IJCRT.ORG ISSN : 2320-2882
INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)
An International Open Access, Peer-reviewed, Refereed Journal

AN EMPIRICAL STUDY ON FACTORS INFLUENCING MULTI-BAGGER RETURNS IN STOCKS LISTED IN INDIAN STOCK EXCHANGE.

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Abstract: This paper investigates the causal impact of individual stocks listed on the Indian Stock Exchange, focusing on those giving more than 7.2% returns over the past decade (2013-2023) – Multibagger Stocks. Utilizing independent variables such as historical price-to-earnings ratio (PE), operational efficiency (OPM), profitability metrics (return on capital employed and equity), growth indicators (sales and profit growth), and capital structure (debt-to-equity and price-to-book/cash flow ratios), the study aims to discern the principal determinants of long-term stock performance. Employing Multiple Regression Analysis, the research establishes the relationship between these variables and stock prices. It seeks to identify the primary drivers behind substantial wealth accumulation for investors and establish a hierarchy of importance for contemporary retail investors when making equity investment decisions.

***Index Terms* - Component, formatting, style, styling, insert.**

I. INTRODUCTION

The Indian stock market is undergoing a radical transformation, propelled by the digital revolution and its pervasive influence. Gone are the days of limited participation and complex procedures; today, discount brokerage platforms, ubiquitous internet access, and cutting-edge tech are democratizing investing like never before. This is reflected in the explosive growth of Demat accounts, ballooning from a mere 1.9 crore in FY11 to a staggering 11.44 crore in FY23, with a particularly sharp ascent in the past two years. Additionally, retail investors are claiming their stake in the game, their participation in the National Stock Exchange surging to 40.73% of total turnover during FY2021-23. This research delves deep into this dynamic landscape, specifically focusing on the phenomenon of "multi-bagger" returns from 2013 to 2023. These are stocks that have delivered extraordinary returns, exceeding 100% within the timeframe. By meticulously dissecting various parameters like historical PE ratios, operational efficiency, profitability measures, growth dynamics, and capital structure, the study aims to unveil the hidden forces that fuel long-term stock performance. However, this is not just a numbers game. The research recognizes the crucial role of investor sentiment and market psychology, exploring how social media trends, economic news, and major events can influence stock prices and investor behavior. By incorporating these elements, the study paints a more holistic picture of what drives stock performance, providing invaluable insights for investors navigating this dynamic market.

II. Review of Literature

Building upon the insightful research by Heikal et al. (2014) and N. Sivathaasan (2013), who identified internal factors like ROE, ROA, and profit margins as crucial to profitability, further studies by D. Hertina (2019) and TNL Nguyen (2020) delve deeper, highlighting the impact of debt-to-equity ratios, firm size, and industry affiliation. Additionally, F.Margaretha (2016) underscores the importance of growth rates, productivity, and management efficiency in this equation. Beyond internal factors, external forces also play a significant role. TN Nariswari (2021) and N. Susanti (2019) explore the influences of economic conditions, interest rates, and industry-specific nuances on profitability and financial distress, respectively. When it comes to share prices, D. Purnamasari (2015) and P Pushpa Bhatt (2012) champion financial performance indicators like ROE, ROA, EPS, BVPS, and DPS. FU Ansari (2020), S Sharma (2009), PT Jariwala (2020), and P Srinivasan (2012) further solidify their importance. However, the impact of non-financial factors cannot be ignored. K.Mogonta (2016), F. Sukmawati (2016), K. Kamar (2017), and A Saha (2009) remind us that market sentiment, economic news, and industry trends can significantly influence share prices. Zooming into specific industries, N. Sivathaasan (2013) reveals the unique interplay of working capital, capital structure, and growth rates in manufacturing, while TN Nariswari (2021) highlights the importance of NPM, GPM, and TAT for profit growth in the packaging & plastics sector. N. Susanti (2019) analyses the intricate relationship between profitability, leverage, and liquidity in combating financial distress within the retail industry. D. Hertina (2019) sheds light on the role of ROE, ROA, and debt-to-equity ratios in driving stock returns for property & real estate companies. K. Mogonta (2016) emphasizes the positive impact of ROA, ROE, and EPS on market share prices in the mining industry, while F. Sukmawati (2016) emphasizes the crucial role of ROE in the cement sector. FU Ansari (2020) highlights the combined influence of profitability, leverage, efficiency, and liquidity on ROE in the IT industry. Finally, S Sharma (2009) and PT Jariwala (2020) underscore the importance of EPS, DPS, and BVPS in driving share prices within the pharmaceutical industry, while AT Gharaibeh (2022) emphasizes the positive correlation between EPS and market price in the banking sector. Remember, as K Tandon (2013) wisely advises, the impact of each factor can vary depending on the industry and market conditions. By understanding these intricate relationships and considering both internal and external factors, investors can navigate the financial landscape with greater confidence, making informed choices to achieve their financial goals. However, this information should not be considered financial advice. Please consult with a qualified professional before making any investment decisions.

Study Objectives:

i) Identify the key factors driving the returns of multi-bagger stocks in the Indian Stock Exchanges.

ii) Rank the identified factors in terms of their significance in influencing the returns of multi-bagger stocks on the National Stock Exchange.

Methodology:

The research Methodology for the research this is conducted with quantitative study
with the help of the data collected from annual reports of companies, that has given more than 7.2% CAGR returns from FY 2013 - 2023, thus delivering more than 100% return. The data collected includes independent variables size of the company (Market Cap), revenue growth, operating profit growth, net profit growth, debt-equity ratio, capital expenditure and a dependent variable (stock price). Before analysis the data was gathered and prepared. The datasets were checked for missing data. For the analysis of the data we used software SPSS, MS Excel Spreadsheet. We used this software for creating the models.

Sample Size:

The sample size for the study comprised 503 companies, selected from the universe of listed stocks on both the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). These companies met specific criteria, including returns exceeding 7.2% and a market capitalization exceeding Rs. 2000 Cr. Data were collected from secondary sources, covering the financial year 2013-24, coinciding with the period of the Indian central bank's rate upcycle, moderation and easing.

Tools Used:

Methodologies employed in this study involved the utilization of various tools and techniques. A multiple regression analysis model was constructed using Microsoft Excel Spreadsheet to analyze the data. Additionally, Screener.in was utilized as a platform for data collection, facilitating the retrieval of relevant information for the research.

Multiple Linear Regression:

Multiple regression is a statistical technique used to analyze the relationship between a single dependent variable and two or more independent variables. It extends simple linear regression by allowing for the consideration of multiple predictors simultaneously. This method assesses how changes in the independent variables are associated with changes in the dependent variable, while accounting for the interrelationships among the predictors. Multiple regression provides insights into the complex interactions and influences of various factors on the outcome of interest.

Basic Terminologies in Multiple Linear Regression:

1. **Dependent Variable:** This is the outcome or response variable that is being predicted or explained by the independent variables.

2. **Independent Variables:** Also known as predictor variables, these are the variables used to predict or explain the variation in the dependent variable.

3. **Coefficients:** These represent the weights assigned to each independent variable in the regression equation, indicating the strength and direction of their relationship with the dependent variable.

4. **Regression Equation:** This equation mathematically expresses the relationship between the dependent variable and the independent variables, allowing for predictions to be made based on given values of the predictors.

5. **Residuals:** Residuals are the differences between the observed values of the dependent variable and the values predicted by the regression equation. They provide insight into the model's accuracy and the extent to which it captures the variability in the data.

Goodness of Fit Test:

Regression Statistics

Multiple R	0.637780763
R Square	0.406764302
Adjusted R Square	0.395956364
Standard Error	10.19721195
Observations	504

Multiple R:

The coefficient of multiple correlation is a statistical measure that indicates the strength of the relationship between a dependent variable and a set of independent variables in a linear regression model. It ranges from 0 to 1, where 0 indicates no relationship and 1 indicates a perfect relationship.

In this case, the coefficient of multiple correlation is 0.638, which indicates a moderately strong positive correlation between the two variables in the model. This means that there is a positive relationship between the independent and dependent variables, and that the independent variables can explain a moderate amount of the variance in the dependent variable.

R - Squared:

The coefficient of determination (R-squared), in this instance at 0.407, quantifies the proportion of variance in the dependent variable attributable to the independent variables within the linear regression model. While it serves as a preliminary indicator of goodness-of-fit, a cautious interpretation is warranted.

While a higher R-squared value generally suggests a better model fit, it is crucial to avoid sole reliance on this metric. Factors such as the characteristics of the variables, their units of measurement, and implemented data transformations can influence its value. Consequently, a high R-squared might not always translate to a robust model.

Furthermore, R-squared does not elucidate the inherent relationship between independent and dependent variables, nor does it validate the model's accuracy. A comprehensive assessment necessitates considering R-squared in conjunction with other pertinent statistical measures to provide a holistic understanding of the model's performance.

Adjusted - R:

In the context of linear regression models, the adjusted R-squared (0.396) serves as a refined metric for evaluating goodness-of-fit, surpassing the limitations of the unadjusted R-squared statistic. Unlike the latter, which can inflate with increasing model complexity, the adjusted R-squared penalizes the model for incorporating superfluous explanatory variables, thereby providing a more robust assessment of its true predictive capacity.

Essentially, while the unadjusted R-squared quantifies the proportion of variance explained by the model, the adjusted R-squared incorporates a penalty term that adjusts for the number of independent variables, mitigating the tendency to overestimate fit solely due to model complexity. In this instance, the minimal difference between the two values (0.407 for R-squared and 0.396 for adjusted R-squared) indicates that the model effectively explains the data without succumbing to overfitting through excessive complexity.

However, it is crucial to acknowledge that neither metric in isolation offers a definitive measure of model quality. A comprehensive evaluation necessitates considering the adjusted R-squared in conjunction with other relevant statistical measures, such as the standard error, to form a holistic understanding of the model's performance and generalizability.

Standard Error:

The standard error of the regression (S), sometimes referred to as the standard error of the estimate, measures the normal difference between the observed values and the regression line. Essentially, it provides a measurement of the frequency with which the regression model deviates from the actual data, represented in response variable units. Since they imply that the observed values are often closer to the fitted regression line, smaller standard error values are favored

This figure, 10.2, represents the average degree of prediction error in the model. A more accurate model is indicated by a smaller standard error. The model's predictions appear to be rather accurate in this instance because the standard error is moderate.

Analysis:

While the model exhibits a moderately strong positive relationship between the variables, explaining 40.7% of the dependent variable's variance, its goodness-of-fit is best assessed through a multi-metric approach. The slight difference between R-squared (0.407) and adjusted R-squared (0.396) suggests moderate complexity without overfitting, further supported by the reasonable standard error (10.2). However, comprehensive evaluation requires additional statistical tests and consideration of limitations for a robust understanding of the model's performance and generalizability.

F test (ANOVA):

ANOVA

	df	SS	MS	F	Significance F
Regression	9	35221.30122	3913.477913	37.6356997	8.94092E-51
Residual	494	51367.66698	103.9831315		
Total	503	86588.9682			

Since, the the value of Significance F is lesser than F < 0.05, we reject the null hypothesis

Statistically Significant

Regression analysis uses the F-test to evaluate the hypothesis that all model parameters are zero. It is also useful in statistical analysis to compare models fitted to the same dataset and underlying factors and determine which model fits the data the best. A common guideline in regression analysis is that if the F-statistic is sufficiently large, the null hypothesis can be rejected. This leads to the conclusion that at least one parameter value in the model is non-zero.

The F-statistic and significance F values for each variable could reveal which ones have a significant influence on the dependent variable. Higher F-statistics and lower significance F values (ideally less than 0.05) would indicate stronger influences.

p-Value:

The p-value in statistical analysis represents the probability of observing a result as extreme as the one obtained, assuming that the null hypothesis is true. A lower p-value indicates stronger evidence against the null hypothesis, suggesting that the observed effect is unlikely to be due to chance.

Variable	p-value	Significance	Explanation
Historical PE 10Years	3.40E-22	Significant	This very low p-value indicates a strong statistically significant relationship between historical PE and the dependent variable.
OPM 10Year	0.008015144	Significant	The p-value is less than 0.05, suggesting a statistically significant relationship between operational profit margin (OPM) and the dependent variable.
Average return on capital employed 10Years	7.13E-05	Significant	Similar to historical PE, this p-value is highly significant, indicating a strong influence of average return on capital employed on the dependent variable.
Average return on equity 10 Years	0.067891538	Marginally Significant	The p-value is close to the 0.05 threshold, suggesting a marginal statistical significance. Further investigation into the context and magnitude of the relationship might be needed.
Sales growth 10Years	0.16440925	Not Significant	The p-value is greater than 0.05, indicating no statistically significant relationship between sales growth and the dependent variable.
Profit growth 10Years	0.000157317	Significant	Similar to historical PE and average return on capital employed, this p-value is highly significant, indicating a strong influence of profit growth on the dependent variable.
D/E	5.28E-19	Significant	This extremely low p-value highlights a very strong statistically significant relationship between debt-to-equity ratio (D/E) and the dependent variable.
P/B	0.211851943	Not significant	The p-value is greater than 0.05, indicating no statistically significant relationship between price-to-book ratio (P/B) and the dependent variable.
P/FCF	1.53E-12	Significant	Similar to historical PE, average return on capital employed, and profit growth, this p-value is highly significant, suggesting a strong influence of price-to-free cash flow (P/FCF) on the dependent variable.

Coefficient of Correlation:

The Greek letter ρ, or rho, stands for coefficient of correlation, which is an important metric for measuring the linear relationship between two variables. It explores the core of their entwined dance, illuminating the scope and trajectory of their relationship.

Considering 2 variables, X & Y, waltzing across a data landscape. The coefficient of correlation acts as a watchful observer, meticulously measuring the synchronicity of their steps. A value of +1 signifies a perfect, lockstep harmony, where X and Y mirror each other in their every move. Conversely, A -1 marks a complete discord, with X's rise met by Y's descent, and vice versa.

Order of Priority:

Order of Priority	Correlation Coefficient
Historical PE 10Years	0.065459037
D/E	0.458596752
Profit growth 10Years	0.413691901
Sales growth 10Years	0.239387542
Average return on capital employed 10Years	0.169684262
Average return on equity 10Years	0.154332882
P/FCF	0.011078701
OPM 10Year	-0.123554623
P/B	-1.769361314

Regression Equation:

The multiple linear regression equation is as follows:

$$\hat{Y} = b_0 + b_1X_1 + b_2X_2 + \ldots + b_pX_p$$

where X1 through Xp are p unique independent or predictor variables, b0 is the value of Y when all of the independent variables (X1 through Xp) are equal to zero, and b1 through bp are the estimated regression coefficients. Y is the anticipated or expected value of the dependent variable. The change in Y in relation to a one unit change in the corresponding independent variable is represented by each regression coefficient. When all other independent variables (i.e., when the remaining independent variables are held at the same value or are fixed) are held constant, b1, for example, represents the change in Y relative to a one unit change in X1. To determine whether each regression coefficient deviates considerably from zero, statistical tests might be run once again.

<u>Observation</u>:

10-Year Stock Return = 15.432 + [0.0655 * Historical PE 10Years] – [0.1236 * OPM 10Year] + [0.1697 * Average return on capital employed 10Years] + + [0.4137 * Profit growth 10Years] + [0.4586 * D/E] + [0.0111 * P/FCF]

This regression equation, concisely encapsulates the **quantitative relationship** between the chosen independent variables and the dependent variable, "10-Year Stock Return." It acts as a mathematical tapestry, meticulously woven with coefficients of varying signs and magnitudes, each representing the **linear association** between a specific factor and the predicted stock return.

The expected return when all independent variables are maintained at zero is indicated by the intercept term, 15.432. Assuming all other variables remain constant, each following coefficient, such as 0.0655 for "Historical PE 10Years," is the incremental change in the expected return for a one-unit increase in the related variable. An inverse link, in which greater values result in lower returns, is suggested by a negative coefficient, whereas a positive coefficient indicates a direct relationship, where higher values of the variable tend to be associated with higher expected returns.

Output:

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.637780763
R Square	0.406764302
Adjusted R Square	0.395956364
Standard Error	10.19721195
Observations	504

ANOVA

	df	SS	MS	F	Significance F	
Regression	9	35221.30122	3913.477913	37.6356997	8.94092E-51	Statistically Significant
Residual	494	51367.66698	103.9831315			
Total	503	86588.9682				

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
Intercept	15.43240901	1.517124171	10.17214629	3.40046E-22	12.45159721	18.41322081	12.45159721	18.4132208	Statistically Significant
Historical PE 10Years	0.065459037	0.024587888	2.662247275	0.008015144	0.017149303	0.113768772	0.017149303	0.11376877	Statistically Significant
OPM 10Year	-0.123554623	0.030842853	-4.005940179	7.12831E-05	-0.184153974	-0.062955273	-0.184153974	-0.06295527	Statistically Significant
Average return on capital	0.169684262	0.092736891	1.829738512	0.067891538	-0.012523118	0.351891641	-0.012523118	0.35189164	Not Statistically Significant
Average return on equity 1	0.154332882	0.110834609	1.392461099	0.16440925	-0.063432491	0.372098255	-0.063432491	0.37209826	Not Statistically Significant
Sales growth 10Years	0.239387542	0.062853523	3.808657531	0.000157317	0.11589434	0.362880744	0.11589434	0.36288074	Statistically Significant
Profit growth 10Years	0.413691901	0.044574276	9.280956063	5.28213E-19	0.326113355	0.501270448	0.326113355	0.50127045	Statistically Significant
D/E	0.458596752	0.366845689	1.250108059	0.211851943	-0.262173491	1.179366995	-0.262173491	1.179367	Not Statistically Significant
P/B	-1.769361314	0.243777741	-7.258092163	1.53293E-12	-2.248330394	-1.290392234	-2.248330394	-1.29039223	Statistically Significant
P/FCF	0.011078701	0.009786582	1.132029579	0.258171189	-0.008149758	0.03030716	-0.008149758	0.03030716	Not Statistically Significant

Conclusion:

This study analyzed the long-term stock performance of multi-bagger stocks in India (2013-2023) using multiple regression. We explored how various factors impacted their success. The key finding is that profitability (measured by Return on Capital Employed and Equity) holds the strongest influence. Stocks efficiently utilizing capital and delivering high returns to shareholders seem to be rewarded with better long-term performance. Interestingly, historical price-to-earnings ratio also has a positive impact, suggesting investors value companies with a proven track record of earnings growth. While sales growth is linked to higher stock prices, the relationship with profit growth is less clear. Finally, our analysis didn't find significant effects from operational efficiency (OPM) or specific capital structure metrics (debt-to-equity and price-to-book/cash flow ratios). These findings offer valuable insights for investors seeking long-term success in the Indian stock market.

Managerial Implication:

This study offers valuable guidance for stock selection and portfolio management strategies, particularly for retail investors: Prioritize Profitability and Moderate Debt: Companies displaying robust profitability (high ROCE and ROE) and maintaining moderate debt levels should be prioritized. This signifies their efficient capital utilization and ability to generate strong returns for shareholders, leading to better long-term performance. Utilize Historical Data, but Look Beyond: Historical valuations and sales growth are helpful indicators, but shouldn't be the sole deciding factors. Seek companies with a proven track record of consistent earnings growth potential and avoid overpaying for past performance based solely on historical ratios.

Invest in Further Growth Research: Further investigation into the intricate link between growth dynamics (like profit growth) and stock performance is crucial. Until then, prioritize companies demonstrating efficient capital utilization and don't solely rely on future growth projections for investment decisions.

By implementing these strategies and conducting thorough due diligence, managers can construct well-balanced portfolios with stocks poised for long-term success in the Indian market. This research empowers them to make informed investment decisions, ultimately leading to increased wealth creation for their clients.

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