 ETF	0.2388198	1.04
Kotak Nifty bank ETF	0.1310342	0.57

Interpretation

Kotak PSU Bank ETF has the highest beta at 3.35, indicating the greatest market volatility, while Kotak Nifty Bank ETF has the lowest beta at 0.57, reflecting the least market risk.

ICICI

	Returns	Beta
ICICI pru mid cap select ETF	0.1630064	0.71
ICICI pru S & P BSE 500 ETF	0.1009813	0.44
ICICI prudential nifty 100 ETF	0.0884854	0.39
ICICI prudential nifty 50 ETFs	0.2388894	1.04
ICICI prudential Nifty50 Value 20 ETF	0.2694444	1.18

Interpretation

ICICI Pru Mid Cap Select ETF has the highest beta at 0.71, showing the greatest volatility, while ICICI Pru S&P BSE 500 ETF has the lowest beta at 0.44, indicating the least market risk.

SBI

	Returns	Beta
SBI ETF nifty next 50	0.61317	2.68
SBI ETFs BSE 100	0.2862043	1.25
SBI ETF nifty 50	0.2385918	1.04
SBI ETF sensex	0.5256978	2.30
SBI ETF nifty bank	0.1270303	0.56

Interpretation

SBI ETF Nifty Next 50 has the highest beta at 2.68, indicating the greatest volatility, while SBI ETF Nifty Bank has the lowest beta at 0.56, reflecting the least market risk.

LIC

	Returns	Beta
LIC MF ETF- NIFTY 100	0.2782911	1.22
LIC MF ETF – CNX Nifty 50	0.2847211	1.24
LIC MF ETF- sensex	0.2130746	0.93
LIC MF G-SEC LT ETF	0.0594686	0.26
LIC MF Nifty 50 ETF	0.2318073	1.01

Interpretation

LIC MF G-SEC LT ETF has the lowest beta at 0.26, indicating the least market risk, while LIC MF ETF-NIFTY 100 has the highest beta at 1.22, reflecting the greatest market volatility among the LIC ETFs.

B. Alpha

Nippon

ETFs	Returns	Beta	Alpha
Nippon ETF PSU bank BeES	78.98	3.36	94.73
Nippon ETF junior BeES	64.93	2.70	76.21
Nippon ETF Infra BeES	62.86	2.41	72.18
Nippon ETF dividend opportunities	51.01	2.17	58.70
Nippon ETF consumption	40.56	1.64	44.66

Interpretation

Nippon ETF PSU Bank BeES has the highest returns at 78.98% and the highest alpha at 94.73, indicating strong performance relative to its risk.

KOTAK

ETFs	Returns	Beta	Alpha
Kotak PSU bank ETFs	83.43	3.35	99.11
Kotak Nifty 50 value 20 ETF	35.50	1.50	38.66
Kotak nifty ETF	28.20	1.10	28.65
Kotak Nifty 50 ETF	26.11	1.04	26.15
Kotak Nifty bank ETF	14.29	0.57	11.15

ICICI

ETFs	Returns	Beta	Alpha
ICICI pru mid cap select ETF	59.57	0.71	57.38
ICICI pru S & P BSE 500 ETF	39.63	0.44	35.61
ICICI prudential nifty 100 ETF	33.21	0.39	28.85
ICICI prudential nifty 50 ETFs	28.36	1.04	28.40
ICICI prudential Nifty50 Value 20 ETF	37.07	1.18	38.06

Interpretation

ICICI Pru Mid Cap Select ETF has the highest returns at 59.57% and a notable alpha of 57.38, reflecting strong performance relative to its risk.

SBI

ETFs	Returns	Beta	Alpha
SBI ETF nifty next 50	63.55	2.68	74.69
SBI ETFs BSE 100	32.73	1.25	34.19
SBI ETF nifty 50	28.31	1.04	28.35
SBI ETF sensex	25.11	2.30	33.68
SBI ETF nifty bank	14.46	0.56	11.25

Interpretation

SBI ETF Nifty Next 50 has the highest returns at 63.55% and the highest alpha at 74.69, indicating superior performance relative to its risk.

LIC

ETFs	Returns	Beta	Alpha
LIC MF ETF- NIFTY 100	33.31	1.22	34.57
LIC MF ETF – CNX Nifty 50	28.10	1.24	29.49
LIC MF ETF- sensex	25.03	0.93	24.33
LIC MF G-SEC LT ETF	6.34	0.26	1.10
LIC MF Nifty 50 ETF	26.02	1.01	25.86

Interpretation

LIC MF ETF-NIFTY 100 has the highest returns at 33.31% and the highest alpha at 34.57, indicating strong performance relative to its risk.

Findings

1. Risk and Volatility

- Among the selected ETFs, PSU Bank ETFs (Nippon and Kotak) exhibited the highest Beta values (3.36 and 3.35, respectively), indicating significant volatility and high market sensitivity.
- ETFs like LIC MF G-SEC LT ETF (Beta = 0.26) and Kotak Nifty Bank ETF (Beta = 0.57) displayed lower risk, making them suitable for conservative investors.

2. Performance and Returns

- Kotak PSU Bank ETF recorded the highest return (83.43%), followed by Nippon PSU Bank ETF (78.98%), suggesting strong profitability for sectoral ETFs.
- LIC MF G-SEC LT ETF (6.34%) showed the lowest returns, emphasizing the trade-off between risk and return in conservative investment choices.

3. Alpha Analysis (Risk-Adjusted Performance)

- Kotak PSU Bank ETF had the highest Alpha (99.11), followed by Nippon PSU Bank ETF (94.73), indicating strong outperformance relative to expected market returns.
- ETFs like LIC MF G-SEC LT ETF (Alpha = 1.10) and Kotak Nifty Bank ETF (Alpha = 11.15) underperformed, making them less attractive for high-return investors.

4. ETF Selection and Market Behaviour

- Sectoral ETFs demonstrated higher risk but greater return potential, especially in the banking and mid-cap categories.
- ETFs based on broader indexes, such as the Nifty 50 and BSE 100 ETFs, offered investors a balanced strategy with moderate beta values.

Suggestions

1. Investor Strategy Based on Risk Tolerance

- High-beta ETFs, such as PSU Bank ETFs, are an option for aggressive investors who want higher returns but more volatility.
- The Nifty 50 and diversified ETFs, which provide a balance between risk and return, may be advantageous to investors with moderate risk tolerance.
- Government securities ETFs (G-SEC), which offer steady but modest returns, are a good option for risk-averse investors.

2. Diversification for Portfolio Stability

- Investors must blend sectoral and diversified ETFs to minimize risk and maximize returns.
- Blending high-beta ETFs with stable ones can balance portfolio volatility.

3. ETF Companies Should Enhance Offerings

- Add sector-specific ETFs in emerging sectors such as technology, green energy, and healthcare to suit changing investor needs.
- Enhance risk management for highly volatile ETFs to increase investor confidence.

4. Need for Investor Awareness

- Most investors are still unaware of ETF performance metrics such as Alpha and Beta.
- Financial literacy programs should be promoted to enable retail investors to make well-informed ETF investment choices.

Conclusion

This study intends to ascertain the risk-return performance of Exchange-Traded Funds (ETFs) offered by five leading asset management companies (Nippon, Kotak, ICICI, SBI and LIC) by applying different performance measures such as Beta and Alpha. Downstream Investing from this Data can aid investors construct clearer picture of ETFs and returned and risk potential.

The ETF schemes had significant differences in market risk based on the Beta analysis. Both Nippon ETF PSU Bank BeES and Kotak PSU Bank ETF showed high-Beta values, reflecting high volatility, while LIC MF G-SEC LT ETF demonstrated low-Beta values, which are less volatile relative to benchmark, i.e., a safer investment. These findings underscore the significance of choosing ETFs according to one's risk preference and investment objectives. Some ETFs generated past average returns relative to their forecasted market returns, according to Alpha calculations. Kotak PSU Bank ETF yielded the maximum Alpha value, next was Nippon ETF PSU Bank BeES, both evidencing a strong propensity of generation of high returns. On the other hand, LIC MF G-SEC LT ETF showcased the least Alpha, a factor that acted as an umbrella to its prudent investment profile.

In general, this study confirms that sector-Specific ETFs like those focused on Public Sector Banks bear higher volatility and possible higher return values, which indicates PSU Banks ETFs are for aggressive investors. Broad-market ETFs and government securities ETFs, on the other hand, provide stability and a lower risk profile, so they attract conservative investors. By diversifying portfolios with cutting-edge sector channels, ETF providers can bring innovation to the field and strengthen their risk management system to appeal to a varied range of investors. By making investment decisions in accordance with their risk appetite and the overall market trends, investors can maximize the risk-adjusted returns of their investment portfolios. This study significantly contributes to the realization of the advantages of exchange-traded funds as dynamic financial instruments within the complex web of investments in India, thereby assisting both individual investors and financial institutions in making more informed decisions based on facts.

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