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# Analyzing the Relationship Between Risk and Return in the Equity Stocks of Ten Selected Companies Over Five years: An In –Depth Study

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**Abstract:**
This study delves into the relationship between risk and return in the equity stocks of ten selected companies over five years. Employing comprehensive data analysis and statistical methods, including beta analysis and Sharpe ratio assessments, it aims to uncover patterns and correlations. The findings offer valuable insights for investors and portfolio managers, aiding in informed decision-making and risk management strategies.

**KEYWORDS**: Risk And Return, Standard Deviation & average

## 1. Introduction:

In the dynamic landscape of the stock market, investor decisions hinge significantly on predictions. Investments inherently involve a balance of risk and return, necessitating a nuanced understanding of both. To maximize rewards, it is crucial to comprehend and analyze risk, as it directly influences decision-making. While every investment carries some level of risk, optimal investments offer high returns with minimal associated risk Acquiring market knowledge is essential for effective risk analysis, aiding in informed decision-making and the implementation of preventive measures. Risk calculation involves assessing volatility and the variance between actual and expected returns. The analysis of risk and return determines the level of risk associated with an investment in relation to its potential rate of returns Diversification emerges as a strategy to mitigate overall portfolio risk but comes with the trade-off of limiting potential returns. While concentrating investments in a single market sector may yield higher returns if that sector outperforms, the lack of diversification exposes the portfolio to greater vulnerability if the sector loses appeal. The effectiveness of diversification diminishes as the returns of two assets become more strongly correlated.

## 2. Statement of the Problem:

Relationship between risk and return is inherently connected, with risk representing the chance of and the investment meeting or falling short of expected profits. A thorough risk and return analysis aims to identify efficient portfolios, optimizing returns for a given level of risk. This analytical approach is crucial for assessing investment opportunities in a manner relevant to financial experts. In today's diverse investment landscape, investors face choices that prompt uncertainty about whether to prioritize higher returns or lower risk. Utilizing risk and return analysis empowers investors to evaluate and

manage risk in their investment decisions. These analytical tools serve as a guide for individuals in selecting assets based on their risk and return profiles. This study endeavors to equip investors with the insights necessary to make informed decisions by considering risk and return in their portfolio choices.

## 3. Needs for the Study:

The study on analyzing the relationship between risk and return in the equity stocks of ten selected companies over five years is essential for investors and portfolio managers. It provides valuable insights into long-term patterns and correlations, aiding in informed decision-making for asset allocation and risk management strategies. Additionally, it contributes to the academic understanding of finance and investment theory, offering empirical evidence and advancing knowledge in this field.

## 4. Objectives of the Study:

1. To convey the primary focus of the study: examining the relationship between risk and return in equity stocks.
2. To specify the scope of the analysis: ten selected companies over a period of five years.
3. To highlight the depth of the study, indicating that it will involve comprehensive research and analysis.

## 5. Review of Literature:

In her 2017 study titled "Risk Return Analysis of Equity Investments in Indian Stock Market (Based on NIFTY)," Mrs. R. Thirugnanasoundari aims to explore the potential for investors in terms of returns and risk within various sectors of the Indian economy. The study's objective is to analyze variations in the overall portfolio of a selected stock index to enhance investment opportunities. Notably, during the study period, Infosys emerged with the highest share price (₹3283) in the Information Technology sector, according to share price research. The study recommends investors consult with a financial planner to avoid making suboptimal investment decisions. Abhishek .V (2018) conducted a research study titled "A STUDY ON RISK AND RETURN ANALYSIS OF SELECTED STOCKS IN BSE SENSEX" with the objective of analyzing the risk and return associated with chosen stocks to identify the most suitable stocks for investment. The study employed Standard deviation and beta values to measure the risk of selected stocks in the Sensex. It suggested that opting for short-term security investments is an effective strategy to mitigate risk compared to long-term investments. Additionally, the research advocated for the use of Sharpe's index model, developed by William Sharpe, as an optimal investment approach. This model demonstrated that investors could diversify their risk by investing in a portfolio of securities. In their 2018 study titled "A STUDY ON RISK & RETURN ANALYSIS OF SELECTED SECURITIES IN INDIA," Dr. P. Subramanian and Dr. NallaBala Kalyan aimed to provide investors with a fundamental understanding of mutual fund investing, encouraging them to explore areas with the potential for optimal returns. The research delves into how businesses strategically diversify their operations across industries to maximize revenue while mitigating risk. While acknowledging the challenge of establishing a definitive pattern for price fluctuations, the study primarily focuses on market volatility and its correlation with Scrip pricing. I n their 2021 study titled "A COMPARISON STUDY ON RISK AND RETURN ANALYSIS OF SELECTED COMPANIES WITH BENCHMARK INDEX IN NSE," Mrs. Rahul Moolbharathi and Mrs. Tukaram Sugandi aimed to provide investors with insights into various statistical methodologies for assessing stock risk and return. The research focuses on

comparing Index performance with the Benchmark index, aiming to identify the sectors most conducive to risk and return investing. The primary objective involves measuring the statistical variation of stocks and indices using Regression Analysis. Notably, the study highlights that HDFC Bank exhibits higher risk and returns compared to other stocks, while all equities in the portfolio have a beta of one, indicating efficiency in terms of risk and return within the selected market stocks. In their 2021 study titled "A STUDY ON RISK AND RETURN ANALYSIS OF FMCG COMPANIES IN INDIAN STOCK MARKET," Mr. S. Sathish and Ms. A. Nagarathinam aimed to analyze the risk and return dynamics within the selected NIFTY FMCG sectors. The research, employing descriptive research methods, focuses on identifying the optimal security for investors seeking high returns with minimal risk. Notably, the study reveals that ITC Ltd. exhibits the lowest return among FMCG companies. The authors emphasize the trade-off between high returns and high risk for investors, cautioning against stocks with higher beta values due to their significant market risk that cannot be effectively diversified. (Awalakki & Archanna, 2023) This non-empirical research paper delves into the interplay between investor attention and financial market volatility, leveraging insights from behavioural finance. It explores the determinants of investor attention, including cognitive biases and social factors, and analyses their impact on market dynamics, offering a thorough review of existing literature and theoretical frameworks to enhance comprehension of this intricate relationship. (Abedi, Dargiri, &Rasiah, 2012). This study emphasizes the importance of the risk-return relationship in aiding investors and organizations in decision-making. By reviewing theories, empirical studies, and performance measures like Treynor, Sharpe, and Jansen Indices derived from the Capital Asset Pricing Model (CAPM), it aims to enhance the understanding of industry sectors' risk-return constructs for improved decision support. (Awalakki & Archanna, 2023). This study explores the impact of overconfidence biases on investment portfolios, examining cognitive and emotional mechanisms such as illusion of knowledge and emotional attachment. Rooted in behavioral finance literature, it highlights consequences like excessive trading and loss aversion, proposing mitigation strategies like diversification, passive investing, and behavioral coaching for more informed and rational portfolio decisions. (Subramanyam, Nalla, &Kalyan, 2018). The study aims to educate investors on mutual funds, emphasizing the potential for maximizing returns amidst India's growing capital market. It sheds light on investor awareness, risk tolerance, and preferences, showcasing the role of mutual funds in diversifying investments for optimal returns and risk mitigation.

## 6. Research Methodology

### 6.1. Sources of data collection

The study utilized secondary data for its research, sourced from various outlets such as the NSE website, publications, journals, and other relevant sources. The research design employed for this study is descriptive in nature.

### 6.2. Sample Size

The research comprises NIFTY IT companies listed on the NSE.

### 6.3. Statistical tools and techniques

**Return**

Returns in a company are influenced by various factors, causing fluctuations in its share price. Market return signifies the profit gained over a specific duration, with returns presenting as positive or negative outcomes. Positive returns indicate profit, while negative returns signify losses. The return calculation

formula is (Closing price – Opening price) / Opening price * 100.

**Standard deviation:**

The standard deviation of a dataset gauges its spread relative to the mean, calculated as the square root of the variance. A stock is considered volatile if it has a high standard deviation, while a stable blue-chip stock typically exhibits a low standard deviation.

The standard deviation is equal to the square root of the variance. The variance ($\sigma$^2) is computed as the sum of the squared differences between each data point (Ri) and the mean, divided by n-1.

**Average**:

The average, a statistical measure in finance, is calculated by summing values and dividing by the total number of observations, representing a central tendency or typical value.

## DATA ANALYSIS AND INTERPRETATION

- Find the standard deviation for stocks.
- Average returns of industries.

**Formula for calculating the returns**

$$Return_i = \frac{Ending\ price_i - Begining\ price_i}{Begining\ price_i}$$

**Formula for calculating the standard deviation**

$$SD_i = \sqrt{Variance_i}$$

$$Variance\ (\sigma) = \frac{\sum (R_i - R_j)^2}{n-1}$$

**Formula for getting average returns of the stocks.**

$$Average\ return\ for\ i; Stock = \frac{\sum Stock\ Returns_i}{n}$$

**Note: n = Number stocks**

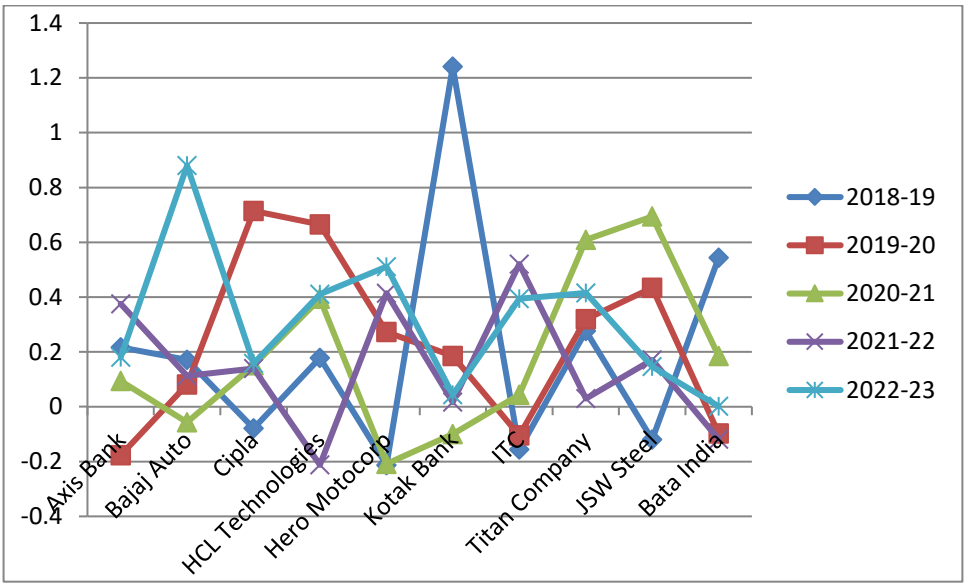
**Data Analysis and Interpretation**

**Table No:** 1

Table showing the five year data returns of the companies

| COMPANINES | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
|---|---|---|---|---|---|
| Axis Bank | 0.2164 | -0.1772 | 0.0936 | 0.3760 | 0.1805 |
| Bajaj Auto | 0.1708 | 0.0813 | -0.0565 | 0.1128 | 0.8797 |
| Cipla | -0.0794 | 0.7144 | 0.1514 | 0.1396 | 0.15837 |
| HCL Technologies | 0.1781 | 0.6654 | 0.394 | -0.2121 | 0.4109 |
| Hero Motocorp | -0.2129 | 0.2729 | -0.2083 | 0.4138 | 0.5114 |
| Kotak Bank | 1.2406 | 0.1847 | -0.0999 | 0.0172 | 0.0442 |
| ITC | -0.1560 | -0.1048 | 0.0433 | 0.5205 | 0.3937 |
| Titan Company | 0.2759 | 0.3192 | 0.6095 | 0.02977 | 0.4149 |
| JSW Steel | -0.1196 | 0.4338 | 0.6940 | 0.1708 | 0.1460 |
| Bata India | 0.5441 | -0.0981 | 0.1848 | -0.1188 | 0.0013 |

**CHART NO: 1** The five year data returns of the companies




**Interpretation of data:**

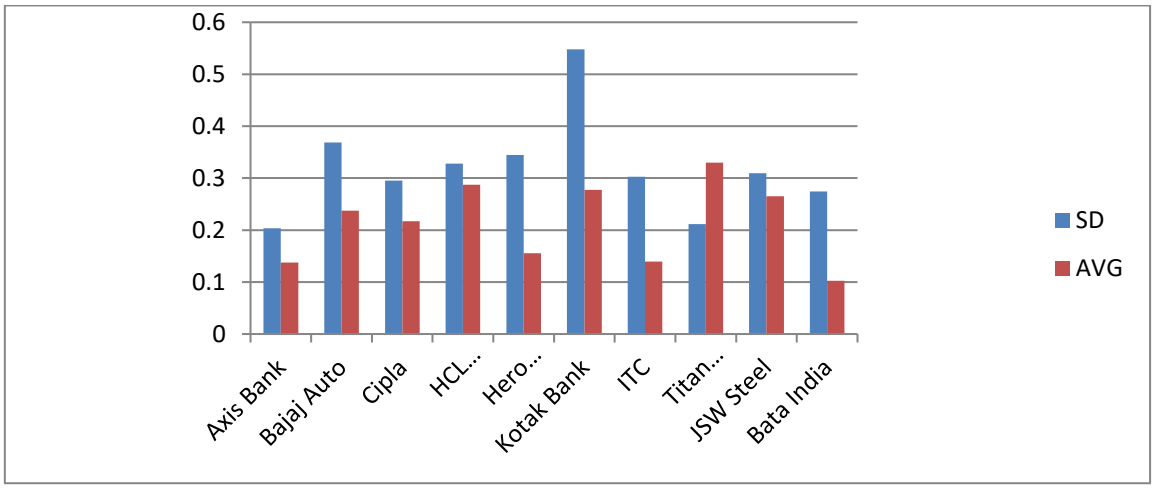
Analyzing the provided data reveals several interesting trends and insights into the performance of the listed companies over the five-year period: Overall Market Trends: Most of the companies show positive returns over the five-year period, indicating overall growth in the market during this time frame. However, the magnitude and consistency of these returns vary significantly between companies.2. Performance of Individual Companies: Axis Bank: Despite fluctuations, Axis Bank shows a general upward trend in returns, with a significant increase in 2021-22.Bajaj Auto Shows consistent positive returns over the years, with a notable increase in 2022-23.Cipla Mixed performance with periods of both positive and negative returns, indicating volatility in the pharmaceutical sector.HCL Technologies: Starts strong but experiences a dip in 2021-22 before recovering in 2022-23.Hero Motocorp: Volatile performance but ends with positive returns in the later years, suggesting resilience despite challenges. Kotak Bank: Strong initial performance followed by fluctuating returns, ending with modest gains.ITC

**TABLE NO: 2**

**Table showing the standard deviation & average**

| COMPANINES | standard deviation | average |
|---|---|---|
| Axis Bank | 0.203666 | 0.13786 |
| Bajaj Auto | 0.368529 | 0.23762 |
| Cipla | 0.295377 | 0.216874 |
| HCL Technologies | 0.328233 | 0.28726 |
| Hero Motocorp | 0.344687 | 0.15538 |
| Kotak Bank | 0.547903 | 0.27736 |
| ITC | 0.302504 | 0.13934 |
| Titan Company | 0.211252 | 0.329854 |
| JSW Steel | 0.309631 | 0.265 |
| Bata India | 0.274426 | 0.10266 |

**CHART NO: 2** The standard deviation & average




**Interpretation:**

This new table seems to provide the standard deviation (SD) and average (AVG) of the annual returns for the same set of companies listed previously. Here's an interpretation, Standard Deviation (SD) This metric measures the dispersion or variability of the annual returns around the average return for each company. A higher standard deviation indicates greater volatility in the returns, while a lower standard deviation suggests more stability. Average (AVG): This represents the mean annual return for each company over the specified time period. It provides a measure of the central now, let's interpret the data for each company. Axis Bank: Has a moderate standard deviation, indicating some fluctuation in returns around the average. The average return is relatively low compared to some other companies. Bajaj Auto: Exhibits a higher standard deviation, suggesting more volatile returns compared to some peers. However, the average return is relatively higher, indicating potential opportunities.

**Findings:**

Here are the findings based on the provided data Performance Trend: Axis Bank Shows fluctuating performance over the years but generally ends with positive returns, with moderate volatility. Bajaj Auto Exhibits overall positive performance with significant volatility, especially notable in 2022-23. Cipla Displays mixed performance with periods of both positive and negative returns, with moderate volatility. HCL Technologies Starts strong but experiences a decline in 2021-22 before recovering in 2022-23, with moderate to high volatility. Hero Motocorp Shows volatility but ends with positive returns in the later years, with moderate to high volatility. Kotak Bank Starts with exceptionally high returns in 2018-19 but experiences fluctuating performance afterward, with high volatility. ITC Exhibits improving performance over the years, with a significant increase in 2021-22 and moderate volatility. Titan Company Generally positive performance with moderate volatility, especially notable in 2020-21.JSW Steel: Displays mixed performance with overall positive returns and moderate volatility.

**Suggestions:**

Risk Management Consider the risk profile of each company before making investment decisions. Companies with higher standard deviations, such as Kotak Bank and Bajaj Auto, may require more careful risk management strategies. Diversify your portfolio to spread risk across companies with different risk profiles. This can help mitigate the impact of high volatility in individual stocks. Investment Strategy Evaluate the risk-return trade-off for each company. Higher average returns may

come with higher volatility, as seen with companies like Bajaj Auto and Titan Company. For investors seeking stability, focus on companies with lower standard deviations and moderate to high average returns, such as Axis Bank, Cipla, and HCL Technologies. Long-Term Perspectiv Consider the long-term performance and growth prospects of each company. A company with consistent positive returns over the years, even with moderate volatility, may offer good long-term investment potential. Analyze the fundamental factors driving each company's performance, such as market position, revenue growth, profitability, and industry trends .Monitoring and Adjustments Regularly monitor the performance of your investments and adjust your portfolio as needed based on changing market conditions and company fundamentals.

**Conclusion:**

Based on the provided data: Volatility and Performance Companies with higher standard deviations have more volatile returns. Examples include Bajaj Auto, HCL Technologies, and Hero Motocorp. Risk vs. Return Higher standard deviations imply higher risk. Companies like Bajaj Auto and Titan Company offer potentially higher returns but also higher risk. Stability Companies with lower standard deviations, such as Kotak Bank and Titan Company, offer more stable performance. Diversification Investors should diversify by considering a mix of companies with different risk-return profiles to balance risk and return object Certainly: Volatility vs. Stability High standard deviation indicates volatility, seen in companies like Bajaj Auto and HCL Technologies, while lower values, as in Kotak Bank and Titan Company, suggest stability.

**References**

1. Abedi , H. S., Dargiri, M. N., &Rasiah, D. (2012). A Review Study of Risk-Return Relationship and Performance Measures Comparing Different Industry Sectors. Australian Journal of Basic and Applied Sciences, 6(12),14-22.Retrieved from https://www.ajbasweb.com/old/ajbas/2012/Nov%202012/14-22.pdf
2. Abhishek.V (2018)A study on Risk and Return analysis of selected stocks in BSE SENSEX, Acharya Institute of Technology.
3. Awalakki , M., &Archanna . (2021). Impact of Economic and Financial Performance Indicators ratios on Determination of Stock Returns – A Study with reference to National Stock Exchange. PSYCHOLOGY AND EDUCATIO, 58(5 (2021)), 6665-6685. Retrieved from http://psychologyandeducation.net/pae/index.php/pae/article/view/6706
4. Awalakki , M., &Archanna. (2023). OVERCONFIDENCE BIAS AND ITS EFFECTS ON PORTFOLIO DECISIONS. International Journal of Creative Research Thoughts (IJCRT), 11(8), g74-g83. Retrieved from https://www.ijcrt.org/papers/IJCRT2308664.pdf
5. Awalakki, M. (2022). Neurotransmitters Impact on Emotional Responses and DecisionMaking in Investment: A Comprehensive Exploration. International Journal of Food and Nutritional Sciences, 11(5), 690-708. Retrieved from https://www.ijfans.org/uploads/paper/fb4237bf576c3b3020696d18585588f8.pd
6. Awalakki, M., &Archanna. (2021). A Study On Accounting Ratios And Stock Returns With Reference To National Stock Exchange Of India. Turkish Online Journal of Qualitative Inquiry, 12(7), 6858-6888. Retrieved from https://www.tojqi.net/index.php/journal/article/view/4940

7. Awalakki, M., &Archanna. (2023). Exploring the Dynamics of Investor Attention and Market Volatility: A Behavioral Finance Perspective. International Journal of Science and Research (IJSR), 12(8), 2245-2251. Doi:10.21275/SR23823155339
8. Awalakki, S. M. (2015). A Study on Investment Patterns and Awareness of Salaried Class Investors. INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH, 4(8), 348-350. Retrieved from https://www.worldwidejournals.com/international-journal-of-scientific research-(IJSR)/fileview.php?val=August_2015_1441174222__112.pdf
9. AWALAKKI, S. M. (2015). FINANCING DECISIONS: A CASE STUDY OF SELECTED CEMENT COMPANIES OF INDIA. International Journal of Advanced Research, 3(8). Retrieved from https://www.journalijar.com/uploads/701_IJAR-6789.pdf
10. Horne, V., & James, C. (2001). Financial Management and Policy. Prentice Hall Publishing.
11. Markowitz, H. (1952). Portfolio selection. Journal of Finance, 7(1), 77-91. Doi:https://doi.org/10.2307/2975974
12. Moolbharathi, R., &Sugandi, T. (2021). A Comparison Study on Risk and Return Analysis of Selected companies with Benchmark Index in NSE. International Journal of Business and Management Invention, 10(10), 04-13. Doi:DOI: 10.35629/8028- 1010010413
13. Mr. S. Sathish, Ms. A. Nagarathinam (2021) A Study on Risk and Return Analysis of FMCG companies in Indian stock market, Annals of R.S.C.B., ISSN:1583-6258, Vol. 24.
14. Subramanyam, P., Nalla, B., &Kalyan, N. B. (2018). A Study on Risk & Return Analysis of Selected Securities in India. International Journal of Engineering Technologies and Management Research, 5(4), 79-86. Doi:DOI: 10.5281/zenodo.124473