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Measuring Financial Performance of Pharmaceutical Industry in India: An Empirical Study

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Abstract: The Indian pharmaceutical industry is expanding worldwide. For some years now, it has been benefiting from the particular dynamics of the Asian economies as both purchasers and producers. An annual growth rate is impressive. India is currently recognized as a high-quality, low-cost skilled producer of pharmaceuticals. It is seen not only as a manufacturing base for APIs and formulations, but also as an emerging hub for biotechnology, bioinformatics, contract research, clinical data management and clinical trials. Financial performance analysis is the process of determining the operating and financial characteristics of a firm from accounting and financial statements. Through a careful analysis of its financial performance, the organization can identify opportunities to improve performance of the department, unit or organizational level. In this context an attempt has been made an analysis of financial performance of pharmaceutical companies as well as to determine the factors affecting their financial performance and growth.
Keywords: Financial Performance, Variables, Solvency

I.   INTRODUCTION

The Indian pharmaceutical industry is expanding worldwide. For some years now, it has been benefiting from the particular dynamics of the Asian economies as both purchasers and producers. Annual growth rates are impressive. Low costs, qualified staff and extensive production and research units India is becoming more and more of a major pharmaceutical location. Drivers of growth are the growing population, as well as the larger number of older people with markedly higher demand for medicines. Add to this the increase in middle-class households which have considerably higher incomes at their disposal than the population on average. One of the major factors that have increased the confidence of foreign multinationals looking for local opportunities in India is the adoption of a new product patent regime in January 2005.

A new patent regime has changed the dynamics of the Indian pharmaceuticals industry in all respects As a result of the new patent legislation, the country's pharmaceutical industry is reorienting itself and focusing on self-developed medicines and/or contract research and production for western drugs companies.

In the course of that transition, a new industry sector expanded to global scope, the field of medicinal chemistry rose to its current prominence, and governments adopted dual roles of supporting basic research and regulating drug safety and efficacy. India is currently recognized as a high-quality, low-cost skilled producer of pharmaceuticals.

It is seen not only as a manufacturing base for APIs and formulations, but also as an emerging hub for biotechnology, bioinformatics, contract research, clinical data management and clinical trials.

Financial performance analysis is the process of determining the operating and financial characteristics of a firm from accounting and financial statements.

The ability of an organization to analyze its financial position is essential for improving its competitive position in the marketplace. Through a careful analysis of its financial performance, the organization can identify opportunities to improve performance of the department, unit or organizational level.

In this context an attempt has been made an analysis of financial performance of pharmaceutical companies as well as to determine the factors affecting the their financial performance and growth.

II.   RESEARCH OBJECTIVES

To assess the short-term and long term solvency trend
To know the efficiency of financial operations and
To analyze the factors determining the behavior of profitability

III.   RESEARCH METHODOLOGY

The study analyzes the various factors affecting the industry profitability. The sample period for the study is five years from 2008 to 2012. The sample of 15 companies representing the major market capitalization of pharmaceutical industry is used for the studyTo achieve the objectives of study, financial performance is taken as dependent variable whereas, other factors like liquidity, solvency and efficiency etc. is taken as independent variable Independent variables are regarded as inputs to a system and may take on different values freely. Dependent variables are those values that change as a consequence of changes in dependent values.

IV.   DATA COLLECTION

The data used in the study is secondary data, which are financial statements of sample pharmaceutical companies in India.
The sources of secondary data are official website of different sample companies
The following research model is used for the study:

V.   RESEARCH MODEL

The relationship between financial performance and other variables affecting performance of companies is represented by following model:

FP = f (L,S,E)
Which shows financial performance is the function of capital structure.
Where;

FP = Financial performance   L=liquidity
S=Solvency   E=Management efficiency
Here, performance is measured with the help of three ratios namely Net profit Ratio, Return on Capital Employed, and Return on Equity.
Whereas, Liquidity is measured by current ratio and liquid ratio, Solvency is measured by Debt Equity Ratio, Long term Debt to total Capitalization and Efficiency is measured by inventory turnover ratio, debtor turnover ratio, fixed asset turnover ratio and total asset turnover ratio.Various statistical measures have been used I like average, correlation, and test of hypothesis – Anova test. In this context an attempt has been made to analyze what factors plays a crucial role in defining financial performance of pharmaceutical companies operated in India.

VI.   RESEARCH HYPOTHESES

Keeping the above objectives in mind, the following null and alternative hypotheses have been formulated and tested during the study period:

A.   *Hypothesis 1*
H0: there is no significant relationship between profitability and efficiency.
H1: there is significant relationship between profitability and efficiency.

B.   *Hypothesis 2*
H0: there is no significant relationship between profitability and solvency.
H1: there is significant relationship between profitability and solvency.

C.   *Hypothesis 3*
H0: there is no significant relationship between profitability and liquidity.
H1: there is significant relationship between profitability and liquidity.

D.   *Hypothesis 4*
H0: there is no significant relationship between profitability and joint performance indicators.
H1: there is significant relationship between profitability and joint performance indicators

E.   *Determinants of Variables and their proxy*

Table 1

Variable	Determinants	Proxy
Liquidity –ALR	Current ratio	CR
	Liquid ratio	LIQR
Solvency –ASR	Debt Equity Ratio	DE
	Debts to Total Capitalization ratio	DTCAP
Efficiency –AER	Inventory turnover ratio	ITR
	Debtor turnover ratio	DTR
	Fixed asset turnover ratio	FATR
	Total asset turnover ratio	TATR
Performance-AFP	Net Profit Ratio	NPR
	Return On Capital Employed	ROCE
	Return On Equity	ROE

Proxy - AFP, AER, ASR, ALR measuring financial performance, management efficiency, solvency and liquidity respectively is calculated by taking average of their corresponding determinants given in above Table 1.

F. Data analysis and interpretation

Correlation and Regression analysis is used to test the relationship of financial performance with various variables used in the study (table I-Annexure).

G. Performance and Efficiency ratio

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.196[a]	.038	.025	29.66311

a. Predictors: (Constant), AER

The above table shows the weak but positive correlation between the average efficiency and performance(table I-Annexure) of sample companies.

1) Hypothesis 1

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2519.373	1	2519.373	2.863	.095[a]
	Residual	63352.815	72	879.900		
	Total	65872.188	73			

a. Predictors: (Constant), AER

b. Dependent Variable: AFP

The above table indicates the coefficient of correlation between the average efficiency and performance (table I-Annexure) of sample companies. Multiple R^2 is 0.038. This shows that only 3.08 % of variance of average performance is accurate by the management efficiency and remaining 96.92 % of variance with performance is attributed to other factors. Hypothesis is tested by applying Anova test and calculated value F-value is less then table value indicate that null hypothesis is accepted and concluded that there is no significant relationship between profitability and companies efficiency. There are many other factors other than efficiency that play an important factors in improving the performance of the companies.

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2) *Performance and Solvency ratio*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.246[a]	.061	.048	29.11574

a. Predictors: (Constant), ASR

The above table shows the weak but positive correlation between the average solvencyand performance (table I-Annexure) of sample companies.

3) *Hypothesis 2*

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3993.386	1	3993.386	4.711	.033[a]
	Residual	61884.033	73	847.726		
	Total	65877.420	74			

a. Predictors: (Constant), ASR

b. Dependent Variable: AFP

The above table indicates the coefficient of correlation between the average solvency and performance(Table I-Annexure)of sample companies. Multiple R^2 is 0.061. This shows that only 6.10 % of variance of average performance is accurate by the management efficiency and remaining 93.92 % of variance with performance is attributed to other factors. Hypothesis is tested by applying Anova test and calculated value F-value is more then table value indicate that null hypothesis is rejected and concluded that there is significant relationship between profitability and companies solvency.

4) *Performance and liquidity ratio*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.726[a]	.527	.521	20.65718

a. Predictors: (Constant), ALR

The above table shows the strong positive correlation between the average liquidity and performance (table I-Annexure) of sample companies.

5) *Hypothesis 3*

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	34726.925	1	34726.925	81.381	.000[a]
	Residual	31150.494	73	426.719		
	Total	65877.420	74			

a. Predictors: (Constant), ALR

Dependent Variable: AFP

The above table indicates the coefficient of correlation between the average liquidity and performance (table I-Annexure) of sample companies. Multiple R^2 is 0.527. This shows that 52.7 % of variance of average performance is accurate by the management efficiency and remaining 43.7 % of variance with performance is attributed to other factors. Hypothesis is tested by applying Anova test and calculated value F-value is more then table value indicate that null hypothesis is rejected and concluded that there is significant relationship between profitability and companies efficiency.

6) *Hypothesis 4*

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	35692.419	3	11897.473	27.985	.000[a]
	Residual	30185.001	71	425.141		
	Total	65877.420	74			

a. Predictors: (Constant), AER, ALR, ASR

b. Dependent Variable: AFP

Hypothesis is tested by applying Anova test and calculated value F-value is more then table value indicate that null hypothesis is rejected and concluded that there is significant relationship between profitability and combined impact of companies efficiency, liquidity and solvency.

V. CONCLUSION

The paper studied the overall financial performance of companies in pharmaceuticals industry in India for the study period and various factors affecting the performance. Study indicates that there is weak positive correlation between management efficiency and average profitability. The other performance indicators liquidity and solvency are strongly correlated with financial performance.

Various proxies are used which are relevant in describing the relationship.

In the interim the result shows that there is strong degree of relationship between various performance indicators – management efficiency, liquidity and solvency, therefore management should give due consideration while deciding about these variables.

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ANNEXURE

Table showing variables used to measure performance and performance indicators-

TABLE- I

Name of the company/year-	CR	QR	DER	LTDR	ITR	DTR	FTR	TATR	NPR	ROCE	ROE
IPCA Pharmaceuticals											
2016	1.52	1.14	0.42	0.26	3.77	5.8	1.9	1.32	11.9	25.88	22.2
2015	1.4	1.77	0.5	0.25	4.54	4.56	2	1.24	13.5	21.76	25.2
2014	1.26	1.55	0.52	0.25	4.66	4.38	1.8	1.22	12.9	22.48	23.9
2013	1.19	1.4	0.71	0.36	4.74	4.29	1.7	1.22	6.87	21.75	14.3
2012	1.16	1.4	0.58	0.3	4.71	4.95	2	1.17	12.5	19.22	23.2
Ranbaxy Pharmaceuticals											
2016	0.81	0.95	2.48	1.02	3.66	2.46	2.1	0.95	-2.47	7.68	-8.45
2015	0.8	0.9	2.25	0.73	4.82	3.09	2.7	1.27	-39.1	17.81	-159
2014	1.4	1.6	0.83	0.57	3.95	3.99	2.1	0.61	19.7	12.82	22.4
2013	1.18	0.89	0.85	0.68	4.05	3.74	2	0.66	11.7	8.03	14.4
2012	1.16	0.86	1.05	0.8	4.07	4.88	2.1	0.64	-22	2.52	-29.5
Biocon Pharmaceuticals											
2016	1.43	1.14	0.09	0.09	6.35	4.96	1	0.86	20.1	14.14	18.9
2015	1.22	0.95	0.11	0.11	5.65	4.15	1	0.87	15.8	15.99	14.9
2014	0.94	0.94	0.16	0.04	6.74	5.47	1.5	1.18	13.1	19.1	18.1
2013	0.78	1.13	0.29	0.05	6.56	5.7	1.4	1.06	12.2	16.67	16.7
2012	0.62	0.97	0.35	0.08	5.24	5.1	1.1	0.84	5.56	14.19	6.16
Cipla Pharmaceuticals											
2016	1.95	1.68	0.11	--	3.54	5.18	1.7	0.83	17.9	20.79	17.0
2015	3.12	1.89	0.12	--	3.88	4.63	1.6	0.92	15.9	18.74	14.9
2014	1.94	1.56	0.07	--	3.73	4.14	1.6	0.9	15	16.22	14.5
2013	2.17	1.57	0.19	--	4.18	3.31	1.9	0.95	19	22.16	18.3
2012	1.81	1.93	0.22	0.02	3.79	3.24	1.9	0.99	14.6	22.39	17.9
Ajanta Pharmaceuticals											
2016	1.28	1.22	0.35	0.2	5.89	6.44	2.1	1.79	11.9	37.93	28.4
2015	0.82	1.08	0.6	0.28	4.23	6.01	1.8	1.44	11	23.86	24.5
2014	0.89	1.27	0.73	0.47	5.51	5.66	1.6	1.22	10.1	18.18	21.5
2013	0.95	1.49	1.16	0.81	4.06	4.24	1.7	1.01	7.45	14.36	16.2
2012	1.01	2.17	1.58	0.97	3.61	3.6	1.9	0.81	6.66	12.73	14.1
Drreddy											
2016	1.62	2.02	0.2	--	5.57	3.41	2.1	0.91	14.9	19.36	16.3
2015	1.7	1.84	0.23	0.08	5.54	3.6	1.9	0.82	13.5	19.22	13.6

2014	1.66	1.91	0.24	0.09	5.36	3.67	1.8	0.7	16.8	14.2	14.8
2013	1.49	1.45	0.1	--	5.39	3.54	1.9	0.69	18.5	15.87	14.3
2012	1.85	2.13	0.12	--	6.09	3.45	1.9	0.69	13.2	13.46	10.7
Lupin Laboratories											
2016	1.59	1.69	0.11	0.01	5.35	4.23	2.6	1.32	17.6	32.52	26
2015	1.17	1.51	0.27	0.04	5.35	3.94	2.3	1.14	15	22.94	21.5
2014	1.09	1.68	0.31	0.07	5.95	4.17	2.4	1.09	18	21.51	25.7
2013	0.96	1.68	0.36	0.06	5.7	4.54	2.3	1.08	17.5	22.49	25.6
2012	0.83	1.02	0.69	0.28	4.53	4.41	2.2	1.28	14.1	22.04	30.3
Aorobindo Pharmaceuticals											
2016	3.55	2.26	0.94	0.94	3.89	3.44	1.9	0.95	9.09	14.23	16.9
2015	0.76	1.6	0.98	0.33	4.09	2.95	1.8	0.87	-0.99	10.04	-1.7
2014	1.21	2.22	0.9	0.43	3.71	3.14	2.1	0.85	14.3	17.48	23.1
2013	1.05	2.28	1.02	0.44	3.89	2.88	2.1	0.84	16.1	17.54	27.5
2012	1.12	2.99	1.6	0.86	4.36	2.93	2.2	0.81	4.54	13.53	9.73
Torrent Pharmaceuticals											
2016	1.59	1.24	0.35	0.28	3.98	4.46	2.4	1.25	18.9	33.14	33.1
2015	1.39	1.25	0.35	0.25	5.69	5.55	2.2	1.19	14.2	26.72	23.9
2014	1.53	1.39	0.52	0.43	5.43	5.83	2	1.06	16.4	21.82	26.6
2013	1.51	1.65	0.59	0.45	6.77	5.74	1.9	1.03	14.3	25.74	23.5
2012	1.66	1.57	0.66	0.56	6.66	5.39	1.8	0.98	15.5	20.43	25.5
Glenmark Pharmaceuticals											
2016	1.57	1.85	0.12	--	10.8	4.8	5.1	0.73	18	14.95	15.3
2015	2.11	3.16	0.22	0.12	11.4	5.91	5	0.61	15.8	14.96	12.1
2014	1.74	7.31	0.58	0.17	9.43	4.68	3.9	0.4	17.4	8.53	10.7
2013	3.88	5.63	0.43	0.35	7.78	2.78	4	0.42	11.7	13.28	7.24
2012	1.82	7	0.86	0.19	7.57	1.72	3.9	0.39	24	11.08	17.7
Unichem Laboratories											
2016	1.37	0.98	0.04	0.03	7.61	5.54	1.6	1.47	10.3	19.8	15.6
2015	1.47	1.14	0.11	0.07	5.57	4.75	1.5	1.23	8.04	13.44	10.8
2014	1.74	1.16	0.08	0.07	5.99	4.67	1.5	1.16	11.5	18.73	15.4
2013	1.64	1.14	0.06	0.06	7.41	4.69	1.6	1.18	16.3	26.07	21.8
2012	1.66	1.21	0.08	0.07	7.81	5.04	1.8	1.41	14.6	23.65	22.3
Elder Pharmaceuticals											
2016	4.11	3.2	1.13	1.13	4.5	3.85	1.6	0.67	8.33	13.5	12.2
2015	1.67	4.09	1.2	0.89	4.69	3.96	1.5	0.62	8.41	11.39	11.6
2014	1.68	3.13	1.14	0.91	5.12	3.79	1.3	0.69	7.79	11.83	11.7

2013	1.63	3.07	0.94	0.72	7.43	3.91	2.8	0.77	7.82	12.06	11.8
2012	2.67	3.13	0.87	0.8	7.09	4.21	2.6	0.77	12.5	14.28	18.2
Orchid Chemicals											
2016	1.41	0.81	1.49	1.49	2.81	6.07	0.6	0.62	5.75	9.18	8.99
2015	0.84	1.06	1.63	1.2	3.17	2.78	0.7	0.58	9.55	6.94	14.1
2014	0.74	1.15	1.63	1.05	3.42	1.79	0.6	0.48	26.5	-9.18	33.2
2013	0.8	0.9	4.43	3.52	1.71	2.02	0.5	0.39	-4.36	2.16	8.89
2012	0.76	0.84	2.84	2.17	2.16	2.79	0.7	0.49	14.9	10.43	26.8
Piramal Enterprises											
2016	2.3	3.79	0.11	0.02	4.53	5.03	1.2	0.1	9.69	-0.14	1.17
2015	8.49	8.95	0.02	0.02	7.23	6.5	2	0.13	650	2.97	110
2014	1.96	1.83	0.44	0.4	9.69	8.36	2.6	1.65	15.8	29.83	29.5
2013	2.02	2.18	0.82	0.74	8.44	6.99	2.3	1.34	11.1	26.99	23.2
2012	1.29	1.53	0.5	0.35	8.12	7.2	2.2	1.53	15.1	26.47	29.5
Unichem Laboratories											
2016	1.37	0.98	0.04	0.03	7.61	5.54	1.6	1.47	10.3	19.8	15.6
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2014	1.74	1.16	0.08	0.07	5.99	4.67	1.5	1.16	11.5	18.73	15.4
2013	1.64	1.14	0.06	0.06	7.41	4.69	1.6	1.18	16.3	26.07	21.8
2012	1.66	1.21	0.08	0.07	7.81	5.04	1.8	1.41	14.6	23.65	22.3

(SOURCE: moneycontrol.com, financial states of companies)

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