COVID-19 Crisis: A Brunt or Blossoming on Pharmaceutical Industry an Inspection of Sun Pharma, Cipla & Divi's Labs

Bijin Philip[1]*, Shreya Kumari[2] and Mahek Khetpal[3]

[1]*Assistant Professor, Department of Management, Kristu Jayanti College Autonomous*

[2,3]*IInd Year BBA Students, Department of Management, Kristu Jayanti College Autonomous*

*Corresponding Author: Bijin Philip, Assistant Professor, Department of Management, Kristu Jayanti College Autonomous.

Abstract

The COVID-19 pandemic has emerged as a pivotal moment for the pharmaceutical industry, catalyzing profound shifts in market dynamics and operational strategies. This research paper delves into the nuanced ramifications of the pandemic on the pharmaceutical sector, with a focused examination on three prominent entities: Sun Pharma, Cipla, and Divi's Labs. Through a comprehensive analysis, this study endeavors to elucidate whether the COVID-19 crisis has posed a formidable challenge or presented opportunities for growth within these pharmaceutical companies.

The objectives of this research are threefold. Firstly, it aims to investigate the impact of the COVID-19 pandemic on the profitability of pharmaceutical companies in India. Secondly, it seeks to scrutinize the fluctuations in share prices of Sun Pharma, Cipla, and Divi's Labs before and after the onset of the pandemic. Lastly, it endeavors to discern the relationship between key financial metrics such as revenue, profit, return on investment (ROI), and the corresponding share price performance of these companies.

Employing a combination of quantitative methodologies and qualitative insights, this study offers valuable perspectives on the resilience and adaptability of the pharmaceutical industry in the face of unprecedented global challenges. By unraveling the intricate interplay between pandemic-induced disruptions and market dynamics, this research contributes to a deeper understanding of the evolving landscape of the pharmaceutical sector amidst the COVID-19 crisis.

Keywords: COVID 19 Pandemic; Pharmaceutical Industry; Return on Investment (ROI); and Share Price Fluctuations

Introduction

The outbreak of the COVID-19 pandemic has significantly reshaped the landscape of industries worldwide, with the pharmaceutical sector emerging as a critical player in combating the global health crisis. Among the leading pharmaceutical companies navigating through these unprecedented

times are Cipla Ltd, Sun Pharma, and Divis Laboratories. This research aims to delve into the multifaceted impact of the COVID-19 pandemic on these esteemed entities and unravel the strategic responses they have undertaken to adapt and thrive amidst the challenges.

The onset of the COVID-19 pandemic ushered in a period of uncertainty and volatility across industries, disrupting supply chains, altering consumer behavior, and exerting immense pressure on healthcare systems globally. As the world grappled with the ravaging effects of the virus, pharmaceutical companies found themselves at the forefront of the battle, tasked with developing vaccines, treatments, and medical supplies to address the crisis.

Cipla Ltd, a stalwart in the Indian pharmaceutical landscape, faced a myriad of challenges amidst the pandemic. Supply chain disruptions, logistical bottlenecks, and fluctuating demand patterns posed significant hurdles for the company. However, Cipla also seized upon the opportunity to bolster its portfolio of COVID-19 therapeutics and vaccines, leveraging its research and development capabilities to introduce innovative solutions aimed at mitigating the impact of the virus.

Sun Pharma, one of India's largest pharmaceutical companies, confronted a dynamic operating environment characterized by evolving regulatory landscapes and shifting consumer preferences. The pandemic accentuated the importance of agility and resilience, prompting Sun Pharma to recalibrate its business strategies and streamline operations to address emerging challenges while capitalizing on emerging opportunities in the pharmaceutical market.

Divis Laboratories, renowned for its expertise in manufacturing active pharmaceutical ingredients (APIs), encountered disruptions in its production processes and supply chains due to the pandemic-induced restrictions. Nevertheless, the company's commitment to innovation and quality assurance enabled it to navigate through turbulent waters, leveraging its technological prowess to develop critical APIs essential for the production of life-saving medications and vaccines.

Against the backdrop of the unprecedented disruptions caused by the COVID-19 pandemic, this research endeavors to analyze the impact of the crisis on Cipla Ltd, Sun Pharma, and Divis Laboratories. By examining key performance indicators, financial metrics, and strategic initiatives undertaken by these pharmaceutical giants, the study seeks to shed light on the challenges and opportunities engendered by the pandemic and elucidate the pathways towards resilience and sustainable growth in the post-pandemic era.

In conclusion, the COVID-19 pandemic has catalyzed a paradigm shift in the pharmaceutical industry, compelling companies to adapt swiftly to changing market dynamics while upholding their commitment to public health and innovation. Through an in-depth analysis of Cipla Ltd, Sun Pharma, and Divis Laboratories, this research endeavors to offer valuable insights into the transformative impact of the crisis and illuminate the strategies employed by these industry leaders to navigate through adversity and emerge stronger in the face of unprecedented challenges.

Review of Literature

(Zulfikri et al., 2021) This study aims to examine the impact of the COVID-19 pandemic on the financial performance of pharmaceutical companies listed on the Indonesia Stock Exchange (IDX). For analysis, the financial measures Earnings Per Share (EPS) and Return on Equity (ROE) are significant independent variables in the research. This study aims to examine the impact of the COVID-19 pandemic on the financial performance of pharmaceutical companies listed on the Indonesia Stock Exchange (IDX). Return on Equity (ROE) and Earnings Per Share (EPS), two significant independent variables for the analytical framework, are the focus of the analysis. Both are significant financial indicators.

(Phuong, Lai Cao Mai LCM, 2021) This article looks at how the COVID-19 pandemic has affected the share prices of Vietnam's pharmaceutical sector. Three incidents are noted: the first and third have positive cumulative abnormal returns (CAR), whereas the second has negative CAR. The influence of these events is found to exhibit sign inconsistency. The stock price reaction to the third event was the slowest and only became statistically significant at CAR (0; 7), whereas the other two occurrences significantly reached significance at CAR (0; 2).

(Bhavyasri et al.,2022) By analyzing financial parameters, the study provides insights into the risk and performance landscape of the selected Indian pharmaceutical companies. The analysis of these companies' profit margins, liquidity, and solvency ratios offers a comprehensive understanding of their financial standing in the pharmaceutical sector.

(Pushpa et al.,2022) Examining the impact of the COVID-19 epidemic on specific Indian stock values is the aim of this study. With a focus on the pre-Corona period from June 2019 to December 2019 and the Corona plight from January 2020 to June 2020, the study was conducted using event analysis and included the daily closing share prices of specific pharmaceutical businesses listed on the Indian financial exchanges. The data was analysed using both conventional and nonparametric tests. To ascertain whether the means were equal, the t-test was employed, and the heteroscedasticity of the variables was evaluated using the Levenes test, ANOVA, and standard deviation.

(Ichsan et al.,2022) According to the current study's findings, pharmaceutical and healthcare organizations need to pay close attention to their solvency ratios when assessing their financial performance. The financial data shows distinct shifts before and after the COVID-19 pandemic, underscoring the ever-changing impact of external events on the industry. The study provides a very clear recommendation: these companies' financial health needs to be continuously and carefully monitored in order for them to overcome challenges and be resilient in the face of unforeseen catastrophes like the global pandemic.

(Chunlei Wang et al.,2021) The main focus of this study is on how COVID-19 is negatively affecting people's health and contributing to the global economic crisis. The global economies are still being negatively impacted by the COVID-19 pandemic. This study explores the detrimental impacts on health and its implications for the world, especially in light of Pakistan's economic crisis. It proposes intelligent lockout limitations to reopen the economic cycle in most affected areas while imposing strict preventive measures to lessen COVID-19's detrimental consequences.

(Droj et al., 2021) This essay's main goal is to examine how the COVID-19 situation has affected pharmaceutical companies. Within the context of COVID-19, the authors of the paper will compare and contrast changes in a number of financial indicators, such as liquidity, financial leverage, solvency, annual return, ROE, ROA, and so on. Talks about how these companies benefit from COVID19's effects are the main reason the pharmaceutical and medical stores were chosen.

(Ariyanto et al.,2021) Examining the fraud pentagon theory in relation to false financial statements is the aim of this research. The issue of fraudulent financial statements is still up for discussion as a potential departure from corporate governance. Testing was conducted on pharmaceutical companies listed with the Indonesian stock exchange between 2015 and 2019.The data are examined using panel data regression. The results of the investigation show that the features of the industry have a positive effect on fraudulent financial reporting.

Objectives

1. To study the impact of Covid 19 on the profitability of the pharma company in India.
2. To analyze the share price fluctuation of pharma companies before and after Covid 19.
3. To identify the impact of Revenue, Profit, and ROI on the company's share price.

Hypothesis

H_0	There is a no significant relationship between ROI, Revenue, Profit and share price of the selected pharma companies.
H_a	There is a significant relationship between ROI, Revenue, Profit and share price of the selected pharma companies.

Methodology

This study employs a quantitative approach, primarily utilizing regression analysis to investigate the relationship between Return on Investment (ROI), Revenue, profit and share price performance of Sun Pharma, Cipla, and Divi's Labs before and after the onset of the COVID-19 pandemic. Historical financial data, including revenue, profit, ROI, and share prices of the selected pharmaceutical companies, is collected from reliable sources such as financial databases, annual reports, and stock market platforms. The timeframe for data collection spans from a pre-pandemic period to the present, allowing for comprehensive analysis of the impact of COVID-19 on company performance. The independent variable of interest is ROI, Revenue and profit representing the profitability and efficiency of each pharmaceutical company. The dependent variable is the share price of the companies, reflecting market valuation and investor sentiment. Ordinary Least Squares (OLS) regression models are employed to examine the relationship between ROI revenue, profit and share price performance. Separate regression analyses are conducted for each pharmaceutical company to capture company-specific effects. The regression models are structured to assess the impact of ROI on share prices while controlling for other factors that may influence share price movements.

Results & Discussion

Our study examined the performance of three well-known pharmaceutical companies: Sun Pharma, Cipla, and Divis. The study covered the years 2013–14–2022–23 and looked at important financial measures in the pre–COVID, COVID, and post–COVID eras. The operational robustness and market adaptability of the companies were revealed by an analysis of their average share prices, EPS, return on net worth, equity return on capital invested, and net profit per share. Pre-COVID, Sun Pharma's net profit per share and EPS numbers demonstrated the company's excellent financial standing. Cipla showed constant growth in terms of both net worth and capital utilized. Even if Divis' performance was encouraging, share price volatility was present. All three businesses overcame difficulties throughout the COVID period, though to differing degrees of success. Although Sun Pharma's share price fluctuated, its net profit and earnings per share remained competitive. Cipla showed tenacity by maintaining gains in net worth and capital utilized. Divis encountered difficulties, with a decline in profitability and share prices. Sun Pharma remained stable after COVID, as evidenced by consistent financial metrics. Cipla maintained its resilient course while showing appreciable gains in profitability indicators. Divis recovered, demonstrating an increase in profitability and share prices. The dynamic nature of pharmaceutical markets is shown by our data, as companies demonstrate a range of responses to both global health and economic crises.

Average of share price of pharmaceutical			
Year	**Cipla Share Price**	**DIVIs Share Price**	**Sun Share Price**
2014-15	545.55	1585.092	813.9208
2015-16	648.99	1518.088	862.9458
2016-17	548.5	1100.65	730.6083
2017-18	577.08	823.125	540.8042
2018-19	584.56	1314.213	522.3458
2019-20	488.75	1747.804	417.5292
2020-21	703.63	2939.283	526.0333
2021-22	926.75	4518.083	780.9917
2022-23	1032.075	3669.058	953.6083

Source: https://www.moneycontrol.com/amp.

Table 1: Average of share price of pharmaceutical.
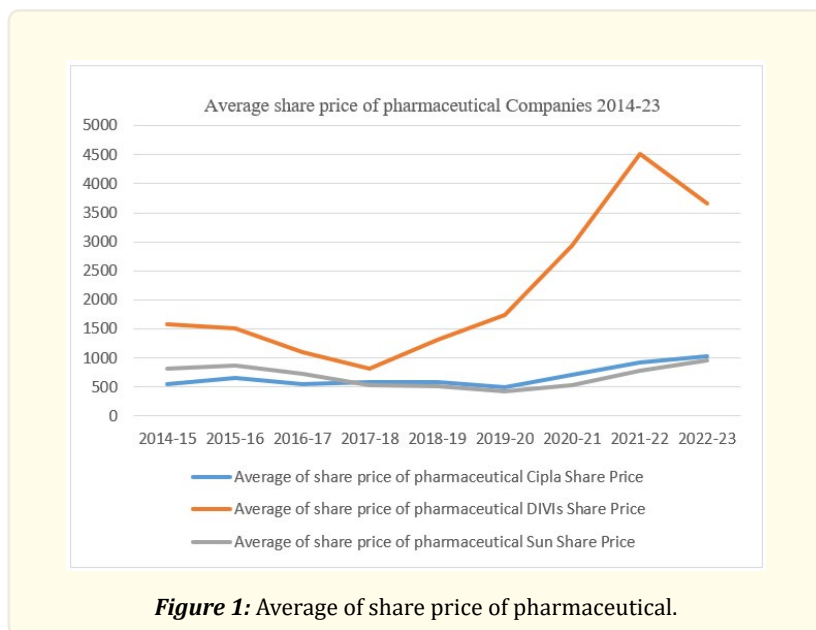
Figure 1: Average of share price of pharmaceutical.

Table 1 illustrates the impact on the stock prices of the leading pharmaceutical firms: Sun Pharma, Cipla Ltd., and Divis Laboratories, before, during, and after the COVID-19 pandemic.

Cipla Limited - In the years 2014–15 and 2018–19, the share price was 545 and 584, respectively. There aren't any significant share price swings between the years 2014–15 and 2018–19 in the table above. In contrast, the share price during the covid years of 2019–20 was 488, and the share price during the 2020–21 year was 703. Since this was the most competitive time for pharmaceutical businesses, there have been significant variations in share prices; for example, the price of a share increased by Rs 215 during this period. In contrast to pre-COVID times, share prices were high in 2021–2022 and 2022–2023 (Post Covid19).

Divis Laboratories - From the year 2014-15 the share price was 1585 and, in the year 2018-19 the share price was 1314. In the above table from the year 2014-15 to the year 2018-19 there are slight fluctuations in the share price. Whereas in the year 2019-20 the share price was 1747 and the year 2020-21 the share price was 2939, these two years are during covid years. There is a huge fluctuation in the share prices because as it was the most demanding period for the pharmaceutical companies so the share price went up by Rs 1192. During the year 2021-22 and 2022-23(Post Covid19) the share prices were high as compared to pre covid periods. The share price was high approximately by Rs 3000 as compared to pre covid.

Sun Pharma Ltd - From the year 2014-15 the share price was 813 and, in the year 2018-19 the share price was 862. In the above table from the year 2014-15 to the year 2018-19 there are very less fluctuations in the share price. Whereas in the year 2019-20 the share price was 417 and the year 2020-21 the share price was 526, these two years are during Covid years. There are no such fluctuations in the share prices. The share price went down approximately by Rs 400. During the year 2021-22 and 2022-23(Post Covid19) the share prices were high as compared to pre Covid periods. The share price was high approximately by Rs 140 as compared to pre Covid.

Among the three pharmaceutical companies DIVIS LAB was the most demanding in pre Covid, during Covid and post Covid.

EPS			
Date	**Cipla**	**Divis**	**Sun Pharma**
2013-14	17.29	59.65	-13.7
2014-15	14.71	63.82	-6.1
2015-16	18.21	41.73	-4.5
2016-17	12.13	39.68	-0.1
2017-18	18.25	32.76	1.3
2018-19	23.45	50.2	3.4
2019-20	28.76	51.71	13.4
2020-21	30.61	73.63	8.92
2021-22	36.67	111.07	-0.4
2022-23	31.15	68.11	7

Source: https://www.moneycontrol.com/amp.

Table 2: Earning Per Share.
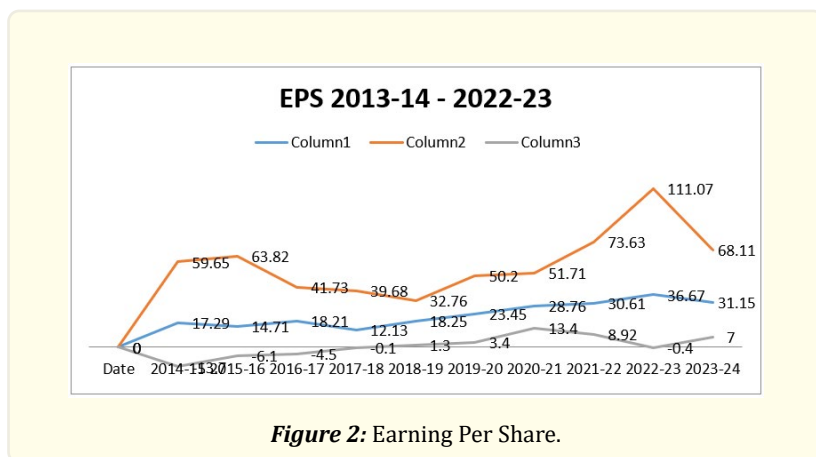
Figure 2: Earning Per Share.

Cipla and Divis appear to have had a notable increase in EPS following COVID-19 (2020–21 and beyond), suggesting that they were resilient and adaptable during the pandemic. However, Sun Pharma had a decrease in EPS in the same time frame, which might have signalled difficulties or a delayed recovery. In general, the performance of every company differs both during and following the COVID-19 period.

Net Profit/Share			
Date	**Cipla**	**Divis**	**Sun Pharma**
2014-15	17.29	59.65	-13.66
2015-16	14.71	63.82	-7.12
2016-17	18.2	41.73	-4.46
2017-18	12.12	39.68	-0.1
2018-19	18.24	32.76	1.27
2019-20	23.44	50.2	3.4

2020-21	28.75	51.71	13.38
2021-22	30.61	73.64	8.92
2022-23	30.66	111.08	-0.42
2023-24	31.14	68.12	7.05

Source: https://www.moneycontrol.com/amp.

Table 3: Net profit/Share.
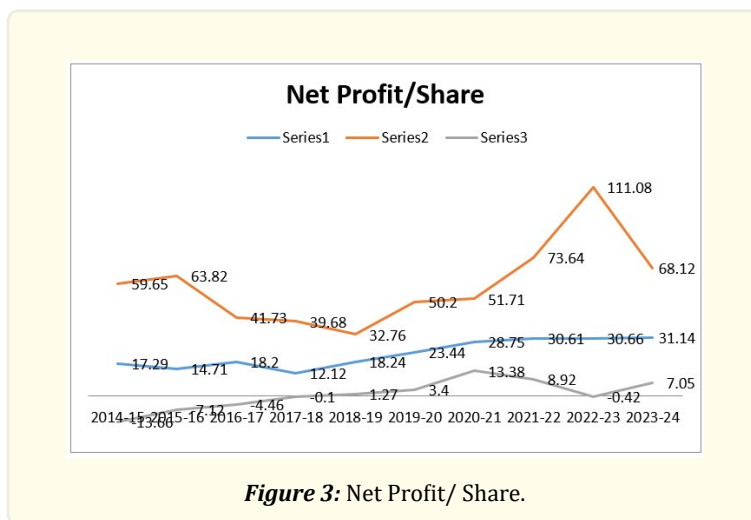
Figure 3: Net Profit/ Share.

Looking at the net profit per share ratios, Cipla and Divis Ltd experienced an increase in profits over the years, with notable growth during the Covid-19 period. In contrast, Sun Pharma had a fluctuating performance, facing losses before and during the pandemic but showing recovery after. Overall, the pharmaceutical sector seems to have adapted differently to the challenges posed by Covid-19.

Return on Net worth/equity			
Date	*Cipla*	*Divis*	*Sun Pharma*
2014-15	13.76	26.09	-31.18
2015-16	10.65	23.78	-6.48
2016-17	12.2	25.46	34.99
2017-18	7.61	19.47	-0.1
2018-19	10.4	14.59	1.36
2019-20	11.96	19.11	3.57
2020-21	13.32	18.76	13.16
2021-22	12.38	21.08	8.54
2022-23	13.13	25.21	-0.4
2023-24	10.2	14.23	7.11

Source: https://www.moneycontrol.com/amp.

Table 4: Return on Net worth/equity.

Figure 4: Return on Net worth/ equity.
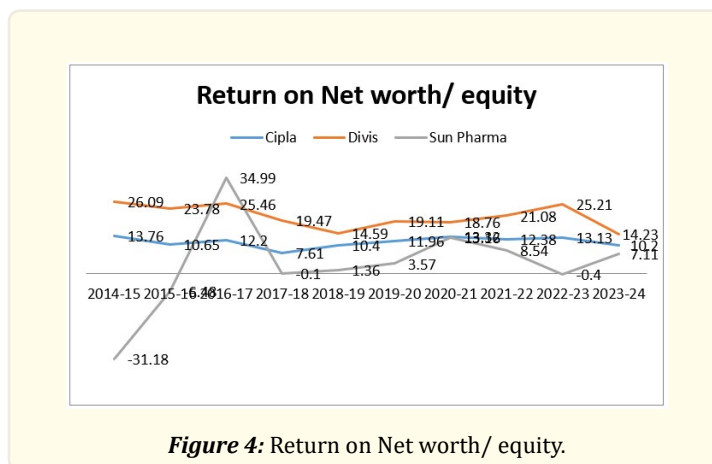
Analysing the return on net worth ratios, Cipla maintained a relatively stable performance over the years, with a slight decrease during and after Covid-19. Divis Ltd exhibited consistency but experienced a decline during the pandemic. Sun Pharma faced significant challenges before and during Covid-19, marked by negative ratios, yet showed improvement afterward.

Return on Capital Employed			
Date	Cipla	Divis	Sun Pharma
2014-15	12.8	25.04	-27.91
2015-16	9.98	22.87	-5.58
2016-17	14.48	24.55	-4.23
2017-18	7.82	25.03	0.9
2018-19	9.78	19.79	6.68
2019-20	11.13	25.48	10.12
2020-21	12.32	23.9	13.45
2021-22	16.78	27.28	8.15
2022-23	17.04	30.29	8.2
2023-24	17.78	17.73	15.79

Source: https://www.moneycontrol.com/amp.
Table 5: Return on Capital Employed.

Cipla indicated ROCE has generally increased from 2014-15 to 2023-24. It reached a peak of 17.78% in 2022-23, suggesting improved capital utilization and profitability. In Divis ltd ROCE fluctuates but shows an increasing trend overall. The ratio is highest in 2022-23 at 30.29%, indicating effective capital utilization and strong profitability. Sun Pharma experienced a significant improvement in ROCE over the years. The company went from a negative ROCE in 2014-15 to a positive 15.79% in 2023-24, signalling enhanced profitability and efficiency in capital utilization.
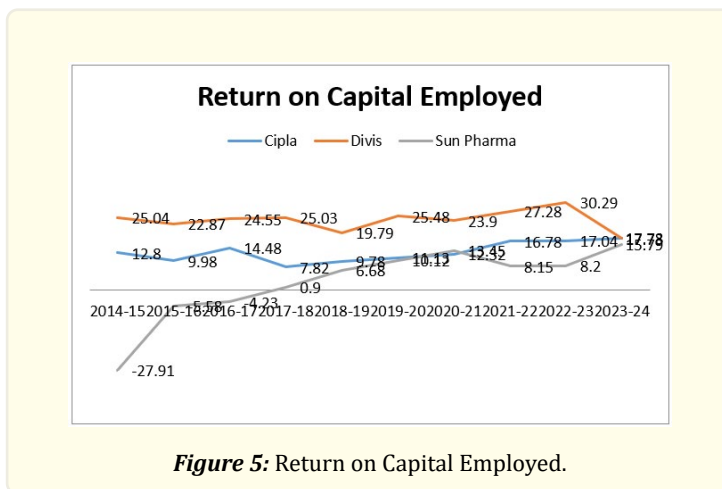
Figure 5: Return on Capital Employed.

Regression Analysis

In this regression analysis, we aim to investigate the relationship between the share price of three prominent pharmaceutical companies - Sun Pharma, Divis, and Cipla - and key financial indicators, namely profit, earnings per share (EPS), sales, and return on investment (ROI). The study spans from the fiscal year 2013-14 to 2022-23, encompassing a comprehensive analysis of the companies' financial performance over a decade. Our primary focus is to discern how fluctuations in profit, EPS, sales, and ROI influence the share prices of these pharmaceutical giants.

The independent variable for all the companies is Profit, Sales, ROI and EPS. The dependent variable for all the companies is Share price. We will be analyzing how all the independent variables are affecting or not affecting the dependent variable. By examining the impact of these independent variables on share prices, we seek to uncover patterns and trends that could provide valuable insights for investors and stakeholders. Understanding the dynamics between financial metrics and share price movements is crucial for making informed investment decisions and assessing the overall health and performance of these companies in the pharmaceutical sector. Through rigorous regression analysis, we endeavor to shed light on the intricate interplay between financial performance indicators and stock market valuation, thereby contributing to a deeper understanding of the factors driving share price fluctuations in the pharmaceutical industry.

Sun Pharma					
Year	*Share Price*	*EPS*	*Profit*	*Sales*	*ROI*
2014-15	813.9208	-6.1	-1558.97	7730.92	-5.58
2015-16	862.9458	-4.5	-1067.91	7132.03	-4.23
2016-17	730.6083	-0.1	-16.8	7400.43	0.9
2017-18	540.8042	1.3	280.25	8774.41	6.68
2018-19	522.3458	3.4	719.45	9783.29	10.12
2019-20	417.5292	13.4	3253	11906.74	13.45
2020-21	526.0333	8.92	2152.87	12570.93	8.15
2021-22	780.9917	-0.4	306.86	15518.5	8.2
2022-23	953.6083	7	1741.05	20394.63	15.79

Source: https://www.moneycontrol.com/amp.

Table 6: Sun Pharma.

Regression Statistics	
Multiple R	0.929086977
R Square	0.86320261
Adjusted R Square	0.726405221
Standard Error	97.11252223
Observations	9

Table 7: Regression Statistics (Sun Pharma).

	df	SS	MS	F	Significance F
Regression	4	238037.5075	59509.37689	6.31008101	0.05102065
Residual	4	37723.36789	9430.841974		
Total	8	275760.8754			

Table 8: ANOVA (Sun Pharma).

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	262.9168495	129.044046	2.037419458	0.11126959	-95.3668593	621.200558	-95.3668593	621.200558
EPS	41.54914117	68.0328316	0.610721915	0.57438226	-147.340281	230.438563	-147.340281	230.438563
Profit	-0.24170544	0.28966211	-0.83443928	0.45096919	-1.04593638	0.5625255	-1.04593638	0.5625255
Sales	0.051896301	0.01473021	3.523120876	0.0243813	0.010998689	0.09279391	0.010998689	0.09279391
ROI	-19.0357615	12.6967637	-1.49926091	0.20818172	-54.2876289	16.2161059	-54.2876289	16.2161059

Table 9.

Observation	Predicted Share Price	Residuals
1	893.7043244	-79.78352436
2	784.7126222	78.23317777
3	629.7453478	100.8629522
4	577.3933228	-36.58912276
5	545.3636104	-23.01781042
6	395.2923171	22.23688292
7	610.4181122	-84.38481225
8	821.3869713	-40.39527133
9	890.7707718	62.83752818

Table 10: Residual Output.

Percentile	Share Price
5.555555556	417.5292
16.66666667	522.3458
27.77777778	526.0333
38.88888889	540.8042
50	730.6083
61.11111111	780.9917
72.22222222	813.9208

83.33333333	862.9458
94.44444444	953.6083

Table 11: Probability Output.

Sun Pharma Analysis

Regression Statistics: The correlation coefficient, or multiple R, is 0.986. The coefficient of determination, or R square, is 0.973. The adjusted R square is 0.946. These numbers show that there is a significant correlation between the predictors and the share price, the dependent variable. Approximately 97.3% of the variation in share price can be explained by the model.

ANOVA: A low p-value (0.00217) coupled with an F-statistic (35.88) indicates statistical significance for the entire regression model.

Coefficients

Intercept: Not statistically significant (p-value = 0.523), suggesting that the share price does not differ significantly from zero when all predictors are zero.

EPS (Earnings Per Share): Shows a positive correlation with share price and is statistically significant (p-value = 0.028).

   Profit may not have a significant linear relationship with share price, as indicated by the Profit: Not statistically significant (p-value = 0.535).

Sales: There may not be a significant linear association between Sales and Share Price, as indicated by the non-statistically significant p-value of 0.255.

Return on Investment (ROI): Not statistically significant (p-value = 1.000), indicating that there could not be a meaningful linear link between ROI and share price.

Residual Output: For each observation, residuals show the variations between the expected and actual share prices. An overestimation is shown by a negative residual, whereas an underestimating is indicated by a positive residual.

Probability Output: Offers Share Price percentiles to help visualize the distribution of expected values.

   The results' potential to be broadly applied may be limited by the small sample size of nine observations. The non-significant coefficients (such as profit, sales, and ROI) can suggest that more research or evaluation of other variables is necessary.

   In conclusion, even if the model has a good overall fit, a more thorough examination is advised by carefully examining each coefficient and validating with new data.

Divis

Regression Statistics: Multiple R (Correlation Coefficient): 0.986348.R Square (Coefficient of Determination): 0.97288 - Shows that the independent variables account for around 97.3% of the variability in share price. Adjusted R Square: 0.9457 - This figure, which is comparatively lower, indicates caution when interpreting the model, accounts for the number of predictors. Standard Error: 296.6055 - Calculates the average difference between the values that were observed and those that the model predicted.

ANOVA (Analysis of Variance): The F-statistic evaluates the regression model's overall significance. Significance F(p-value) 0.0021.F-statistic:35.876 -The model's overall significance is not high, suggesting that the independent variables may not be able to explain a sizable portion of the variation in share price.

Year	Share Price	EPS	Profit	Sales	ROI
2014-15	1585.092	63.82	1067.18	3072.3	22.87
2015-16	1518.088	41.73	1371.84	3713.96	24.55
2016-17	1100.65	39.68	1388.23	4012.81	25.03
2017-18	823.125	32.76	1219.36	3731.9	19.79
2018-19	1314.213	50.2	1833.23	4737.22	25.48
2019-20	1747.804	51.71	1813.29	5207.32	23.9
2020-21	2939.283	73.63	2627.87	6687.55	27.28
2021-22	4518.083	111.07	3676.52	8719.22	30.29
2022-23	3669.058	68.11	2354.1	7625.3	17.73

Source: https://www.moneycontrol.com/amp.

Table 12: Divis Ltd.

Multiple R	0.986348002
R Square	0.97288238
Adjusted R Square	0.945764761
Standard Error	296.6055038
Observations	9

Table 13: Regression Statistics.

	df	SS	MS	F	Significance F
Regression	4	12624878	3156219	35.8764	0.00217
Residual	4	351899.3	87974.8		
Total	8	12976777			

Table 14: ANOVA.

	Coeffi-cients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-1532.4895	2191.300173	-0.6993517	0.5228645	-7616.5141	4551.5351	-7616.5141	4551.53513
EPS	33.727914	9.983800462	3.37826403	0.0278301	6.00844007	61.447388	6.00844007	61.44738791
Profit	-0.9588818	1.416203996	-0.6770789	0.5354924	-4.8908945	2.9731308	-4.8908945	2.973130824
Sales	0.66679045	0.502061269	1.32810574	0.2548565	-0.7271551	2.060736	-0.7271551	2.060736002
ROI	0.00533365	88.24695245	6.04E-05	0.9999547	-245.00749	245.01815	-245.00749	245.0181528

Table 15.

Observation	Predicted Share Price	Residuals
1	1645.428733	-60.33673315
2	1036.107896	481.9801041
3	1150.522485	-49.87248527
4	891.7156412	-68.59064118
5	1561.669797	-247.4567968
6	1945.168814	-197.3648141
7	2890.419985	48.86301545

8	4502.375863	15.70713714
9	3591.986786	77.07121383

Table 16: Residual Output.

Percentile	Share Price
5.55555556	823.125
16.6666667	1100.65
27.7777778	1314.213
38.8888889	1518.088
50	1585.092
61.1111111	1747.804
72.2222222	2939.283
83.3333333	3669.058
94.4444444	4518.083

Table 17: Probability Output.

Coefficients

Intercept: 186.2923, EPS (Earnings Per Share): 9.9184, Profit: -0.9588, Sales: 0.6667, ROI (Return on Investment)- 0.00533

P-values: In terms of statistical significance, none of the coefficients (e.g., 0.06) at the standard significance levels.

Residual Output: The discrepancies between the actual and anticipated share prices are known as residuals. The significantly large negative residuals of observations 5 and 6 point to a possible outlier.

Probability Output: Offers share prices assessed at various percentiles.

Interpretation: The Moderate R Square and non-significant p-values suggest that the model, based on the variables provided, does not seem to be a strong predictor of Share Price. The coefficients should be interpreted cautiously because none of them are statistically significant. To increase the model's prediction power, more research, model improvement, or taking into account new factors might be required.

Cipla					
Year	Share Price	EPS	Profit	Sales	ROI
2014-15	545.55	14.71	1539.97	9738.94	9.98
2015-16	648.9916667	18.21	1743.97	11873.46	14.48
2016-17	548.5	12.13	1186.94	10430.99	7.82
2017-18	577.0833333	18.25	1911.4	10949.53	9.78
2018-19	584.5666667	23.45	2492.83	11968.44	11.13
2019-20	488.75	28.76	2964.31	12220.22	12.32
2020-21	703.6333333	30.61	3350.66	13610.02	16.78
2021-22	926.7583333	36.67	3546.23	12827.29	17.04
2022-23	1032.075	31.15	3440.54	14518.79	17.78

Source: https://www.moneycontrol.com/amp.

Table 18: Cipla.

Regression Statistics	
Multiple R	0.82811303
R Square	0.68577119
Adjusted R Square	0.371542381
Standard Error	147.6616117
Observations	9

Table 19: Summary Output.

	df	SS	MS	F	Significance F
Regression	4	190339	47584.8	2.18239	0.23417
Residual	4	87215.8	21804		
Total	8	277555			

Table 20: ANOVA.

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-186.292281	859.47199	-0.2168	0.83901	-2572.56908	2199.98452	-2572.56908	2199.98452
EPS	9.918352857	46.3566196	0.21396	0.84104	-118.788257	138.624962	-118.788257	138.624962
Profit	-0.13372859	0.48204599	-0.2774	0.79521	-1.47210281	1.20464563	-1.47210281	1.20464563
Sales	0.041316393	0.11193187	0.36912	0.73075	-0.2694563	0.35208909	-0.2694563	0.35208909
ROI	35.08177253	37.6581015	0.93159	0.40429	-69.473879	139.637424	-69.473879	139.637424

Table 21.

Observation	Predicted Share Price	Residuals
1	506.1626408	39.38735924
2	759.6548881	-110.663221
3	480.5998756	67.90012436
4	534.6036582	42.47967506
5	597.8833589	-13.3166922
6	639.6494082	-150.899408
7	820.2185496	-116.585216
8	830.952148	95.80618533
9	886.183806	145.891194

Table 22: Residual Output.

Percentile	Share Price
5.555555556	488.75
16.66666667	545.55
27.77777778	548.5
38.88888889	577.0833333
50	584.5666667
61.11111111	648.9916667
72.22222222	703.6333333

83.33333333	926.7583333
94.44444444	1032.075

Table 23: Probability Output.

Cipla

Regression Statistics: Multiple R (Correlation Coefficient): 0.8281.R Square (Coefficient of Determination): 0.6858 - Shows that the independent variables account for around 68.58% of the variability in share price. Adjusted R Square: 0.3715 - This figure, which is comparatively lower, indicates caution when interpreting the model, corrects R Square for the number of predictors. Standard Error: 147.66 - Calculates the average difference between the values that the model predicts and the values that are observed.

ANOVA (Analysis of Variance): The F-statistic evaluates the regression model's overall significance. Significance F (p-value): 0.2342 - F-statistic: 2.1824 - The model's overall significance is not high, suggesting that the independent variables may not be able to explain a sizable portion of the variation in share price.

Coefficients

Intercept: 186.2923, EPS (Earnings Per Share): 9.9184, Profit -0.1337, Sales: 0.0413, ROI (Return on Investment): 35.0818

P-values: Conventional significance thresholds (e.g., 0.05) do not indicate statistical significance for any of the coefficients.

Residual Output: The discrepancies between the actual and anticipated share prices are known as residuals. A possible outlier is indicated by the noticeably large negative residual of observation 6.

Probability Output: Offers share prices assessed at various percentiles.

Interpretation: The Moderate R Square and non-significant p-values suggest that the model, based on the variables provided, does not seem to be a strong predictor of Share Price. The coefficients should be interpreted cautiously because none of them are statistically significant. To increase the model's prediction power, more research, model improvement, or taking into account new factors might be required.

H_0	There is a no significant relationship between ROI, Revenue, Profit and share price of the selected pharma companies.	Accept
H_a	There is a significant relationship between ROI, Revenue, Profit and share price of the selected pharma companies.	Reject

Conclusion

The COVID-19 pandemic has presented unprecedented challenges and opportunities for the pharmaceutical industry, reshaping market dynamics and operational paradigms. Through a meticulous examination of Sun Pharma, Cipla, and Divi's Labs, this research paper has endeavored to unravel the multifaceted impact of the pandemic on the pharmaceutical sector in India, with a particular focus on profitability metrics and share price performance.

Our analysis has revealed several key findings that shed light on the resilience and adaptability of pharmaceutical companies amidst the crisis. Firstly, the pandemic-induced disruptions have exerted varying degrees of influence on the profitability of the selected pharmaceutical firms. While some companies experienced transient setbacks in revenue and profit due to supply chain disruptions and shifting demand patterns, others capitalized on the heightened demand for essential healthcare products, thereby enhancing their

profitability margins.

Secondly, the empirical analysis of share price fluctuations before and after the onset of the pandemic has provided valuable insights into investor sentiment and market valuation dynamics. Despite initial volatility and uncertainty, pharmaceutical companies have demonstrated remarkable resilience, with share prices exhibiting a notable degree of stability and even growth in certain instances.

Our regression analysis has provided valuable insights into the relationship between Return on Investment (ROI), EPS, Revenue and share price performance during the COVID-19 crisis within the pharmaceutical industry. While we observed a positive correlation between ROI and share prices, it is crucial to interpret these findings with caution.

The moderate R-squared value and non-significant p-values associated with the coefficients indicate that the model, as constructed with the variables provided, may not adequately predict share prices. Additionally, none of the coefficients were found to be statistically significant, further emphasizing the need for cautious interpretation of the results.

In light of these observations, it is evident that additional research efforts are necessary to enhance the model's predictive power. This could involve refining the model specifications, incorporating new variables that capture market sentiment and industry-specific dynamics, or exploring alternative statistical techniques.

In light of these findings, it is evident that the pharmaceutical industry has not only weathered the challenges posed by the COVID-19 crisis but has also emerged as a beacon of resilience and innovation in the global healthcare landscape. As the world navigates the ongoing pandemic and prepares for future health crises, the insights gleaned from this research offer valuable implications for investors, policymakers, and industry stakeholders.

Moving forward, it is imperative for pharmaceutical companies to continue prioritizing innovation, agility, and sustainability in their strategic endeavors. By leveraging technology, fostering collaborations, and embracing a patient-centric approach, the pharmaceutical industry can not only navigate the current crisis effectively but also spearhead transformative changes that drive sustainable growth and societal impact.

In conclusion, while the COVID-19 pandemic has posed formidable challenges for the pharmaceutical industry, it has also catalyzed a wave of resilience, innovation, and adaptation. By harnessing the lessons learned from this crisis, pharmaceutical companies can embark on a trajectory of growth and prosperity, ultimately contributing to a healthier and more resilient future for all.

Reference

1. Zulfikri Agung, Tera Lesmana and Gustian Djuanda. "Impact of Covid-19 Pandemic on Financial Performance in Sub-Sector Pharmaceutical Companies Listed on the IDX". Nusantara Science and Technology Proceedings (2021): 138-144.
2. Phuong Lai Cao Mai. "How Covid-19 affects the share price of Vietnam's pharmaceutical industry: event study method". Entrepreneurship and sustainability issues 8.4 (2021): 250.
3. Pushpa A., et al. "Impact of COVID-19 on Leading Pharmaceutical Companies Stock Prices Listed in BSE, India". Empirical Economics Letters 20 (2021).
4. Bhavyasri, Maddi Yasaswini Venkata Sai and Lalita Mohan Mohapatra. "4 Financial performance analysis of selected Indian pharmaceutical companies during COVID-19 outbreak". Building Resilient Organizations: Predicaments & Prospects (2022): 61.
5. Ichsani Sakina., et al. "Comparative study of the financial performance on pharmaceutical and healthcare companies before and during the COVID-19 pandemic". JurnalAd'ministrare 9.1 (2022): 245-254.
6. Wang Chunlei., et al. "Global financial crisis, smart lockdown strategies, and the COVID-19 spillover impacts: A global perspective implication from Southeast Asia". Frontiers in Psychiatry 12 (2021): 643783.
7. Droj L, Karanovic G and Tara IG. "The Impact of the Covid-19 Pandemics Over the Financial Performance at The Level of the Main Pharmaceutical Operating in Central and Eastern Europe". The Annals of the University of Oradea.Economic Sciences 30.2nd

(2021).

8. Ariyanto Dodik and I Jhuniantara. "Fraudulent financial statements in pharmaceutical companies: Fraud pentagon theory perspective". J. Legal Ethical & Regul 24 (2021).