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PERFORMANCE MEASUREMENT OF BANK-SPONSORED FUNDS: A CONVENTIONAL APPROACH

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Abstract *The paper studies the performance of selected public sector bank-sponsored mutual funds in India using conventional measures. The data for the study has been captured from two leading public sector bank-sponsored fund houses, namely SBI Fund Management Pvt. Ltd. and UTI Asset Management Co. Ltd., to examine their performances. The study uses maximum numbers of leading risk-adjusted interventions, like the Sharpe index, Treynor index, information ratio, Jensen's alpha, Fama's selectivity measure, and M-squared. The result of the study unveils that most of the sampled schemes executed well in terms of return and professional management of funds by the fund managers. The work also reveals that the SBI fund house is a slightly better performer than the UTI fund house, in terms of efficient schemes and professional management of the portfolio. The study concludes that stakeholders must make wise choices in their investments by looking at all the risk measures and returns, and other developed measures.*

Keywords: *Mutual Funds, Performance Measurement, Professional Management, Bank-Sponsored Funds*

INTRODUCTION

Mutual funds are a key investment method for investors. They provide safe and systematic avenues by which investors can reduce their risk through risk diversification features. In today's volatile market scenario, the mutual fund is a suitable sector for investors, compared to other investment options. The MF industry has functioned in India for more than five decades (Sehgal & Babbar, 2017). At the booming stage of the Indian MF industry, the evolution of many public sectors and private sector funds has been witnessed (Rathi & Yadav, 2014; Sharma et al., 2012). Among them, bank-sponsored funds are one of the categories of funds sponsored by banks. Over the past decade, the mutual fund has remained the fastest-growing institution globally, including in India, because its diversification features can manage the risk. Mutual funds (MFs) infuse a dynamic role in savings mobilisation by issuing units and channelling the funds into productive investment via the capital market (Dhar & Sinha, 2015).

The MF industry has had the most upwards trend in recent times, for developing new and existing mutual fund companies. The development also takes place by way of increasing foreign-owned mutual fund companies. The nationalised banks that started operation in mutual funds in the early nineties became successful for the stock market boom afterwards. Due to its growing demand, it becomes pertinent to judge mutual funds' performance before making any investments. Performance measurement of mutual funds has been creating interest among academics and professionals for the last few decades. It is happening as the mutual fund industry boosts its expansion and association with the efficient market hypothesis. Investors get an advantage out of the repeated evaluation of fund performance. They can know the ability of fund managers in terms of value addition or reduction in their portfolio management by the managers (Zabiulla, 2014).

Investment in mutual funds has been primarily studied in finance. Over the last few decades, there has been a substantial gain in the evolution of tools measuring the accomplishment of mutual funds (Lee et al., 2010). The measurement of the status of the mutual fund is equally essential for both investment companies and fund investors. In the Indian scenario, the MF industry also gained momentum in recent times. The present research attempts to analyse the status of selected public sector bank-sponsored MF schemes in India based on risk-adjusted measures.

The latter part of the work is structured as follows: Section 2 cites the specific objectives of the study; Section 3 briefly reviews the related literature, followed by Section 4, which

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shows the data and methods; Section 5 presents descriptions of the tools/measures used in the study; the results and discussions are reported in section 6; and the last section provides concluding remarks.

OBJECTIVES OF THE STUDY

In India, several studies have used conventional risk-adjusted measures. They have taken various segments of the mutual fund industry (Babbar & Sehgal, 2018; Bantwa & Bhuva, 2012; Baral et al., 2016; Goel et al., 2012; Kaur & Kaushik, 2016; Seth & Das, 2015; Sharma, 2016; Sharma et al., 2019). They have explored various issues in multiple dimensions, yet sponsor-specific broad studies have not been done. In the Indian context, the study related to bank-sponsored mutual funds is yet to be explored. The task of sponsors in the MF industry is pivotal worldwide (Dhar, 2003). So, the current study attempts to contribute to the literature gap by evaluating the bank-sponsored funds in India. The specific goals of the work are as follows:

- To analyse the performance of selected bank-sponsored mutual funds in India.
- To compare and analyse the performance of bank-sponsored fund houses in India.

REVIEW OF LITERATURE

The empirical literature has witnessed several indices and studies related to mutual fund development. Most of the important indices were developed during the sixties (Jensen, 1968; Sharpe, 1966; Treynor, 1965). These indices are all based on the CAPM model. Researchers had conducted lots of research on the progress and performance of funds during the early seventies. Since then, plenty of work has been undertaken in the arena of mutual fund performance. In the late 90s, Daniel et al. (1997) investigated fund performance in the context of characteristic-based benchmarks. The study observed that aggressive growth funds showed selection ability, but no timing ability. Cai et al. (1997) performed a study on Japanese funds, where it revealed that most of the funds had underperformed. Goldreyer et al. (1999) used multiple dimensions via traditional performance measures to see the mutual fund's overall status. The survey results supported the conviction that socially screened portfolios neither out-performed nor under-performed relative to conventional collections that are selected. There exists much research on Greek funds, e.g., Noulas et al. (2005) analyse risk-return relationship among funds, which ultimately found a positive correlation among the two parameters of the funds for the whole period.

Focusing on Islamic funds, a few authors used the Sharpe index, adjusted Sharpe index, and Jensen's alpha in a study, and explored that Islamic mutual funds gave a better performance in a bearish economic trend than conventional funds. In bullish financial situations, general funds offered better returns (Abdullah et al., 2007). Arugaslan et al. (2008) analysed the risk-adjusted outcome of the most significant US-based funds using M-squared and other performance metrics. The result showed that funds with higher returns might lose their glamour if the risk rate is factored into the evaluation. Besides, a few funds offer attractive returns while low risk is factored into their performance. Lukashin and Lukashin (2009) attempted to discover the Russian mutual fund's development and found that the MF development takes place in the context of the fund's number, and the total worth of net assets with a high amount of profitability.

Swinkels and Rzezniczak (2009) used the monthly returns of 38 different categories of Polish mutual funds in the study. Their study revealed a positive outcome from each of the selected categories, but lacked under the selectivity skill of fund managers, which was insignificant. The types chosen for the study were equity, balanced, and bonds fund. Kiymaz (2015) also did a performance study on Chinese funds using various ratios and techniques. The study found a positive alpha generated by the Chinese funds for the investors. The study found that aggressive allocation funds come with higher returns, followed by moderately aggressive allocation funds. Their research revealed that some funds, like older funds, smaller funds, and funds bearing higher fees, and so on, had been performing well compared to other funds. Another example of a similar study based on the performance scrutiny of Indian funds (Bantwa & Bhuva, 2012) found that except for one scheme, all the sampled plans under investigation were found positive in the case of performance, compared to the market index. The study reveals that 55% of the schemes showed positive values, complying with measures like the Sharpe and Treynor ratio. Additional findings of the work, like the existence of good diversification among schemes and their level of diversification, were negatively correlated. Roy and Ghosh (2013) also examined the NAV performance of India's selected open-ended mutual fund schemes. The study investigated whether the past return performance of the mutual funds could be used as a reliable indicator to predict the future return.

The literature on mutual funds also provided a few extraordinary works (Allen & Parwada, 2006). They researched the mutual fund mergers and investors' responses related to it. The outcomes showed that mergers do not accompany extra money flows. Instead, investors pooled money from the target funds prior to a merger and post-merger. Jamaludin et al. (2012) perform a survey-based study to know the selection criteria among Muslim and non-Muslim EPF members. Their research reveals that Muslim and non-Muslim members had different attitudes

towards selecting funds based on ranking. It observed that non-Muslim EPF members accepted past performance as the most crucial criterion. Muslim EPF members considered Islamic principles the most decisive criterion in complying with religious beliefs. The authors also found that mutual fund selection was affected by the fund's overall reputation.

In the Indian scenario, Sehgal and Babbar (2017) delivered that a conditional version of the Carhart (1997) model is the most suitable performance benchmark. The conditional model's achievements over the unconditional models showed that fund managers dynamically run their portfolios. There are several studies about the persistence of performance that many researchers have worked out around the globe. A study had interpreted that the past accomplishment of a mutual fund scheme is related to the present performance and has a significant bearing on it (Goel et al., 2012). The authors had confirmed the existence of persistence matter in mutual funds performance. The literature concentrating on mutual funds also witnessed a few studies like that of Fortin and Michelson (2005). They used different variables in their research and tried to explore the variables' relationship with each other. Their study found a negative correlation between the variables. Their analysis claimed that actively managed international mutual funds benefit better than index funds. Another study tried to point out the relationship among various determinants of the mutual fund's performance (Alexandri, 2015). Their study result showed a significant relationship among selected determinants: fund age, total risk, market timing, and stock selection with fund performance. However, their study did not find any significant relationship among other determinants, like systematic risk, fund size, and fund performance. Kaur (2014) analysed the impact of size, age, ownership, and load on India's equity mutual funds' efficiency. The study results suggested that an increase in size increases the probability of being efficient by 26-43 per cent in various estimates. A study investigated the mutual fund's performance, utilising multiple variables, which explored that the performance of funds tends to fluctuate (Gusni et al., 2018). It was being affected by inflation and stock selection skill, whereas there was no significant effect of market timing skill and fund size on the performance of funds. Chauhan and Adhav (2015) investigated the current status of the Indian mutual fund industry, where they experienced a growth phase in the Indian market. Another study applied the risk-adjusted measures to Indian mutual fund schemes for a three-year time frame (Agarwal & Mirza, 2017). Their review stated that the higher the number of short-, long-, and ultra-short debt funds, ELSS and mid-/small-cap funds give consistent performance over time. Kaur (2021) studied the performance of open-ended short-term debt mutual fund schemes using different risk-adjusted measures, from April 2015 to March 2020. The study discovered that Baroda short-term bond fund and India bulls short-term fund were the pre-eminent performers during the study period.

The above literature revealed many studies in the mutual fund context in different dimensions. However, there are no studies on public sector bank-sponsored mutual fund performance evaluation. The present research is an effort to examine the performance of public sector bank-sponsored mutual funds in India. The study has utilised a maximum number of risk-adjusted measures that were also not included in earlier literature.

METHODOLOGY

The primary intent of the study is to see the performance of two pioneering bank-sponsored fund houses in India. The current study uses secondary data that have been collected for public sector bank-sponsored schemes in India. Daily Net Assets Value (NAV) has been used as raw data for analysis, collected from the individual AMC's websites and other websites, like Morningstar India, Amfi India, and Blue chip India. The authenticity of the NAV data has been cross-checked. The benchmark data has been collected from the BSE website. For the risk-free interest rate, RBI 91 days Treasury Bills has been used (Bodla, 2012; Goel & Mani, 2018; Tripathy, 2017).

The current work on the performance of the sample bank-sponsored equity fund schemes has been covered for seven years, from 1 April 2012 to 31 March 2019. The benchmark index and other data have been collected for the same period for the study. The study considers open-ended equity public sector funds in India. The sample has been obtained from two mutual fund companies, namely SBI Funds Management Pvt. Ltd. and UTI Asset Management Co. Ltd. The sample selection has been done based on a purposive sampling method (Alexandri, 2015; Gusni et al., 2018; Hafizh et al., 2019; Robbani, 2019; Sharma, 2016; Singh et al., 2011). The following criteria have been used for sampling: data availability for the whole period, open-ended schemes, high resources mobilisation, and bank-sponsored mutual funds. Based on the sampling criteria, all the 27 public sector bank-sponsored mutual funds that existed during the study period have been collected. The summary of the sample schemes is provided in Table 1.

Table 1: Summary of Sample Schemes

Code with Serial No.	Name of Schemes	Launch Date(s)
SF 01	SBI Blue Chip Fund (G)	23-Dec-05
SF 02	SBI Contra Fund (G)	14-Jul-99

Code with Serial No.	Name of Schemes	Launch Date(s)
SF 03	SBI Focused Equity Fund (G)	23-Aug-04
SF 04	SBI Healthcare Opportunities Fund (G)	16-Dec-04
SF 05	SBI Infrastructure Fund (G)	06-Jul-07
SF 06	SBI Large and Midcap Fund (G)	27-Apr-05
SF 07	SBI Magnum Comma Fund (G)	30-Jun-05
SF 08	SBI Mag. Equity ESG Fund (G)	29-Oct-93
SF 09	SBI Mag. Global Fund (G)	06-Jun-05
SF 10	SBI Mag. Midcap Fund (G)	21-Feb-05
SF 11	SBI Mag. Multicap Fund (G)	22-Aug-05
SF 12	SBI PSU Fund (G)	17-May-10
SF 13	SBI Small Cap Fund (G)	27-Jul-09
UF 14	UTI Banking and Financial Services Fund (G)	09-Mar-04
UF 15	UTI Core Equity Fund (G)	18-Jan-93
UF 16	UTI Dividend Yield Fund (G)	23-May-05
UF 17	UTI Equity Fund (G)	18-May-92
UF 18	UTI Healthcare Fund (G)	27-May-99
UF 19	UTI India Consumer Fund (G)	30-Jul-07
UF 20	UTI Infrastructure Fund (G)	09-Mar-04
UF 21	UTI Long-Term Equity Fund (G)	15-Nov-99
UF 22	UTI Master share Unit Scheme (G)	19-Sep-86
UF 23	UTI Mid Cap Fund (G)	07-Apr-04
UF 24	UTI MNC Fund (G)	29-May-98
UF 25	UTI Nifty Index Fund (G)	06-Mar-00
UF 26	UTI Transportation and Logistics Fund (G)	11-Apr-08
UF 27	UTI Value Opportunities Fund (G)	20-Jul-05

TOOLS/MEASURES

Daily NAV Returns (Annualised)

Net Asset Value is known as the present value of the fund's holdings. During a specific period, a return is a surrogate of the profit or benefit of a mutual fund scheme. Daily NAV returns have been calculated for the period using the following formula.

$$R_s = [\frac{NAV_t - NAV_{t-1}}{NAV_{t-1}} \times 100]$$

Where, R_s = Fund returns in period 't'

NAV_t = NAV in the period 't'

NAV_{t-1} = NAV in the period 't–1'

Market Return

Here, daily return on S&P BSE SENSEX index has been used as a benchmark, as it is used widely in earlier literature (Arora & Chawla, 2019; Dhar & Mandal, 2014; Gudimetla, 2015; Joyjit Dhar, 2013; I. Kaur, 2013; Kumar & Katyal, 2017; Rathi & Yadav, 2014; Roy, 2015). The market return acts as a benchmark for the portfolio return. The market return has been computed using the same procedure as the NAV return.

Beta

It captures the volatility of portfolio returns in response to its market return. It is used mostly to identify the systematic risk of the investment portfolio. Beta is computed by dividing the covariance of portfolio return and market return by the variance of the benchmark. This beta value has been used in calculating other ratios or measures.

Standard Deviation

It reveals the variation in returns of a mutual fund scheme from its mean return, over a specified period. Standard deviation can be computed from the square root of the variance, and it evaluates the volatility of the fund. Standard deviation is very much necessary for the computation of other risk-adjusted measures.

Sharpe Index

This index inculcates risk-adjusted fund performance. This is obtained by dividing the amount of difference between the return on the portfolio and the return on the risk-free instrument by the standard deviation of the return on investment. This method provides a foresight to the investors about whether the investment in any particular fund is safe or not by considering the total risk. The best fund's return relative to the amount of risk incurred is denoted by a higher ratio of this measure. It is as follows:

$$S_i = (R_i - R_{fr})/S_d$$

Where,

S_d = Standard deviation of the portfolio return

R_t = Portfolio return

R_{fr} = Risk-free rate of the portfolio

Treynor Index

Jack Treynor constructed this index. The point where it differs from the Sharpe index is that it applies systematic risk (beta) as the denominator in place of standard deviation. Fund performance may not be the same in both the Sharpe and Treynor index. Total risk is appropriate in the case of analysing the risk-return relationship of a poorly diversified portfolio. Still, systematic risk is more suitable for assessing a well-diversified portfolio (Tripathy, 2017).

$$T_i = \frac{R_i - R_f}{\beta_i}$$

Where,

R_t = Return on the fund

R_f = Risk-free rate of return

B_i = Beta of the fund

A high and positive Treynor's index will predict superior performance, while a weak and negative Treynor's index would suggest unfavourable results.

Information Ratio

It predicts the consistency in generating superior performance by the manager. It is an important indicator of the persistence of a manager's performance. The information ratio is used to measure the skill of the managers. A higher ratio can identify consistent returns by the fund manager. Information ratio uses active returns as the numerator and tracking error as the denominator. This measure will give an idea about the manager's consistent performance for the sample funds of the study.

$$IR = \frac{R_i - R_b}{\partial}$$

Where,

R_t = Portfolio return

R_b = Benchmark return

∂ = SD of the active return (tracking error)

Jensen's Alpha

Jensen suggests a model that can analyse the selectivity skill of the fund manager. Alpha indicates the superior or inferior performance of portfolio managers compared to the market, after adjusting for risk. Superior performance is predicted by a positive alpha, while negative performance is denoted by a negative alpha. A generic version of his basic model is given by:

$$\overline{R}_j - R_F = \alpha_j + \beta_j(\overline{R}_{Mt} - R_{Fr})$$

Where,

$\overline{R}_j$ = Portfolio return 'j'

R_{Fr} = Risk-free rate of interest

α_j = Forecasting ability of the manager

β_j = Systematic portfolio risk

$\overline{R}_{Mt}$ = Average return of a market portfolio

Fama's Net Selectivity

Fama's decomposition (1972) of absolute returns is useful in identifying the security selection capacity of fund managers. If selectivity is favourable, it signifies that the fund has not earned better returns due to poor stock selection. The present study uses this measure to explore fund performance in terms of the manager's professional management.

$\text{Net}_{\text{selectivity}} = [R_{pt} - R_{fr}] - [\frac{\sigma_p}{\sigma_m}] * [R_{mt} - R_{fr}]$

R_{pt} = Actual return of the portfolio

R_{fr} = Risk-free rate

R_{mt} = Return on the market index

σ_p and σ_m are the standard deviation of the portfolio return and market return, respectively.

M-Squared

This is determined by multiplying the Sharpe ratio by the normal market deviation, and then incorporating the risk-free rate of return. Franco Modigliani and Lea Modigliani developed the measure in 1997. The risk of a portfolio and the risk of the market portfolio are adjusted by this measure. The model is used to visualise how well a fund's returns rewards an investor for the amount of risk taken in the market. M^2 is closely linked to the Sharpe index, and it is a relatively new technique. The M^2 value identifies an additional return from holding a portfolio by the investor, instead of the market index. The following formula is used to calculate M^2 (Arugaslan et al., 2008; Feibel, 2003; Kiymaz, 2015).

$$M^2 = (R_p - R_f)/\sigma_p \times \sigma_m + R_f$$

σ_m = SD of the market return

σ_p = SD of the scheme return

R_p and R_f are scheme return and risk-free return, respectively.

FINDINGS AND DISCUSSION

The sample schemes' analysis has been done using the above-stated measures. The performance of the selected schemes has been summarised firstly, and the performance of the sample fund houses has been summarised later. The below sections present a detailed analysis of the findings. The findings of each measure are presented.

Table 2 depicts the Sharpe index of all the selected schemes. This index is based on the ratio of active returns to the standard deviation of the portfolio. The higher the Sharpe index, the greater the returns on a fund compared to the risk ratio, while a negative Sharpe index is an indicator of poor returns generated by a portfolio. From the table, it is evident that out of 27 schemes, 18 (67%) have performed well in terms of the Sharpe index, whereas nine (33%) have failed to generate the superior index that is compared with the market's Sharpe index. The top-ranked scheme under this measure is SF13 (1.16), followed by SF10 (0.93); the worst performance has been given by SF12 (−0.11) and SF07 (0.16).

Table 2: Statement of Consolidated Sharpe Index of the Schemes

Serial Number of Mutual Fund Schemes	Sharpe Index (Schemes)	Sharpe Index (Market)	Out-Performed (O)/ Under-Performed (U)	Rank
SF 01	**0.75**	**0.45**	**O**	9
SF 02	0.43	0.45	U	19
SF 03	**0.90**	**0.45**	**O**	3
SF 04	**0.53**	**0.45**	**O**	14
SF 05	0.26	0.45	U	25
SF 06	**0.71**	**0.45**	**O**	10
SF 07	0.16	0.45	U	26
SF 08	**0.56**	**0.45**	**O**	12
SF 09	**0.87**	**0.45**	**O**	4
SF 10	**0.93**	**0.45**	**O**	2
SF 11	**0.76**	**0.45**	**O**	8
SF 12	−0.11	0.45	U	27
SF 13	**1.16**	**0.45**	**O**	1
UF 14	**0.47**	**0.45**	**O**	17
UF 15	**0.47**	**0.45**	**O**	17
UF 16	0.40	0.45	U	22
UF 17	**0.66**	**0.45**	**O**	11
UF 18	0.39	0.45	U	23
UF 19	0.42	0.45	U	21
UF 20	0.28	0.45	U	24
UF 21	**0.53**	**0.45**	**O**	14
UF 22	**0.54**	**0.45**	**O**	13
UF 23	**0.81**	**0.45**	**O**	6
UF 24	**0.87**	**0.45**	**O**	4
UF 25	**0.49**	**0.45**	**O**	16
UF 26	**0.79**	**0.45**	**O**	7
UF 27	0.43	0.45	U	19

Source: Researchers' compilation.

Reward to volatility/Treynor index of all sample schemes is presented in Table 3. The analysis of the Treynor index reveals that out of the selected schemes, 23 schemes (85%) have maintained a good Treynor index and out-performed the market. In contrast, the rest of the schemes (15%) could not attain the required index and lie behind the market's Treynor's index. The top-ranked scheme under this measure is SF13 (29.48), and the worst performer is SF12 (−3.30) again.

Table 3: Statement of Consolidated Treynor's Index of the Schemes

Serial Number of Mutual Fund Schemes	Scheme Treynor's Index	Market Treynor's Index	Out-Performed (O)/Under-Performed (U)	Rank
SF 01	**10.95**	**6.3**	**O**	13
SF 02	**6.75**	**6.3**	**O**	22
SF 03	**14.92**	**6.3**	**O**	7
SF 04	**20.11**	**6.3**	**O**	2
SF 05	**7.63**	**6.3**	**O**	20
SF 06	**12.46**	**6.3**	**O**	9
SF 07	4.50	6.3	U	26
SF 08	**8.91**	**6.3**	**O**	15
SF 09	**12.35**	**6.3**	**O**	10
SF 10	**18.59**	**6.3**	**O**	5
SF 11	**12.63**	**6.3**	**O**	8
SF 12	−3.30	6.3	U	27
SF 13	**29.48**	**6.3**	**O**	1
UF 14	**18.48**	**6.3**	**O**	6
UF 15	**7.22**	**6.3**	**O**	21
UF 16	6.14	6.3	U	25
UF 17	**9.87**	**6.3**	**O**	14
UF 18	**12.28**	**6.3**	**O**	11
UF 19	6.25	6.3	U	24
UF 20	**8.03**	**6.3**	**O**	16
UF 21	**7.87**	**6.3**	**O**	18
UF 22	**7.88**	**6.3**	**O**	17
UF 23	**20.07**	**6.3**	**O**	3
UF 24	**11.26**	**6.3**	**O**	12
UF 25	**7.86**	**6.3**	**O**	19
UF 26	**19.08**	**6.3**	**O**	4
UF 27	**6.57**	**6.3**	**O**	23

Source: Researchers' compilation.

Table 4 shows the result of the information ratio. Out of the total sample schemes, only 17 (63%) have made a positive information ratio, while ten (37%) could not generate a positive information ratio. This measure's top and the worst schemes are SF13 (0.94) and SF12 (−0.65), respectively. So, managers belonging to the top schemes have given a consistent performance in their professional management of funds.

Table 4: Statement of Consolidated Information Ratio of the Schemes

Serial Number of Mutual Fund Schemes	Information Ratio	Out-Performed (O)/Under-Performed (U)	Rank
SF 01	**0.44**	**O**	6
SF 02	−0.08	U	21
SF 03	**0.42**	**O**	7
SF 04	**0.15**	**O**	14
SF 05	−0.16	U	25
SF 06	**0.41**	**O**	8

Serial Number of Mutual Fund Schemes	Information Ratio	Out-Performed (O)/ Under-Performed (U)	Rank
SF 07	−0.31	U	26
SF 08	**0.17**	**O**	13
SF 09	**0.32**	**O**	10
SF 10	**0.54**	**O**	2
SF 11	**0.48**	**O**	5
SF 12	−0.65	U	27
SF 13	**0.94**	**O**	1
UF 14	**0.23**	**O**	12
UF 15	−0.01	U	18
UF 16	−0.13	U	23
UF 17	**0.31**	**O**	11
UF 18	−0.04	U	19
UF 19	−0.10	U	22
UF 20	−0.13	U	23
UF 21	**0.09**	**O**	16
UF 22	**0.11**	**O**	15
UF 23	**0.51**	**O**	3
UF 24	**0.34**	**O**	9
UF 25	**0.08**	**O**	17
UF 26	**0.51**	**O**	3
UF 27	−0.07	U	20

Source: Researchers' compilation.

*Negative values are taken as under-performed.

*Positive values are taken as out-performed.

Table 5 projected the alpha values for all the selected sample schemes. Out of the 27 schemes, it is evident that 23 (85%) have generated positive alpha values, which is an indication of the superior management ability of the managers of these schemes. This also shows their selectivity skill. The remaining schemes (15%) have under-performed as they have negative alpha values. SF13 (13.89) has the highest alpha value, while SF12 has the least score of −5.36.

Table 5: Statement of Consolidated Jensen's Alpha of the Sample Schemes

Serial Number of Mutual Fund Schemes	Jensen's Alpha	Out-Performed/Under-Performed	Rank
SF 01	**4.13**	**O**	12
SF 02	**0.37**	**O**	22
SF 03	**6.34**	**O**	5
SF 04	**5.86**	**O**	7
SF 05	**0.76**	**O**	21
SF 06	**4.90**	**O**	9
SF 07	−1.06	U	26
SF 08	**2.23**	**O**	15
SF 09	**4.78**	**O**	10

Serial Number of Mutual Fund Schemes	Jensen's Alpha	Out-Performed/Under-Performed	Rank
SF 10	**8.26**	**O**	3
SF 11	**5.21**	**O**	8
SF 12	−5.36	U	27
SF 13	**13.89**	**O**	1
UF 14	**6.23**	**O**	6
UF 15	**0.79**	**O**	20
UF 16	−0.14	U	25
UF 17	**3.15**	**O**	13
UF 18	**2.82**	**O**	14
UF 19	−0.04	U	24
UF 20	**1.05**	**O**	19
UF 21	**1.39**	**O**	17
UF 22	**1.43**	**O**	16
UF 23	**8.45**	**O**	2
UF 24	**4.28**	**O**	11
UF 25	**1.37**	**O**	18
UF 26	**8.10**	**O**	4
UF 27	**0.23**	**O**	23

Source: Researchers' compilation.

*Negative values are taken as under-performed.

*Positive values are taken as out-performed.

The M-squared of the selected schemes is shown in Table 6. This measure adjusts the risk of a portfolio with the risk of the market portfolio. Higher M^2 signifies that the scheme has out-performed the market portfolio, while lower M^2 is a sign of under-performance. Here, individual schemes' scores have been compared with the market scores and it was found that 18 schemes have out-performed the benchmark. M^2 values discovered that SF13 (22.4) and SF12 (4.84) are the top- and worst-scored schemes, respectively.

Table 6: Statement of Consolidated M^2 of the Schemes

Serial Number of Mutual Fund Schemes	M^2 (%)	M^2 (Benchmark)	Out-Performed (O)/Under-Performed (U)	Rank
SF 01	**16.66**	**12.55**	**O**	9
SF 02	12.21	12.55	U	20
SF 03	**18.78**	**12.55**	**O**	3
SF 04	**13.60**	**12.55**	**O**	14
SF 05	9.90	12.55	U	25
SF 06	**16.17**	**12.55**	**O**	10
SF 07	8.51	12.55	U	26
SF 08	**14.00**	**12.55**	**O**	12
SF 09	**18.38**	**12.55**	**O**	5
SF 10	**19.23**	**12.55**	**O**	2
SF 11	**16.90**	**12.55**	**O**	8
SF 12	4.84	12.55	U	27
SF 13	**22.40**	**12.55**	**O**	1
UF 14	**12.77**	**12.55**	**O**	17

Serial Number of Mutual Fund Schemes	M^2 (%)	M^2 (Benchmark)	Out-Performed (O)/Under-Performed (U)	Rank
UF 15	**12.77**	**12.55**	**O**	17
UF 16	11.81	12.55	U	22
UF 17	**15.50**	**12.55**	**O**	11
UF 18	11.71	12.55	U	23
UF 19	12.09	12.55	U	21
UF 20	10.13	12.55	U	24
UF 21	**13.59**	**12.55**	**O**	15
UF 22	**13.83**	**12.55**	**O**	13
UF 23	**17.48**	**12.55**	**O**	6
UF 24	**18.42**	**12.55**	**O**	4
UF 25	**13.08**	**12.55**	**O**	16
UF 26	**17.29**	**12.55**	**O**	7
UF 27	12.27	12.55	U	19

Source: Researchers' compilation.

Table 7 represents the returns earned by the schemes due to selectivity. It has been found that from the total sample schemes, 18 (67%) out-performed the market. In the case of nine of the schemes, Fama's net selectivity is negative. The top scheme under this measure is SF13 (10.75), while the worst scheme remains SF12 (−9.77).

Table 7: Consolidated Fama's Net Selectivity of the Schemes

Serial Number of Mutual Fund Schemes	Fama's Net Selectivity	Out-Performed/Under-Performed	Rank
SF 01	**3.81**	**O**	9
SF 02	−0.38	U	20
SF 03	**5.43**	**O**	3
SF 04	**1.16**	**O**	13
SF 05	−3.32	U	25
SF 06	**3.58**	**O**	10
SF 07	−4.95	U	26
SF 08	**1.38**	**O**	12
SF 09	**4.67**	**O**	6
SF 10	**6.40**	**O**	2
SF 11	**4.21**	**O**	8
SF 12	−9.77	U	27
SF 13	**10.75**	**O**	1
UF 14	**0.24**	**O**	17
UF 15	**0.16**	**O**	18
UF 16	−0.77	U	22
UF 17	**2.74**	**O**	11
UF 18	−0.96	U	23
UF 19	−0.50	U	21
UF 20	−3.16	U	24
UF 21	**0.93**	**O**	15
UF 22	**1.15**	**O**	14
UF 23	**5.37**	**O**	4

Serial Number of Mutual Fund Schemes	Fama's Net Selectivity	Out-Performed/Under-Performed	Rank
UF 24	**4.66**	**O**	7
UF 25	**0.48**	**O**	16
UF 26	**5.15**	**O**	5
UF 27	−0.32	U	19

Source: Researchers' compilation.

Table 8 summarises the performance of the selected schemes under various parameters. From the table, it can be concluded that out of the 27 schemes studied, on average, 19 (70%) have out-performed the market under various measures. SF13 has secured the top rank during the study period.

Table 8: Summary of Performance of the Selected Bank-Sponsored Schemes under Various Parameters

Tools/Measures	Superior	Average/Poor	Top Performer	Poor Performer
Sharpe Index	18 (67%)	09 (33%)	SF 13	SF 12
Treynor Index	23 (85%)	04 (15%)	SF 13	SF 12
Information Ratio	17 (63%)	10 (37%)	SF 13	SF 12
Jensen's Alpha	23 (85%)	04 (15%)	SF 13	SF 12
M^2	18 (67%)	09 (56%)	SF 13	SF 12
Fama's Net Selectivity	18 (67%)	09 (33%)	SF 13	SF 12

Source: Researchers' compilation.

Fund-Wise Performance Based on Different Parameters

Tables 9-11 projected all the schemes' fund-wise performance, based on various measures. The tables give an outlook of the best performing schemes under each fund house.

Table 9 shows the performance of all schemes, under different measures, belonging to SBI Funds Management Pvt. Ltd. SBI PSU fund is the only scheme that performs very poorly in almost all the measures. A few schemes, like SBI Contra Fund, SBI Infrastructure Fund, SBI Magnum Comma Fund, and SBI PSU fund, show weak professional management by the fund managers in terms of information ratio. At the same time, most of the schemes' performance shows the good selectivity skills of fund managers under two selectivity measures.

Table 9: SBI Funds Management Pvt. Ltd.

Name of Schemes	Sharpe Index	Treynor Index	Information Ratio	Jensen's Alpha	M-Squared	Fama's Net Selectivity
SBI Blue Chip Fund (G)	0.75	10.95	0.44	4.13	16.66	3.81
SBI Contra Fund (G)	0.43	6.75	−0.08	0.37	12.21	−0.38
SBI Focused Equity Fund (G)	0.90	14.92	0.42	6.34	18.78	5.43
SBI Healthcare Opportunities Fund (G)	0.53	20.11	0.15	5.86	13.60	1.16
SBI Infrastructure Fund (G)	0.26	7.63	−0.16	0.76	9.90	−3.32
SBI Large and Midcap Fund (G)	0.71	12.46	0.41	4.90	16.17	3.58
SBI Magnum Comma Fund (G)	0.16	4.50	−0.31	−1.06	8.51	−4.95
SBI Magn. Equity ESG Fund (G)	0.56	8.91	0.17	2.23	14.00	1.38
SBI Magn. Global Fund (G)	0.87	12.35	0.32	4.78	18.38	4.67
SBI Magn. Midcap Fund (G)	0.93	18.59	0.54	8.26	19.23	6.40
SBI Magn. Multicap Fund (G)	0.76	12.63	0.48	5.21	16.90	4.21
SBI PSU Fund (G)	−0.11	−3.30	−0.65	−5.36	4.84	−9.77
SBI Small Cap Fund (G)	1.16	29.48	0.94	13.89	22.40	10.75

Source: Researchers' compilation.

Table 10 shows the performance of all schemes, under different measures, belonging to UTI Asset Management Company Ltd. UTI Dividend Yield Fund and UTI India Consumer Fund perform poorly compared to other schemes, under all measures. A few schemes, like UTI Core Equity Fund, UTI Dividend Yield Fund, UTI Healthcare Fund, UTI India Consumer Fund, UTI Infrastructure Fund, and UTI Value Opportunities Fund, show weak professional management by the fund managers, under information ratio. In contrast, most of the schemes' performance shows the good selectivity skills of fund managers under two selectivity measures.

Table 10: UTI Asset Management Company Ltd.

Name of Schemes	Sharpe Index	Treynor Index	Information Ratio	Jensen's Alpha	M-Squared	Fama's Net Selectivity
UTI Banking and Financial Services Fund (G)	0.47	18.48	0.23	6.23	12.77	0.24
UTI Core Equity Fund (G)	0.47	7.22	−0.01	0.79	12.77	0.16
UTI Dividend Yield Fund (G)	0.40	6.14	−0.13	−0.14	11.81	−0.77
UTI Equity Fund (G)	0.66	9.87	0.31	3.15	15.50	2.74
UTI Healthcare Fund (G)	0.39	12.28	−0.04	2.82	11.71	−0.96
UTI India Consumer Fund (G)	0.42	6.25	−0.10	−0.04	12.09	−0.50
UTI Infrastructure Fund (G)	0.28	8.03	−0.13	1.05	10.13	−3.16
UTI Long-Term Equity Fund (G)	0.53	7.87	0.09	1.39	13.59	0.93
UTI Master Share Unit Scheme (G)	0.54	7.88	0.11	1.43	13.83	1.15
UTI Mid Cap Fund (G)	0.81	20.07	0.51	8.45	17.48	5.37
UTI MNC Fund (G)	0.87	11.26	0.34	4.28	18.42	4.66
UTI Nifty Index Fund (G)	0.49	7.86	0.08	1.37	13.08	0.48
UTI Transportation and Logistics Fund (G)	0.79	19.08	0.51	8.10	17.29	5.15
UTI Value Opportunities Fund (G)	0.43	6.57	−0.07	0.23	12.27	−0.32

Source: Researchers' compilation.

Table 11: Consolidated Performance of Fund Houses

Fund House Name	Sharpe Index	Treynor Index	Information Ratio	Jensen's Alpha	M-Squared	Fama's Net Selectivity	AVERAGE	RANK
	No. of Top-Performing Schemes under Different Measures							
SBI Funds Management Pvt. Ltd.	09	11	09	11	09	09	10 (13)	01
UTI Asset Management Company Ltd.	09	12	08	12	09	09	10 (14)	02

Source: Researchers' compilation.

*Figures in the bracket indicate total sample schemes.

From Table 11, it is evident that out of the two leading fund houses, SBI Funds Management Pvt. Ltd. is better than the UTI fund house, to some extent; however, it is hard to come to any definite conclusion. In terms of top-performing schemes to total sample schemes mentioned in the average column, we can say that SBI has the highest number of well-performing schemes.

CONCLUSION

The performances of the selected funds have been analysed in the way of risk-return relationship using leading performance evaluation measures like Sharpe index, Treynor index, information ratio, Jensen's alpha, M^2, and Fama's net selectivity. After analysing the funds, it is found

that, on average, 19 schemes (70%) have out-performed the market, as well as showing better selectivity skills of the fund managers under various measures, out of the total sample schemes, in terms of fund houses. SBI Funds Management Pvt. Ltd is having the highest number of top-performing schemes, in terms of the schemes under study. It is also observed that most of the top-ranked schemes come under the SBI Funds Management Pvt. Ltd.

The present study will specifically have implications on the investors' part. The analysis has put forward a reasonable performance shown by both mutual fund houses, regarding their respective schemes' performance. For an investor, it is necessary to consider some statistical measures while making investment decisions in mutual funds, to minimise their risk and maximise their returns. The study will provide insights to understand various performance measures, along with the fund's performance. The study has some limitations, like sample size, which can be increased by taking more fund houses into consideration. Future studies can be carried out by utilising other non-parametric models like DEA, using different variables to know the performance of funds.

REFERENCES

Abdullah, F., Hassan, T., & Mohamad, S. (2007). Investigation of performance of Malaysian Islamic unit trust funds: Comparison with conventional unit trust funds. *Managerial Finance*, *33*(2), 142-153. doi:https://doi.org/10.1108/03074350710715854

Agarwal, S., & 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. doi:https://doi.org/10.32728/ric.2017.31/4

Alexandri, M. B. (2015). Analysis of mutual fund's performance and persistence in Indonesia. *International Journal of Science and Research (IJSR)*, *4*(1), 2011-2015.

Allen, D. E., & Parwada, J. T. (2006). Investor's response to mutual fund company mergers. *International Journal of Managerial Finance*, *2*(2), 121-135.

Arora, N., & Chawla, S. (2019). A study on performance evaluation of private sector mutual fund schemes. *International Journal of Advanced Science and Technology*, *28*(12), 25-35. doi:https://doi.org/10.9790/487X-1912076972

Arugaslan, O., Edwards, E., & Samant, A. (2008). Evaluating large US-based equity mutual funds using risk-adjusted performance measures. *International Journal of Commerce and Management*, *17*(1/2), 6-24. doi:https://doi.org/https://doi.org/10.1108/10569210710774721

Babbar, S., & Sehgal, S. (2018). Mutual fund characteristics and investment performance in India. *Management and Labour Studies*, *43*(1-2), 1-30. doi:https://doi.org/10.1177/0258042x17745183

Bantwa, A., & Bhuva, K. (2012). Performance evaluation of selected Indian equity diversified mutual fund schemes: An empirical study. *GJRIM*, *2*(2), 1-24.

Baral, P. K., Kishore, K., & Das. (2016). Mutual funds industry in India: A growth trend analysis. *International Journal of Multidisciplinary Research and Development*, *3*(1), 1-13.

Bodla, B. S. (2012). (2012, May). M*arket timing and selectivity skills of mutual fund managers in India: An empirical study of equity funds*. XIII Annual International Conference on Global Turbulence: Challenges & Opportunities (pp. 1-13).

Cai, J., Chan, K. C., & Yamada, T. (1997). The performance of Japanese mutual funds. *The Review of Financial Studies*, *10*(2), 237-273. Retrieved from https://www.jstor.org/stable/2962346

Carhart, M. M. (1997). On persistence in mutual fund. *The Journal of Finance Journal*, *70,* 57-82. Retrieved from papers://22880b5a-c3f7-4a61-9e33-ed4c97fcb3c7/Paper/p138

Chauhan, P. M., & Adhav, S. M. (2015). Recent trends in mutual fund industry in India. *International Journal of Science, Technology & Management*, *4*(4), 54-61.

Daniel, K., Grinblatt, M., Titman, S., & Wermers, R. (1997). Measuring mutual fund performance with characteristic – Based benchmarks. *The Journal of Finance*, *52*(3), 1035-1057. doi:https://doi.org/10.1007/978-3-540-88802-4_25

Dhar, J. (2003). Investment management of mutual funds: Evidence of timing and selectivity from India during 1997-2003.

Dhar, J., & Mandal, K. (2014). Market timing abilities of Indian mutual fund managers: An empirical analysis. *Decision*, *41*(3), 299-311. doi:https://doi.org/10.1007/s40622-014-0036-2

Dhar, J., & Sinha, R. P. (2015). Portfolio return, risk and market timing: A non-parametric approach. *International Journal of Financial Management*, *5*(2). doi:https://doi.org/10.21863/ijfm/2015.5.2.009

Feibel, B. J. (2003). *Investment performance measurement.* John Wiley & Sons. Retrieved from https://books.google.co.in/books?id=fzAVZvAGP7cC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Fortin, R., & Michelson, S. (2005). Active international mutual fund management: Can managers beat the index?

Managerial Finance, *31*(1), 41-51. doi:https://doi.org/10.1108/03074350510769451

Goel, S., & Mani, M. (2018). Efficiency measurement of open-ended mutual fund schemes with respect to Indian mutual fund industry. *International Journal of Financial Services Management*, *9*(2), 140. doi:https://doi.org/10.1504/ijfsm.2018.10014033

Goel, S., Mani, M., & Sharma, R. (2012). A review of performance indicators of mutual funds. *Journal of Arts, Science & Commerce*, *3*(4), 100-107.

Goldreyer, E. F., Parvez, & Diltz, J. D. (1999). The performance of socially responsible mutual funds: Incorporating socio-political information in portfolio selection. *Managerial Finance*, *25*(1), 23-36.

Gudimetla, A. (2015). Timing and selectivity in Indian sector mutual funds performance. *International Journal of Research and Development*, *4*(3), 42-46.

Gusni, G., Silviana, S., & Hamdani, F. (2018). Factors affecting equity mutual fund performance: Evidence from Indonesia. *Investment Management and Financial Innovations*, *15*(1), 1-9. doi:https://doi.org/10.21511/imfi.15(1).2018.01

Hafizh, A., Syauqi, B. I., & Achmad, F. (2019). Performance analysis of sharia equity fund in Indonesia. *Russian Journal of Agricultural and Socio-Economic Sciences*, *89*(5), 130-134. doi:https://doi.org/10.18551/rjoas.2019-05.15

Jamaludin, N., Smith, M., & Gerrans, P. (2012). Mutual fund selection criteria: Evidence from Malaysia. *Asian Review of Accounting*, *20*(2), 140-151. doi:https://doi.org/10.1108/13217341211242187

Joyjit Dhar, J. D. (2013). Stock selection skills of Indian mutual fund managers during 2000-2012. *IOSR Journal of Business and Management*, *10*(1), 79-87. doi:https://doi.org/10.9790/487x-1017987

Kaur, I. (2013). Performance, timing and selectivity skills of Indian equity mutual funds: An empirical approach. *Journal of Arts, Science & Commerce*, *4*(4), 87-94.

Kaur, I. (2014). Effect of fund attributes on efficiency: Cross-sectional evidence from Indian equity mutual funds. *Journal of Commerce & Accounting Research*, *3*(4), 35-46.

Kaur, I., & Kaushik, K. P. (2016). Determinants of investment behaviour of investors towards mutual funds. *Journal of Indian Business Research*, *8*(1), 19-42. doi:https://doi.org/10.1108/JIBR-04-2015-0051

Kaur, K. (2021). Evaluation of mutual fund schemes in India – Does prolonged existence rewards performance. *Journal of Commerce & Accounting Research*, *10*(2), 23-29.

Kiymaz, H. (2015). A performance evaluation of Chinese mutual funds. *International Journal of Emerging Markets*, *10*(4), 820-836. doi:https://doi.org/10.1108/JFM-03-2013-0017

Kumar, S., & Katyal, H. (2017). Evaluation of market timing abilities of Indian mutual fund managers: An empirical study. *International Journal of Applied Business and Economic Research*, *15*(9), 421-426.

Lee, C. L., Liu, N., Lee, C., Lee, A. C., & Liu, N. (2010). Handbook of Portfolio Construction. doi:https://doi.org/10.1007/978-0-387-77439-8

Lukashin, Y., & Lukashin, I. (2009). The development of mutual fund market in Russia. *Management Research News*, *32*(2), 132-144. doi:ttps://doi.org/ 10.1108/01409170910927596

Jensen, M. C. (1968). Problems in selection of security portfolios the performance of mutual funds in the period 1945-1964. *Journal of Finance*, *23*(2), 389-416.

Noulas, A. G., Papanastasiou, J. A., & Lazaridis, J. (2005). Performance of mutual funds. *Managerial Finance*, *31*(2), 101-112. doi:https://doi.org/10.1108/03074350510769523

Rathi, P., & Yadav, R. (2014). Factors affecting selection, performance, opportunities and challenges of mutual funds in India. *Journal of General Management Research*, 39-52.

Robbani, H. (2019). Analysis of Sharia mutual fund efficiency with the data envelopment analysis (DEA) method. *Literatus*, *1*(1), 25-30. doi:https://doi.org/10.37010/lit.v1i1.6

Roy, S. (2015). Conditional selectivity performance of Indian mutual fund schemes: An empirical study. *Management Science Letters*, *5*(6), 577-590. doi:https://doi.org/10.5267/j.msl.2015.4.008

Roy, S., & Ghosh, S. K. (2013). Can mutual fund predict the future? An empirical study. *Journal of Commerce & Accounting Research*, *2*(1), 1-9.

Sehgal, S., & Babbar, S. (2017). Evaluating alternative performance benchmarks for Indian mutual fund industry. *Journal of Advances in Management Research*, *14*(2), 222-250.

Seth, S., & Das, S. (2015). Ethical investing: Examining the performance of Indian Shariah funds Vis-A-Vis Shariah index. *Journal of Commerce & Accounting Research*, *4*(2), 51-57. Retrieved from http://www.publishingindia.com/jcar/47/ethical-investing-examining-the-performance-of-indian-shariah-funds-vis-a-vis-shariah-index/398/2822/

Sharma, D. (2016). An empirical analysis of market timing performance of Indian asset management companies under unconditional model. *International Journal of*

Finance and Accounting, *5*(1), 1-12. doi:https://doi.org/10.5923/j.ijfa.20160501.01

Sharma, M., Didwania, M., & Kumar, D. S. (2019). Performance evaluation of banks sponsored mutual funds: An analytical study. *Paradigm*, *23*(2), 197-218. doi:https://doi.org/10.1177/0971890719859941

Sharma, S., Raina, D., & Singh, S. (2012). Measurement of technical efficiency and its sources: An experience of Indian banking sector. *International Journal of Economics and Management*, *6*(1), 35-57.

Sharpe, W. F. (1966). Mutual fund performance. *The Journal of Business*, *39*(1), 119-138. doi:https://www.jstor.org/stable/2351741

Singh, T., Mehta, S., & Varsha, M. S. (2011). Macro-economic factors and stock returns: Evidence from Taiwan. *Journal of Economics and International Finance*, *2*(4), 217-227. doi:https://doi.org/10.1111/j.1475-6803.1987.tb00481.x

Swinkels, L., & Rzezniczak, P. (2009). Performance evaluation of Polish mutual fund managers. *International Journal of Emerging Markets*, *4*(1), 26-42. doi:https://doi.org/10.1108/17468800910931652

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

Tripathy, N. (2017). Efficiency of mutual funds and performance measurement in India: An empirical investigation. *International Journal of Business Excellence*, *13*(2), 217-237. doi:https://doi.org/10.1504/IJBEX.2017.086338

Zabiulla. (2014). Portfolio strategies of fund managers in the Indian capital market. *IIMB Management Review*, *26*(1), 28-58. doi:https://doi.org/10.1016/j.iimb.2013.12.003