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׀**RESEARCH ARTICLE**

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Performance Under Microscope Examining Indian Pharma and Tech Equity Mutual Funds

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ABSTRACT

Indian investors frequently use mutual funds because of their capable professional management, diversification and likelihood of decent returns. With an emphasis on the technology and pharmaceutical sectors, this research work looks at the performance of sectoral equity funds in India. Because sectoral funds invest in certain businesses, they are inherently riskier. Assessing whether these funds have continuously generated better performance based on risk-return metrics is the objective of this studyThe research evaluates performance across 1, 3, 5-, 7-, 10- and 12-years using data from several asset management companies (AMCs). Chosen funds' regular and direct plans are examined. The study employs important financial indicators like Compound Annual Growth Rate (CAGR), standard deviation, Sharpe ratio, alpha, beta, and R-squared.

Previous research yielded conflicting results. While some discovered varying performance throughout the years, others came to the conclusion that sectoral funds performed better across specific market cycles. By incorporating more lengthy and varied periods, this study expands on existing conclusions. Additionally, it contrasts the direct and regular plans' cost-effectiveness, which has not been thoroughly examined in previous studies.

The study found that direct plans performed better overall and in terms of risk-adjusted return across all periods than regular plans. Regarding performance consistency in terms of risk-adjusted returns during the picked periods, every fund did better than its corresponding benchmark index. Further, the study noticed skills from fund managers in identifying quality stocks. It was noted that the chosen funds were defensive throughout the study period. Moreover, the research noticed adequate diversification of the chosen funds.

1 INTRODUCTION

A mutual fund is an investment pool under professional management that is overseen by a fund manager. The Indian Mutual Fund Industry (IMFI) has grown significantly in the last several years. As such, it emerged as a key vehicle for retail and institutional investors seeking diversified exposure to various sectors of the economy. An equity fund that lends money to businesses in the same sector is known as a sectoral fund. These fund managers invest the money they get from investors in stocks of companies operating in specific industries. Funds allocated to a specific industry, such as the banking and financial, information technology (IT), pharmaceutical and healthcare, fast-moving consumer goods (FMCG), etc., are known as sector-specific funds. Among the sectoral funds, pharmaceutical and technology funds have garnered increasing interest among investors. This is due to their potential for high returns, driven by innovation, export potential and global competitiveness. These sectors are often seen as resilient and growth-oriented, particularly in the context of post-pandemic recovery and the accelerating pace of digital transformation.

The pharmaceutical industry experienced a surge in demand for healthcare products, vaccines and generic drugs during the pandemic, boosting investor interest in the funds of this sector. On the other hand, the technology sector capitalised on rapid digitisation, remote work adoption and increased demand for IT services, leading to strong post-pandemic demand for tech-focused funds. The pharmaceutical and healthcare sector is usually considered a defensive sector, and its products are in constant demand irrespective of the business cycle. The technology sector, however, is often considered a cyclical sector whose performance depends on the economic conditions of the nation.

2 REVIEW OF LITERATURE

Studies on mutual funds are plentiful in the global context. India is not a laggard as well. A substantial amount of literature exists on various aspects of mutual funds. Among these, performance analysis of mutual funds is quite a popular area of research. The literature can be grouped into three broad themes: studies finding outperformance, underperformance and no performance persistence.

Outperformance

Abraham (2007) found that the ICICI Prudential Infrastructure Fund's astute stock selection allowed it to beat both the benchmark and the category over a range of periods. The fund should not be an integral component of an individual's primary portfolio, though, the author opined. However, if an investor wishes to add zing to their belongings, the fund is unquestionably in the running. According to Bondyopadhyay (2008), sector or theme funds can yield decent returns in a relatively short time frame (one to three years). Diversified equity funds, nevertheless, are unquestionably among the winners over a longer time frame of three years or more. Dhume & Ramesh (2011) examined the performance of select sectoral equity mutual fund schemes across various sectors, including FMCG, healthcare, banking, infrastructure, and technology, from 2008 to 2011. They employed traditional measures, including the Sharpe Ratio, Treynor Ratio, Jensen's Alpha, Information Ratio, and M-squared. The findings reveal that most of the chosen schemes outperformed the benchmark indices. Furthermore, FMCG schemes exhibited the least volatility, whereas those from banking and infrastructure showed higher risk. Mittal (2011) observed decent performance from the banking sector mutual fund schemes. However, many schemes showed inferior performance to that of the risk-free rate. Further, infrastructure funds remained underperformers against the Sensex and diversified equity funds.

No Performance Persistence

Several studies found that sector funds do not show consistent performance. Sector-fund managers do not show any discernible performance persistence, according to Khorana & Nelling (1997). Furthermore, sector funds are just as risky as aggressive-growth and small-cap funds. Vijh & Tiwari (2001) examined 607 actively managed equity sector funds between 1990 and

2000. The findings revealed that these funds did not perform better or worse than their benchmark indices. Because performance persistence is lacking, it is impossible to predict future performance based on historical results. Moreover, the study noticed that investors find it difficult to reliably select profitable sector funds or sectors.

3 Mixed and More Recent Findings

More recent studies continue to show mixed results. Joshi (2010) noted that while Indian investors have a strong desire for sectoral funds, particularly banking and pharmaceutical funds. However, the scenario is different for infrastructure funds. Over the past six years, according to the writer, the performance of infrastructure funds in particular has lagged behind their officially declared benchmark indices, such as the SENSEX, NIFTY, etc. Gudimetla (2015) used the Treynor and Mazuy model to assess sector fund managers' selectivity and market-timing abilities between 2012 and 2015. The outcomes revealed that fund managers demonstrated poor selectivity and timing ability. To make things worse, evidence of negative market timing was also noticed. Sengupta (2016) used risk-adjusted returns to assess the performance of several sectoral mutual funds. According to the study, certain sectoral funds, such as those belonging to the banking and IT sectors, performed better over the long run, while others exhibited greater volatility and decreased returns.

Investors, the researcher opined, have to diversify their holdings and select funds with solid track records and steady growth trends. Kumar and Rani (2018) examined the growth of mutual funds in India with a focus on sectoral mutual funds. They noted that funds from the banking, technology and healthcare sectors outperformed their benchmark indices even during the 2008–2009 crises. Accordingly, well-managed sector funds should appeal to investors with high risk tolerance. Bhattacharjee (2020) noted that all metrics support the ability of a wide range of sector-specific funds to offer superior returns adjusted for risks. Furthermore, the information ratio attests to the fund's capability to continuously outperform the market through diligent portfolio management. Therefore, while making investment decisions, investors should think about sector-specific funds in their portfolio based on their risk appetite. Kole & Deshpande (2020) examined the performance of select sectoral funds between 2017 and 2020 from sectors like banking and financial services, healthcare, FMCG and IT. The 13-week treasury bill rate was taken as the risk-free rate of return. The researchers used conventional metrics like Sharpe Ratio, Treynor Ratio and Jensen Alpha. The results reveal stable performance from healthcare and FNCG funds. At the same time, the general outperformance of banking & financial services sector funds in terms of returns was noticed. Kaur & Bala (2020) examined the performance equity mutual fund schemes from three sectors, namely, infrastructure, banking and financial services and technology, from 2010 to 2019 using Sharpe Ratio, Treynor Ratio and Jensen's Alpha, with the 91-day T-Bills as the risk-free rate of return. All selected schemes showed excellent risk-adjusted performance. The results highlight the persistence of sectoral funds in beating general market benchmarks.

Martí-Ballester (2020) observed superior performance of biotechnology and healthcare funds in terms of risk-adjusted returns in comparison to traditional mutual funds. This is due to smart stock-picking by fund managers of these funds. Moreover, these funds were aligned with SDG-3 of the UN. As such, investing in these funds contributes to the promotion of sustainable development and world health. Reddy & Ramesh (2022) noted the underperformance of the Sensex against sector-specific funds belonging to Banking and Financial Services, FMCG, Healthcare and Technology sectors from 2017 to 2021. Equity mutual fund schemes of FMCG, Healthcare, Infrastructure and Energy & Power sectors were found to be more defensive and carried lower volatility than schemes of Banking and Financial Services and technology sectors. According to Kazmi (2022), the benchmark index offered a greater risk-adjusted return and fared better than the sectoral mutual funds. Furthermore, the return from a sectoral mutual

fund appeared to be unaffected by the manager's background and experience. Kushwaha & Jain (2024) examined 123 Indian SDG-themed equity funds. They observed that the chosen funds performed more or less similarly to those of sectoral indices during the medium term. Nevertheless, these funds, in the opinion of the researchers, have the potential to excel in the future. Healthcare funds exhibited better performance due to assistance from the government, while energy funds struggled with decarbonisation and the transition to environmentally friendly energy.

4 RESEARCH GAP

Previous studies on sectoral mutual fund performance in India were carried out over predetermined time frames, such as one, three, five or ten years. As such, these studies lacked focus on consistent performance. For example, a researcher may choose a time frame of 10 years from 2014 to 2024 (say). A fund stood first in this period. But the same fund did not perform well in 2, 3, 5, and 7 years. On the other hand, the third-ranked fund in 10 years (say) performed well in all the years (2, 3, 5 and 7) and stood first in overall ranking because of its consistent performance over the years. A particular period is also used in this research work. However, to assess how consistently the chosen funds performed throughout time, the entire period is broken down into 1, 3, 5, 7, 10 and 12 years.

Further, earlier studies concentrated on the performance analysis of funds under either the "Direct Plan" or "Regular Plan". Here, both plans are considered so that the investors can understand which one is better. Moreover, prior research employed the Price Return Index (PRI) as a standard, which provides an imprecise view because it does not account for dividends. The Total Return Index (TRI), which includes both capital gains and dividends for a better evaluation, is used in this research following SEBI's 2018 recommendations.

5 RESEARCH QUESTIONS

Four main questions are intended to be addressed by this study:

1. In terms of risk-return metrics, are the chosen open-ended sectoral equity funds in India performing well?
2. Do fund managers have good stock selection capabilities?
3. Do the funds behave more defensively or aggressively than their benchmarks?
4. Are the funds adequately diversified?

6 OBJECTIVES OF THE STUDY

The current study is being carried out with the following objectives in mind.

- To evaluate the selected open-ended sectoral equity funds' performance in India using risk-return metrics
- To assess how consistently the fund has performed throughout a range of periods;
- To evaluate the effectiveness of direct and regular plans;
- To assess how well fund managers choose stocks and the funds' performance relative to their benchmarks; and
- To examine the chosen funds' degree of diversification.

7 DATA AND METHODOLOGY

This research combines both empirical and exploratory approaches. The exploratory section examines the conceptual and regulatory facets of mutual funds and explores the body of available literary works, including books, journals, research papers and websites. The BSE, NSE, AMFI, SEBI, official fund house websites, financial publications, periodicals and finance newsletters were the sources of the data used in the empirical portion.

All of the data used in the present research is secondary. It focuses on 14 sectoral equity funds that are open-ended and offered by different fund houses. These include 6 funds from the pharmaceutical or healthcare sector and 8 funds from the technology sector. Only funds which, as of December 31, 2024, had been in operation for more than 12 years were chosen. Both direct plans and regular plans are considered. The impact of taxation and inflation has been ignored. To facilitate analysing

performance consistency, the research separates the chosen periods into six different intervals of 1, 3, 5, 7, 10 and 12 years. The selected time for the study covers both the pre-pandemic and post-COVID periods.

Data Sources

Mutual fund month-end closing NAVs were taken from the respective Asset Management Companies (AMCs) websites. Benchmark index values were taken from the NSE website. The benchmark for pharma funds is Nifty Healthcare TRI. The benchmark for technology funds is Nifty IT TRI. The risk-free rate of return is the rate on 91-day Treasury bills.

Measures Used and Reason

CAGR (Compounded Annual Growth Rate) shows simple growth in fund value over time. Standard Deviation (S.D.) measures the total risk or volatility of the fund. Sharpe Ratio shows risk-adjusted returns by comparing excess return to total risk. Beta measures systematic risk. A beta below 1 means the fund is defensive. A beta above 1 means it is aggressive. Alpha (Jensen's Alpha) measures stock-picking skill. A positive alpha means good stock selection. R-squared (Coefficient of Determination) shows how much of the fund's return is explained by the benchmark. Higher R-squared means better diversification. Table 1 presents the fund selection criterion for the study.

Table 1: Guidelines for Funds Selection

Total number of Mutual Funds offered by the Pharma and Technology sectors, both in Direct Plan and Regular Plan as of April 1, 2025	58
Less: Number of funds excluded because they started after 01.01.2013	44
Number of funds chosen for the research work	14

Source: Computed by Researchers

Selected Funds

1. Pharmaceutical Sector (6 funds): Nippon India Pharma Fund - Direct Plan (NIPFD), Nippon India Pharma Fund - Regular Plan (NIPFR), SBI Healthcare Opportunities Fund - Direct Plan (SHCOFD), SBI Healthcare Opportunities Fund - Regular Plan (SHCOFR), UTI Healthcare Fund - Direct Plan (UHCFD), UTI Healthcare Fund - Regular Plan (UHCFR)

2. Technology Sector (8 funds): Aditya Birla Sun Life Digital India Fund - Direct Plan (ABDIFD), Aditya Birla Sun Life Digital India Fund – Regular Plan (ABDIFR), Franklin India Technology Fund - Direct Plan (FITFD), Franklin India Technology Fund – Regular Plan (FITFR), ICICI Prudential Technology Fund - Direct Plan (IPTFD), ICICI Prudential Technology Fund - Regular Plan (IPTFR), SBI Technology Opportunities Fund - Direct Plan (STOFD), SBI Technology Opportunities Fund - Regular Plan (STOFR)

Statistical Note

This study includes the entire population of open-ended sectoral equity funds from the pharmaceutical and technology sectors that met the selection criterion (in operation for more than 12 years as of December 31, 2024). Since no sampling was used, inferential statistical tests such as t-tests or ANOVA are not required. The analysis is based on actual performance rankings and consistency across time periods. Therefore, the findings are descriptive and directly observable, not estimated or generalised from a sample.

8 ANALYSIS AND DISCUSSION

Compounded Annual Growth Rate (CAGR)

It has been computed using the change in NAVs. The monthly returns of the chosen sectoral funds over the period of study (R_{sf}) have been computed as follow

$$R_{sf} = \frac{N(t)-N(t-1)}{N(t-1)} \times 100$$

Where, R_{sf} = CAGR of the sectoral fund
N(t) = Closing Net Asset Value of the sectoral fund for a month t,
N (t-1) = Closing Net Asset Value of the sectoral for the preceding month (t-1).

Table 2: CAGR of Chosen Sectoral Funds and Their Benchmark Indices

Sl.	Fund	1y	3y	5y	7y	10y	12y	1y	3y	5y	7y	10y	12y	Total
1	NIPFD	35.2572	19.9617	29.3933	21.4052	16.4456	19.3598	6	5	4	1	1	1	18
2	NIPFR	34.0373	18.8885	28.226	20.3308	15.4213	18.3418	7	6	5	2	2	3	25
3	SHCOFD	43.7474	24.0263	31.1939	19.899	15.2205	19.2386	2	1	1	3	3	2	12
4	SHCOFR	42.2207	22.709	29.7787	18.6015	13.9172	17.9552	4	2	2	5	5	4	22
5	UHCFD	44.2699	21.3264	29.4184	19.4353	14.4003	17.449	1	3	3	4	4	5	20
6	UHCFR	42.8616	20.0711	28.1046	18.2234	13.275	16.3336	3	4	6	6	6	6	31
NIFTY HEALTHCARE TRI		40.5526	18.5733	25.2882	15.3331	9.8852	13.4116	5	7	7	7	7	7	40
								X	X	X	X	X	X	X
1	ABDIFD	19.4101	9.184	29.2503	24.5823	20.1083	22.5549	8	5	3	3	1	2	22
2	ABDIFR	18.0925	7.9006	27.7723	23.2272	18.9432	21.4137	9	7	6	7	3	5	37
3	FITFD	29.7593	15.8755	28.1348	23.5787	18.3604	20.9213	3	1	5	6	5	7	27
4	FITFR	28.4353	14.6787	26.8715	22.4822	17.4025	20.0132	4	2	8	8	7	8	37
5	IPTFD	26.3848	8.0776	30.9663	25.0557	19.3525	23.1171	5	6	1	2	2	1	17
6	IPTFR	25.4146	7.0636	29.7625	23.9122	18.2906	22.0765	6	8	2	4	6	4	30
7	STOFD	31.4668	12.3936	28.9019	25.0848	18.572	22.1927	1	3	4	1	4	3	16
8	STOFR	30.0512	11.1281	27.4667	23.6693	17.3415	20.9305	2	4	7	5	8	6	32
NIFTY IT TRI		22.0267	3.844	22.5906	20.6208	14.4726	17.8618	7	9	9	9	9	9	52

Source: Computed by Researchers

Table 2 shows that all direct plans outperformed regular plans throughout the study period. In terms of overall consistency in performance among the pharma funds, SHCOFD ranked first, and UHCFR ranked last. However, all six funds performed better than the benchmark. A look at the overall performance of the technology fund reveals that STOFD remained the best performer, whereas ABDIFR and FITFR were the worst performers in terms of consistency. All eight technology funds, nevertheless, outperformed the benchmark index.

Standard Deviation of the Funds Returns (SD_p)

The total risk associated with a fund or the benchmark is quantified by the measure called Standard Deviation (S.D.). Table 3 exhibits the total risk of the chosen sectoral equity funds and the respective benchmark indices

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Table 3: Total Risk of Chosen Sectoral Funds and Their Benchmark Indices

Sl.	Fund	1y	3y	5y	7y	10y	12y	1y	3y	5y	7y	10y	12y	Total
1	NIPFD	11.1698	14.9363	18.3224	17.4514	16.7779	16.5004	4	4	4	2	2	2	18
2	NIPFR	11.0199	14.8921	18.2908	17.4226	16.7547	16.4815	3	3	3	1	1	1	12
3	SHCOFD	10.2315	14.047	17.2601	17.5951	17.4401	17.3838	2	2	2	4	6	6	22
4	SHCOFR	10.2202	14.0336	17.2387	17.5723	17.4246	17.373	1	1	1	3	3	5	14
5	UHCFD	12.4433	15.4175	18.5112	18.0217	17.4347	17.0633	6	5	6	6	5	4	32
6	UHCFR	12.432	15.4224	18.5056	18.0151	17.4252	17.0545	5	6	5	5	4	3	28
NIFTY HC TRI		13.5004	16.2047	19.6163	19.7094	18.9799	18.5024	7	7	7	7	7	7	42
1	ABDIFD	17.1663	18.1454	21.2574	19.2689	18.6145	18.681	6	6	6	6	6	6	36
2	ABDIFR	17.1508	18.1323	21.2308	19.2424	18.5965	18.6647	5	5	5	5	5	5	30
3	FITFD	14.8507	17.6907	19.3541	17.7915	16.3733	17.8098	2	4	4	4	2	2	18
4	FITFR	14.8425	17.6709	19.3381	17.7718	16.3527	17.7968	1	3	3	3	1	1	12
5	IPTFD	17.2767	18.1508	22.4285	20.2053	18.9572	19.0558	8	7	8	8	8	8	47
6	IPTFR	17.2639	18.1508	22.4051	20.1784	18.935	19.0379	7	7	7	7	7	7	42
7	STOFD	15.9167	17.0955	19.1052	17.4908	16.8255	17.8573	4	2	2	2	4	3	17
8	STOFR	15.9019	17.08	19.0973	17.4822	16.823	17.8622	3	1	1	1	3	4	13
NIFTY IT TRI		21.2862	20.7078	23.5298	21.7473	20.3659	21.1613	9	9	9	9	9	9	54

Source: Computed by Researchers

Table 3 shows that most regular plans (except UHCFR in 3 years, IPTFR in 3 years and STOFR in 12 years) demonstrated lower risk than direct plans, but the S.D. value difference is very negligible. On an overall basis, NIPFR was the best performer in the pharma category and FITFR in the technology category. In both categories, benchmark indices underperformed the chosen funds every year and overall.

Risk-Adjusted Return

The Sharpe Ratio, a relative indicator of risk-adjusted return, indicates the fund's additional return over and above the risk-free return and the total risk of the fund. It is sometimes referred to as the reward-to-variability ratio. It is expressed as:

$SR_{sf} = (R_{sf} - R_f) / SD_{sf}$ where SR_{sf} = Sharpe Ratio of the sectoral fund, R_{sf} = CAGR of the sectoral fund, R_f = Risk-free rate of return, SD_{sf} = Annualised standard deviation of the sectoral fund.	$SR_b = (R_b - R_f) / SD_b$ where SR_b = Sharpe Ratio of the benchmark index, R_b = CAGR of the benchmark index, R_f = Risk-free rate of return, SD_b = Annualised standard deviation of the benchmark index.

Table 4: Risk-Adjusted Return of Chosen Sectoral Funds and Their Benchmark Indices

Sl	Fund	1y	3y	5y	7y	10y	12y	1y	3y	5y	7y	10y	12y	Total
1	NIPFD	2.5701	0.8979	1.2467	0.8512	0.5898	0.7763	5	4	3	1	1	1	15
2	NIPFR	2.4943	0.8285	1.1851	0.791	0.5295	0.7155	7	6	5	2	2	3	25
3	SHCOFD	3.6356	1.2441	1.4278	0.7587	0.4972	0.7299	1	1	1	3	3	2	11
4	SHCOFR	3.4902	1.1514	1.3475	0.6858	0.4228	0.6565	2	2	2	5	5	4	20
5	UHCFD	3.0313	0.9584	1.2354	0.715	0.4503	0.6387	3	3	4	4	4	5	23
6	UHCFR	2.9208	0.8767	1.1648	0.648	0.3859	0.5737	4	5	6	6	6	6	33
	NIFTY HC TRI	2.5186	0.742	0.9552	0.4456	0.1757	0.3708	6	7	7	7	7	7	41
1	ABDIFD	0.7491	0.1452	1.0679	0.9358	0.7284	0.8568	7	5	5	4	1	3	25
2	ABDIFR	0.673	0.0745	0.9996	0.8667	0.6664	0.7964	9	7	8	7	5	7	43
3	FITFD	1.5628	0.5271	1.1153	0.9571	0.7213	0.8069	2	1	2	3	2	5	15
4	FITFR	1.4745	0.46	1.0509	0.8965	0.6637	0.7565	4	2	6	6	6	8	32
5	IPTFD	1.1481	0.0842	1.0886	0.9159	0.6753	0.8694	5	6	4	5	4	2	26
6	IPTFR	1.0927	0.0283	1.036	0.8604	0.62	0.8156	6	8	7	8	8	4	41
7	STOFD	1.5655	0.3418	1.1699	1.0597	0.7145	0.876	1	3	1	1	3	1	10
8	STOFR	1.4779	0.268	1.0953	0.9792	0.6415	0.8051	3	4	3	2	7	6	25
	NIFTY IT TRI	0.7271	-0.1307	0.6817	0.647	0.389	0.5346	8	9	9	9	9	9	53

Source: Computed by Researchers

It is witnessed from Table 4 that direct plans outperformed regular plans in terms of risk-adjusted return in every period as well as in overall performance. In the pharma sector, SHCOFD remained the best performer on an overall basis. STOFD stood first in terms of overall consistency among the technology funds. All pharmaceutical funds performed better than the benchmark in 5, 7, 10 and 12 years. On the other hand, all technology funds outperformed the benchmark index in all years, barring 1 year when only one fund underperformed the benchmark. In terms of performance consistency over the chosen periods, all funds outperformed their respective benchmark indices.

Alpha

Jensen Alpha is an absolute metric that evaluates the fund manager's effectiveness in choosing quality stocks. A positive alpha value implies that the fund manager has good stock selection skills, and a negative alpha value indicates poor stock selection by the fund manager. Jensen Alpha is expressed as:

$$\text{Alpha} = R_{sf} - [R_f + \text{Beta} \times (R_b - R_f)]$$

where Alpha = Differential return earned by the fund due to the ability of the fund manager in selecting the right stocks;
R_{sf} = Sectoral fund return,
R_f = Risk-free rate of return,
R_b = Benchmark return,
Beta = Systematic risk of the sectoral fund.

Table 5: Alpha Values of the Selected Sectoral Funds

Sl.	Fund	1y	3y	5y	7y	10y	12y	1y	3y	5y	7y	10y	12y	Total
1	NIPFD	0.363	0.249	0.4368	0.5919	0.6023	0.5943	6	4	3	1	1	1	16
2	NIPFR	0.3829	0.1851	0.3672	0.5204	0.5298	0.5241	5	6	5	2	2	3	23
3	SHCOFD	1.0824	0.6171	0.678	0.5007	0.5091	0.5512	1	1	1	3	3	2	11
4	SHCOFR	0.9934	0.5276	0.5876	0.4101	0.4139	0.4604	2	2	2	5	5	4	20
5	UHCFD	0.7816	0.3294	0.4317	0.4353	0.4254	0.4082	3	3	4	4	4	5	23
6	UHCFR	0.6999	0.2412	0.3457	0.3496	0.3426	0.3281	4	5	6	6	6	6	33
MAXIMUM		1.0824	0.6171	0.678	0.5919	0.6023	0.5943							
MINIMUM		0.363	0.1851	0.3457	0.3496	0.3426	0.3281							
1	ABDIFD	0.1253	0.4501	0.6723	0.5306	0.5708	0.5598	7	5	6	5	2	2	27
2	ABDIFR	0.0326	0.3507	0.5753	0.4388	0.4893	0.4814	8	7	8	7	5	6	41
3	FITFD	1.155	0.9904	0.7994	0.6075	0.5761	0.5079	1	1	1	2	1	5	11
4	FITFR	1.0682	0.903	0.7159	0.5328	0.5082	0.4447	2	2	3	4	4	8	23
5	IPTFD	0.6188	0.3621	0.6977	0.4838	0.4856	0.5801	5	6	4	6	6	1	28
6	IPTFR	0.5546	0.2833	0.6206	0.4076	0.4112	0.5093	6	8	7	8	8	4	41
7	STOFD	1.0493	0.7023	0.7731	0.6492	0.5236	0.5508	3	3	2	1	3	3	15
8	STOFR	0.9581	0.6073	0.6785	0.5536	0.436	0.4632	4	4	5	3	7	7	30
MAXIMUM		1.155	0.9904	0.7994	0.6492	0.5761	0.5801							
MINIMUM		0.0326	0.2833	0.5753	0.4076	0.4112	0.4447							

Source: Computed by Researchers

Table 5 reveals that the chosen funds exhibited positive alpha values throughout the period. It implies that the fund managers demonstrated their capabilities in picking stocks of good quality. So far as pharmaceutical or healthcare funds are concerned, SHCOFD performed best on an overall basis and stood first in 1, 3 and 5 years. NIPFD stood first in 7, 10 and 12 years and remained in the second position in terms of overall consistency. FITFD was the best performer on an overall basis among the technology funds. Here also, direct plans outperformed their regular plan counterparts.

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Table 6: Beta Value of the Selected Sectoral Funds

Sl.	Fund	1y	3y	5y	7y	10y	12y	1y	3y	5y	7y	10y	12y
1	NIPFD	0.7575	0.8914	0.9109	0.8574	0.8428	0.8388	D	D	D	D	D	D
2	NIPFR	0.724	0.883	0.9071	0.854	0.8404	0.8369	D	D	D	D	D	D
3	SHCOFD	0.6880	0.8291	0.8443	0.8499	0.8583	0.8787	D	D	D	D	D	D
4	SHCOFR	0.6871	0.8284	0.8432	0.8486	0.8575	0.8781	D	D	D	D	D	D
5	UHCFD	0.8069	0.9049	0.9156	0.8772	0.8823	0.8873	D	D	D	D	D	D
6	UHCFR	0.8060	0.9051	0.9152	0.8769	0.8818	0.8869	D	D	D	D	D	D
MAXIMUM		0.8069	0.9051	0.9156	0.8772	0.8823	0.8873						
MINIMUM		0.6871	0.8284	0.8432	0.8486	0.8404	0.8369						
1	ABDIFD	0.7990	0.8541	0.8657	0.8331	0.8537	0.8280	D	D	D	D	D	D
2	ABDIFR	0.7984	0.8544	0.8651	0.8324	0.8529	0.8273	D	D	D	D	D	D
3	FITFD	0.6086	0.7587	0.7441	0.7369	0.7285	0.7797	D	D	D	D	D	D
4	FITFR	0.6083	0.7581	0.7436	0.7363	0.7277	0.7792	D	D	D	D	D	D
5	IPTFD	0.7932	0.8603	0.9195	0.8849	0.8805	0.8427	D	D	D	D	D	D
6	IPTFR	0.7924	0.8601	0.9185	0.8837	0.8795	0.8418	D	D	D	D	D	D
7	STOFD	0.7323	0.8062	0.7824	0.7693	0.7855	0.8095	D	D	D	D	D	D
8	STOFR	0.7317	0.8055	0.7821	0.7687	0.7852	0.8095	D	D	D	D	D	D
MAXIMUM		0.799	0.8603	0.9195	0.8849	0.8805	0.8427						
MINIMUM		0.6083	0.7581	0.7436	0.7363	0.7277	0.7792						

Source: Computed by Researchers **D: Defensive**

Table 6 shows that the beta values of the funds were less than 1 throughout the period. It indicates that the chosen funds were defensive across periods in comparison to the benchmark.

Coefficient of Determination

The coefficient of variation, known as R-squared (RSQ), is the square of the correlation coefficient, which indicates the percentage change in the fund's return that can be attributed to changes in the benchmark's return. There exists an inverse relationship between RSQ and unsystematic risk. A low RSQ value indicates inadequate diversification. Moreover, a high RSQ value indicates sufficient diversification of the portfolio. Table 7 exhibits the RSQ values of the selected sectoral funds.

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Table 7: RSQ Value of the Selected Sectoral Funds

Sl.	Fund	1y	3y	5y	7y	10y	12y	1y	3y	5y	7y	10y	12y	Total
1	NIPFD	0.8383	0.9353	0.9511	0.9376	0.9089	0.8847	1	1	1	1	3	3	10
2	NIPFR	0.787	0.9238	0.9464	0.9341	0.9064	0.8826	4	2	2	2	4	4	18
3	SHCOFD	0.8241	0.9149	0.9207	0.9063	0.8724	0.8748	2	4	5	5	5	5	26
4	SHCOFR	0.8237	0.915	0.9206	0.906	0.8723	0.8746	3	3	6	6	6	6	30
5	UHCFD	0.7664	0.9046	0.9413	0.9204	0.9226	0.9257	5	5	3	3	1	2	19
6	UHCFR	0.7661	0.9045	0.9411	0.9203	0.9225	0.9258	6	6	4	4	2	1	23
MAXIMUM		0.8383	0.9353	0.9511	0.9376	0.9226	0.9258							
MINIMUM		0.7661	0.9045	0.9206	0.906	0.8723	0.8746							
1	ABDIFD	0.9817	0.9501	0.9183	0.884	0.8725	0.8796	2	6	6	6	5	4	29
2	ABDIFR	0.9818	0.9521	0.9192	0.8849	0.8724	0.8798	1	5	5	5	6	3	25
3	FITFD	0.7611	0.7888	0.8184	0.8114	0.821	0.8582	8	8	8	8	8	8	48
4	FITFR	0.7612	0.7893	0.8187	0.8119	0.8214	0.8585	7	7	7	7	7	7	42
5	IPTFD	0.955	0.9632	0.9305	0.9071	0.8948	0.8757	5	1	1	3	3	5	18
6	IPTFR	0.9546	0.9628	0.9304	0.907	0.8947	0.8755	6	2	2	4	4	6	24
7	STOFD	0.9592	0.9535	0.9284	0.9149	0.9039	0.9203	4	4	4	1	1	1	15
8	STOFR	0.9594	0.9536	0.9285	0.9144	0.9035	0.9198	3	3	3	2	2	2	15
MAXIMUM		0.9818	0.9632	0.9305	0.9149	0.9039	0.9203							
MINIMUM		0.7611	0.7888	0.8184	0.8114	0.821	0.8582							

Source: Computed by Researchers

A look at Table 7 reveals that the selected funds depicted satisfactory RSQ values over the years. For pharmaceutical funds, RSQ ranged from 0.7661 to 0.9511, whereas for technology funds, RSQ was between 0.7611 and 0.9818. Direct plans of pharma funds showed more RSQ values than their regular plans. However, that is not the case with technology funds. Here, only the direct plan of IPTFD had a higher RSQ than its regular plan (IPTFR) on an overall basis. In terms of overall performance consistency, NIPFD stood first for pharma funds. STOFD and STOFR were the best performers in the technology fund category on an overall basis. Nevertheless, the chosen funds did very well in the diversification aspect within the available scope in the concerned sector.

CONCLUSION

Based on research questions, the summarised findings are presented below

- **Risk-return performance:** Direct plans performed better than regular plans in every period. SHCOFD (pharma) and STOFD (technology) were the best overall. All funds outperformed their benchmarks consistently.
- **Stock selection skill:** All alpha values were positive (range 0.03 to 1.16), confirming that fund managers had good stock-picking abilities.
- **Defensive or aggressive behaviour:** All beta values were below 1 (range 0.61 to 0.92), meaning all funds behaved defensively compared to their benchmarks.
- **Diversification:** R-squared values ranged from 0.76 to 0.98, indicating satisfactory diversification within each sector.

LIMITATIONS OF THE STUDY

The main limitations of the present research work are listed below:

- The performance of the chosen pharmaceutical and technology funds is assessed in this research work using only a few conventional metrics. Numerous additional techniques exist.
- Even though there are numerous sectoral funds in the Indian mutual fund business, this analysis only looks at two: technology and pharmaceuticals.
- Over the study period, fund managers may have changed. But it has not been considered.

SCOPE FOR FURTHER RESEARCH

The researchers may focus on the following areas:

- Future research can examine how these funds perform in various market stages, including recessions and turnarounds.
- A greater understanding of cost-effectiveness can be obtained by comparing returns from direct and regular plans across sectors with an emphasis on expense ratios.
- Investors' attitudes and comprehension capabilities can be better understood by researching how they decide between direct and regular plans.
- Researching fund managers and their tactics in various industries may be an area of research.
- Comparison between sectoral funds and other equity funds may be an area of research.

DISCLOSURE: None of the funds mentioned in the research work are owned by the researchers.

DISCLAIMER: The researchers' opinions are meant to be instructive and suggestive. Before making a final decision, readers and investors should consult their financial experts or use their own discretion. In no event should the researchers be held accountable for readers' or investors' monetary or other losses.

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