INVESTIGATING THE IMPACT OF PROFITABILITY ON THE STOCK PRICES OF SELECTED PHARMACEUTICAL COMPANIES- PRE AND POST IPA 2005 IMPLEMENTATION

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ABTRACT

Analyzing the profitability and stock performance of pharmaceutical companies is crucial in understanding their resilience and growth potential within the global economy. This study examines the effects of the Patents (Amendment) Act of 2005 on the stock prices of 15 major pharmaceutical companies in India, leveraging paired t-tests and multiple regression analysis. The Act, following India's adherence to the TRIPS agreement, brought significant changes to the country's patent system, impacting the pharmaceutical sector profoundly. The selected pharmaceutical firms represent key players in the Indian market, influencing industry performance significantly. By comparing stock prices before and after the enactment of the IPA 2005, this study delves into the relationship between a company's profitability and its stock performance. The result shows a significant increase in the stock prices of the companies under study and also state that profitability of a company greatly affects the stock price of these companies. The findings offer valuable insights for investors, policymakers, and industry stakeholders, shedding light on the intricate dynamics of the Indian pharmaceutical market and its response to regulatory changes in intellectual property rights.

Introduction:

Profitability analysis is a goldmine of information for companies looking to boost their competitiveness and streamline operations from a strategic management perspective. Through the identification of the variables influencing variations in profitability, researchers can provide useful guidance to companies looking to enhance their financial performance.

Researchers' examination of a company's profitability is primarily significant as it is a crucial measure for stakeholders and investors. When deciding whether to invest in a specific company or sell their holdings, investors rely heavily on profitability metrics. Successful companies not only inspire confidence in their current investors but also draw in new ones, providing the capital infusion needed for business growth and innovation.

Moreover, profitability analysis helps investors evaluate the risk attached to their investments, empowering them to make wise decisions in a constantly shifting market. Examining a company's profitability metrics also provides researchers with a thorough grasp of its operational effectiveness and financial stability. A firm's resource allocation, overall business model, and strategic decisions can all be evaluated by researchers by carefully examining profit margins, returns on investments, and other important metrics.

Over the last three decades, the pharmaceutical industry in India has risen significantly, becoming a successful high-tech sector. Owing to things like advantageous government regulations and little outside rivalry, a number of privately held Indian companies now operating in the business hold a sizable portion of the local pharmaceutical markets. But as Indian companies start to surface from their home markets and get ready for global competition, the liberalization of the Indian economy is changing them. The Indian pharmaceutical industry is one of the sectors that is being forced to reevaluate its long-term strategy and business strategies as the country's markets open up to international commerce.

As the need to secure expensive expenditures in research and development (R&D) becomes increasingly obvious, factors like intellectual property protection are becoming more crucial. In India, the government is trying to create a patent regime that is in compliance with its international obligations and supportive of technological improvements, while also addressing concerns over the enforceability of the country's current intellectual property laws.

As a signatory to the TRIPS agreement, India has a contractual obligation to alter its patent laws to comply with the pact's terms. The first of these revisions, the Patents (Amendment) Act of 1999, provided pipeline protection. Until the nation starts to issue product patents for innovations in medicine. Effective January 1, 1995, it created guidelines for the postal filing of product patent applications in the areas of agrochemicals and pharmaceuticals. It also instituted the granting of Exclusive Marketing Rights (EMRs) for certain patents. In order to comply with the second set of TRIPS obligations, India amended the Patents Act, 1970 with the Patents (Amendment) Act, 2002. This amendment establishes a standard term of 20 years. All kinds of innovations might now be protected by patents, which have a 20-year duration that begins on the day the application was filed. The third set of changes to patent law was introduced by the Patents (Amendment) Act of 2005. In 2005, the Indian Patents Act, 1970 was amended to

provide medicines and pharmaceutical products with patent protection. This modification, however, only extended patentability of therapeutic compounds to the degree that patents would cover new chemical entities.

The study examines a sample of fourteen Indian pharmaceutical companies (1995–2023) over a period of twenty-eight years, The difference in the stock price of the selected companies Pre and Post IPA 2005 has been studied . The proportional influence of profitability on the stock prices of Indian pharmaceutical companies is further highlighted by the study's findings. The findings demonstrate that IPA 2005 compliance has a substantial effect on the Indian pharmaceutical sector. Descriptive and empirical research methods are employed to analyze data from 1995 to 2023.

The paper is divided into four parts. The first section talks about the introduction and conceptual framework, The second portion contains an overview of the literature, the third portion explains the data sources and techniques used to conduct the empirical study, and the fourth section analyses the empirical results.

Conceptual framework Indian pharmaceutical industry and Patent

The Indian Pharmaceutical Industry (IPI) is the world's largest provider of affordable generic pharmaceuticals. The Indian government's implementation of various legislative reforms, including reverse engineering of patented drug molecules and the implementation of Trade Related Intellectual Property Rights (TRIPS), to protect its domestic pharmaceutical industry and lessen foreign dominance, is largely responsible for the sector's spectacular growth. Intellectual property rights (IPR) in the pharmaceutical industry are represented by patents. Following India's 1995 signature of the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement, the country's patent system saw substantial changes. As a signatory to the TRIPS agreement, India was legally required to amend its patent laws to comply with the pact's regulations.

In terms of volume, the Indian pharmaceutical industry is the third biggest in the world, but in terms of value, it is ranked fourteenth. The reason for the lower ranking in terms of value might be that Indian pharmaceutical companies have a wide variety of firm sizes and product mixtures, and they mostly concentrate on producing generic medications at low costs. Since 1995, trade-related intellectual property rights (TRIPS) have resulted in substantial changes to the Indian pharmaceutical industry. Furter the Indian pharmaceutical businesses have been significantly impacted by the ratification of IPA 2005.

The study investigates a sample of fourteen Indian pharmaceutical businesses (1995-2023) during a twenty-eight-year period. The difference in stock price of the selected companies before

and after IPA 2005 is analyzed. The research also looks into the proportional effect of profitability on stock prices of Indian pharmaceutical businesses. The study's measures of profitability include Net Profit Margin (NPM), Return on Capital Employed (ROCE), Return of Assets (ROA), and Return on Net Worth (RONW).

Definition of variables under study is as under: -

Stock Price: The current market value of one share of a company' stock is referred to as the stock price. It is influenced by a number of variables, including as investor attitude, market conditions generally, growth potential, profitability, earnings, and financial performance of the firm. Stock prices can rise in response to good news, solid financial performance, and favourable economic conditions; they can fall in response to bad news or underwhelming performance. Stock prices are a crucial metric used by investors to assess a company's worth and performance in the financial markets.

Profitability: A company's capacity to turn a profit in relation to its expenditures and expenses is referred to as its profitability. It is a crucial financial indicator that evaluates how well a company uses its resources—such as labour and capital—to generate net income.

There are several measures and ratios used to evaluate the profitability of a firm, including:

Return on Capital Employed (ROCE): compares a company's profitability to the total amount of capital used in its activities. This measure sheds light on how successfully a corporation is making money off of the capital—both debt and equity—that it has invested in its operations. The following formula can be used to determine return on capital employed:

ROCE=(Operating Profit/ Capital Employed)×100

Return On Asset: gauges an organization's profitability in relation to its total assets. It sheds light on how well a business uses its resources to turn a profit.

The proportion of net profit made for every rupee of total assets is represented by the return on assets, which is stated as a percentage. A greater return on assets (ROA) suggests that the business is making better use of its resources to turn a profit**.**

ROA=(Net Profit/ Total Assets)×100

Return on Net worth (RONW):

A financial ratio called return on net worth (RONW), often referred to as return on equity (ROE), gauges a company's profitability in relation to its net worth or shareholders' equity. It offers information on how well a business is using its equity to produce profits for its owners. The following formula may be used to determine return on net worth:

RONW= (Net Profit / Shareholders′ Equity) ×100

Net Profit Margin (NPM):

A financial term known as net profit margin quantifies a company's profitability by presenting net profit as a proportion of sales. It is a crucial sign of how effectively a business is controlling its costs and turning a profit in relation to its total sales. Keeping a healthy NPM is important for pharmaceutical businesses since it shows how well their cost and price initiatives are working.

Net Profit Margin= (Net Profit/ Revenue) ×100

Businesses are more likely to enjoy a rise in stock prices if their profit margins improve year after year. This is due to the fact that a company's capacity to produce steady profits and cash flow is indicated by good profitability, which boosts investor confidence and propensity to purchase the stock. Additionally, investor behavior and market forecasts might have an impact on how profitability affects stock prices.

Various studies have revealed that In the financial markets, a company's stock price is mostly determined by how profitable it is. A productive business produces more returns and revenues for its owners. Consequently, the firm's stock sees an upsurge in demand as investors view it as a robust and feasible investment opportunity. Existing owners benefit from higher stock prices as a result of the increased demand for the shares. On the flip side, investors could view a company as riskier and less appealing if it is losing money or is experiencing decreasing profitability. This may result in less people wanting to buy the stock, which would lower its price.

Furthermore, a company's profitability is frequently regarded as a sign of both its overall success and financial stability. For this reason, in order to make well-informed judgments regarding purchasing or disposing of a company's shares, investors keep a careful eye on profitability metrics like net income, return on equity, and profits per share. Source: Custom Response, "Profitability and Stock Prices Analysis" The influence of profitability on a company's stock price is substantial. A productive business produces more returns and revenues for its owners. Due to increased demand and investor interest, the price of the company's shares rises.

In contrast, investors could consider a firm less appealing and riskier if it is losing money or experiencing lesser profitability. This may result in less people wanting to buy the stock, which would lower its price.

REVIEW OF LITERATURE:

According to **Brissimis, Athanasoglou and Delis (2008),** profitability is the capacity of a commercial activity in any firm, corporation, or organization to generate profits. The main goal of businesses is to make a profit over a specific time frame in order to ensure their existence and expansion. Making a profit demonstrates how effectively an organization is led and managed in relation to its available resources.

Patel (2018) investigated return of 10 pharmaceutical organizations in Indian securities exchange for period of 2013 to 2018. The examination inferred that among selected companies Sun Pharmaceutical Industries Ltd gives exceptional yield yet the market danger of the offers is much high. So, the value offers of Divi's Laboratories Ltd are increasingly great to potential speculators since it gives exceptional yield and the hazard related with those offers less.

Gopalakrishnan (2017) undertaken a study to analyse the risk return relationship of selected companies in pharmaceutical industry of Indian stock market. This study usedata from 2012 to 2017. The study finds the risk return characteristics of selected 10 pharmaceutical co., & concluded that Sun Pharmaceutical Industries Ltd carry high return high risk & Divi's Laboratories Ltd gives high return and the risk associated with those shares less.

In an early research, **Ball and Brown (1968)** examined the link between stock prices and accounting profits for 261 businesses listed between 1957 and 1965 on the New York Stock Exchange. The outcome showed that, in comparison to the impact of the other information prior to the declaration of profits, the yearly profit and the information regarding the amount of this profit had a major influence on the share prices.

A similar study was conducted on the Indonesian Stock Exchange by Susilowati (2015), who used several internal metrics such earnings per share, net profit margin, return on equity, and return on asset. Regression analysis was performed by the author utilizing ISE data for businesses listed on the Indonesian Stock Exchange between 2008 and 2011. The analysis's findings indicate that while return on equity, net profit margin, and earnings per share have a favorable impact on the stock price, return on asset has a considerable negative impact. He comes to the conclusion that the stock price was substantially impacted by Return on Equity, Return on Assets, Net Profit Margin, and Earnings per Share all at the same time.

Ravi Kumar Bakshi. (2018) researched to examine how profitability affects share prices using NTPC, an Indian company, as a case study. Additionally, the study sought to investigate how investors make decisions based on share price profitability. Research indicates that a company's profitability can be impacted by a number of factors, including firm size, growth, delayed profitability, capital structure, debt, liquidity, and lagged debt. Conversely, a company's profitability has a big influence on share prices. Since a rising or high share price indicates stronger growth and strength in the company's profitability, it is necessary to investigate the relationship between profitability and share prices using a case study.

A sample of 25 Indian pharmaceutical companies was examined by **Singh, K., &Azhar, N. (2022)** data of Over 25 years (1996–2020) was taken into consideration, and the data indicate that TRIPS compliance has a major effect on the Indian pharmaceutical sector. The study's conclusions also highlight how different firm resources relate to each other in terms of how well Indian pharmaceutical companies function. The findings of this study will contribute to the growing corpus of information about the variables affecting the performance of the Indian pharmaceutical industry in emerging nations.

In their study **Tyagi, S., &Nauriyal, D. K. (2016),** used an OLS regression model with Newey-West standard errors using time-series data that has been adjusted for inflation for the years 1990–2014. It has been discovered that the post-product patent system, export intensity, and A&M intensity have all positively impacted industry profitability. The operational expenditure to total assets ratio and the leverage ratio's negative and statistically significant influences suggest that businesses need to improve how effectively they manage their finances and keep expenditures under control. According to the report, as part of a long-term plan, businesses must focus far more on optimizing their operations, marketing, and advertising expenses as well as strengthening their export orientation.

Using mean, standard deviation, coefficient of variation, and correlation analysis, **Nikam and Gaikwad (2021)** examined the profitability position of Lupin and Glenmark, two of Maharashtra's top pharmaceutical companies, especially on export earnings for a period of ten years , from 2010–2011 to 2019–2020. This research set out to evaluate the pharmaceutical businesses that were chosen based on their financial performance, or profitability. The study shows that the net profit ratio is significantly influenced by the gross profit ratio, net profit ratio, return on equity, return on investment, and fixed assets to net worth.

In a research **Amaliyah, Apriyanto & Sihwahjoeni (2017).** Panel data analysis techniques were employed to examine the correlation between profitability and the stock prices of eleven banks that are quoted on the Saudi stock exchange. In order to do this, the Panel Granger Causality test was used to investigate the causative link between these banks' stock prices and profitability. The

causal link between the bank stock prices and profitability ratios was examined using the causality test. The findings indicate that there was no direct association between profitability and price, although there was a causal relationship between bank pricing and profitability at levels of 1% and 5%.

From 2011 to 2016, **Panigrahi, C. M. A. (2019)** examined the profitability situation of the top five Indian pharmaceutical companies. A number of ratios are computed. Moreover, a number of statistical methods are used to the computed ratios, including multiple regression, coefficient of variation, standard deviation, and mean. The analysis demonstrates that the net profit ratio of the chosen pharmaceutical businesses was significantly influenced over the study period by return on equity capital, gross profit ratio, operational ratio, and profits per share. Additionally, it is determined that the chosen pharmaceutical businesses' profitability position during the research period was sufficient.

Patjoshi, P., and Nandini, G (2019) conducted ratio analysis, Spearman's rank correlation analysis, complete rank test, and t-test were used to examine the impact of liquidity management on Cipla and Sun Pharma's financial outcomes from 2009–10 to 2018–19. The study's findings show that Cipla has a stronger liquidity position than Sun Pharma, and the hypothesis that was investigated revealed that there is no discernible difference between the two companies' financial performance in terms of liquidity management.

The top three pharmaceutical behemoths, Dr. Reddy's Laboratories, Cipla, and Ranbaxy, are taken into consideration while examining the financial performance of pharmaceutical businesses in India in a research by **Sheela, S. C., & Karthikeyan, K. (2012).** The Return on Investment (ROI) and Return on Equity (ROE) are calculated using the Dupont analysis. As to the data, Cipla Pharmaceutical has the greatest returns on equity and investment in terms of ROE and ROI, followed by Dr. Reddy's and Ranbaxy.

The study by **TegAlam and RupeshRastogi (2011)** explores the Indian pharmaceutical industry's business model, R&D profile, and financial position. It highlights changes in Intellectual Property Laws and the TRIPS agreement, which have given flexibility to Indian companies. The research uses secondary data from 11 years of balance sheet data and GAP analysis. The Indian government's support and lenient patent regime have boosted the industry, transforming it from import-reliant to self-reliant. It is concluded that Economic liberalization and the TRIPS agreement have also positively impacted the industry, providing skilled personnel and lower drug discovery costs.**ShilpiTyagi, D. K. Nauriyal (2016)**The study explores the factors affecting profitability in the Indian pharmaceutical and drug industries, revealing that the industry has adjusted to the new economic environment due to TRIPS compliance. The research uses an OLS regression model and time-series data from 1990 to 2014. It finds that post-product

patent system, export intensity, and A&M intensity positively impact industry profitability. However, the study also highlights the need for businesses to improve their money management and cost control. Firms can improve performance by expanding overseas, raising A&M expenditure, and addressing quality issues. Future research should consider mergers, acquisitions, pricing policies, and R&D activities.The study conducted by **Danish, M. S., Sharma, R., &Dhanora, M. (2020, November).** examines the relationship between the performance of 287 Indian pharmaceutical companies and the quality of their patents, concentrating on their profitability ratio and return on assets. To evaluate the quality of innovation, the study employs revealed technology advantage (RTA) and relative patent position (RPP). The findings indicate considerable variances in product and process innovation, pointing to the need for pharmaceutical companies to strengthen their R&D capacities and take the lead in key technologies in order to improve performance. This shows that improving these aspects could enhance the success of pharmaceutical companies as a whole.

The literature study highlights a lack of thorough, comparative analysis across several pharmaceutical companies and geographical areas. A wider investigation of profitability dynamics, encompassing financial elements and longitudinal trends, is still lacking, despite the fact that current studies concentrate on particular companies or geographical areas. Other topics that need more research include integrating qualitative methodologies and predicting future obstacles. Closely examining these gaps would yield more in-depth understanding of the profitability drivers that affect the entire industry, facilitating the development of sustainable growth policies and strategic decision-making post IPA implementation.

Research Methodology

The study aims to assess the impact of profitability determinants on stock prices of selected pharmaceutical companies pre and post the implementation of IPA 2005. Descriptive and empirical research methods are employed to analyze data from 1995 to 2023. The time frame of the study is 28 years (1995-2023).Fourteen Pharmaceutical Companies are selected based on market capitalization to ensure representativeness.

Regression analysis to explore the relationship between profitability determinants and stock prices, and to find the significant difference in the stock prices of selected pharmaceutical companies pre and post IPA 2005 implementation, paired t- test is applied.

The study involve collection of pre and post IPA 2005 implementation data on ROCE, ROA, RONW, NPM, and stock prices from annual reports of the companies and the website of moneycontrol.com as well. Average values of profitability determinants for both periods are calculated to assess the impact of profitability on stock prices using regression analysis. Pre and

post IPA 2005 stock prices are compared to evaluate significant differences. The growth percentages of the average stock prices for each pharmaceutical company is computed and visualized on a bar graph. This comprehensive research methodology aims to provide valuable insights into the intricate dynamics between profitability and stock prices within the pharmaceutical industry over an extended period.

Research Objectives

1. To Investigate the impact of profitability on the stock prices of selected pharmaceutical companies.

2. To Analyze the variation in stock prices among selected pharmaceutical companies before and after the implementation of IPA 2005.

3. To find out and compare growth (in percentage) of Stock prices of selected pharmaceutical companies.

Hypothesis

1. H_0: There is no significant impact of profitability of selected pharmaceutical companies on their stock prices.

2. H_0: There is no significant difference in the stock prices of selected pharmaceutical firms post IPA 2005 implementation.

Model of the study
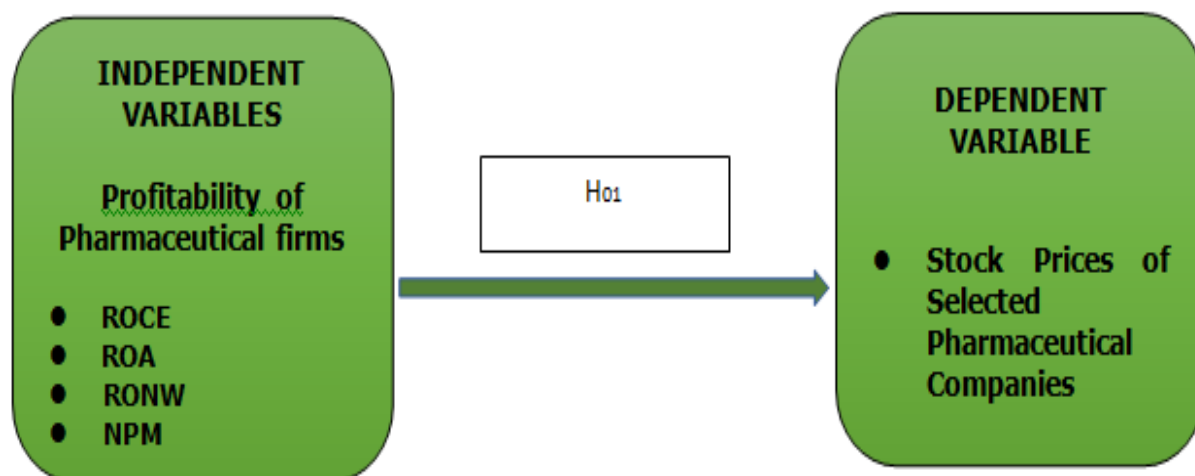
Results and Discussion

H_0: There is no significant impact of profitability of selected pharmaceutical companies on their stock prices.

To test the hypothesis 1 Multiple regression is applied and following equation is formulated.

Multiple Regression Equation-

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where, Y = Dependent variable (Stock Price of Pharmaceutical companies

X_1= Return on Asset (ROA)

X_2= Return on Capital Employed

X_3= Return on Net Worth

X_4= Net Profit Margin

B1,$\beta2$, $\beta3$= Beta Coefficients

A = Constant and ε= Standard Error

Table 1 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.800[a]	.640	.580	634.081	.762

a. Predictors: (Constant), NPM, RONW, ROCE, ROA

b. Dependent Variable: STOCK_PRICE

R stands for multiple correlation coefficient and is one of the measures used to predict the dependent variable. R is represented in the second column of the table above. In the third column, the value of 'R^2' is shown, which is used to calculate how much variance in the dependent variable is explained by the independent variables. The R^2 of 0.640(adjusted

R^2=0.580) shows a high result from multiple regression. NPM, RONW, ROCE, ROA of the companies plays a significant role in explaining the variance in the overall Stock Price of Pharmaceutical companies, as indicated by the relatively high R^2 (0.640), stating that the Predictor variables : NPM, RONW, ROCE, ROA of the companies explains 64.0 percent variability and has a significant effect on the overall Stock Price of Pharmaceutical companies.8 The extremely significant F ratio shows that the equation's findings are unlikely to have happened by coincidence. The regression analysis revealed that the coefficient had a positive sign.

Table 2 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17149488.722	4	4287372.181	10.664	**.000**[b]
	Residual	9649424.105	24	402059.338		
	Total	26798912.828	28			

a. Dependent Variable: STOCK_PRICE

b. Predictors: (Constant), NPM, RONW, ROCE, ROA

Inference

The ANOVA results for the STOCK_PRICE regression model are statistically significant (F = 10.664, $p < 0.05$). This indicates that the predictor variables (NPM, RONW, ROCE, ROA) has a significant effect on STOCK_PRICE. The regression model explains a significant amount of variance in STOCK_PRICE, as reflected in the substantial F-statistic. Further analysis of individual predictor variables and their coefficients would provide insights into their specific impact on STOCK_PRICE. Thus we can conclude that the Null Hypothesis that 'There is no significant impact of selected profitability ratios (NPM, RONW, ROCE and ROA) on the overall stock prices of the companies is rejected and the alternate Hypothesis that 'There is a significant impact of selected profitability ratios (NPM, RONW, ROCE and ROA) on the overall stock prices of the companies' is accepted.

Table 3 Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	165.937	162.695		1.020	.318	-169.849	501.723		
ROA	21.124	32.167	.134	.657	.518	-45.265	87.513	.360	2.781
ROCE	10.686	14.474	.118	.738	.468	-19.188	40.559	.592	1.690
RONW	12.506	13.445	.153	.930	.362	-15.243	40.256	.554	1.805
NPM	72.029	21.783	.561	3.307	.003	27.072	116.987	.522	1.917

a. Dependent Variable: STOCK_PRICE

The coefficients provide insights into the strength and direction of the relationships between the predictor variables (ROA, ROCE, RONW, NPM) and the dependent variable (STOCK_PRICE). The associated t-values and p-values help assess the statistical significance of these relationships. NPM has a significant positive impact (coefficient = 72.029) and sig value =0.003 which is less than 0.05 significance level. The collinearity statistics (tolerance and VIF) suggest no significant multicollinearity issues among the predictor variables as all the values are less than or equal to 2.

The contribution of selected profitability ratios (ROA, ROCE, RONW and NPM) on the overall stock prices of the companies' forms the regression equation as:

Y= 165.937 + 21.124 (ROA)+ 10.686 (ROCE) + 12.506 (RONW)+ 72.029 (NPM)+ 162.695

Y= Dependent variable (overall stock price of the companies)

X_1= Return on Asset (ROA)

X_2= Return on Capital Employed

X_3= Return on Net Worth

X_4= Net Profit Margin

B1,β2, β3= Beta Coefficients

    Constant   **:**   165.937

    Standard Error (ε) **:**   162.695

According to the linear regression analysis, selected profitability ratios add 64.0 percent to the overall stock prices of the selected pharmaceutical companies. This indicates that 64.0 percent of the difference overall stock prices of the selected pharmaceutical companies may be attributed to profitability. And it has a favorable effect on the overall stock prices of the companies as seen by the above regression equation.

2. H$_0$: There is no significant difference in the stock prices of selected pharmaceutical firms post IPA 2005 implementation.
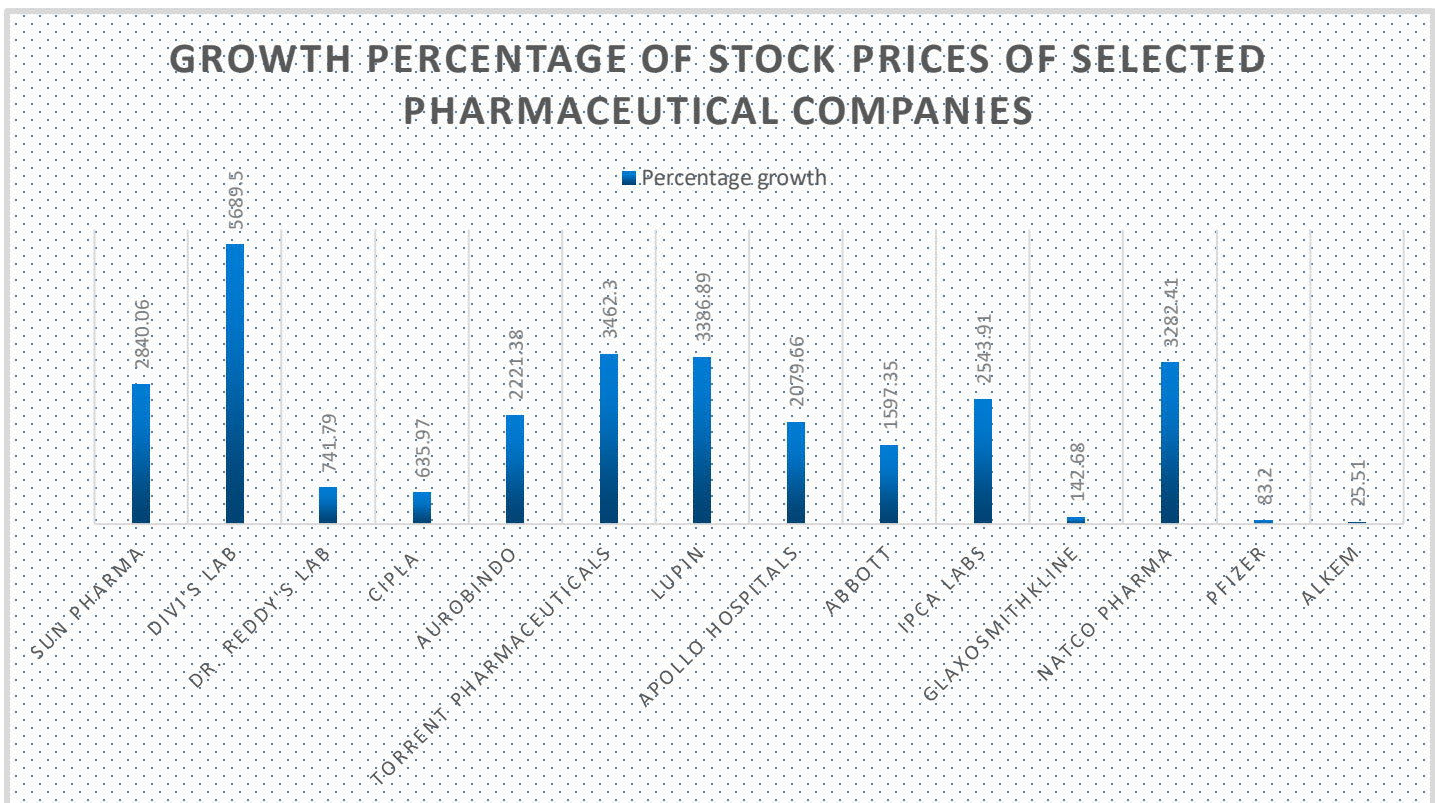
Table 4:Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	PREIPA_StockPrice - POSTIPA_StockPrice	-1163.01286	1705.85553	455.90907	-2147.94451	-178.08120	-2.551	13	.024

Inference: Table 4 shows the results of paired samples t-test, it is evidence to suggest a statistically significant difference in the stock prices of the selected pharmaceutical companies before and after the implementation of IPA 2005.The p-value of .024 is less than l significance

level of .05. Therefore the null hypothesis is rejected indicated the difference in the stock prices of selected pharmaceutical companies before and after the implementation of IPA 2005.

Table 5: Growth percentage of Selected pharmaceutical companies during the specified period

Selected Pharmaceutical Companies	Sun Pharma	Divi's Lab	Dr. Reddy'S Lab	Cipla	Aurobindo Pharma	Torrent Pharmaceuticals	Lupin	Apollo Hospitals	Abbott	Ipca Labs	Glaxosmithkline	NatcoPharma	Pfizer	Alkem
Percentages of Stock Price	2840.06	5689.5	741.79	635.97	2221.38	3462.3	3386.89	2079.66	1597.35	2543.91	142.68	3282.41	83.2	25.51

Graph 1-Source: Created by author after calculating Growth percentages

Table 5 represents thepercentage growth values represent how much the stock prices have increased for each respective pharmaceutical company during a specified period. Sun Pharma

has experienced a remarkable percentage growth of 2840.06%, indicating a substantial increase in its stock prices during the specified period 1995-2005 to 2006-2023.

Divi's Lab has the highest percentage growth among the listed companies, with a staggering 5689.5% increase in stock prices. Dr. Reddy's Lab, Cipla, and Aurobindo also show significant percentage growth, with values of 741.79%, 635.97%, and 2221.38%, respectively.

Other companies, such as Torrent Pharmaceuticals, Lupin, Apollo Hospitals, Abbott, Ipca Labs, and NATCO Pharma, also experienced positive percentage growth in their stock prices.Pfizer, and Alkem has shown least but remarkable growth 83.2% and 25.5%in their stock prices respectively.

Conclusion:

This research seeks to explore the multifaceted impact of India's adoption of TRIPS and the subsequent enactment of the Patents (Amendment) Act of 2005 on its pharmaceutical industry. It delves into the pre-IPA 2005 era when India emerged as a leading producer of generic medicines and analyzes the key challenges faced by the industry following IPA 2005 implementation. The study scrutinizes the provisions and implications of the Patents (Amendment) Act of 2005, considering its effects on the profitability and stock prices of Indian pharmaceutical firms. To achieve the above aim the researcher has selected top 15 pharmaceutical firms in India, representative of the entire Indian pharmaceutical Industry and has studied the changes in the performance of these selected firms before and after the implementation of Indian Patent ACT 2005 with special reference to a firms profitability and stock prices.

Multiple regression was applied to find out how a pharmaceutical firm's profitability affects its stock price and Paired T-test was applied to compare the stock prices of the chosen pharmaceutical companies before and after IPA 2005.

The multiple regression analysis reveals that the selected profitability ratios (NPM, RONW, ROCE, ROA) play a significant role in explaining the variance in the overall stock prices of pharmaceutical companies. The high multiple correlation coefficient (R = 0.640) and the associated R-squared value (0.640) indicate that approximately 64.0% of the variability in stock prices can be explained by these profitability ratios. The F-statistic of 10.664, with a p-value less than 0.05, further supports the statistical significance of the regression model, rejecting the null hypothesis that there is no significant impact. Specifically, the profitability ratio NPM has a significant positive impact on stock prices, with a coefficient of 72.029 and a p-value of 0.003. The absence of significant multicollinearity issues among the predictor variables enhances the reliability of these findings.

Despite these significant findings, there are limitations to consider. The study covers a specific period (1995-2005 to 2006-2023), and market conditions and dynamics may have changed over time. The analysis is based on historical data, and future events or trends could influence stock prices differently. Additionally, the study focuses on selected profitability ratios, and other factors not considered in the model may also impact stock prices. A more comprehensive view of the causes influencing stock price can be obtained by incorporating additional variables, such as industry-specific considerations, regulatory changes, and macroeconomic indicators. Qualitative factors can also be integrated, such as management strategies, innovation, and market perception, to provide a more comprehensive understanding of stock price determinants. Also besides NPM, ROCE, RONE and ROA other variables like EPS, R & D Intensity, Operation expenditure to total asset ratio, Advertising and Marketing intensity etc. can also be taken to measure the profitability of pharmaceutical firms.

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