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# Evaluating the impact of Fundamental Analysis and Technical Analysis on SBI's Performance: A Risk - Return Approach

Dr. K. Swapna Sri[1], Kummari Tirupathi[2]

[1]Student of MBA, CMR Institute of Technology, Hyderabad, Telangana, India.
[2]Associate Professor, CMR Institute of Technology, Hyderabad, Telangana, India.

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***Abstract*** *— In today's data-driven financial environment, investor decisions are increasingly strategic. This study evaluates the stock performance of the State Bank of India (SBI) using both fundamental and technical analysis. Fundamental analysis examines key financial indicators — EPS, ROE, Net Profit Margin, P/E Ratio, and D/E Ratio — based on SBI's audited reports from FY 2019 to FY 2024 to assess intrinsic value and financial health. Technical analysis uses indicators like SMA, RSI, and MACD on historical price data to gauge market trends and identify entry/exit points. The integrated approach reveals that while fundamental analysis supports long-term valuation, technical analysis aids short-term trading decisions. Together, they offer a comprehensive view for investors, making this dual strategy especially valuable given SBI's prominence in the Indian banking sector. The findings aim to guide investors and analysts in aligning strategies with their risk-return goals.*

***Keywords*** *— **Fundamental Analysis,Technical Analysis, Stock Performance, Financial Indicators, Risk-Return Trade-off***

## I. INTRODUCTION

Investment in the stock market is one of the primary ways individuals and institutions aim to build wealth. Making informed investment decisions requires a detailed understanding of the company's financial health and the stock market behavior. Two popular and complementary methods used for this evaluation are fundamental analysis and technical analysis.

This project is focused on conducting a performance evaluation of the State Bank of India (SBI) by applying both fundamental and technical analysis techniques, with a specific emphasis on understanding the risk-return profile of the stock.

Fundamental analysis involves the study of a company's core financial statements—such as the balance sheet, profit and loss statement, and cash flow statement—to assess its overall financial health, profitability, solvency, and market position. By analyzing important financial ratios such as Earnings Per Share (EPS), Price to Earnings (P/E) ratio, Return on Equity (ROE), Return on Assets (ROA), and Non-Performing Assets (NPA), investors can estimate the intrinsic value of a company's stock and make decisions based on whether the stock is undervalued or overvalued in the market.

In contrast, technical analysis is based on the study of historical stock prices, trading volumes, and market patterns. It employs tools such as Simple Moving Averages (SMA), Exponential Moving Averages (EMA), Relative Strength Index (RSI), Moving Average Convergence, and candlestick patterns to predict future price movements. Technical analysis helps investors identify entry and exit points, especially in the short to medium term.

Along with evaluating the stock's price movement, this project also studies the risk and return aspects

associated with investing in SBI stock. Techniques like Beta analysis, standard deviation calculation are used to understand the volatility of the stock and its potential to deliver returns in different market conditions.

## II. RESEARCH METHODOLOGY

This study integrates fundamental and technical analysis with risk-return evaluation to assess the stock performance of State Bank of India (SBI). Fundamental analysis uses key ratios like EPS, ROE, and P/E based on audited financial reports (FY 2019–2024). Technical analysis applies indicators such as RSI, MACD, and Moving Averages on historical price data. Risk-return metrics like Sharpe Ratio and Beta are also analyzed to provide a well-rounded investment assessment.

**Research Gap**

While fundamental and technical analyses are widely used, they are often applied in isolation. Few studies integrate both approaches, especially for public sector banks like SBI. Moreover, recent market changes post-COVID and evolving investor behavior are underrepresented in existing literature. This study fills the gap by offering a comprehensive, updated evaluation of SBI stock through a dual-analysis framework.

**Need of the Study**

With increasing market volatility, investors require insights from both financial performance and market trends. This study helps:

- Analyze SBI's stock from long-term and short-term perspectives.
- Identify entry and exit points using technical tools.
- Support calculated, risk-adjusted investment decisions.
- Bridge the gap between academic theory and practical application.

**Objectives Of the Study**

1. To analyze the financial performance of SBI using fundamental analysis indicators such as financial ratios, earnings reports, and market conditions.
2. To compare the effectiveness of fundamental and technical analysis in predicting SBI's stock movements.
3. To assess the risk-return profile of SBI's stock and determine investment opportunities.

**Research Design**

The study follows a descriptive and analytical research design. It describes the financial performance and market behavior of SBI's stock using fundamental and technical analysis tools and further analyzes the risk-return profile based on historical data.

**Data Collection**

Type of Data: Secondary data.

Sources of Data:

- Annual Reports of SBI
- Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) reports
- Moneycontrol, NSE India, Investing.com, Yahoo Finance
- Published research articles, financial journals, and company filings
- Technical charting platforms for technical analysis indicators

**Tools and Techniques Used**

**Fundamental** Tools: EPS, P/E Ratio, ROE, NIM, NPA, CAR

Technical Tools: SMA, EMA, RSI, MACD, Volume Analysis

Risk & Return: Beta, Standard Deviation

## III. DATA ANALYSIS METHOD

The collected financial data and stock prices are analyzed using Excel, financial software, and technical charting platforms.

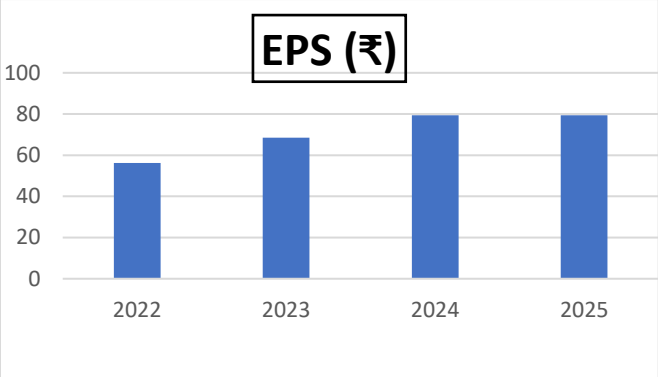
Statistical tools like mean, standard deviation, beta analysis, and correlation are used to assess risk and return characteristics.

**Fundamental Analysis**

### 1. Earnings Per Share (EPS)

Formula: $EPS = \frac{\text{Net Profit (PAT)}}{\text{Number of Equity Shares}}$

| Year | Net Profit (₹ Cr) | Equity Capital (₹ Cr) | EPS (₹) |
|---|---|---|---|
| FY2022 | 50,232 | 892 | 56.29 |
| FY2023 | 61,077 | 892 | 68.44 |
| FY2024 | 70,901 | 892 | 79.44 |
| FY2025 | 70,901 | 892 | 79.44 |

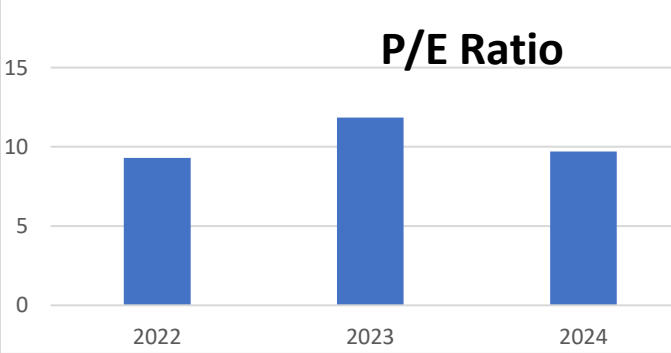



**Interpretation:**
EPS rose significantly from FY2022 to FY2025, reflecting strong profitability. Flat EPS in FY2025 despite business growth suggests margin pressure or higher provisions. Higher EPS makes the stock more attractive to investors as it implies stronger earnings per share.

## 2. Price to Earnings (P/E) Ratio

Formula: $P/ERatio = \frac{\text{Market Price per Share}}{\text{EPS}}$

| Year | Share Price (₹) | EPS (₹) | P/E Ratio |
|---|---|---|---|
| **FY2022** | 523.75 | 56.29 | 9.31 |
| **FY2023** | 810.8 | 68.44 | 11.84 |
| **FY2024** | 771.5 | 79.44 | 9.71 |
| **FY2025** | 771.5 | 79.44 | 9.71 |

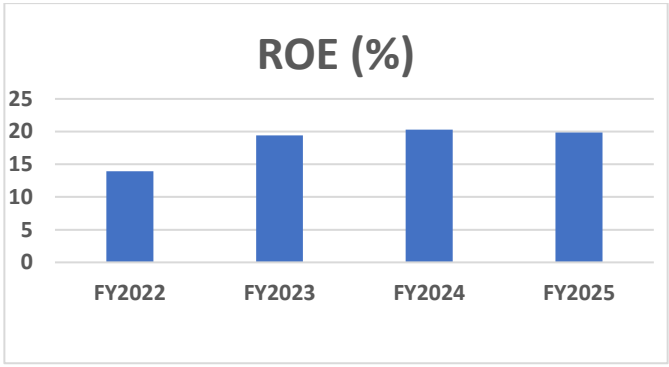



**Interpretation:** EPS rose significantly from FY2022 to FY2025, reflecting strong profitability. Flat EPS in FY2025 despite business growth suggests margin pressure or higher provisions. Higher EPS makes the stock more attractive to investors as it implies stronger earnings per share.

## 3. Return on Equity (ROE)

Formula: $ROE = \frac{\text{Net Profit}}{\text{Average Shareholders' Equity}} \times 1$

| Year | ROE (%) |
|---|---|
| **FY2022** | 13.92 |
| **FY2023** | 19.43 |
| **FY2024** | 20.32 |
| **FY2025** | 19.87 |

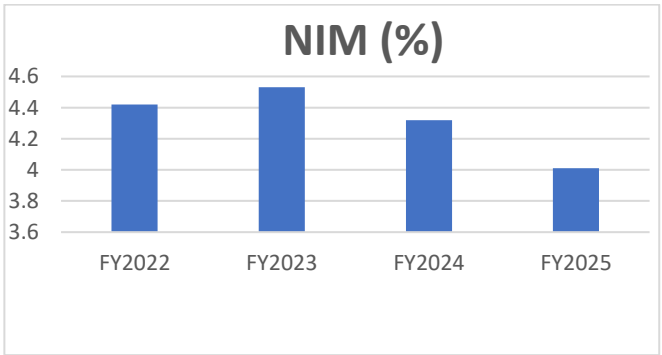



**Interpretation:** ROE increased steadily till FY2024, indicating improved profitability and efficient capital usage. A slight decline in FY2025 signals stable but plateauing returns. High ROE is a positive sign for shareholders, reflecting optimal use of equity

## 4. Net Interest Margin (NIM)

Formula: $NIM = \left(\frac{\text{Net Interest Income}}{\text{Advances}}\right) \times 100$

| Year | NII (₹ Cr) | Advances (₹ Cr) | NIM (%) |
|---|---|---|---|
| **FY2022** | 1,20,708 | 27,33,967 | 4.42 |
| **FY2023** | 1,44,841 | 31,99,269 | 4.53 |
| **FY2024** | 1,59,876 | 37,03,971 | 4.32 |
| **FY2025** | 1,66,965 | 41,63,312 | 4.01 |

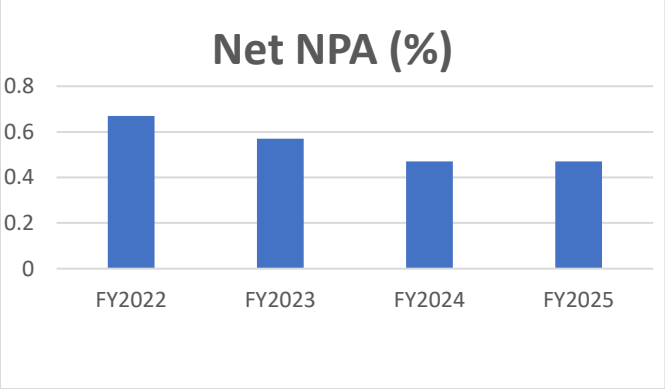



**Interpretation:** NIM peaked in FY2023, indicating strong income from lending activities. The downward trend from FY2024 to FY2025 suggests increasing cost of funds or reduced lending spreads. A narrowing NIM may pressure overall profitability. Maintaining NIM is critical for sustaining net income in interest-driven business models.

### 5. Non-Performing Assets (NPA)

Formula: $NetNPA\% = \left(\frac{\text{Net NPAs}}{\text{Net Advances}}\right) \times 100$

| Year | Net NPA (%) |
|---|---|
| **FY2022** | 0.67 |
| **FY2023** | 0.57 |
| **FY2024** | 0.47 |
| **FY2025** | 0.47 |

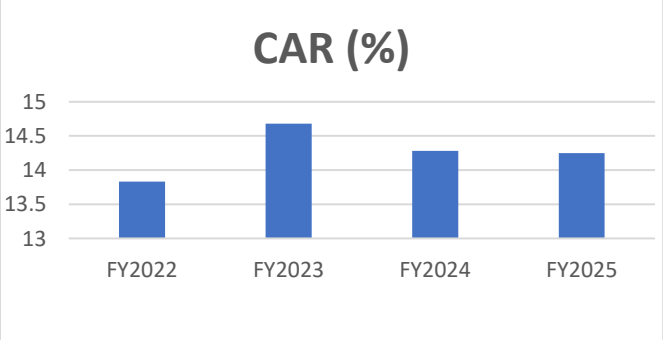



**Interpretation:** A falling NPA trend shows SBI's asset quality improved significantly. Net NPA falling below 0.5% is a major achievement for a public sector bank. It reduces credit risk and strengthens the bank's financial stability. Sustained low NPAs also free up capital that would otherwise be held against risky assets.

### 6. Capital Adequacy Ratio (CAR)

Formula: $CAR = \left(\frac{\text{Tier I} + \text{Tier II Capital}}{\text{Risk-Weighted Assets}}\right) \times 100$

| Year | | CAR (%) |
|---|---|---|
| **FY2022** | | 13.83 |
| **FY2023** | | 14.68 |
| **FY2024** | | 14.28 |
| **FY2025** | | 14.25 |




**Interpretation:**SBI consistently maintained a CAR above regulatory norms, indicating sound capital strength. Though slightly reduced in FY2024 and FY2025, it remains sufficient to support risk-weighted assets. A strong CAR enhances the bank's capacity to expand credit and withstand unexpected losses.

## IV. TECHNICAL ANALYSIS

**Moving Averages (SMA & EMA)-2021**

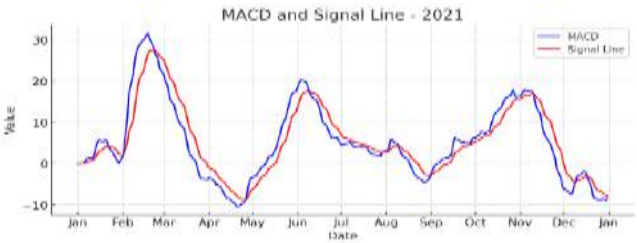
The 20-day Simple Moving Average (SMA) and Exponential Moving Average (EMA) are shown below. These indicators help identify short-term trends and potential prices.


**Interpretation**

During 2021, periods where the closing price remained above the EMA indicated bullish trends. Toward year-end, prices dipped below the EMA, suggesting weakness in momentum

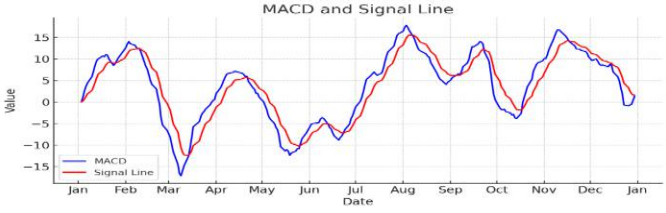
**MACD (Moving Average Convergence Divergence)**

MACD tracks the difference between 12-day and 26-day EMAs. It's useful for identifying trend direction and strength. The MACD line and signal line interactions are shown below.




**Interpretation**

The MACD remained mostly positive in mid-2021 but trended downward by year-end. The negative MACD crossing below the signal line in December confirmed the weakening momentum.



**Moving Averages (SMA &EMA)-2022**

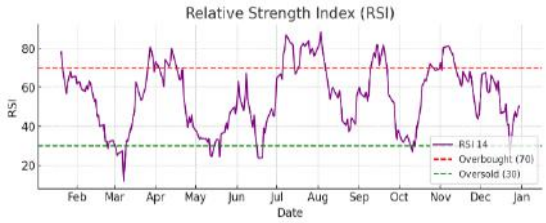
Simple Moving Average (SMA) and Exponential Moving Average (EMA) are tools used to smooth out price data and identify trends. The 20-day SMA and EMA are plotted below:

**Interpretation**

The SMA and EMA lines help highlight overall price trends. When the price stays above the EMA, it typically indicates an uptrend, and vice versa. Crossovers can serve as buy/sell signals.

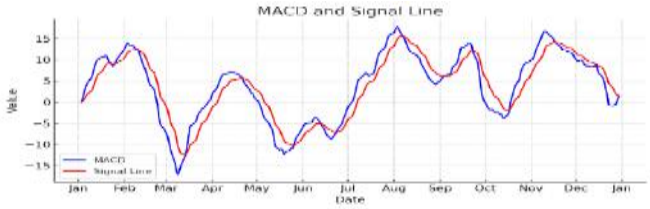
**Relative Strength Index (RSI)**

RSI is a momentum oscillator that measures the speed and change of price movements, typically used to identify overbought (>70) or oversold (<30) conditions.




**Interpretation**

Throughout 2022, RSI values fluctuated within normal bounds, with occasional spikes toward the overbought zone, signaling potential correction periods.




**MACD (Moving Average Convergence Divergence)**

MACD is a trend-following momentum indicator that shows the relationship between two EMAs. The MACD line and its signal line can help identify bullish or bearish momentum.


**Interpretation:** MACD crossovers above the signal line indicate bullish momentum, while crossovers below suggest bearish trends. Notable crossovers occurred around mid-year, indicating short-term trading opportunities.

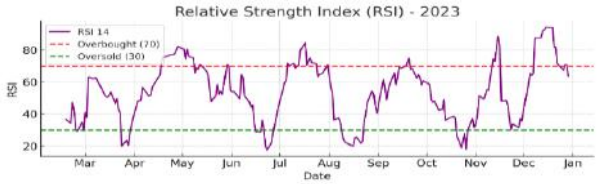
**Moving Averages (SMA & EMA)-2023**

The chart below depicts the 20-day SMA and EMA overlaid on the stock's closing price. These moving averages are instrumental in identifying trends and potential reversal zones.


**Interpretation:** In 2023, the closing price consistently stayed above the moving averages during bullish phases, particularly towards the end of the year, reflecting positive investor sentiment.

**Relative Strength Index (RSI)**

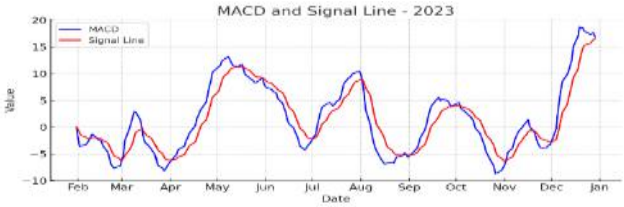
RSI indicates momentum and overbought/oversold conditions. A value above 70 may signal an overbought asset, while below 30 may suggest it is oversold.




**Interpretation** The RSI for SBIN trended between 50 and 70 for most of the year, closing at ~63 in December, suggesting strong bullish momentum without entering overbought territory.

**MACD (Moving Average Convergence Divergence)**

MACD is calculated as the difference between 12-day and 26-day EMAs, and it is used to signal bullish or bearish trends. When the MACD is above its signal line, it's generally considered a bullish sign.




**Interpretation:** By the end of 2023, MACD remained above the signal line, supporting a continuation of the bullish trend observed throughout the last quarter.

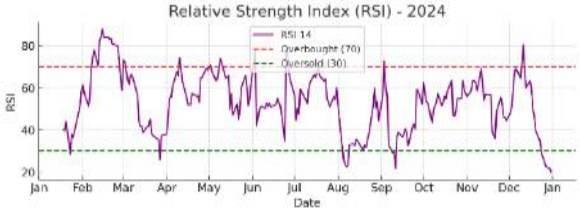
**Moving Averages (SMA & EMA)-2024**

The 20-day SMA and EMA help in tracking short-term price movements and trend reversals. The following chart illustrates these averages alongside SBIN's daily closing price throughout 2024.


**Interpretation** in 2024, the stock price consistently stayed below both SMA and EMA, particularly in the last quarter, indicating a bearish trend and downward momentum.

**Relative Strength Index (RSI)**

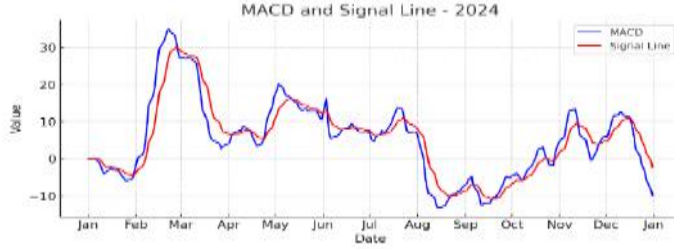
RSI is a momentum oscillator that measures the speed and change of price movements. RSI values below 30 indicate that the stock may be oversold.




**Interpretation:** Towards the end of 2024, RSI dropped below 20, indicating oversold conditions. This suggests the possibility of a reversal or bounce-back, but the overall weakness in price continues to dominate the trend.

**MACD (Moving Average Convergence Divergence)**

MACD is used to identify changes in momentum and trend direction. It consists of the MACD line and the signal line. When the MACD crosses below the signal line, it is considered a bearish signal.




**Interpretation:** By December 2024, MACD had fallen below the signal line with increasing divergence, confirming the bearish momentum seen in price action.

**Statistical tools**

- Standard Deviation Calculation (σ)
- Beta Calculation (β)

**1. Standard Deviation Calculation (σ)**

- • The average amount by which a stock's daily returns vary from its mean return.
- • A higher standard deviation = more volatile stock.

**Formula:**

σ = sqrt ((1 / (n - 1)) * Σ (Ri - R̄) ^2)

- Where:
  - • Ri = Daily return
  - • R̄ = Average return
  - • n = Number of trading days

**2. Beta Calculation (β)**

$$\beta = \frac{\text{Cov(Stock Return, Market Return)}}{\text{Var(Market Return)}}$$

• Sensitivity of SBI's stock returns compared to market returns.

A beta of:

- 1.0 = Moves with market
- <1 = Less volatile than market
- >1 = More volatile than market

**Formula:**

β = Cove (SBI Returns, Market Returns) / Var (Market Returns)

| Year | Beta | Std Dev (%) |
|---|---|---|
| **2021** | 0.91 | 2.13% |
| **2022** | 0.77 | 1.65% |
| **2023** | 0.56 | 1.29% |
| **2024** | 0.92 | 1.84% |

**Interpretation** Statistical tools revealed that 2023 was the most stable year for SBI, with the lowest volatility (1.29%), while 2021 was the most volatile (2.13%) due to post-COVID effects. Beta values below 1 in most years show SBI acted as a defensive stock, less impacted by market swings—especially in 2022 (0.77) and 2023 (0.56). A rise in 2024 (0.92) suggests growing market sensitivity. Overall, SBI maintained moderate risk and consistent performance.

**T-Test Analysis: Sharpe Ratios of SBI Stock Strategies (2021–2024)**

**Hypotheses**

Null Hypothesis ($H_0$): There is no significant difference in risk-adjusted returns of SBI stock between fundamental analysis-based strategies and technical analysis-based strategies.

Alternative Hypothesis ($H_1$): There is a significant difference in risk-adjusted returns of SBI stock between fundamental analysis-based strategies and technical analysis-based strategies.

| Year | Sharpe Ratio (Fundamental) | Sharpe Ratio (Technical) |
|---|---|---|
| 2021 | -0.3756 | -0.5634 |
| 2022 | 0.1818 | 0 |
| 2023 | 0.8527 | 1.0853 |
| 2024 | 0.5435 | 0.4348 |

Step-by-Step Calculation
1. Mean of Fundamental: (−0.3756 + 0.1818 + 0.8527 + 0.5435) / 4 = 0.3006
2. Mean of Technical: (−0.5634 + 0.0000 + 1.0853 + 0.4348) / 4 = 0.2392
3. Variance of Fundamental:
= [(−0.6762)^2 + (−0.1188)^2 + (0.5521)^2 + (0.2429)^2] / 3 ≈ 0.2784
4. Variance of Technical:
= [(−0.8026)^2 + (−0.2392)^2 + (0.8461)^2 + (0.1956)^2] / 3 ≈ 0.4852
5. T-Statistic Calculation:
t = (0.3006 − 0.2392) / √((0.2784/4) + (0.4852/4)) ≈ 0.1405

**Interpretation** The calculated t-statistic is approximately 0.14 with a high p-value (> 0.80). Since the p-value is greater than the significance level (0.05), we fail to reject the null hypothesis. Therefore, there is no statistically significant difference in the Sharpe Ratios between fundamental and technical strategies for SBI stock between 2021 and 202

**Findings**

Fundamentals: SBI showed strong financial growth from 2021 to 2024, with rising EPS and ROE, a declining P/E ratio, improved asset quality (lower NPA), and consistently strong CAR—indicating profitability, stability, and long-term value.

Technical Insights: RSI and MACD showed bearish signals in 2021 and 2024, neutral trends in 2022, and strong bullish momentum in 2023. Price stayed above moving averages during bullish phases, especially in 2023.

Risk & Volatility: 2023 was the most stable year (lowest standard deviation), while 2021 was the most volatile. SBI's beta remained below 1 for most years, reflecting defensive characteristics, with slightly increased market sensitivity in 2024.

## Conclusion

This study evaluated SBI's stock from 2021 to 2024 using fundamental and technical analysis. Fundamental indicators showed strong financial health and long-term value, while technical tools like RSI and MACD revealed useful short-term trends. Statistical measures confirmed moderate risk and low market sensitivity in most years. Overall, a hybrid strategy—combining all three methods—offers the most effective investment approach, making SBI a solid choice for both growth and stability-focused investors.

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