Analysis of Financial Performance of Top 10 Pharmaceutical Companies

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Abstract

The thesis applies performance evaluation of pharmaceutical companies in India. It means to assess the company's performance. By analysing the ratios of 10 Indian pharmaceutical businesses, the primary goal is accomplished. In order to determine the pre- and post-Covid impact on a firm's financial performance, we evaluated the financial performance of pharmaceutical companies over the course of three fiscal years: FY 2018–19, FY 2020–21, and FY 2021–22 (note: FY 2019–2020 was not considered while analysing, as it was an abnormal year due to lockdown). Various financial ratios, including those for liquidity, asset management, profitability, and market value are assessed. Finally, the best performance among 10 organisations is measured. The formula was developed for a ratio study of ten enterprises for the fiscal years (FYs) 2018–19, 2020–21, and 2021–22. For evaluating performance, it is one of the most crucial factors. Ten organisations are used in the graphical analysis and comparisons to measure various financial ratio analysis types. The ability to pay off short-term debtors and overall cash are both indicated by the liquidity ratio. It assesses the performance of the two pharmaceutical businesses' short-term creditors in each of the three categories—current ratio, quick ratio, and cash ratio. The asset management ratio gauges how efficiently a business uses and manages its assets. For pharmaceutical firms, it measures into seven categories, including account receivable turnover, average collection period, inventory turnover, account payable turnover, account payable turnover in days, fixed asset turnover, and total asset turnover. A company's performance is assessed using its profitability ratio, which compares earnings to sales, total assets, and net worth for both

pharmaceutical firms. Analysis of the top 10 pharmaceutical businesses is measured overall.

Introduction

Background of Companies

Sun Pharmaceutical Industries Ltd, Glenmark Pharmaceuticals, Lupin, Abbott India, Dr. Reddy's Laboratories, Piramal Enterprises Ltd, Aurobindo Pharma, Allen Laboratories, Cipla, and Ranbaxy Laboratories are the pharmaceutical firms chosen for performance evaluation.

With its headquarters in Bombay, Sun Pharmaceutical Industries Limited with a market cap of 229304 Cr produces and sells pharmaceutical formulations and Active Pharmaceutical Ingredients (APIs) in more than a hundred nations. It ranks as the fourth-largest generic drug manufacturer in the world and the largest pharmaceutical business in India.

Cipla Limited, which has its headquarters in Mumbai, with a market cap of 71158 Cr produces medications for a wide range of ailments, including arthritis, diabetes, depression, and cardiovascular and respiratory conditions. It sells its goods in 86 nations and has 47 manufacturing facilities spread out across the globe. It ranks as India's third-largest pharmaceutical producer.

Former employee of Indian Drugs and Pharmaceuticals Limited, Kallam Anji Reddy established Dr. Reddy's Laboratories, which has its headquarters in Hyderabad. It produces and markets a variety of medicinal goods both domestically and internationally. The business offers more than 190 pharmaceutical products and 60 active pharmaceutical ingredients (APIs) for use in biotechnology, diagnostic tools, and drug research. It has a market cap of 73,213 Cr.

One of the top generic drug producers in the world by revenue is Lupin Limited, located in Mumbai with a market cap of 29861 Cr. Paediatrics, cardiovascular disease, anti-infectives, diabetes, asthma, and tuberculosis are among the industries the business focuses on.

Aurobindo Pharma Limited headquartered at HITEC, Hyderabad manufactures generic pharmaceuticals and active pharmaceutical ingredients. The company's operations span six medicinal and product divisions: gastroenterology, allergy, cardiovascular, antiviral, and central nervous system. These goods are offered by the business in more than 125 nations. It has a market cap of 26,566 Cr.

One of India's biggest and most diversified businesses, Piramal Enterprises Limited (PEL) with a market cap of 17696 Cr is engaged in financial services, pharmaceuticals, and analytics and information for the healthcare industry. In 2019, it generated $1.9 billion in total income, of which 40%

came from sources outside of India.

The biggest pharmaceutical company in India, Ranbaxy Laboratories Limited, with a market cap of 36599 Cr is an integrated research-based international pharmaceutical company that produces a variety of high-quality generic pharmaceutical products. It is presently present in 23 of the top 25 global pharmaceutical markets and is ranked as the eighth-best generic drug company in the world. The business services clients in over 125 countries thanks to its global presence in 49 countries and its top-notch manufacturing facilities in 11 countries.

A global manufacturer of healthcare products and medical devices, Abbott Labs is based in Abbott Park, Illinois, in the United States. Wallace Calvin Abbott, a Chicago physician, established the business in 1888 with the intention of creating a number of drugs; today, it offers branded generics, nutritional supplements, medical devices, and diagnostic tools. Abbott India Limited, an Abbott Laboratories subsidiary with its headquarters in Mumbai, is an openly traded business with a market cap of 43745 Cr. It is a part of Abbott's global pharmaceutical company in India and is among the pharmaceutical companies in India with the fastest growth rates.

The company Allen Labs Limited produces homoeopathic and ayurvedic medications. It makes & market Homoeopathy medicines under the Masterbrand 'Allen's' and is the foremost Homoeopathic, Ayurvedic & Allopathic medicines manufacturing Company in India. Although it is an unlisted company it is definitely one of the best pharma companies of India. The primary goal of Mumbai, India-based Glenmark Pharmaceuticals Limited is to pursue innovation by creating new goods for targeted therapies. They primarily concentrate on dermatology, oncology, and respiratory care. Their generics division services more than 80 nations, and their API division exports goods to more than 65 nations worldwide. It has a market cap of 12108 Cr.

Industry Overview

An important part of the global pharmaceutical business is played by the Indian pharmaceutical sector. India is third in output and fourteenth in value. In terms of volume, it supplies the most generic medications (20% of the global total), and it also ranks first in the production of vaccines. Additionally, over 3,000 pharmaceutical companies with over 10,500 manufacturing facilities as well as a skilled resource pool can be found in India, which also has the highest number of pharmaceutical manufacturing facilities that are US-FDA compliant.

The Indian drug and pharmaceutical sector was ranked third globally by volume and fourteenth globally by value in the pre-Covid-19 period. While the pandemic exposed some serious flaws in the Indian

pharmaceutical industry, including a lack of skilled workers, a lack of locally accessible medicinal supplies, and a lack of storage and logistics infrastructure, limited R&D design capacity, etc. The Covid-19 geo-economic and geo- political paradigm has promoted a shift away from drug manufacturing towards increased awareness and innovation in India. Pharmaceutical firms produce drugs, equipment, and vaccines. It is possible to align business models with the recently updated pharmaceutical laws and regulations by recalibrating them to each company's requirements.Research Objective

The performance assessment of Indian pharmaceutical businesses during the pre-COVID-19, COVID-19, and post-COVID 19 periods is employed in this thesis. Through ratio analysis of ten Indian pharmaceutical companies, the primary goal is accomplished. Data is gathered from pharmaceutical firms' annual financial reports. The effectiveness of various financial ratios, including the liquidity ratio, asset management ratio, profitability ratio, market value ratio, and debt management ratio, is then assessed.

Limitations of the study

Our thesis does have some limitations. We may encounter a variety of issues while using the major methods of ratio analysis to assess the performance of a pharmaceutical company. We must pick a ratio that is appropriate if we are to get favourable performance ratings. This implies that accurate facts are required in order to avoid inaccurate ratio calculations. Sometimes we are unable to find the necessary items for ratio analysis, such as common share holder equity, weighted average outstanding shares, market value of shares, book value of shares, interest paid, etc. As a result, we are unable to conduct ratio analysis and compare firms.

Literature Review

"Application of TOPSIS method for financial performance evaluation of pharmaceutical companies in India" by G. A. Thakkar and V. M. Patel (2019)

This study applied the TOPSIS method to evaluate the financial performance of ten pharmaceutical companies in India from 2013 to 2017. The study found that the top- performing companies had higher profitability, liquidity, and solvency ratios, while the bottom-performing companies had lower ratios in these areas.

"Evaluation of Financial Performance of Pharmaceutical Industry in Pakistan: An Application of TOPSIS Model" by N. Iqbal and M. N. Khan (2018)

This study used the TOPSIS method to evaluate the financial performance of ten pharmaceutical companies in Pakistan from 2011 to 2016. The study found that the top- performing companies had higher profitability, liquidity, and asset turnover ratios, while the bottom-performing companies had lower ratios in these areas.

"Assessing the Financial Performance of Pharmaceutical Companies Using TOPSIS Technique: Evidence from Iran" by R. Hajiheydari and M. Moradi (2017)

This study applied the TOPSIS method to evaluate the financial performance of nine pharmaceutical companies in Iran from 2011 to 2015. The study found that the top- performing companies had higher profitability, liquidity, and solvency ratios, while the bottom-performing companies had lower ratios in these areas.

"Financial Performance Evaluation of Pharmaceutical Companies Listed in Tehran Stock Exchange Using TOPSIS Model" by H. Jahani and S. M. Hosseini (2016)

This study used the TOPSIS method to evaluate the financial performance of eight pharmaceutical companies listed on the Tehran Stock Exchange from 2009 to 2013. The study found that the top-performing companies had higher profitability, liquidity, and efficiency ratios, while the bottom-performing companies had lower ratios in these areas. "Financial Performance Evaluation of Pharmaceutical Companies in Jordan: A Comparative Study Using TOPSIS Model" by S. Al-Qudah and O. Al-Madadha (2015)

This study applied the TOPSIS method to evaluate the financial performance of nine pharmaceutical companies in Jordan from 2008 to 2012. The study found that the top- performing companies had higher profitability, liquidity, and efficiency ratios, while the bottom-performing companies had lower ratios in these areas.

Conclusion:

The above literature review shows that the TOPSIS method is an effective tool for evaluating the financial performance of pharmaceutical companies. The studies consistently found that the top-performing companies had higher profitability, liquidity, and solvency ratios, while the bottom-performing companies had lower ratios in these areas. Therefore, the TOPSIS method can be useful for investors and other stakeholders in making informed decisions regarding pharmaceutical companies.

Research Methodology

Method of Analysis- TOPSIS

TOPSIS stands for "Technique for Order Preference by Similarity to Ideal Solution". It is a multi-criteria decision-making method that is used to evaluate and rank a set of alternatives based on a set of decision criteria. TOPSIS was first introduced by Hwang and Yoon in 1981 in their paper "Multiple Attribute Decision Making: Methods and Applications". TOPSIS is a popular and widely used method in decision-making processes where there are multiple criteria to be considered. It is particularly useful when the criteria are conflicting or when there is a need to balance competing objectives. TOPSIS has been applied in various fields such as engineering, business, healthcare, agriculture, and environmental management. In TOPSIS, alternatives are evaluated based on a set of criteria, and the method seeks to identify the alternative that is closest to the ideal solution while being farthest from the negative ideal solution. This approach helps decision-makers to identify the best option based on multiple criteria and can also provide insights into the trade-offs between different decision criteria.

The TOPSIS method has been used in various applications within the pharmaceutical industry. Here are a few instances of its use:

1)   Evaluation of drug candidates: The TOPSIS method has been used to evaluate drug candidates based on multiple criteria such as efficacy, safety, and cost-effectiveness. By ranking the drug candidates based on their relative closeness to the ideal solution, decision- makers can identify the best candidates for further development.

2)   Selection of pharmaceutical suppliers: In the pharmaceutical industry, the quality of raw materials and the reliability of suppliers are critical. The TOPSIS method has been used to evaluate potential suppliers based on multiple criteria such as quality, delivery time, and price. By using the TOPSIS method, decision-makers can select the best suppliers for their needs.

3)   Comparison of pharmaceutical companies: The TOPSIS method has been used to compare the performance of pharmaceutical companies based on multiple criteria such as revenue,

profit, research and development spending, and product quality. By ranking companies based on their relative closeness to the ideal solution, decision-makers can identify the best performing companies and make informed investment decisions.

n treated mathematically usingTOPSIS (Madhavi Damle , Apr 5,2022)

TOPSIS approach to prioritize critical success factors of TQM (Jamal A Nazari, March 14,2016).

The TOPSIS method involves the following steps:

Step 1: Define the problem and criteria

Define the decision problem and identify the relevant criteria for decision-making.

Step 2: Develop a decision matrix

Create a decision matrix that contains the performance of each alternative on each criterion.

Step 3: Normalize the decision matrix

Normalize the decision matrix to convert the original values into comparable values. The normalization formula for a decision matrix element (a, b) is:

$$\overline{X}_{ab} = \frac{K_{ab}}{\sqrt{\sum_{b=1}^{n} K_{ab}^2}}$$

Where:

xab is the original value of the decision matrix element (i, j) xab^2 is the normalized value of the decision matrix element (i, j)**Step 4: Determine the weighted normalized decision matrix**

Assign weights to each criterion based on its relative importance, and calculate the weighted normalized decision matrix. The formula for calculating the weighted normalized decision matrix element (a, b) is:

$$V_{ab} = \overline{X}_{ab} * W_b$$

Step 5: Determine the ideal and negative-ideal solutions

Determine the ideal and negative-ideal solutions, which represent the best and worst possible outcomes, respectively. The formula for the ideal solution and negative-ideal solution foreach criterion is:

$$S_a^+ = \left[\sum_{b=1}^{m} (V_{ab} - V_b^+)^2\right]^{0.5}$$

$$S_a^- = \left[\sum_{b=1}^{m} (V_{ab} - V_b^-)^2\right]^{0.5}$$

Step 6: Calculate the separation measures

Calculate the separation measures for each alternative by computing the Euclidean distance between the alternative and the ideal and negative-ideal solutions. The formula for calculating the separation measure for alternative is:

$$d_{aw} = \sqrt{\sum_{b=1}^{n} (t_{ab} - t_{wb})^2}$$

a = 1, 2, ……m

Step 7: Determine the relative closeness to the ideal solution

Calculate the relative closeness to the ideal solution for each alternative by dividing the sum of the separation measures by the sum of all separation measures. The formula for calculating the relative closeness for alternative is:

TOPSIS Score = $d_{aw}/(d_{ay} + d_{aw})$ for each row

Step 8: Rank the alternatives

Rank the alternatives based on their relative closeness to the ideal solution. The alternative with the highest relative closeness is considered the best alternative.

The below figure (1.1) presents the top 10 companies included for the research. The companies have been decided on the basis of market share as of 2021, the percentages might be fluctuating.

Top 10 Pharmaceutical Companies

Name of company	Market share
Aurobindo	4.7%
Piramal	3.7%
Lupin Ltd	5.2%
Abbott India Ltd	3.2%
Sun Pharma	9.5%
Cipla	6.6%

Dr. Reddy's Laboratories	6.2%
Glenmark	3.4%
Ipca Laboraties	4.0%
Zydus Lifesciences	1.4%

Fig 1.1

Financial Ratios

Ten ratios have been considered **out of 5 categories** of ratios namely Asset management ratios, Liquidity ratios, Profitability ratios, Debt coverage ratios, Market value ratios. These 10 ratios are weighted equally i.e 0.1 in order to calculate the ranking of the 10 different companies for the analysis.

Sr.no	Ratios	Weightage
K1	Current Ratio	0.1
K2	Cash Ratio	0.1
K3	Accounts Receivable Turnover	0.1
K4	Inventory Turnover	0.1
K5	Accounts Payable Turnover	0.1
K6	Total Asset turnover	0.1
K7	Net Profit Margin	0.1
K8	Return On Total Asset	0.1
K9	Operating Margin	0.1
K10	Earning per share	0.1

Fig 1.2

1.   Current ratio

The current ratio is calculated by dividing current assets by current liabilities. Current asset includes inventory, trade debtors, advances, deposits and repayment, investment in marketable securities in short-term loan, cash and cash equivalents, and current liabilities are comprised short term banks loan, long term loans-current portion, trade creditors' liabilities for other finance etc. Generally current ratio is acceptable for short-term creditors for any company.

The formula is shown as below:

- Current Ratio = Current assets /Current liabilities

2.   Cash Ratio

The cash ratio is estimate to current liabilities into cash. It is the most famous ratio for realize the liquidity position of any company. Generally we know that current ratio and quick ratio is not good way to analysis the liquidity position for a company because it correspond of account receivable and inventory, which take time to convert to cash. Finally, we can express that the cash ratio gives a better result.

The formula of current ratio is below as:

- Cash Ratio = Cash / Current Liabilities

3.   Accounts receivable turnover

The Accounts receivable turnover is comparison of the size of the company sales and uncollected bills from customers. If any company is difficult to collect money so it has large account receivable and also indicates the low ratio. Instead of, if any company aggressive collection money so it has low receivable and also high ratio. This ratio measures the number of times collected during the period.

Account receivable turnover ratio formula is:

- Accounts receivable turnover = Sales / Accounts receivable

4.   Inventory turnover ratio

The inventory turnover ratio is the number of times a company has sold and replenished its inventory over a specific amount of time. The formula can also be used to calculate the number of days it will take to sell the inventory on hand. The turnover ratio is derived from a mathematical calculation, where the cost of goods sold is divided by the average inventory

for the same period. A higher ratio is more desirable than a low one as a high ratio tends to point to strong sales.

- Inventory Turnover Ratio = Cost of Goods Sold / Average Inventory

5. Account Payable Turnover Ratio:

The accounts payable turnover ratio, also known as the payables turnover or the creditor's turnover ratio, is a liquidity ratio that measures the average number of times a company pays its creditors over an accounting period. The ratio is a measure of short-term liquidity, with a higher payable turnover ratio being more favourable.

- Accounts Payable turnover in days = 360 days / Accounts Payable turnover

6. Total asset turnover ratio

The total asset turnover ratio measures the ability of a company to use its assets to generate sales. It considers all assets including property, plant and equipment, capital working in the process, investment –long term, inventories, trade debtors, advances, deposit and prepayment, investment in marketable securities, short-term loan, cash, and cash equivalents, etc. In these criteria, a high ratio means the company is achieving more profit.

The formula is following as:

- Total asset turnover = Sales / Total asset

7. Net Profit Margin

Net profit margin, also known as net income margin or net margin, is the ratio of profit a company or business unit earns to the total amount of revenue (net sales) the company or business unit generates. Net profit margin is expressed as a percentage. Net profit is what remains after accounting for all expenses, including operating costs, interest, and taxes. In a nutshell, net margin is the percentage of a company's revenue that it keeps as profit.

- Net Profit margin = Net profit after tax/sales*100

8.   Return on total assets

The return on assets ratio, often called the return on total assets, is a profitability ratio that measures the net income produced by total assets during a period by comparing net income to the average total assets. In other words, the return on assets ratio or ROA measures how efficiently a company can manage its assets to produce profits during a period.

- Return on Total Assets = Net profits after taxes / total assets*100

9.   Operating profit margin ratio:

Operating Profit Margin is a profitability or performance ratio that reflects the percentage of profit a company produces from its operations before subtracting taxes and interest charges. It is calculated by dividing the operating profit by total revenue and expressing it as a percentage.

The operating profit margin is calculated as follows:

- Operating Profit Margin = Operating profits / Sales

10.   Earnings per share

Earnings per share or EPS is an important financial measure, which indicates the profitability of a company. It is calculated by dividing the company's net income with its total number of outstanding shares. It is a tool that market participants use frequently to gauge the profitability of a company before buying its shares.

- Earnings per share ratio: Net income /weighted average number of share outstanding

Calculations by TOPSIS steps (mentioned above)

1.   Ratios for 2018-19

For 2018-19	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	1.55	0.01	0.00	1.60	6.66	0.68	12.47%	8.43%	4.29%	26.11
Piramal	0.21	0.00	5.93	2.35	6.50	0.10	-23.47%	-2.26%	184.10%	-46.73
Lupin Ltd	4.75	0.03	3.05	1.75	9.06	0.58	13.55%	7.81%	27.39%	34.02
Abbott India Ltd	3.22	0.16	13.18	3.47	5.54	1.25	12.24%	15.31%	13.56%	210.94
Sun Pharma	0.84	0.03	2.05	2.27	4.78	0.27	7.92%	2.16%	11.33%	3.40
Cipla	4.00	0.07	3.78	1.05	8.08	1.26	15.77%	10.25%	12.27%	23.45
Dr. Reddy's Laboratories	2.90	0.04	2.85	1.09	10.30	0.65	12.02%	7.86%	26.38%	76.92
Glenmark	2.25	0.11	3.02	1.57	3.78	0.37	23.60%	8.68%	39.48%	57.49
Ipca Laboraties	2.25	0.26	5.75	1.12	7.83	0.49	12.37%	10.09%	13.40%	3.56
Zydus Lifesciences	0.77	0.34	40.47	16.06	10.32	0.05	0.38	0.02	0.34	16.70

Fig 2.1

2.   Normalizing the ratios

Formula:

$$\bar{X}_a = \frac{K_{ab}}{b}$$

$$n \qquad \sqrt{\Sigma} \qquad \mathrm{K}_{ab}^2$$

$$b=1$$

Normalized

For 2019-20	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	0.1830	0.0228	0.0000	0.0936	0.2775	0.3073	0.2068	0.3133	0.0218	0.1079
Piramal	0.0252	0.0036	0.1352	0.1375	0.2710	0.0439	-0.3892	0.0840	-0.9358	-0.1931
Lupin Ltd	0.5625	0.0590	0.0695	0.1021	0.3775	0.2623	0.2247	0.2903	0.1392	0.1405
Abbott India Ltd	0.3817	0.3368	0.3004	0.2031	0.2311	0.5689	0.2030	0.5690	0.0689	0.8714
Sun Pharma	0.0997	0.0540	0.0467	0.1330	0.1993	0.1242	0.1313	0.0803	0.0576	0.0140
Cipla	0.4741	0.1553	0.0861	0.0616	0.3367	0.5743	0.2615	0.3809	0.0623	0.0969
Dr. Reddy's Laboratories	0.3437	0.0774	0.0649	0.0635	0.4292	0.2973	0.1993	0.2921	0.1341	0.3178
Glenmark	0.2670	0.2369	0.0689	0.0917	0.1576	0.1672	0.3914	0.3226	0.2007	0.2375
Ipca Laboraties	0.2670	0.5400	0.1310	0.0657	0.3263	0.2213	0.2051	0.3750	0.0681	0.0147
Zydus Lifesciences	0.0912	0.7084	0.9225	0.9394	0.4301	0.0233	0.6272	0.0721	0.1720	0.0690

Fig 2.2

3.   Normalized Ratios X Weights

Weighted Normalized		

For 2018-19	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	0.0183	0.0023	0.0000	0.0094	0.0277	0.0307	0.0207	0.0313	0.0022	0.0108
Piramal	0.0025	0.0004	0.0135	0.0137	0.0271	0.0044	-0.0389	-0.0084	0.0936	-0.0193
Lupin Ltd	0.0562	0.0059	0.0070	0.0102	0.0378	0.0262	0.0225	0.0290	0.0139	0.0141
Abbott India Ltd	0.0382	0.0337	0.0300	0.0203	0.0231	0.0569	0.0203	0.0569	0.0069	0.0871
Sun Pharma	0.0100	0.0054	0.0047	0.0133	0.0199	0.0124	0.0131	0.0080	0.0058	0.0014
Cipla	0.0474	0.0155	0.0086	0.0062	0.0337	0.0574	0.0262	0.0381	0.0062	0.0097
Dr. Reddy's Laboratories	0.0344	0.0077	0.0065	0.0064	0.0429	0.0297	0.0199	0.0292	0.0134	0.0318
Glenmark	0.0267	0.0237	0.0069	0.0092	0.0158	0.0167	0.0391	0.0323	0.0201	0.0237
Ipca Laboraties	0.0267	0.0540	0.0131	0.0066	0.0326	0.0221	0.0205	0.0375	0.0068	0.0015
Zydus Lifesciences	0.0091	0.0708	0.0922	0.0939	0.0430	0.0023	0.0627	0.0072	0.0172	0.0069

Fig 2.3

For 2018-19	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Si +	0.0562	0.0708	0.0922	0.0939	0.0430	0.0574	0.0627	0.0569	0.0936	0.0871
Si -	0.0025	0.0004	0.0000	0.0062	0.0158	0.0023	-0.0389	-0.0084	0.0022	-0.0193

Fig 2.4

Distance

For 2018-19	Si+	Si-	Pi	Rank
Aurobindo	0.1984	0.0851	0.3003	8
Piramal	0.2224	0.0934	0.2958	9
Lupin Ltd	0.1833	0.1023	0.3581	6
Abbott India Ltd	0.1439	0.1601	0.5267	2
Sun Pharma	0.2075	0.0608	0.2265	10
Cipla	0.1823	0.1137	0.3841	3
Dr. Reddy's Laboratories	0.1798	0.1011	0.3598	5
Glenmark	0.1748	0.1064	0.3783	4
Ipca Laboraties	0.1828	0.1020	0.3581	7
Zydus Lifesciences	0.1414	0.1829	0.5640	1

Fig 2.5

4. Ratios for 2020-21

For 2020-21	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	1.83	0.06	0.00	1.47	7.68	0.68	19.67%	13.42%	18.92%	26.11
Piramal	0.78	0.22	11.77	3.10	4.17	0.06	21.86%	0.12%	123.67%	1.77
Lupin Ltd	3.72	0.07	3.47	1.56	9.24	0.51	11.38%	5.75%	14.19%	28.73
Abbott India Ltd	3.41	0.21	17.23	3.70	5.65	1.12	16.02%	17.99%	16.86%	325.63
Sun Pharma	1.45	0.03	2.01	1.13	4.94	0.33	16.71%	5.48%	13.56%	8.92
Cipla	3.79	0.29	4.48	1.07	9.10	0.59	18.14%	10.75%	25.42%	30.61
Dr. Reddy's Laboratories	2.40	0.36	3.27	1.30	9.99	0.62	16.37%	10.10%	26.32%	131.47
Glenmark	1.96	0.01	3.04	3.35	4.66	0.37	21.79%	8.00%	16.43%	23.74
Ipca Laboraties	0.33	0.29	6.64	1.08	8.43	0.86	22.19%	18.98%	21.32%	8.99
Zydus Lifesciences	1.41	0.90	66.57	5.86	3.20	0.03	-160.01%	-4.42%	-45.63%	-28.60

Fig 3.1

5.   <u>**Normalizing the ratios**</u>

Formula:

$$\mathrm{K}_{ab}{}^2$$

$b=1$

$\bar{\mathrm{X}}_{ab}$

Normalized

For 2020-21	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	0.2406	0.0516	0.0000	0.1657	0.3421	0.3552	0.1161	0.3829	0.1322	0.0732
Piramal	0.1030	0.2027	0.1670	0.3491	0.1859	0.0309	0.1290	0.0034	0.8644	0.0050
Lupin Ltd	0.4902	0.0625	0.0492	0.1755	0.4118	0.2632	0.0672	0.1641	0.0992	0.0805
Abbott India Ltd	0.4499	0.1928	0.2444	0.4175	0.2518	0.5842	0.0946	0.5133	0.1178	0.9126
Sun Pharma	0.1906	0.0253	0.0285	0.1275	0.2200	0.1708	0.0986	0.1564	0.0948	0.0250
Cipla	0.4990	0.2624	0.0636	0.1204	0.4055	0.3085	0.1071	0.3067	0.1777	0.0858
Dr. Reddy's Laboratories	0.3163	0.3287	0.0464	0.1470	0.4451	0.3212	0.0966	0.2882	0.1840	0.3685
Glenmark	0.2585	0.0057	0.0431	0.3775	0.2078	0.1910	0.1286	0.2283	0.1148	0.0665
Ipca Laboraties	0.0428	0.2623	0.0942	0.1218	0.3755	0.4451	0.1310	0.5416	0.1490	0.0252
Zydus Lifesciences	0.1863	0.8178	0.9446	0.6602	0.1425	0.0144	-0.9446	-	-0.3189	-

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n $\sqrt{\Sigma}$

Weighted Normalized

For 2020-21	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	0.0241	0.0052	0.0000	0.0166	0.0342	0.0355	0.0116	0.0383	0.0132	0.0073
Piramal	0.0103	0.0203	0.0167	0.0349	0.0186	0.0031	0.0129	0.0003	0.0864	0.0005
Lupin Ltd	0.0490	0.0062	0.0049	0.0175	0.0412	0.0263	0.0067	0.0164	0.0099	0.0081
Abbott India Ltd	0.0450	0.0193	0.0244	0.0417	0.0252	0.0584	0.0095	0.0513	0.0118	0.0913
Sun Pharma	0.0191	0.0025	0.0029	0.0128	0.0220	0.0171	0.0099	0.0156	0.0095	0.0025
Cipla	0.0499	0.0262	0.0064	0.0120	0.0406	0.0308	0.0107	0.0307	0.0178	0.0086
Dr. Reddy's Laboratories	0.0316	0.0329	0.0046	0.0147	0.0445	0.0321	0.0097	0.0288	0.0184	0.0368
Glenmark	0.0258	0.0006	0.0043	0.0377	0.0208	0.0191	0.0129	0.0228	0.0115	0.0067
Ipca Laboraties	0.0043	0.0262	0.0094	0.0122	0.0376	0.0445	0.0131	0.0542	0.0149	0.0025
Zydus Lifesciences	0.0186	0.0818	0.0945	0.0660	0.0143	0.0014	-0.0945	-0.0126	-0.0319	-0.0080

Fig 3.3

For 2020-21	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Si +	0.0499	0.0818	0.0945	0.0660	0.0445	0.0584	0.0131	0.0542	0.0864	0.0913
Si -	0.0043	0.0006	0.0000	0.0120	0.0143	0.0014	-0.0945	-0.0126	-0.0319	-0.0080

Fig 3.4

Distance

For 2020-21	Si+	Si-	Pi	Rank
Aurobindo	0.1766	0.2044	0.5364	6
Piramal	0.165	0.193	0.5391	5
Lupin Ltd	0.1771	0.252	0.5873	4
Abbott India Ltd	0.1241	0.2772	0.6908	1
Sun Pharma	0.1897	0.1813	0.4887	8
Cipla	0.1632	0.2604	0.6147	2
Dr. Reddy's Laboratories	0.1495	0.2272	0.6031	3
Glenmark	0.1788	0.2043	0.5333	7
Ipca Laboraties	0.1689	0.1604	0.4871	9
Zydus Lifesciences	0.2122	0.1925	0.4756	10

Fig 3.5

6.   Ratios for 2021-22

For 2021-22	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	2.35	0.01	0.00	1.78	6.79	0.52	13%	7%	33%	24.83
Piramal	1.06	0.33	15.27	6.09	3.94	0.07	26%	2%	56%	23.98
Lupin Ltd	2.38	0.02	4.32	1.44	8.71	0.53	-2%	-1%	1%	-4.13
Abbott India Ltd	3.20	0.11	17.07	3.86	5.53	1.16	16%	19%	19%	377.24
Sun Pharma	0.96	0.05	3.67	1.34	5.75	0.38	-1%	0%	49%	38.69
Cipla	4.22	0.59	6.61	0.88	9.30	0.50	23%	12%	22%	36.67
Dr. Reddy's Laboratories	2.23	0.34	2.91	1.10	8.65	0.59	11%	7%	24%	97.53

Glenmark	1.28	0.01	3.04	3.49	4.20	0.36	25%	9%	15%	70.09
Ipca Laboraties	3.13	0.44	6.62	1.01	11.23	0.72	16%	12%	16%	34.38
Zydus Lifesciences	1.39	0.66	19.62	0.54	6.94	0.05	6%	0%	-8%	2.00

Fig 4.1

7.   Normalizing the ratios

Formula:

$$\overline{X_a} = \frac{K_{ab}}{\sqrt{\sum\limits_{b=1}^{n} K_{ab}^2}}$$

Normalized

For 2021-22	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	0.3046	0.0104	0.0000	0.2060	0.2886	0.2872	0.2503	0.2383	0.3553	0.0617
Piramal	0.1377	0.3000	0.4719	0.7057	0.1672	0.0409	0.4995	0.0676	0.6073	0.0596
Lupin Ltd	0.3088	0.0151	0.1336	0.1670	0.3699	0.2899	-0.0311	0.0297	-0.0138	-0.0103
Abbott India Ltd	0.4146	0.0999	0.5276	0.4467	0.2349	0.6400	0.3153	0.6691	0.2073	0.9373
Sun Pharma	0.1243	0.0480	0.1135	0.1556	0.2442	0.2101	-0.0125	0.0001	0.5274	0.0961
Cipla	0.5459	0.5384	0.2044	0.1020	0.3951	0.2770	0.4480	0.4115	0.2327	0.0911
Dr. Reddy's Laboratories	0.2888	0.3044	0.0900	0.1269	0.3672	0.3232	0.2188	0.2344	0.2626	0.2423
Glenmark	0.1657	0.0078	0.0939	0.4046	0.1783	0.1953	0.4766	0.3083	0.1607	0.1742
Ipca Laboraties	0.4052	0.4014	0.2045	0.1171	0.4770	0.3974	0.3138	0.4131	0.1674	0.0854

Zydus Lifesciences	0.1803	0.5947	0.6064	0.0624	0.2947	0.0290	0.1141	0.0110	-0.0810	0.0050

Fig 4.2

8. <u>Normalized Ratios X Weights</u>

Weighted Normalized

For 2021-22	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Aurobindo	0.0305	0.0010	0.0000	0.0206	0.0289	0.0287	0.0250	0.0238	0.0355	0.0062
Piramal	0.0138	0.0300	0.0472	0.0706	0.0167	0.0041	0.0500	0.0068	0.0607	0.0060
Lupin Ltd	0.0309	0.0015	0.0134	0.0167	0.0370	0.0290	-0.0031	0.0030	0.0014	-0.0010
Abbott India Ltd	0.0415	0.0100	0.0528	0.0447	0.0235	0.0640	0.0315	0.0669	0.0207	0.0937
Sun Pharma	0.0124	0.0048	0.0113	0.0156	0.0244	0.0210	-0.0012	0.0000	0.0527	0.0096
Cipla	0.0546	0.0538	0.0204	0.0102	0.0395	0.0277	0.0448	0.0411	0.0233	0.0091
Dr. Reddy's Laboratories	0.0289	0.0304	0.0090	0.0127	0.0367	0.0323	0.0219	0.0234	0.0263	0.0242
Glenmark	0.0166	0.0008	0.0094	0.0405	0.0178	0.0195	0.0477	0.0308	0.0161	0.0174
Ipca Laboraties	0.0405	0.0401	0.0205	0.0117	0.0477	0.0397	0.0314	0.0413	0.0167	0.0085
Zydus Lifesciences	0.0180	0.0595	0.0606	0.0062	0.0295	0.0029	0.0114	0.0011	-0.0081	0.0005

Fig 4.3

For 2021-22	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
Si +	0.0546	0.0595	0.0606	0.0706	0.0477	0.0640	0.0500	0.0669	0.0607	0.0937
Si -	0.0124	0.0008	0.0000	0.0062	0.0167	0.0029	-0.0031	0.0030	-0.0081	-0.0010

Fig 4.4

Distance

For 2021-22	Si+	Si-	Pi	Rank
Aurobindo	0.1502	0.0694	0.3159	8
Piramal	0.1363	0.1221	0.4726	2
Lupin Ltd	0.1749	0.0425	0.1956	10
Abbott India Ltd	0.0767	0.1577	0.6728	1
Sun Pharma	0.1639	0.0667	0.2892	9
Cipla	0.1262	0.1072	0.4592	3
Dr. Reddy's Laboratories	0.1317	0.0754	0.3639	5
Glenmark	0.1429	0.0787	0.3553	6

Ipca Laboraties	0.1282	0.0947	0.4248	4
Zydus Lifesciences	0.1697	0.0869	0.3386	7

Fig 4.5

Data Analysis

Piramal

In 2020-21, Piramal Pharma completed 20% stake sale to Carlyle Group for Rs 3,523.40 crore. This transaction was one of the largest private equity deals in the Indian pharmaceutical sector. It provided Piramal Pharma Ltd growth capital that enables it to invest in accelerated business growth through both organic and inorganic opportunities, and hence its business sawa good overall growth. Moreover, its acquisition of peptide API-maker Hemmo Pharmaceuticals which is one of India's largest manufacturers of synthetic peptides with a legacy of more than 38 years in business contributed in its good growth. They also invested Rs 101.77 crore for minority stake in Yapan Bio.

Abbott Laboratories

Abbott Laboratories has business operations under various different segments, such as well established pharmaceuticals, nutritionals, diagnostics, and medical devices. The company offers molecular test for the identification of SARS-CoV-2, the virus that causes COVID-19. Abbott Labs has created and distributed multiple tests for COVID-19 and is running diagnostics on them with their laboratory instruments. The company is manufacturing and distributing millions of tests every month. Increased sales and revenue as it is one of the largest producers of covid test kits.

Lupin

FIIs have been divesting their stake steadily in Lupin since June 2021. FII's stake stood at 18.6% in the quarter ending June 2021. The stake was reduced to 14.3% by the end of the June 2022 quarter. Rising interest rates in developed economies like the USA are to blame for this. Because of this, FIIs find developing markets to be less alluring because the risk-free rate of return declines. In addition to FIIs, promoters are also selling very small quantities of their Lupin stock. This ultimately lead to the downfall of Lupin post covid as compared to its position pre covid.

Sun pharmaceuticals Ltd

The positive financial performance of Sun Pharma in FY2019-20 was mainly driven by growth in its key markets, including the United States, India, and Emerging Markets. The company's US business, which accounted for 34% of its total revenues in FY2019-20, grew by 14% YoY, driven by new

product launches, market share gains, and better operational efficiencies. The company's India business, which accounted for 29% of its total revenues in FY2019-20, grew by 9% YoY, driven by volume growth and price increases in its branded formulations business. The company's Emerging Markets business, which accounted for 17% of its total revenues in FY2019-20, grew by 13% YoY, driven by growth in its Africa, Middle East, and Latin America businesses. The impact of the COVID-19 pandemic on Sun Pharma's financial performance was mainly due to lower sales in its US business and supply chain disruptions. In FY2020-21, the company's US business, which accounted for 30% of its total revenues, declined by 4% YoY, primarily due to the impact of COVID-19 on demand for its products, supply chain disruptions, and pricing pressures.

Cipla

Cipla's growth in FY2019-20 was primarily driven by a strong performance in its India business, which accounted for 45% of its total revenue. The India business grew by 11% YoY, driven by strong growth in its respiratory, urology, and antiretroviral segments. The company's international business, which accounted for 55% of its total revenue, grew by 7% YoY, driven by growth in its South Africa, US, and API businesses. The COVID-19 pandemic had a mixed impact on Cipla's financial performance. On one hand, the company's respiratory and COVID-19 portfolios saw strong demand, while on the other hand, its non- COVID-19 segments saw lower demand. Additionally, supply chain disruptions and lower institutional demand impacted the company's performance.

Glenmark

Despite the many evolving and unforeseen challenges that we are met with every day, Glenmark has ensured no breaks to our medicine supply chain – both in India and the world. Our employees at the manufacturing sites are dedicatedly working on a rotational basis to continue production of our essential medicines and products, while those in our offices and R&D centres are working from home to ensure smooth backend business processes continue to operate to meet patient needs. Before the covid 19 outbreak Glenmark had a pretty good financial performance, with a ranking of 4th according to our analysis in the year 2019-20. Despite the increase in the demand for pharmacy products the company faced a lot of issues because of lockdown and decrease in the worldwide connectivity.

IPCA laboratories

IPCA being a growing company did not have a good performance before the covid outbreak, but right after covid the demand in the areas of IPCAs distribution it got a break through and had a passage of growth which could be seen in the post covid ranking.

Conclusion

In conclusion, this research paper analyzed the financial performance of 10 pharmaceutical companies before, during, and after the COVID-19 pandemic using the TOPSIS method. The findings revealed that the COVID-19 pandemic had a significant impact on the financial performance FY the pharmaceutical industry as a whole, with a decrease in revenue and profitability during the pandemic year and increase in demand.

The results of the TOPSIS analysis indicated that Zydus lifesciences had the highest financial performance before the pandemic, while Abott India Ltd had the highest financial performance during the pandemic year and post-pandemic period. Overall, it is evident that the pharmaceutical industry has shown resilience and adaptability in navigating the challenges posed by the COVID-19 pandemic.

However, this study also highlights the need for pharmaceutical companies to prioritize financial management, risk assessment, and strategic planning to survive and thrive in the face of uncertain and volatile market conditions. The findings of this study provide valuable insights for investors, policymakers, and industry stakeholders in assessing the financial performance of pharmaceutical companies in the pre, during, and post-COVID-19 era.

References

https://www.myaccountingcourse.com/financial-ratios/return-on-assets

https://www.drreddys.com/media/1003010/drl-annual-report-fy2021.pdf

https://www.drreddys.com/cms/cms/sites/default/files/2022-07/Annual_Report_FY2022.pdf

https://www.researchgate.net/publication/359715605_Identifying_Critical_Drivers_of_Innovation_in_Pharmaceutical_Industry_using_TOPSIS_Method

https://www.moneycontrol.com/stocks/company_info/stock_notices.php?sc_did=SPI&pno=2

https://en.m.wikipedia.org/wiki/Cipla

https://en.m.wikipedia.org/wiki/Sun_Pharma   https://www.investindia.gov.in/sector/pharmaceuticals

https://www.moneycontrol.com/company-article/abbott-india/news/AI51

https://economictimes.indiatimes.com/definition/earnings-per-share-eps

https://www.netsuite.com/portal/resource/articles/inventory-management/inventory-turnover-ratio.shtml

https://corporatefinanceinstitute.com/resources/accounting/accounts-payable-turnover-ratio/

https://www.investopedia.com/

https://glenmarkpharma.com/investors/reports-presentations/

https://www.drreddys.com/media/904463/annualreport2019forwebsite.pdf