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A STUDY ON PHARMACEUTICAL INDUSTRY IN INDIA

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Abstract

The pharmaceutical industry of India plays a vital role in enhancing individual's health and welfare along with significant contribution to the Gross Domestic Product of the economy. Apart from this, pharmaceutical industry is one among the industry which has trade surplus in many of the financial years and contributing much in reducing the trade deficit. Hence, to know the performance of such an essential industry present study is to analyses the turnover, foreign direct investment inflow, export-import to know the industry's contribution to the Indian economy as well as the global market and analyzed the performance of top 14 Indian pharmaceutical companies. Data have been collected from the Centre for Monitoring Indian Economy **(CMIE)** database. The tools like correlation, annual growth rate, compounded growth rate and trend analysis have been used. Findings reveal that the research and development expenditure and sales have a significant relationship, as much the amount investment done on the research is stimulating the sales of the companies. The other findings show the trend of the overall turnover, inflow of foreign direct investment and trade balance of the industry as positive.

Key words: GDP, FDI, Economic Development, Export, Import.

Introduction

Every economy starts with the individual and ends with the individual. These individual forms the base for the economy. In the Morden world especially in the post-covid period the importance of the life expectancy and immunity have been gaining more importance among the individuals. Such raising importance is been boosting the pharmaceutical sector, which seeing a growing trend and plays a crucial role in helping individuals to have good and healthy life by way of inventing new formulation and producing life essential drugs to fight against the various diseases starting from the common cold to cancer. Pharmaceutical sector in India much towards the GDP, balance of payments, employment generation and so on. It ranks third globally in pharmaceutical production by volume and is known for its generic medicines and low-cost vaccines. The sector

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contributed to around 1.32 percent of the Gross Value Added of the Indian Economy in 2020-21. The total annual turnover of Pharmaceuticals in the fiscal year 2021-22 was Rs. 3,44,125 crores[2].

Indian Pharmaceutical Industry in Global Scenario

India is a global leader in the supply of various medicines that is considered as a lifesaving drugs. It is the leading supplier of the vaccines is too. India is the leading supplier of low-cost vaccine to the world. It supplies vaccines such as DPT, BCG, Measles and Covid-19. India is contributing much for the global vaccine production, nearly 40 to 70 percent of the World Health Organization **(WHO)** demand for Diphtheria, Tetanus and Pertussis **(DPT),** being leading supplier in generic medicine and contribute about 8 percent of the global API manufactures.[3]. During the recent past year, the exports have been kept on increasing while the imports too been increasing at the rate less than exports. United states, European Union, Belgium, Russia, Netherland and African nations are key destinations for Indian pharmaceutical exports, which accounts for the major share of the exports. Among the exported items the major exported are the drugs and formulations, followed by the intermediate bulk drugs and the Ayush products along the with surgical and other products.[4]

Investments in Indian pharmaceutical industry

Investments in pharmaceutical industry would be coming in two way one from the government of India and other one from foreign countries, called as foreign direct investments which wisely benefited pharmaceutical industry among others. This FDI plays a crucial role in shaping the economic landscape of the country, impacting the various economic variable such as the employment, exports, imports, balance of payments and economic growth.[5]

Role of research and development

Research and development are the vital factor influence the growth of the companies. Especially in the pharmaceutical industry in order to mitigate the day-to-day challenges posed by new diseases. With implementation of the Trade-Related Aspects of Intellectual Property Rights (TRIPS), the trend of research and development have undergone a major change. Many companies started investing more of the profit on the research so as to gain the maximum result. The nature and trends of it have keep evolving along with strategies, its focus extends to both global and region-specific disease, to enhance the firm’s ability to compete with the firms across the world.[6]

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[2] Annual Report of Pharmaceutical Ministry 2022-2023. https://pharmaceuticals.gov.in/

[3] India’s vaccine manufacturing prowess. (n.d.). Invest India. https://www.investindia.gov.in/team-indiablogs/indias-vaccine-manufacturing-prowess

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Review of literature

Agrawal and Saibaba (2001)[7], the study on The TRIPS and impact on the pharmaceutical sector in India anticipated an, significant impact in the industry in the field of patenting the drug and carrying out the research. Then it further studies the course of action that the chance more research would be done on the diseases in the country, it results in unavoidable situation of raise in the cost of medicine. Suggest that, it became necessary for the government to reconsider and renegotiation as view of securing national interest.

Syed and Sreenivasa (2011)[8], study on foreign direct investments trends is India in the post-liberalization period, find out that India experienced a surge in Foreign Direct Investment (FDI), driven by relaxed international trade and investment policies and positive responses from capital-exporting nations.

Mestre-Ferrandiz et al. (2012)[9] The R&D cost of a new medicine. This study has made a significant contribution to the R&D cost involved in the producing the pharmaceutical product. It has discussed about the background which incur more cost, that is whether the finding the drug, getting the human trial and getting the approval which had a significant impact on the cost of the product.

Akhtar (2014)[10], Foreign Direct Investment (FDI) plays a crucial role in shaping the economic landscape of a host country, impacting variables such as employment, exports, imports, prices, balance of payments, and economic growth. This study aimed to analyse the nature and effects of FDI inflows in the Indian Pharmaceutical Industry since 1991, exploring its impact on production, investment, exports, and employment.

Das and Das (2015)[11], study on competitiveness and its impact on the research and development aims to assess the competitive landscape within the Indian pharmaceutical sector and analyse the enduring influence of research and development on the competitiveness of pharmaceutical firms.

Nandy (2020)[12], research article aims to assess the influence of research and development efforts on the financial performance, found out a statistically significant positive impact of R&D activities on the financial performance of the pharmaceutical companies listed in National Stock Exchange.

Statement of the Research Problem

Pharmaceutical industry is one among the industry which year by year making a significant contribution to Gross Domestic Product of the economy, with 2.31 percent as per the economic survey report 2022 and also

[7] TRIPS and India's Pharmaceuticals Industry. Agrawal, P., and Saibaba, P. (2001, January 1). ResearchGate. 5

[8] Trends of FDI inflows in India in the post-liberalization period- A study with special reference to pharmaceutical sector. Syed Safiuddin, K. S., & Sreenivasa, M. (2011, Dec). Advances in Management, 4(12), Pp 46-52.

[9] The R&D cost of a new medicine. Mestre-Ferrandiz, J., Sussex, J., and Towse, A. (2012). Office of Health Economics.

[10] Problem and Prospect of FDI inflows in Indian Pharmaceutical Industry. Akhtar, G. (2014). IOSR Journal of Humanities and Social Science, 19(3), 69–73. https://doi.org/10.9790/0837-19316973

[11] Competitiveness and its Impact on Research and Development in Indian Pharmaceutical Industry Das, P., and Das, S. (2015, July 28). https://doi.org/10.1007/s40622-015-0099-8

[12] Is There Any Impact of R&D on Financial Performance? Evidence from Indian Pharmaceutical Companies. Nandy, M. (2020). FIIB Business Review, 9(4), Pp.319–334. https://doi.org/10.1177/2319714520981816

ensuring the welfare of the public. This industry despite being supplying the life essential commodities has the export surplus in most of the financial year such as Rs.118977.9 crore in 2022-23 as per ministry of commerce and industry trade statistics which help in reducing the trade deficit of the economy and as well as providing medicine to the person below poverty at low cost by way of various schemes. Hence, to know the performance of such an essential industry present study is to analyze the turnover, foreign direct investment inflow, export-import to know the industry's contribution to the Indian economy as well as the global market and to analyze performance of top 14 Indian pharmaceutical companies' sales, profit and their research and development expenditure which plays a vital role in invention of new formulation and medicines that required to tackle the diseases in the current modern world.

Objectives of the Study

1. To study the growth performance of India's pharmaceutical industry, and
2. To study the sale and profit of top 14 pharma companies in India.

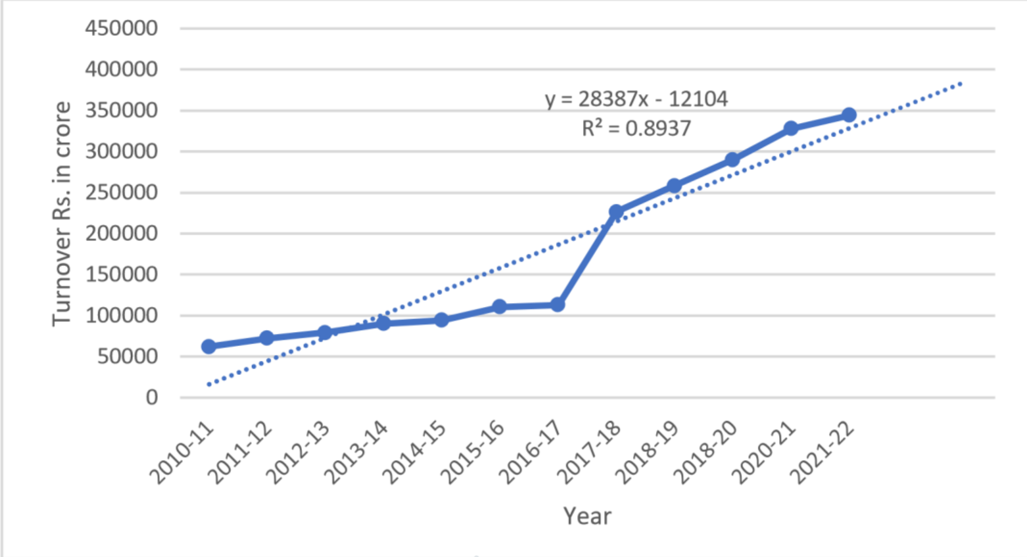
Research Methodology

The study is based on the secondary data, the data were collected from annual reports of Ministry of Pharmaceutical, Ministry of Commerce and Industry trade statistics data base, Reserve Bank of India's database and Centre for Monitoring Indian Economy (CMIE) database. The study covered a period of 13 years from 2010-11 to 2022 -23. This time period is been selected to ensure the gestation period of TRIPS and recovery of economy from economic depression 2008. Top 14 companies have been selected for analyzing the sales, profit and research and development based on their sales in the period 2022-23. The top 14 companies had the share of 33.95 percent of the total market share which is more than one third of the share. Statistical tools like Annual Growth Rate (AGR), Compounded Annual Growth Rate (CAGR), and trend analysis were used to analyze the data.

Results and Discussions

Turnover of the Indian pharmaceutical industries have seen an increasing trend during the study period.

Chart 1 Trend Analysis of Indian Pharmaceutical Industry Turnover



Source: Annual reports of Ministry of Pharmaceutical Industry

The chart 1 reveals that the turnover of the Indian pharmaceutical industry have seen raising trend during the study period 2010-11 to 2021-22. During the period 2017-18 the industry has seen its highest growth, nearly the sales have been doubled to the previous year. This happened due to surge in the domestic demand along with excessive exports to the North American and African countries. The chart also the reveals the trend projection of the future years. With the current trend, projection revealed a notable point that industry would be facing the rising trend in the near future.

Table 1 Foreign Direct Investment (FDI) inflow in pharmaceutical industry

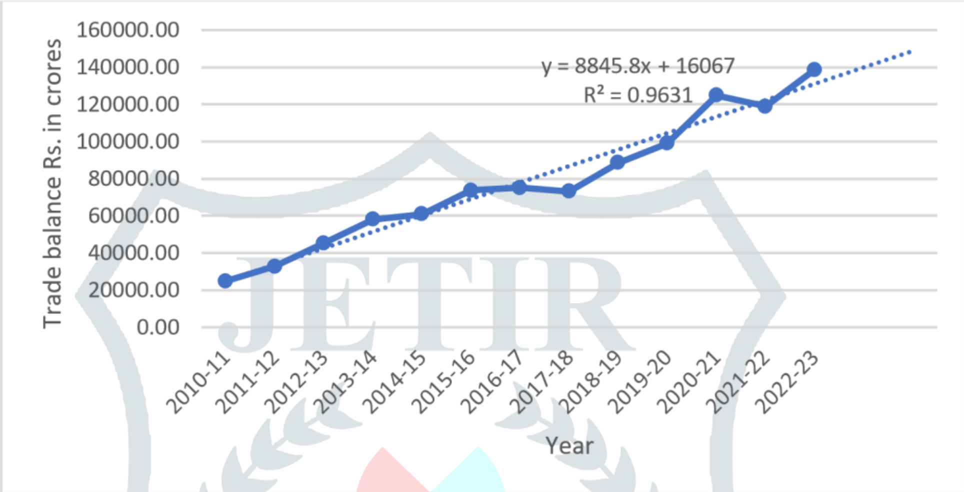
(Rs. in Crores)

S.no	Year	FDI Inflow	AGR (%)
1	2010-11	961	-
2	2011-12	14605	1419.77
3	2012-13	6011	-58.84
4	2013-14	7191	19.63
5	2014-15	9052	25.88
6	2015-16	4975	-45.04
7	2016-17	5723	15.04
8	2017-18	6502	13.61
9	2018-19	1842	-71.67
10	2018-20	3650	98.15
11	2020-21	11015	201.78
12	2021-22	10552	-4.20
13	2022-23	16654	57.83
	CAGR (%)	**26.83**	

Source: RBI Bulletin

The data in the table 4.3 reveal the FDI inflow in the Indian pharmaceutical sector during the period 2010-23. During the period it has faced as fluctuating trend. The data reveals that the year 2014-15 and 2017-2018, the industry have faced major downward trend in the inflow of FDI as the result of shift in geopolitical scenario. The raise in the FDI inflow 202021 reveals the industry potential to grow and efficiency in production along with the coping up the pandemic. The surge in flow also due to Indian pharmaceutical industry is due to its potential to supply the covid vaccine in huge quantity.

Chart 2 Trend analysis of Indian pharmaceutical industry trade balance

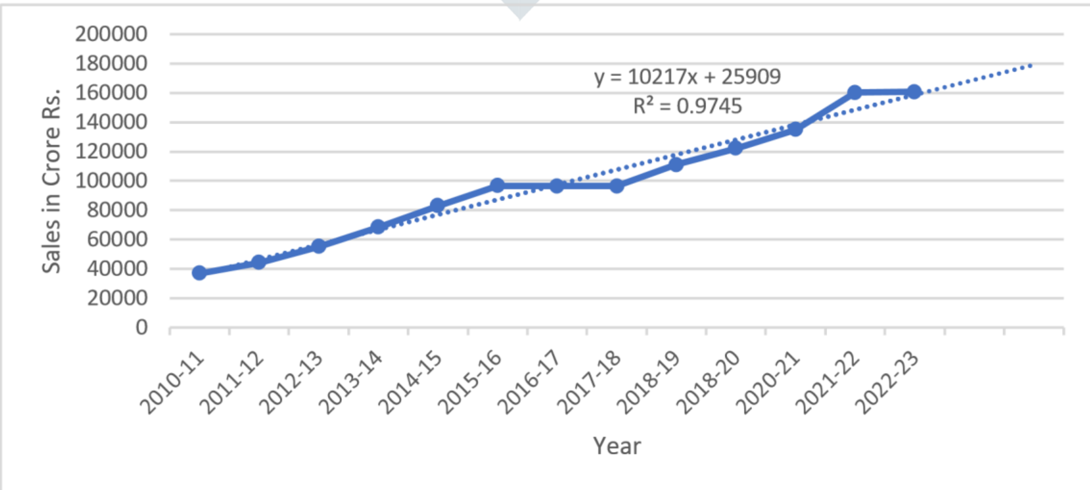


Source: Ministry of Commerce and Industry trade statistics

The trend analysis of Indian pharmaceutical industry trade balance has depicted by the data in the chart 2. The data reveals that the industry have seen a fluctuating trend during the study period. The equation and R2 value of the trend is derived as y = 8845.8x + 16067 and

0.96317 respectively. The R^2 value 0.96317 shows that the growth of the trade balance would be a robust growth in the future years.

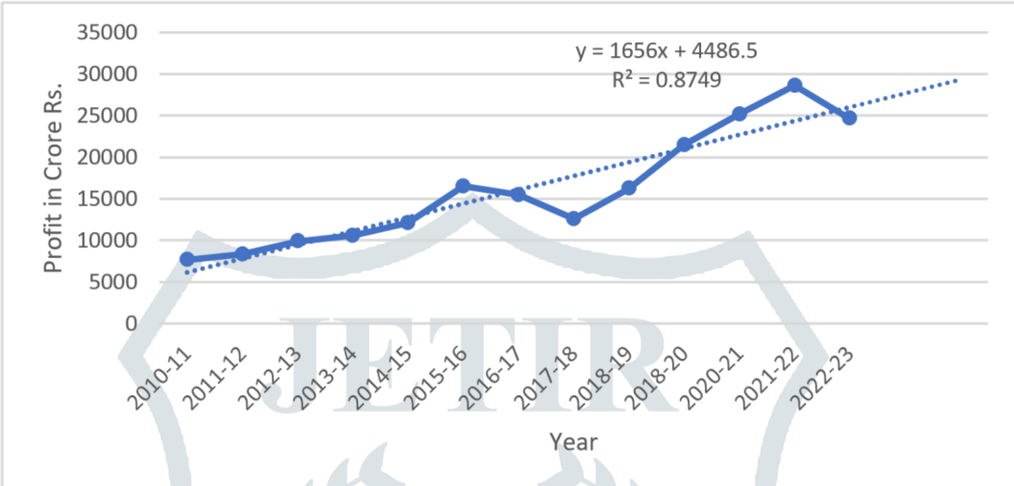
Chart 3 Trend analysis of sales of top 14 companies



Source: Centre for Monitoring Indian Economy (CMIE) database

The chart 3 provide the cumulative sales and the trend of the top 14 companies listed in CMIE database. The sales of the companies have seen a raising trend with a fall in few years. The equation and R^2 value of the trend is derived as y = 10217x + 25909 and 0.9745 respectively. The trend is increasing at the constant rate of 25909 every year. The R^2 value 0.9745 shows that the growth of sales would be much stronger in the future year. This is positive sign for the companies as well as the industry as whole as it would boost further growth in production, revenue, employment and other aspects.

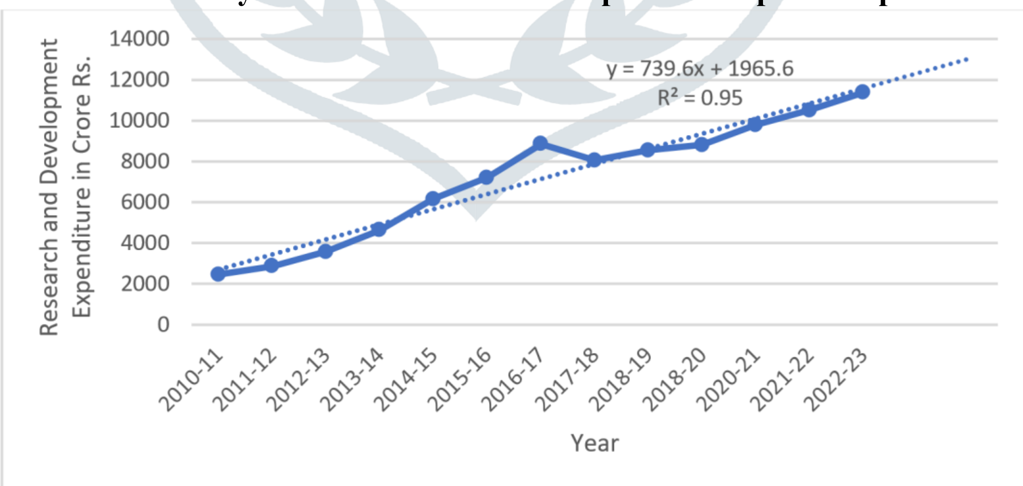
Chart 4 Trend analysis of profit of top 14 companies



Source: Centre for Monitoring Indian Economy (CMIE) database

The chart 4 depict the cumulative profit and its trend of the top 14 companies listed in CMIE database. The profit of the companies has seen a fluctuating trend during the study period. The equation and R^2 value of the trend is derived as y = 1656x + 4486.5 and 0.8749 respectively. The trend is increasing at the constant rate of 8749 every year. The R^2 value 0.8749 shows that the growth of profit would be stronger in the future year.

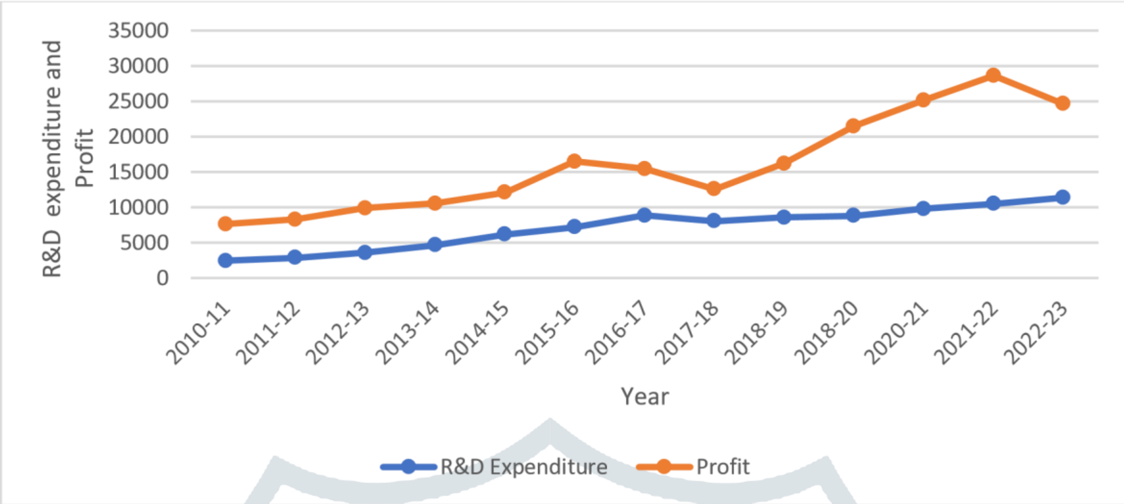
Chart 5 Trend analysis of research and development of top 14 companies



Source: Centre for Monitoring Indian Economy (CMIE) database

The chart 5 shows the cumulative research and development expenditure and its growth rate of the top 14 companies listed in CMIE database. The research and development expenditure of the companies has seen a raising trend with few fluctuations during the study period. The equation and R^2 value of the trend is derived as y = 739.6x + 1965.6 and 0.95 respectively. The R^2 value 0.95 shows that the growth of research and development expenditure would be much stronger in the future year resulting more invention in formulations.

Chart 6 Research and development expenditure and profit of top 14 companies



The chart 4.5 depicts the research and development expenditure and profit of the company. The chart supports and make it clearer that the more the profit gained during the year is getting reinvested next year and similarly the more of amount spent on the research and development the profit is being increased. The reinvestment of profit in the research and development is yielding positive result for the companies, which would be get increasing in the future years as revealed by the chart 3 and 4.

Table 2 Correlation between research and development expenditure and sales

		Research and development expenditure	Sales
Research and development expenditure	Pearson correlation	1	.968
	Sig. (2 tailed)		.000
	N	13	13
Sales	Pearson correlation	.968	1
	Sig. (2 tailed)	.000	
	N	13	13

The correlation between the sales and research and development expenditure is tabulated in the above table. The results show that there is significant relationship between Research and development expenditure and sales at 1 percent significance level. The value .968 shows that there is high correlation between sales and research and development expenditure. It indicates that amount that the companies spent on the research and development have an impact on the sales of the companies is in a positive way.

Conclusion

Indian pharmaceutical industry being leader in the global supply have seen positive trend in sales, export and foreign direct inflow. It has been constantly contributing for the GDP, employment and health care of the general public. To make the industry maintain the current raising trend and compete in the dynamic global market it should spent more on research and development. This research and development expenditure would result is in new invention in formulations of drugs and innovation in various medication and medical devices. This would have an impact on sales, revenue, profit, production, foreign direct investment and trade balance of the economy as a whole. Thus, it became utmost need for the government to launch new schemes along with current schemes to ensure and enhance more of research and development activities in pharmaceutical industry resulting better yielding, innovative and competitive industry.

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