

“Analyzing the Financial Performance of the Selected Pharmaceutical Companies in India Using DuPont Analysis”

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Abstract

This study attempts basically to measure the financial performance of the Pharmaceutical Industry taking top 5 companies like Cipla Ltd, Dr Reddy's laboratories Ltd, Sun pharmaceuticals industries Ltd, Divi's laboratories and Gland Pharma for a period of 5 years from 2017 to 2021. In order to achieve our goals in this paper we have measured the ratios of ROE, ROA applying the DuPont analysis, which have been demonstrated with the aim of tables to show the change periodically. DuPont analysis (ROI and ROE)) is an important tool for judging the operating financial performance. It is an indication of the earning power of the firm. DuPont Model which is based on analysis of Return on Equity (ROE) & Return on Investment (ROI). The return on equity disaggregates performance into three components: Net Profit Margin, Total Asset Turnover, and the Equity Multiplier. Return on Investment consists of Assets Turnover and Profit Margin. The return on investment consists of Assets Turnover (Operating Income X Total Assets) and Profit Margin (EBIT X Operating Income). From the study it is found that Divi's laboratories financial performance is high followed by Gland Pharma followed by Dr. Reddy's Laboratories then Cipla Ltd and then Sun pharmaceuticals industries Ltd. The five companies are significant at their level. In conclusion, ROE & ROI is the most comprehensive measure of profitability of a firm. It considers the operating and investing decisions made as well as the financing and tax related decisions

Key words

Financial Performance, Pharmaceutical companies, DuPont analysis, Return on equity, Return on investment.

Introduction

For measuring the financial performance of any business, it's necessary to conduct a financial analysis to understand how well the business is running. Among this analysis there's a model called DuPont analysis which was developed by Donaldson Brown in the early 1900. DuPont

analysis could also be a useful technique for decomposing the varied drivers of return on equity and could be used for assessment of profitability. Dupont analysis are often employed by the investors for determining the risk analysis and they can compare the ROE of different companies to choose the company with the highest metrics so that their return on investment is increased.

This model was created by F. Donaldson brown when he was assigned to clean up the overall financial statements of the General Motors and from that point this model has been a crucial a part of financial analysis. Dupont model was first employed by DuPont corporation, this model breaks return on equity and return on investment into three parts that are, net income margin, asset turnover and leverage factor.

The DuPont analysis may be a useful mechanism for measuring both the overview and the focus of the analysis. This model helps to know the strengths and weakness evidences within the financial statements of the corporate. During this analysis, we are studying the financial performance of the pharmaceutical industry in India. The most important goal is to seek out the ROE and ROI of the top 5 pharmaceutical companies in India according to the market capitalization in Indian stock exchange namely Cipla ltd, Dr Reddy's laboratories ltd, Sun pharmaceuticals industries ltd, Divi's laboratories and Gland Pharma for a period of 5 years from 2017 to 2021.

India is that the 3rd largest producer and provider of overall volume of generic medicines within the world and 14th consistent with the worth. It has a worth of US\$42 billion in 2021, with 20% and 3.5% share of the entire global pharmaceutical exports consistent with volume and value respectively which is quite more than 200 countries and territories in 2021. Indian pharmaceutical sector supplies over 50% of worldwide demand for various vaccines and 40% of generic demand. India has projected to grow over 12% within the next 5 years which might lead India to become the leading country in pharmaceutical industry. Due to the expansion seen within the pharmaceutical industry the shareholders of those companies have more confidence within the companies because companies profit results in increase within the value of the shareholders fund and thereby increasing the amount of dividend earned by them. This is the reason to aim the research towards the financial performance of the pharmaceutical industry in India using the DuPont analysis.

Literature Review Concept of DuPont analysis

For an investment to be acceptable to a firm's financial management it must provide a positive answer to the question "Will the acquisition of this asset increase the value of the owner's equity?" (Arditti, 1967)

The five step Du-Pont explains that, where companies have high cost of borrowing, their interest expense on more debt could offset the positive effects of increased leverage. In addition, interest expenses for most companies are non-tax deductible, so the extended model considers interest charges and the company's tax burden. (Kusi, Ansah-Adu, & Agyei, 2015)

The company profitability for most investors is a landmark in terms of earnings they could obtain by placing capital. Profits earned by a company, taken the absolute amount, provides

an overview of a company's activity without giving details about the extent to which the company manages dividends, debts, liabilities or other indicators. In this paper it is tried to demonstrate with the help of profitability ratios like ROI and ROE that the comparison of performance and condition of a company against its competitors, analysing trends in the returns of a company in the context of trends of the components and forecasting the returns of a company based on forecasts of the components. (Christina Sheela, 2012)

DuPont analysis might not seem as eye-catching as it was seen when it first came into the scene, where it was the only tool to measure return in this fashion. This century-old analytical tool has not lost its shine as DuPont analysis helps in analysing what factors are causing increase or decrease in return on equity; this can also be witnessed with the fact that various software and online portals are available for performing DuPont analysis and is being highly used for making investment decisions. It helps in understanding the cause-and-effect relationship that is, what actually causing the return on equity to be what it is. (Chouhan, 2020)

Indian pharma industry is one of the most preferred sectors by the investors because it is considered as one of the world's main and fastest-growing sectors. Therefore, while making an investment in the pharmaceutical sector; a comprehensible analysis is needed. This study provides adequate information for prospective investors in taking a rational and informed investment decision. The information from this study will be helpful to the sample units of pharma industries to map the coming near future with a vision of improving their performance particularly the ROE. (SUSHMA, 2020)

We examine the usefulness of the level and changes in DuPont components (i.e. ATO and PM) in predicting profitability performance, as well as how market participants (i.e. investors and analysts) use DuPont components in their decisions, within a healthcare setting. We propose that the unique environmental and operational characteristics, such as heavy government regulations and labour intensiveness, would potentially affect the level of informativeness of accounting signals and change the relative importance of DuPont components documented in previous literature. (Chang, Chichernea., & HassabElnaby, 2013)

Du Pont analysis takes into consideration three indicators to measure firm's profitability:

ROA, ROE and ROI

Return on Assets- Investors can use ROA to hunt out stock opportunities because the ROA shows how efficient a company is at using its assets to generate profits. Assets include cash, stock, property, receivables, etc. Return on Assets over 5% are considered good and over 20% are considered excellent. ROAs should always be compared to firms in the same sector.

ROA = Total Assets / Net income

Return on equity- ROE offers a gauge of profit-generating efficiency by measuring the earnings an organization can generate from assets. ROE helps investors to determine whether the organization could also be a lean, profit machine or an inefficient operator. ROE indicates whether the organization is earning profits without pouring new equity capital into the business which can be considered as a very useful tool for financial success of the organization

ROE = Net income/ sales x sales/ assets x assets/ shareholder's equity

Return on investment- Return on investment may be a performance measurement tool used to evaluate the efficiency or profitability of an investment or compare the efficiency of a variety of different investments which are done by the organization. Relative to the investment's cost ROI tries to directly measure the amount of return on a particular investment done by the organization.

ROI = Assets Turnover (Operating Income X Total Assets) X Profit Margin (EBIT X Operating Income)

Problem statement

According to the existing literature, many studies have been conducted by various researchers to determine the financial soundness of the organization, but no one has used DuPont analysis as a method to determine the financial soundness of the company. In the present research, Analyzing the Financial Performance of the Selected Pharmaceutical Companies in India Using DuPont Analysis we have used the DuPont analysis to find out the financial soundness of the selected pharmaceutical companies. To determine the financial soundness of the selected pharmaceutical companies, we used return on investment and return on equity. During this study, we discovered that DuPont analysis is an important tool for determining the financial soundness of an organization, so we used DuPont analysis to determine the organization's financial soundness.

Objectives

1. To understand the financial performance of the pharmaceutical companies using the DuPont analysis
2. To find out the strengths and weakness of the companies by studying the net profitmargin, asset turnover and leverage factor.
3. To establish a relationship between return on equity and return on investment.

Hypothesis

1. **Null hypothesis-** There is no significant difference in the financial performance of selected companies with reference to Return on equity and return on investment.
2. **Alternative hypothesis-** There is significant difference in the financial performance of selected companies with reference to Return on equity and return on investment.

Research Methodology

To test the hypothesis, this study has used secondary data from the annual reports published on various websites like moneycontrol.com and ticker.finology.in for the selected pharmaceutical companies in India namely Cipla Ltd, Dr Reddy's laboratories Ltd, Sun pharmaceuticals industries Ltd, Divi's laboratories and Gland Pharma for a period of 5 years from 2017 to 2021. In this study we have calculated the return on equity (ROE) and return on investment (ROI) of the selected pharmaceutical companies. The formula is as follow:

Return on equity (ROE) = Profit Margin X Asset Turnover X Equity Multiplier

Profit Margin- Profit margin is a measure of profitability. It is an indicator of a company's pricing strategies and how well the company controls costs. Profit margin is calculated by finding the net profit as a percentage of the total revenue. As one feature of the DuPont equation, if the profit margin of a company increases, every sale will bring more money to a company's bottom line, resulting in a higher overall return on equity.

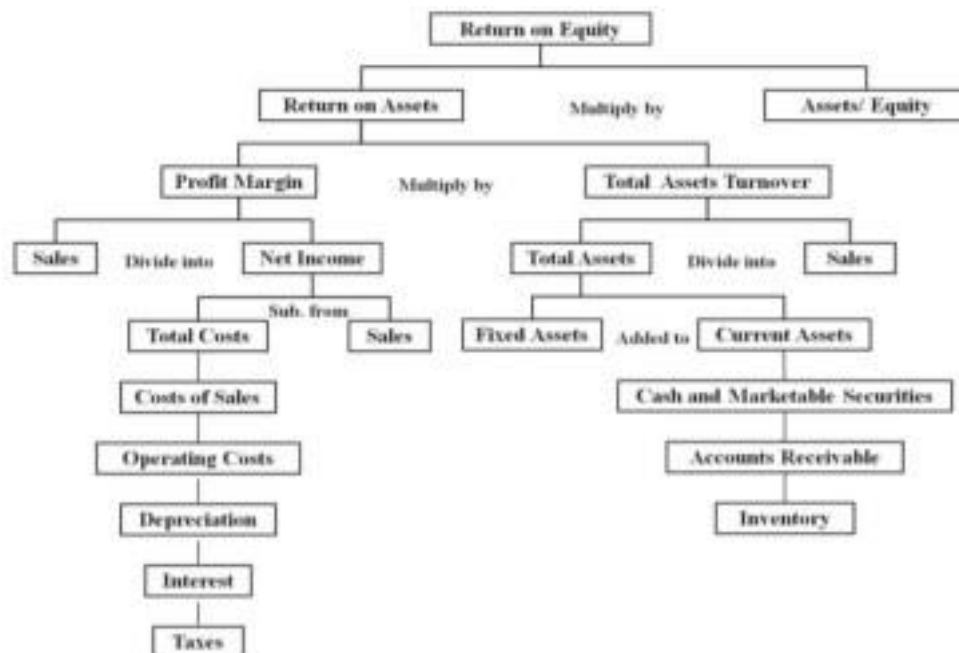
Profit Margin = Net Income/Sales

Asset Turnover- Asset turnover is a financial ratio that measures how efficiently a company uses its assets to generate sales revenue or sales income for the company. Companies with low profit margins tend to have high asset turnover, while those with high profit margins tend to have low asset turnover. Similar to profit margin, if asset turnover increases, a company will generate more sales per asset owned, once again resulting in a higher overall return on equity.

Asset Turnover= Sales/ Total Assets

Financial Leverage- Financial leverage refers to the amount of debt that a company utilizes to finance its operations, as compared with the amount of equity that the company utilizes. As was the case with asset turnover and profit margin, increased financial leverage will also lead to an increase in return on equity. This is because the increased use of debt as financing will cause a company to have higher interest payments, which are tax deductible. Because dividend payments are not tax deductible, maintaining a high proportion of debt in a company's capital structure leads to a higher return on equity.

Financial Leverage= Total Assets/Total Equity



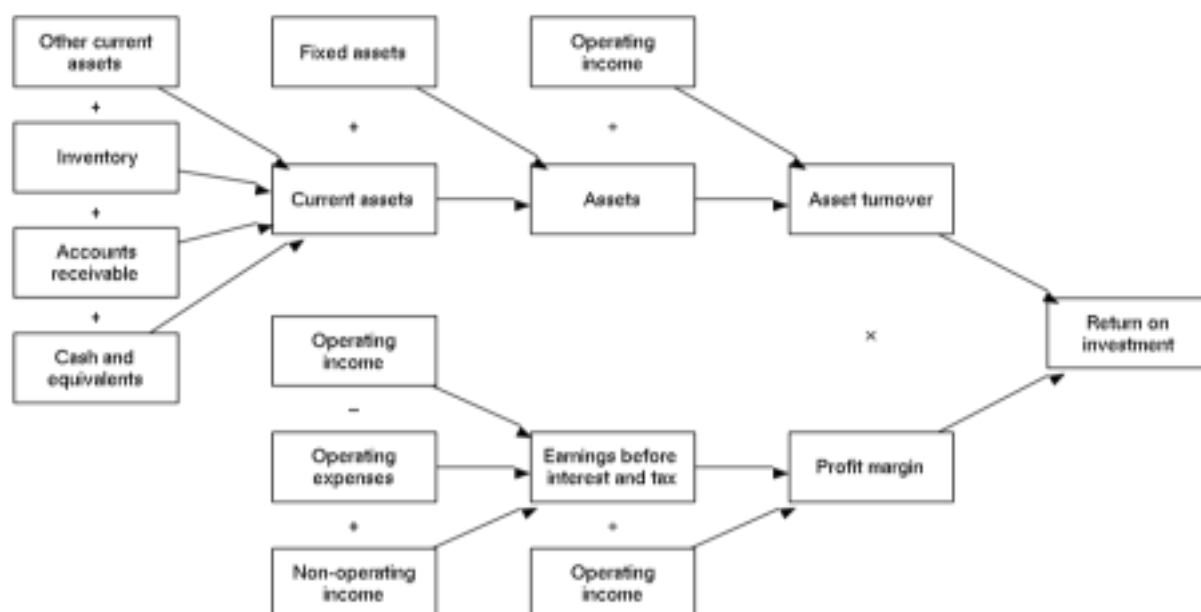
Return on investment (ROI)= Assets Turnover (Operating Income X Total Assets) X Profit Margin (EBIT X Operating Income)

Asset turnover- The asset turnover ratio measures the efficiency of a company's assets in generating revenue or sales. It compares the dollar amount of sales (revenues) to its total assets as an annualized percentage. Thus, to calculate the asset turnover ratio, divide net sales or revenue by the average total assets. One variation on this metric considers only a company's fixed assets (the FAT ratio) instead of total assets.

Asset Turnover= Operating Income X Total Assets

Net profit margin- The net profit margin, or simply net margin, measures how much net income or profit is generated as a percentage of revenue. It is the ratio of net profits to revenues for a company or business segment. Net profit margin is typically expressed as a percentage but can also be represented in decimal form. The net profit margin illustrates how much of each dollar in revenue collected by a company translates into profit.

Net Profit Margin= EBIT X Operating Income



Data Analysis Showing ROE & ROI for Sun Pharmaceutical Industries Ltd

Return on equity							
YEAR	Total Assets (A)	Shareholders Fund (B)	Financial Leverage (A/B) =(C)	Net profit margin (D)	Total asset turnover (E)	ROA (D*E/100) =(F)	ROE (C*F)
2017	33869.27	21012.47	1.61	-0.29	22.68	-0.065772	-0.11
2018	36791.81	22322.61	1.65	3.39	24.47	0.829533	1.37
2019	37714.13	22843.61	1.65	7.92	27.31	2.162952	3.57
2020	38410.33	24396.22	1.57	25.62	32.62	8.357244	13.16
2021	38998.83	25040.16	1.56	16.71	32.82	5.484222	8.54
MEAN	37156.8740	23123.0140	1.6086	10.6700	27.9800	3.3536	5.3063

STD. DEVIATION	2013.4609	1617.8389	0.0423	10.4960	4.6318	3.5020	5.4757
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	2.166876 (0.096146)

Table 1.A

Return on investment							
YEAR	Operating Income (A)	Total Assets (B)	Asset Turnover (A/B) =(C)	EBIT (D)	Operating Income (E)	Profit Margin (D/E) =F	ROI (C*F)
2017	7683.96	33869.27	0.23	206.77	7683.96	0.03	0.01
2018	9006.25	36791.81	0.24	1619.06	9006.25	0.18	0.04
2019	10303.21	37714.13	0.27	2474.75	10303.21	0.24	0.07
2020	12531.93	38410.33	0.33	3661.01	12531.93	0.29	0.10
2021	12803.21	38998.83	0.33	2499.41	12803.21	0.20	0.06
MEAN	10465.712	37156.874	0.279882968	2092.2	10465.712	0.186844834	0.055026
STD. DEVIATION	2215.159935	2013.460944	0.046318914	1279.847359	2215.159935	0.09953816	0.032909
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	3.738835 (0.020141)

Table 1.B.

Inference- From the above table 1.A. ROE it is clear that mean value is 5.3063, Std. dev is 5.4757, the t-value is 2.166876 and it is significant at 5% level of significance (0.096146). In table 1.B. ROI it shows that the mean value is 0.055026, std. dev is 0.032909, the t-value is 3.738835 and it is significant at 5% level of significance (0.020141)

Showing ROE & ROI for CIPLA LTD.

Return on equity

YEAR	Total Assets (A)	Shareholders Fund (B)	Financial Leverage (A/B) =(C)	Net profit margin (D)	Total asset turnover (E)	ROA (D*E/100) =(F)	ROE (C*F)
2017	15607.22	12800.51	1.22	9.05	68.99	6.243595	7.61
2018	17094.97	14113.52	1.21	12.89	66.62	8.587318	10.40
2019	18418.81	15781.91	1.17	15.26	67.18	10.251668	11.96
2020	20405.66	17402.96	1.17	18.31	62.03	11.357693	13.32
2021	22963.74	19927.56	1.15	17.75	60.53	10.744075	12.38
MEAN	18898.08	16005.292	1.18449949	14.652	65.07	9.4368698	11.13538
STD. DEVIATION	2877.197145	2794.503113	0.029169275	3.802475509	3.608122781	2.060399568	2.233212
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	11.149 623 (0.0003 6)

Table 2.A.

Return on investment							
YEAR	Operating Income (A)	Total Assets (B)	Asset Turnover (A/B) =(C)	EBIT (D)	Operating Income (E)	Profit Margin (D/E) =F	ROI (C*F)
2017	10768.49	15607.22	0.69	845	10768.49	0.08	0.05
2018	11389.9	17094.97	0.67	964	11389.9	0.08	0.06
2019	12374.01	18418.81	0.67	1069	12374.01	0.09	0.06
2020	12659.15	20405.66	0.62	571	12659.15	0.05	0.03

2021	13900.58	22963.74	0.61	1025	13900.58	0.07	0.04
MEAN	12218.426	18898.08	0.650751212	894.8	12218.426	0.073668093	0.048238
STD. DEVIATION	1207.979288	2877.197145	0.0360853	199.6326627	1207.979288	0.016740961	0.012456
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	8.6593 18 (0.0009)

Table 2.B.

Inference- From the above table 2.A. ROE it is clear that mean value is 11.13538, Std. dev is 2.233212, the t-value is 11.149623 and it is significant at 5% level of significance (0.00036). In table 2.B. ROI it shows that the mean value is 0.048238, std. dev is 0.012456, the t-value is 8.659318 and it is significant at 5% level of significance (0.0009) **Showing ROE & ROI for Dr Reddy's laboratories ltd.**

Return on equity

YEAR	Total Assets (A)	Shareholders Fund (B)	Financial Leverage (A/B) =(C)	Net profit margin (D)	Total asset turnover (E)	ROA (D*E/100) =(F)	ROE (C*F)
2017	16447.2	11600.6	1.417788735	14.24	59.09	8.414416	11.92986
2018	17100.3	11807.8	1.448220668	6.05	54.73	3.311165	4.795298
2019	16247.5	12684.1	1.280934398	12.02	65.39	7.859878	10.06799
2020	19475.8	15191.9	1.281985795	24.78	60.84	15.076152	19.32741
2021	21629.6	16983.7	1.273550522	16.37	61.71	10.101927	12.86531
MEAN	18180.08	13653.62	1.340496024	14.692	60.352	8.9527076	11.79718
STD. DEVIATION	2317.420007	2346.148428	0.085193158	6.830290623	3.894331778	4.246419487	5.241168

T VALUE Sig (2. TAILED)	-	-	-	-	-	-	5.033093 (0.007318)
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Table 3.A.

Return on investment							
YEAR	Operating Income (A)	Total Assets (B)	Asset Turnover (A/B) =(C)	EBIT (D)	Operating Income (E)	Profit Margin (D/E) =F	ROI (C*F)
2017	9719.8	16447.2	0.59	1617	9719.8	0.17	0.10
2018	9359.3	17100.3	0.55	1429	9359.3	0.15	0.08
2019	10625.5	16247.5	0.65	2380	10625.5	0.22	0.15
2020	11850.4	19475.8	0.61	1927	11850.4	0.16	0.10
2021	13349.1	21629.6	0.62	2932	13349.1	0.22	0.14
MEAN	10980.82	18180.08	0.603580279	2057	10980.82	0.185056817	0.112573
STD. DEVIATION	1636.358028	2317.420007	0.038964348	607.214542	1636.358028	0.033960358	0.026966
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	9.334776 (0.000733)

Table 3.B.

Inference- From the above table 3.A. ROE it is clear that mean value is 11.79718, Std. dev is 5.241168, the t-value is 5.033093 and it is significant at 5% level of significance (0.007318). In table 3.B. ROI it shows that the mean value is 0.112573, std. dev is 0.026966, the t-value is 9.334776 and it is significant at 5% level of significance (0.000733)

Showing ROE & ROI for DIVI'S LABORTARIES.

Return on equity							
YEAR	Total Assets (A)	Sharehold ers Fund (B)	Financial Leverage (A/B) =(C)	Net profit margin (D)	Total asset turnover (E)	ROA (D*E/100) =(F)	ROE (C*F)
2017	6210.08	5408.91	1.15	26.17	64.79	16.96	19.47
2018	6807.78	5959.65	1.14	22.78	56.05	12.77	14.59
2019	8040.18	6973.31	1.15	27.31	60.69	16.57	19.11
2020	8514.11	7316.69	1.16	25.84	62.37	16.12	18.75
2021	10723.77	9271.57	1.16	28.75	63.39	18.22	21.08
MEAN	8059.184	6986.026	1.152742226	26.17	61.458	16.127841	18.59911415
STD. DEVIATION	1753.035577	1489.459157	0.008130688	2.211164851	3.372791129	2.035216762	2.413503341
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	17.231749 (0.000067)

Table 4.A.

Return on investment							
YEAR	Operating Income (A)	Total Assets (B)	Asset Turnover (A/B) =(C)	EBIT (D)	Operating Income (E)	Profit Margin (D/E) =F	ROI (C*F)
2017	4023.85	6210.08	0.65	1397.00	4023.85	0.35	0.22
2018	3815.94	6807.78	0.56	1232.00	3815.94	0.32	0.18

2019	4879.66	8040.18	0.61	1858.00	4879.66	0.38	0.23
2020	5310.57	8514.11	0.62	1825.00	5310.57	0.34	0.21
2021	6798.61	10723.77	0.63	2666.00	6798.61	0.39	0.25
MEAN	4965.726	8059.184	0.614620706	1795.6	4965.726	0.357318729	0.219994456
STD. DEVIATION	1193.202282	1753.035577	0.033743702	556.5252016	1193.202282	0.028457505	0.025105724
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	19.594040 (0.000040)

Table 4.B.

Inference- From the above table 4.A. ROE it is clear that mean value is 18.59911415, Std. dev is 2.413503341, the t-value is 17.231749 and it is significant at 5% level of significance (0.000067).

In table 4.B. ROI it shows that the mean value is 0.219994456, std. dev is 0.025105724, the t-value is 19.594040 and it is significant at 5% level of significance ((0.000040)

Showing ROE & ROI for GLAND PHARMA.

Return on equity

YEAR	Total Assets (A)	Sharehold ers Fund (B)	Financial Leverage (A/B) =(C)	Net profit margin (D)	Total asset turnover (E)	ROA (D*E/100) =(F)	ROE (C*F)
2017	2473.75	2089.81	1.18	27.97	59.79	16.72	19.80
2018	2928.34	2410.42	1.21	19.82	55.31	10.96	13.32
2019	3522.58	2862.11	1.23	22.10	58.03	12.82	15.78
2020	4086.04	3646.24	1.12	29.35	64.44	18.91	21.19

2021	6496.06	5903.29	1.10	28.79	53.30	15.35	16.89
MEAN	3901.354	3382.374	1.170076278	25.606	58.174	14.953709	17.39559
STD. DEVIATION	1572.80699	1525.67474	0.057389833	4.34493153	4.296897718	3.139457289	3.149422
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	12.350 752 (0.0002 47)

Table 5.A.

Return on investment							
YEAR	Operating Income (A)	Total Assets (B)	Asset Turnover (A/B) =(C)	EBIT (D)	Operating Income (E)	Profit Margin (D/E) =F	ROI (C*F)
2017	1479.18	2473.75	0.60	420.00	1479.18	0.28	0.17
2018	1619.94	2928.34	0.55	293.00	1619.94	0.18	0.10
2019	2044.2	3522.58	0.58	274.00	2044.2	0.13	0.08
2020	2633.24	4086.04	0.64	350.00	2633.24	0.13	0.09
2021	3462.88	6496.06	0.53	472.00	3462.88	0.14	0.07
MEAN	2247.888	3901.354	0.58179591	361.8	2247.888	0.17361372	0.101188
STD. DEVIATION	814.1592604	1572.80699	0.042954481	83.8343605	814.1592604	0.064883473	0.039716
T VALUE Sig (2. TAILED)	-	-	-	-	-	-	5.697078 (0.004690)

Table 5.B.

Inference- From the above table 5.A. ROE it is clear that mean value is 17.39559, Std. dev is 3.149422, the t-value is 12.350752 and it is significant at 5% level of significance (0.000247). In table 5.B. ROI it shows that the mean value is 0.101188, std. dev is 0.039716, the t-value is 5.697078 and it is significant at 5% level of significance (0.004690)

Conclusion and Recommendation

The company profitability for most investors is a landmark in terms of earnings they could obtain by placing capital. Profits earned by a company, in absolute terms, provide an overview of the company's activity without providing details on how the company manages dividends, debts, liabilities, or other indicators. In this paper it is tried to demonstrate with the help of profitability ratios like ROI and ROE that the comparison of performance and condition of a company against its competitors, analysing trends in the returns of a company in the context of trends of the components and forecasting the returns of a company based on forecasts of the components.

From the above analysis it is found that the Return on equity and Return on investment of Divi's Laboratories is the highest with 18.599 and 0.22 followed by gland pharma which is 17.39 and 0.101. The third position is secured by Dr Reddy's laboratories ltd with ROE and ROI of 11.79 and 0.11 followed by Cipla ltd. with 11.13 and 0.048. The last position is held by Sun Pharmaceutical Industries Ltd with ROE and ROI of 5.30 and 0.055.

From this we understand that Divi's Laboratories focus on its financial performance by reducing the cost and the expenses which in turn increases the wealth of the shareholders whereas the cost and expenses of sun pharmaceutical industries ltd is very high due to which the shareholders are not earning maximum returns. They should try and control their cost to provide better return to their shareholders.

We can conclude from this DuPont analysis that we made by calculating the return on equity and return on investment of the top 5 pharmaceutical companies as per market capitalization in India emphasizes that absolute measurements are not relevant every time. Therefore, they should have a common basis of comparison between several companies and to compose ranks the relative sizes for measuring efficiency are necessary when calculating the ratio.

Limitation and Future of Research

The present study is limited to the top 5 pharmaceutical companies in India as per the market capitalization for a period of 5 year from 2017 to 2021. The future study can use this analysis in various other sectors in India. The future study can also use this analysis for ranking the companies in India as per their ROE and ROI which is not done here.

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