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ANALYSIS OF PROFITABILITY IN PHARMACEUTICAL INDUSTRY

A

Thesis Submitted To Saurashtra University

For Award of the Degree Of

DOCTOR OF PHILOSOPHY (PhD) IN COMMERCE

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Statement of Declaration

I undersigned, Mr. Dharmesh Sureshbhai Raval, a student of Doctor of Philosophy, Department of Business Management, Saurashtra University, Rajkot hereby acknowledge that the research work in this thesis is my own work and has been supervised by Dr. Hitesh J. Shukla, Associate Professor, Department of Business Management, Saurashtra University, Rajkot.

The thesis titled "Analysis of Profitability in Pharmaceutical Industry." to be submitted for the Ph.D. Degree, is my original work and no degree or diploma has been conferred before either by this University or by any other University for this work.

Mr. Dharmesh Sureshbhai Raval

Date:

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Certificate

This is to certify that, Mr. Dharmesh Sureshbhai Raval, a student of Doctor of Philosophy, Department of Business Management, Saurashtra University, has carried out the research work as presented in this thesis under my supervision and that the work is his original contribution.

The thesis titled "Analysis of Profitability in Pharmaceutical Industry." to be submitted for the Ph.D. Degree, has not been previously submitted to any institution for any degree award.

(Dr. Hitesh J. Shukla)
Supervisor

Date:

Acknowledgement

Any word or expression would prove to be incompetent to express our gratitude toward God-the Almighty! I bow down to Holy Mother for blessing me with everything with the help of which I could prepare and submit this work for Ph.D.

Next to god is Guru, but then we do have a famous saying which says that it is a matter of dilemma to choose between Guru and God when we have to; but like in that saying I would also express my deepest gratitude to my Guide Dr. Hiteshbhai Shukla [Associate Professor, Department of Business Management, Saurashtra University Rajkot] who guided and motivated me for this work.

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Preface

There has been a number of research work carried out by number of researchers in various areas. These researches have made a significant contribution in the existing knowledge base and opened various newer fields for learning and have significantly contributed to the overall well being of society at large. The contribution by several researchers aids in the overall economic progress which leads to growth of any country or many countries and finally tries to make things simpler and more convenient.

The present research work is a very modest effort from the side of researcher to add to the current knowledge base in the area of Pharmaceutical Industry and its financial performance. There are several research conducted by several researchers in and outside country for the Indian Pharmaceutical Industry as the industry is on the threshold of a paradigm shift from process patents to product patents and several such legal international issues.

The Indian Pharmaceutical sector is highly fragmented with more than 20,000 registered units. The pharmaceutical industry in India meets around 70% of the country's demand for bulk drugs, pharmaceutical formulations, chemicals, tablets, capsules, orals and injectibles. There are about 250 large units and about 8000 Small Scale Units, which form the core of the pharmaceutical industry in India (including 5 Central Public Sector Units). These units produce the complete range of pharmaceutical formulations, i.e., medicines ready for consumption by patients and about 350 bulk drugs, i.e., chemicals having therapeutic value and used for production

of pharmaceutical formulations. The Indian Pharmaceuticals sector has come a long way, being almost non-existing during 1970, to a prominent provider of health care products, meeting almost 95% of country's pharmaceutical needs. The domestic pharmaceutical output has increased at a compound growth rate (CAGR) of 13.7% per annum. Currently the Indian pharma industry is valued at approximately $ 8.0 billion. Globally, the Indian industry ranks 4th in terms of volume and 13th in terms of value. Indian pharmaceuticals industry has over 20,000 units. Around 260 constitute the organized sector, while others exist in the small-scale sector.[2] According to the analysts at RNCOS, "India accounts for 23% of the global generics market and is rapidly emerging as a regional hub of global R&D activities in the healthcare space.[3]

In this scenario there are two major things coming out, **firstly,** Indian Pharmaceutical Industry is growing in output, value, volume, number of units - steadily and showing resemblance to the entire growth story of Indian Economy. **Secondly**, there is a major change occurring to the very basic system of pharmaceutical business in India. By issuing the patent ordinance, India met a WTO commitment to recognize foreign product patents from 1st January 2005, the culmination of 10 year process. In this new scenario, the Indian Pharmaceutical manufacturers would not be able to manufacture patented drugs which they have been doing since long although by another process.

This situation brought a very interesting and exciting research scope into the financial abilities of the industry. As such the crux of any growth or decline depends largely on the financial health it was imperative for the researcher to carry out a detailed profitability analysis of the leading pharma companies of India.

Thus, a study of some selected units of Indian Pharmaceutical Industry for a period of 8 years is carried out to study their financial performance before the patent regime and make a financial situational analysis of the industry to judge their economic standing to meet the technological and economic challenges. This has been carried out with the help of several parameters and a humble effort has been made to draw inferences out of the research work.

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1. http://www.pharmaceutical-drug-manufacturers.com/pharmaceutical-industry/
2. A FICCI report for National Manufacturing Competitiveness Council: "Competitiveness of the Indian Pharmaceutical Industry in the new Product Patent Regime", March 2005
3. http://www.newswiretoday.com/news/7486/

Contents

Chapter 1

CONCEPT AND MEASUREMENT OF PROFITABILITY

Content

Page Number

1. Introduction

Every act in this world is done with an intention; similarly every business activity is carried out with some aim, objective or goal. And when this aim is to make oneself financial wealthier, that aim is referred to as Profit Objective, or in other words, to have reasonable surplus for the survival and growth of the organization. There are so many types of people on this earth carrying out variety of financial activities. Hence there are innumerable views for this concept of profit. Prof. Knight has observed that "Perhaps no term or concept in economic discussion is used with a more bewildering variety of established meaning than profit."

But here an effort is made to make the meaning of the term "Profit" clear. Let us start with examining the meaning of profit given by various dictionaries:

a) OXFORD DICTIONARY:

- Profit is , "money gained in business, especially the difference between the amount earned and the amount spent" [1]
- Profit is, "advantage or benefit gained from something." [1]

b) WEBSTER DICTIONARY

- Profit is, "money left in a business or for distribution to shareholders after all costs and charges have been deducted from sales."

After looking to all definitions, one can say that profit is the positive difference of revenue account of a particular period, in other words it represents the excess of credit

side of Trading Account and Profit and Loss Account over the debit side of the account. It is considered as the oxygen of the organization. This word shows the importance of profit for any economic organization, survival of any organization in long run is only depends on profit or surplus. The market reputation or goodwill, credibility of management and organization is measured through their profit. It is considered as the efficiency of the management as well as efficiency of resources used by the business unit.

In general parlance we refer profit as the financial gain from any transaction. Say for example if Mr. A purchases goods at Rs. 100 per kg. and then sells at Rs. 125 per kg.; it is said that he has earned a profit of Rs.25 per kg. But going into the details of the transaction, we will realize that there are so many expenses incurred which made this transaction possible. Even Mr. A has given his time in this transaction, so looking to the opportunity cost of time, it would add to the total expenses. Hence we need to restate the profit after giving the expenses, the due consideration.

2. Various concepts of Profit:

1.   Accounting Profit

 There are several concepts of profit in Accounting like Gross Profit, Net Profit, etc.

▪   **Gross Profit:** The excess of the proceeds of goods sold and services

rendered during a period over their cost, before taking into account administration,

selling, distribution and financial expenses, is called Gross Profit. When the result of

this computation is negative it is referred to as gross loss.

Gross margin shows the profitability of the trade, i.e., buying and selling. It partly

reflects on the efficiency of the firm's buying and selling activities and any

unsatisfactory state of the gross profit is traced into some defect in any of these two

activities comprising trade. [2]

▪   **Net Profit:**   The excess of revenue during a particular accounting

period is called net profit. When the result of this computation is negative, it is

referred to as net loss. Net profit is the earning of the business unit and so brings out

the profitability of the trade unit. In other words it throws light on the efficiency of

spending and capabilities of earning extra incomes. Hence, accounting profit is the

residual after charging all cost and expenses, paid or payable.

2.   Economic Profit

In Economics, profit is taken to be the reward for risk taking as a factor of production in the same way as wages are regarded to be the reward for labor and interest for capital. Economists generally define profit, i.e. the reward for the entrepreneur as residual of production after all other factors of production get their rewards. This definition is justified because the ultimate risk is borne by the entrepreneur and it is only for that reason that he is given a share in the production.[3] According to Taussig, "only that amount which is over and above interest on the owner's capital, rent for owner's premises and monopoly gains should be regarded as business profits"[4] Here it is implied that rent, wages and interest payable to parties other than the owner have already been paid.

One important point here need attention is that entrepreneur is getting his share after paying to other factors of production, therefore he would do his best to procure land, labor and capital at the lowest possible price. If he succeeds in that he would earn that much more, now this addition in his income is due his ability other than risk taking. This addition is nothing but the difference between the market price of land, labor, capital and the price paid by him. This theory is based on the basic assumption that even if he has selected cheaper factors of production, it will in no case adversely affect the production quantity and quality. Or we can say that he is paying less prices to quality factors of production. Hence this benefit as addition in his income is due to his bargaining ability.

Accounting Profit Vs. Economic Profit

Economics is the basic theory from which all the financial concepts have evolved and Accounting is practical art and science of recording the financial transaction to arrive at some conclusion regarding the financial affairs and efficiency of the business.

Concept of profit as per economics is based on the return to the factors of production. That is to say, owner of the business gets his share of profit is nothing but his payment as one of the factors of production. After paying for land, labor and capital whatever is left, belongs to the owner of the business – the entrepreneur. This return to the entrepreneur is residual amount and he receives it on account of his ability to take risk.

Entrepreneur is taking the risk of arranging for capital, land, laborers, organization, etc and making an agreement with them to pay them after some definite period of time. This means that he is legally obliged to pay all of them. This is absolutely risky. As such he is assuming that proper production as per market requirement will be carried out and will be sold out in time, and revenues will be generated which will be used in payment to other factors of production. Hence an entrepreneur is taking a big liability on his head on a mere assumption.

While accounting profit is nothing but the difference between total revenue income of the year and the revenue expenses of the year. Accountants follow the accounting concepts

and conventions to prepare the accounts for a particular accounting period. Total business income is calculated which is from the normal course of the business and all the expenses which are made to earn the income are deducted from the total income, the difference between the income and expense is referred to as profit by the Accountants. This amount shows the exact financial benefit to the business during the year as the accounts are maintained by following the scientific rules and principles of preparing the accounts.

3. Concept of Profitability

Profitability refers to the capacity or capability of earning profit. In financial language it may be referred as "Earning Capacity", which means what is the capability of a company to earn profit in current year and future. In this sense, profitability is usually defined as the ability of a given investment to earn a return from its use. As such market in which a company operates gives equal opportunity to all. Finance can also be acquired by all, at a common rate of interest, let us assume that even work-force is also available, and trained as per requirement. In this situation, a company has to earn profit in a competitive situation. This is the earning power or to say the ability of the company to earn profit. We will discuss later in the chapter that which factors affect profit and to which extent. Concept of profitability is a relative rather than an absolute one. As such if we check the figures of profit of a company we cannot come to any conclusion that whether the profit is good enough or not. Hence profitability is a relative concept rather than absolute one. Profitability can be calculated with the help of profitability ratios, which we will see later

in this chapter. There are two profitability ratios they are: Gross Profit Ratio and Net Profit Ratio. The gross profit margin ratio tells us the profit a business makes on its cost of sales, or cost of goods sold. It is a very simple idea and it tells us how much gross profit per Re. 1 of turnover our business is earning.

Gross profit is the profit we earn before we take off any administration costs, selling costs and so on. So we should have a much higher gross profit margin than net profit margin. For example ABC Co. has a Gross Profit ratio of 25.26%.

The net profit margin ratio tells us the amount of net profit per Re.1 of turnover a business has earned. That is, after taking account of the cost of sales, the administration costs, the selling and distributions costs and all other costs, the net profit is the profit that is left, out of which they will pay interest, tax, dividends and so on. For example ABC Co. has a Gross Profit ratio of 4.05%.

We still can't say, though, whether a gross profit margin of about 25% is good or bad and we can't say whether a net profit margin of around 4% is good or bad: we still need even more information.

There are two ways to tell whether ratio result is good:

- find ratio values for the business we are looking at for three, four or more year, preferably more: this is known as trend analysis;

- find ratio values for other businesses in the same industry: this is known as inter firm comparison

In the interpretation of financial statements of various business houses that are made today considerable importance and weightage is given to the measurement and evaluation of their current and prospective earning capacities. In this sense, profitability is usually defined as the ability of a given investment to earn a return from its use.

4. Factors Affecting Profit

We have already discussed various aspects of profit and profitability. Now let us discuss that what are the elements or which factors affects profit. Or to say which factors would make an impact over profit or profitability. These factors may be discussed in two broad parts:

{a}   Internal Factors

1)   Goal or objective of the organization

2)   Management

3)   Finance

4)   Labour Force

5)   Relationship between Management and Labour Force

{b}   External Factors

1)   Market Condition

2)   Response of Consumers

3)   Government Policy

4)   Natural Factors

Now let us discuss each point in detail:

{a}   Internal Factors

1. Goal or objective of the organization

Most of the organizations have profit maximization as their prime goal, but there are various types of entities coming into existence which do not have this objective. Hence apart from the ability and possibility of earning profit it is the willingness, which is also very important factor which affect profit.

2. Management

It is a well know truth that unless you have efficient management, profit is not possible. In order to achieve the set objectives and for earning reasonable profit also the management must be strong enough. Management can utilize the scarce resources efficiently, can handle the man-power, and take such decisions, which will be proved decisive at the end. Hence top management is one of the most important factor affecting profit.

3. Finance

Finance lies in the center of all the business activities. It is not just the adequacy of the capital but also the timely availability of capital and in proper form is also very important. Profit basically is the indicator of sound business operations. Or to say that if the business is operated smoothly than only the business will be in profitable situation. But for smooth operation of the business, there should be adequate finance available in the hands of business as and when required.

4. Labour Force

In a capital intensive unit also there is a significant contribution from the expert operators, supervisors and the technical staff. But take labour intensive unit and you

need a separate independent department which can take care of labour force. Workers or employees are as important for a business undertaking as the blood for a human body. As such employees carry out the majority of work, there are various types of workers like – experts workers, technically knowledgeable workers, unskilled labour, etc.

5. Relationship between Management and Labour Force

There is a famous saying regarding labour force that is if you can manage you men, they will manage everything. Modern managers have realized the importance of labour force, and they have realized that in order to take work from labour force, it is essential to motivate them. Hence if labour force is properly motivated they will work efficiently which will result in profit situation for the company.

{b}   External Factors

1. Market Condition

External factors are largely uncontrollable. Market is the place where the business can buy and sell goods and services. Hence from the beginning to end market plays an important role in a business unit. Profit is affected by the cost of production and realized amount of output, both these are highly affected by market conditions. Starting from procuring raw materials, other goods, services, etc to selling the finished product, if market conditions are favourable then only a business can earn profit. Another important

factor in market is of the business units in the similar business providing similar goods or services. Hence if a business unit has enough plans and strengths to fight competition in the market, then it can earn consistent profit.

2. Response of Consumers

Consumer is considered the king of market. All the products, marketing and sales promotion is consumer oriented. As such if consumer likes the goods or services than only he will buy the product which will lead to sales and thus the profit. Hence profit of a business unit is to a great extent dependent on the behavior of consumers. In other words profit is much affected by how a consumer reacts to a new product (or service) launched by the business, or how he (consumer) reacts to the modification made in the product or service.

3. Government Policy

Every industry is affected by the regulation and restriction laid by government. Especially in country like India every industry has to do business while following the strict line of rules lay down by the state and central government. But the other side of the coin is for government also provides man incentives to the business unit engaged in the business of certain kind, and also to those businesses that are carrying out their activities in certain notified areas. Hence as per the government policy a business will stand   benefited and may lose also. But as it is an external factor businessmen can do very little about it.

4. Natural Factors

Nature is still the dominating factor even in this hi-tech age. It is more than 100% true especially for those business concerns who are partly or totally dependent on the natural

factors. Adverse environment not only directly harms the business but it also indirectly harms by causing distress to the manpower of the business unit.

5. Concept of Value Added

Value Added Concept is the emerging accounting concept which has been discussed since long, but applied in practice in the recent past. Very few Indian companies are showing the value addition compared to some foreign companies. Value addition is show by way of preparing a Value Added Statement.

Value Added Concept is as the name suggests, regarding what value has been added to the goods which are purchased and sold. Value added is the wealth an entity has been able to create through the utilization of land, labour, capital and management. In the words of Ravi M. Kishore, "The 'Value Added' is a basic and broad standard of judging the performance of an enterprise."[5]

First the goods and services are purchased from the market, than some changes are made to these purchases, that is to say their form is changed and they are sold at some other place, which is nothing but changing the availability location of the goods. Hence these alterations made to the goods and services purchased are known as value addition or value generation, which is nothing but the extra price realized by selling these (altered) goods and services in the market.

6. Financial Statements

Financial statements include the Trading and Profit & Loss Account, Profit & Loss Appropriation Account and Balance Sheet. These statements are prepared to show the result of operations during a period. The basic objective of financial statements is to communicate financial position and performance of the business entities to the users

of accounts. Financial position of a business entity is indicated through Balance Sheet and performance is indicated through Profit & Loss Account.

Trading account gives the overall result of trading i.e. purchasing and selling of goods. In other words, it explains whether purchasing of goods and selling them has proved to be profitable for the business or not. It takes into account on the one hand the cost of goods sold and on the other the value for which they have been sold away. In case the sales value is higher than the cost of goods sold, there will be gross profit, while in reverse, there will be a loss.

The Trading account simply tells about the gross profit or loss made by a businessman on purchasing and selling of goods. It does not take into account the other operating expenses incurred by him during the course of running the business. Besides this, a businessman may have other sources of income. In order to ascertain the true profit or loss which the business has made during a particular period, it is necessary that all such expenses and incomes should be considered. Profit and Loss Account considers all such expenses and incomes and gives the net profit made or loss suffered by a business during a particular period. Balance Sheet is prepared to know the financial position of the business. Balance Sheet is the statement of assets and liabilities on a particular date.

Balance sheet has two sides. On the left hand side, the liabilities of the business are shown while on the right hand side the assets of the business appear. According to Palmer, "The Balance Sheet is a statement at a given date showing on one side the trader's property and possessions and on the other side his liabilities." According to American Institute of Certified Public Accountants, Balance Sheet is "a list of

balances of the asset and liability account. This list depicts the position of assets and liabilities of a specific business at a specific point of time."

Now let us examine some definitions of financial statements given by various authors:

Hampton John J has defined financial statements in his work "Financial Decision Making ", [8](Ed 1977 page 62) "A Financial Statement is an organised collection of data according to logical and consistent accounting procedures. Its purpose is to convey an understanding of some financial aspects of a business firm. It may show a position at a moment of time as in the case of a balance sheet, or may reveal a series of activities over a given period of time, as in the case of an Income Statement."

S.N. Maheshwari has defined financial statements [9]: A financial statement is an organized collection of data according to logical and consistent accounting procedures. Its purpose is to convey an understanding of some financial aspects of a business firm. It may show a position at a moment of time as in the case of a balance sheet, or may reveal a series of activities over a given period of time, as in he case of an Income Statement.

Thus, the term financial statements generally refer to two basic statements:

(i)   The Income Statement.

(ii)   The Balance Sheet.

Additional of statements are as under

(iii)   A statement of Retained Earnings.

(iv)   A statement of changes in financial position.

7. Analysis and Interpretation of Financial Statements

Financial Statements reveals the financial position of the business and also reveals in detail the reasons for the profit or loss and the financial position. Financial statements are of immense importance to various parties.

Financial Statements are prepared by Accountants, but there are various other parties who are very much interested in the statements like:

- the executives, who require the information for running the business,

- the bankers and financial institutions, who require the information to justify the making of the loans,

- the investors, who require the information to warrant their purchase of securities of the business,

- the creditors and suppliers, who require the information to check the security of their lending,

- the labour leaders, who require the information to check how the

- company stands in relation to labour and its welfare.

- the debenture holders, who require the information to check that whether the company's income generates a sufficient margin to pay the interest, whether the cost is adequate, and whether the company will have enough funds to retire debentures at maturity.

- the tax authorities, who require the information to check the authenticity of the income shown by the business,

- the government departments, who require the information to check the figures of sales, sources of finance, type of activity, export-import composition, growth, prices charged, etc,

- the employees, who require the information to know the profits earned by the business and its use and the extent of profits kept reserved,

- the research institutions, who require the information for their research work

- the stock exchanges, who require the information for various purposes

- the news agencies, who require the information for publishing the information of the company's affairs, etc

- the general public, etc who require the information of social cost and benefit.

The above list shows the importance of financial statements, but it is not only the statements which are of such immense importance, but it is its interpretation which is also equally, and sometimes more important than the statements themselves. Unless and until they are properly interpreted it will not have that much utility.

Now let us examine the meaning of interpretation and analysis.

According to F. Wood, "Interpret means to put the meaning of a statement into simple terms for the benefit of a person."

According to S.N.Maheshwari, "The term 'Interpretation' means explaining the meaning & significance of the data simplified by analysis."[10]

Interpretation of financial statement refers to converting the statements into such a form that can be understood by various interested parties. It should speak the language which is understood by the interested parties and the picture which is hidden behind the various figures should be clear and easy to understand.

According to Myers, "Financial Statement analysis is largely a study of relationship among the various financial factors in a business as disclosed by a single set of statements and study of the trends of these factors as shown in a series of statements."

According to S.N.Maheshwari, the term "Analysis" means methodical classification of the data given in the financial statements.[11]

Analysis of financial statements also means breaking into parts the material presented in the form of financial statements.

Therefore while analysis comprises resolving the statements by breaking them into simpler statements by a process of rearranging, regrouping and the calculation of ratios, interpretation is the mental process of understanding the terms of such statements and forming opinions or inferences about the financial health, profitability, efficiency and such other aspects of the undertaking.

Now let us examine the relationship between Analysis of financial statements and Interpretation of financial statements.

Interpretation of financial statements is the final and main objective for which Analysis is done, hence interpretation includes analysis. Analysis helps in arranging the data so that data can be interpreted. Thus we can say that data is simplified by Analysis and its (data) meaning and significance is explained by Interpretation.

Analysis & interpretation of financial statements, therefore, refers to such a treatment of the information contained in the income statement and the Balance sheet so as to afford full diagnosis of the profitability and financial soundness of the business.

However both "Analysis" and "Interpretation" are complementary to each other. Interpretation requires analysis, while analysis is useless without interpretation.

Reasons or Need or Utility of Analysis of Financial Statements:

- Managers would be interested in checking the financial position of the business

- Potential Investors would be interested in the earning capacity of the business and the dividend policy, etc

- Institutional investors are interested in the growth potential of the company and sound financial base. According to Harry G. Guthmann, "investors as a class need to know, first, that the whole financial structure is strong-not merely that the concern will be able to meet the obligations; and second, that there is sufficient

evidence in the history of its earnings to warrant a belief in future growth, or at least reasonable stability."

- Debenture holders, Shareholders, Potential Investors, etc would be interested to know whether the company would be able to pay its long term debt.

- Trade Creditors would be interested in the liquidity position of the company.

Tools used for Analysis of Financial Statements:

[1]   Ratio Analysis

[2]   Dynamic or Horizontal or Trend Analysis

[3]   Static or Vertical or Structural Analysis

[4]   Fund Flow Analysis

Now let us examine each of the above tools in detail:

[1]   Ratio Analysis

A ratio is a relation between two amounts, which shows how many times one contains the other. Ratio is a unit of measurement to measure the relationship between two amounts. In other words a ratio is a statistical yardstick that provides a measure of relationship between two accounting figures. Thus if we want to observe the relationship of two variables we could find out their ratio which would give the

information of their inter-relationship. In the words of S.N.Maheshwari, "Ratios are mathematical relationship expressed between inter-connected accounting figures."[12]

The individual amounts are non-expressive or to say they cannot convey any message or meaning, but if they are compared with some other figure or other relevant amount, then this comparison can convey a significant or important conclusion. This comparison of different amounts with each other is known as Ratio. And using this comparison to find out the hidden meaning of the figures is known as Ratio Analysis. In other words, when we try to find out the relationship between two relevant figures, which would lead to some conclusion, we are referring to Ratio Analysis.

This is one of the most important and key tool of analysis of financial statements. Ratio analysis helps the management to quickly understand the working of the enterprise and plan for the future. A single ratio is not likely to tell the whole story. It is therefore, necessary in order to arrive at correct conclusions to study a number of related ratios.

Financial ratios are calculated from one or more pieces of information from a company's financial statements. For example, the "gross margin" is the gross profit from operations divided by the total sales or revenues of a company, expressed in percentage terms. In isolation, a financial ratio is a useless piece of information. In context, however, a financial ratio can give a financial analyst an excellent picture of a company's situation and the trends that are developing.[13]

A ratio gains utility by comparison to other data and standards. For example, a gross profit margin for a company of 25% is meaningless by itself. If we know that this company's competitors have profit margins of 10%, we know that it is more profitable than its industry peers which are quite favourable. If we also know that the historical trend is upwards, for example has been increasing steadily for the last few years, this would also be a favourable sign that management is implementing effective business policies and strategies.

There are basically three main ways in which ratio can be calculated:

Depending upon the type of amount and accounting figure, any of the above listed ratio may be used:

(a)   Plain Ratio: This is the simplest ratio which can be derived by simply dividing one number by another. For example if we want to know what is the gross profit ratio , i.e. what is the proportion of gross profit to sales , we can find out by dividing sales by gross profit. For example, if Sales if Rs. 1, 00,000 and gross profit is Rs. 50,000- then the ratio would be 2:1. Which means gross profit is half of sales.

(b) Percentage Ratio: This ratio shows the interrelation in percentage. If we continue the earlier example, then we can say that gross profit ratio will be 50%,

which means gross profit is 50 %(half) of sales.

(c)   Rate Ratio: This ratio shows how many times one amount contains another amount. If we continue the earlier example, then we can say that gross profit will be half of sales or sales are two times (twice) the gross profit.

Types of Ratios:

There are various types of ratios, and they are to be calculated as per the requirement, they are classified as per below three classifications:

(A)   Traditional Classification

1.   **Balance Sheet Ratios or Financial Ratios**

- Current Ratio

- Liquid Ratio

- Proprietary Ratio

- Stock – Working Capital Ratio

- Capital Gearing Ratio

2. Profit and Loss Account Ratios

- Gross Profit Ratio

- Operating Ratio

- Expenses Ratio

- Net Profit Ratio

- Stock Turnover Ratio

3.   **Composite or Combined Ratios (Balance Sheet and Profit and Loss Account**

   Ratios)

- Return on Capital Employed

- Return on Shareholders' funds

- Earnings Per Share

- Debtors' Turnover Ratio

- Creditors' Turnover Ratio

- Turnover of Fixed Assets

Ratios

Balance Sheet Ratios	P&L Statement Ratios	Composite Ratios
1. Current Ratio 2. Liquid Ratio 3. Proprietary Ratio 4. Stock – Working Capital Ratio 5. Capital Gearing Ratio	1. Gross Profit Ratio 2. Operating Ratio 3. Expenses Ratio 4. Net Profit Ratio 5. Stock Turnover Ratio	1. Return on Capital Employed 2. Return on Shareholders' funds 3. Earnings Per Share 4. Debtors' Turnover Ratio 5. Creditors' Turnover Ratio 6. Turnover of Fixed Assets

(B) **Functional Classification**

1. Liquidity Ratios

2. Leverage Ratios

3. Activity Ratios

4. Profitability Ratios

(C)   Classification from the view point of users.

1. From Shareholders' Point of View

▪   Earnings Per Share

2. From Long term Creditors Point of View

▪   Debt-Equity Ratio

▪   Long term funds to Fixed Assets Ratio

3. From Short term Creditors Point of View

▪   Liquidity Ratio

     i. Current Ratio

     ii. Quick Ratio

▪   Stock Turnover Ratio

▪   Debtors' Turnover Ratio

Now let us discuss each ratio in detail

1. Current Ratio

Current Ratio: = Current Assets / Current Liabilities

Current Ratio is calculated by dividing Current Assets by Current Liabilities. This ratio shows the availability of current assets with the firm to meet its current liabilities.

1:1 current ratio means; the company has Re. 1 in current assets to cover each Re.1 in current liabilities. Look for a current ratio above 1:1 and as close to 2:1 as possible.

One problem with the current ratio is that it ignores timing of cash received and paid out.[14] For example, if all the bills are due this week, and inventory is the only current asset, but won't be sold until the end of the month, the current ratio tells very little about the company's ability to survive.

2. Liquid Ratio

Liquid Ratio: = Current Assets-Inventories / Current Liabilities

This ratio is also referred as Quick Ratio or Acid Test Ratio. It is calculated by dividing liquid assets by current liabilities. Liquid assets mean those assets which can be immediately converted into cash. This ratio shows the short term solvency position of the firm.

Indicates the extent to which you could pay current liabilities without relying on the sale of inventory -- how quickly you can pay your bills. Generally, a ratio of 1:1 is good and indicates you don't have to rely on the sale of inventory to pay the bills.[15] Although a little better than the Current ratio, the Quick ratio still ignores timing of receipts and payments.

3. Stock-Working Capital Ratio

Stock-Working Capital Ratio: = stock / Working Capital

This ratio is also referred as 'Inventory-Working Capital Ratio' or 'Inventory net current assets ratio'. This ratio shows the relationship between stock and working capital.

This ratio tells how much of a company's funds are tied up in inventory. It preferable to run your business with as little inventory as possible on hand, while not affecting potential sales opportunities. Keeping track of inventory levels is crucial to determining

the financial health of your business. If this number is high compared to the average for your industry, it could mean your business is carrying too much inventory. [16]

4. Capital Gearing Ratio

$$\text{Capital gearing ratio:} = \frac{\text{Funds bearing fixed interest or fixed dividend}}{\text{Total Capital Employed}}$$

This is a capital structure ratio, which shows the proportion of debt and equity in the total capital employed.

This ratio can be calculated by dividing "Funds bearing fixed interest or fixed dividend" by "Total Capital Employed". High ratio is known as highly geared, while low ratio is known as low geared ratio. This ratio is very important when company wishes to give the benefit of its earning to the equity shareholders. As such fixed interest or fixed dividends are to be given to debenture holders or preference share

holders, and hence any surplus earned on their funds can be given to the equity share holders. This is also referred as "Trading on Equity".

5. Gross Profit Ratio

Gross Profit Ratio: = Gross Profit / Net Sales

This ratio shows the rate at which gross profit is earned on sales. The gross profit margin ratio tells us the profit a business makes on its cost of sales, or cost of goods sold. It is a very simple idea and it tells us how much gross profit per Re.1 of turnover our business is earning. Gross profit is the profit we earn before we take off any administration costs, selling costs and so on. So we should have a much higher gross profit margin than net profit margin.[17]

The gross profit margin is a measurement of a company's manufacturing and distribution efficiency during the production process. The gross profit tells an investor the percentage of revenue / sales left after subtracting the cost of goods sold. A company that boasts a higher gross profit margin than its competitors and industry is more efficient. Investors tend to pay more for businesses that have higher efficiency ratings than their competitors, as these businesses should be able to make a decent profit as long as overhead costs are controlled [overhead refers to rent, utilities, etc.]

6. Operating Ratio

Operating ratio: = Operating Costs / Net Sales This ratio is calculated by dividing operating costs by net sales. This is very important ratio for the management to check its operating expenses.

7. Net Profit Ratio

Net Profit Ratio: = Net Profit / Net Sales

This ratio shows the rate at which net profit is earned on sales. The net profit margin ratio tells us the amount of net profit per £1 of turnover a business has earned. That is, after taking account of the cost of sales, the administration costs, the selling and distributions costs and all other costs, the net profit is the profit that is left, out of which they will pay interest, tax, dividends and so on.[18]

8. Stock Turnover Ratio

Stock Turnover Ratio: = Cost of Goods Sold / Average Stock

This ratio is also referred as 'Inventory ratio' or 'Inventory Turnover ratio' or 'Stock turn ratio' or 'Merchandise Turnover ratio' or 'Stock Velocity ratio' or 'Velocity of stock'.

This ratio measures the number of times stock turns or flows or rotates in an accounting period compared to the sales effected during that period. In other words, the ratio indicates the frequency of inventory replacement i.e., the number of times the inventory has been sold and replaced during a given period of time.

9. Return on Capital Employed

$$\text{Return on Capital Employed} = \frac{\text{Net profit before tax, interest and preference dividend}}{\text{Capital employed}}$$

This ratio is also referred as "Return on Investment" or "Overall Profitability Ratio" This ratio shows the percentage of total profits earned with relation to the total capital employed or total assets utilized. If one wants to assess the efficiency of any company, one of the obvious indicators is of course sales figure. If the company has operated efficiently, it would have higher sales and hence it would be rewarded with higher profits. Lack of efficiency will result in lesser sales and thus less profit. One more angle to look over less profit is the cost aspect. Lower profitability is also the result of uncontrolled cost. This ratio is a very good indicator of how good the assets are utilized and how much optimum the resources are utilized. If this ratio is compared with the same ratio of different years or with the ratio of other companies, it can give very important conclusions on which the strategy for the future course of action can be prepared.

10. Return on Shareholders' Funds

$$\text{Return on Shareholders' Funds} = \frac{\text{Net profit after tax and interest}}{\text{Shareholders' Funds}}$$

This ratio shows the profit available for shareholders of the company. Here we are using profit which is after interest and tax, which means the profit which is available

to the shareholders of the company. As such after paying for tax and interest on long term loans and debentures, whatever profit remains that belongs to the shareholders.

11. Return on Equity Shareholders' Funds

$$\text{Return on Equity Shareholders' Funds} = \frac{\text{Net profit after tax, interest and Preference Dividend}}{\text{Equity Shareholders' Funds}}$$

The above ratio is same as previous, but this ratio shows the profits which are available to only Equity Shareholders. After paying tax and interest from the profit, whatever profit is left that is available for Preference and Equity Shareholders.

But as Preference Shareholders are entitled to a fix rate of dividend on their investment before Equity shareholders, they will be paid first and then whatever profit remains that entirely is available for the Equity Shareholders. This profit compared to Equity shareholders' funds (i.e. Equity Share Capital + Reserves + Retained Earnings + Surplus) gives the Return on Equity Shareholders' Funds. This is considered one of the most important indicators of the efficiency of the management. Higher the ratio higher will be the level of expertise of the management.

12. Debtors' Turnover Ratio

$$\text{Debtors' Turnover Ratio} = \frac{\text{Credit Sales}}{\text{Average Accounts Receivables}}$$

This ratio is also referred as 'Debtors' Velocity' or 'Turnover of debtors' ratio' or 'Accounts receivable turnover ratio' or 'Debtors Turnover period' or 'Average collection period'. This ratio shows the rate at which the trade debts are collected. This number indicates how quickly customers are paying to the business. The greater the number of times receivables turn over during the year, the shorter the time between sales and cash collection.

13.   Creditors' Turnover Ratio

$$\text{Creditors' Turnover Ratio} = \frac{\text{Credit Purchases}}{\text{Average Accounts Payables}}$$

This ratio shows the rate at which creditors are paid. This number reveals how quickly your company pays its bills. The payables turnover ratio reveals how often payables turn over during the year. A high ratio means there is a relatively short time between purchase of goods and services and payment for them. A low ratio may be a sign that the company has chronic cash shortages. It is a very important ratio with regard to the cash management of the firm as such creditors should not be paid too early, but looking to the reputation aspect of the firm the payments should not be too delayed as it creates negative impression of the firm in the eyes of the creditors who are major source of credit purchases.

14.   Debt-Equity Ratio

$$\text{Debt-Equity Ratio} \; = \; \underline{\text{Total Liabilities/Debts}}$$

Total Equity

This ratio shows the ratio between capital invested by the owners and the funds provided by lenders and does the comparison of how much of the business was financed through debt and how much was financed through equity.

The higher the ratio, the greater the risk to a present or future creditor. Too much debt can put your business at risk, but too little debt may mean you are not realizing the full potential of your business, and may actually hurt your overall profitability. This is particularly true for larger companies where shareholders want a higher reward (dividend rate) than lenders (interest rate).

This ratio shows the proportion of borrowed capital and ownership capital. It can be of two types:

(a) **Debt-Equity Ratio** $=$ $\dfrac{\text{Long Term Debts}}{\text{Shareholders' Funds}}$

(b)   **Debt-Equity Ratio** $=$ $\dfrac{\text{Long Term Debts}}{\text{Shareholders' Funds} + \text{Long Term Debts}}$

The ratio shares favourable or unfavourable financial position of the concern. It shows long term capital structure. The low ratio is

viewed as favourable from long term creditors point of view. It reveals high margin of safety to the creditors. Higher ratio is unfavourable. Higher the ratio greater will be the risk involved in respect of creditors. It indicates too much dependence on long term debts.

[2]   Dynamic or Horizontal or Trend Analysis

When financial statements of different years are compared with regard to   individual items, it is referred to as Dynamic Analysis or Horizontal Analysis or   Trend Analysis. For example, sales figures, cost figures, etc are compared over   the years.

In case of this type of analysis, financial statements for a number of years are reviewed and analyzed .The current year's figures are compared with the standard or base year. The analysis statement usually contains figures for two or more years   and the changes are shown regarding each item from the base year usually in the form of percentage. Such an analysis gives the management considerable insight into levels and areas of strength and weakness. Since this type of analysis is based on the data from year to year rather than on one date, it is also termed   dynamic analysis.

[3] Static or Vertical or Structural Analysis

When different accounting variables of the same year's financial statement are compared with each other, the analysis is known as Static or Vertical or Structural Analysis.

In case of this type of analysis a study is made of the quantitative relationship of the various items in the financial statements on a particular date. For example, the ratios of different items of costs for a particular period may be calculated with the sales for that period. Such an analysis is useful in comparing the performance of several companies in the same group, or division or departments in the same company. Since this analysis depends on the data for one period, this is not very conductive to a proper analysis of the company's position. It is also called 'Static Analysis' as it is frequently used for referring to ratios developed on one date or for one accounting period. It is to be noted that both analysis-vertical & horizontal can be done simultaneously also. For example- the income statement of a company for several years may be given horizontally it may show the change in different elements of cost and sales over a number of years. On the other hand, vertically it may show the percentage of each element of cost to sales.

[4]   Fund Flow Analysis

The balance sheet shows the financial position of the company on a particular   day. Income statement or Profit & Loss Account shows the operational profit of   the company. But if we want to know the working capital transaction of the year,   we need to prepare Fund Flow Statement.

A Fund Flow Statement is prepared for recording inflows and outflows of funds. During the year there are numerous transactions resulting in increase and decrease of working capital. If a payment is made working capital would be reduced and if there is a receipt working capital would be increased. Thus in fund flow analysis, we prepare a fund flow statement which records the flow of funds which means change in funds or change in working capital.

A Fund Flow Statement records all the inflows and outflows of funds irrespective of its revenue or capital nature. It is different from Income Statement in that regard   and also income statement records the income and expenditure pertaining   to   current year only. For example, if debentures are issued for cash, it becomes a   source   of funds while preparing Fund Flow Statement, but it is not an item of   income for an Income Statement. During a year there are numerous transactions,   but   only fund transactions would be recorded in the Fund Flow Statement. Any   non   fund transaction would not find any place in Fund Flow Statement. Thus, any   fund transaction or the transaction which affects working capital

would be recorded in Fund Flow Statement. Comparing Fund flow statement with Balance Sheet some authors have observed that, "The purpose of Fund flow statement is not to match the asset and liabilities as on a particular date but to show as to what have happened to the funds available from different sources. Thus the fund flow statement emphasis on change and not on status as it is in the case of balance sheet."[19]

FUND FLOW ANALYSIS AS TOOL OF FINANCIAL STATEMENT ANALYSIS

We have seen the meaning and use of fund flow analysis; here we are discussing fund flow analysis as a tool of financial statement analysis. Now let us examine Fund Flow Analysis as a tool of financial statement analysis. In the words of Dr. S.N.Maheshwari, "Fund Flow Statement helps the financial analyst in having a more detailed analysis and understanding of changes in the distribution of resources between two balance sheet dates. In case such study is required regarding the future working capital position of the company, a projected funds flow statement can be prepared."

Although a company prepares various financial statements but fund flow statement has its own usefulness. It is one of the very important tool of analysis of financial statement.

- It throws light on the liquidity position of the company

- It throws light on the use of profit

- It helps in allocating scare resources of the company

- It checks the effective use of working capital.

References

1. A.S.Hornby, Oxford Advanced Learner's Dictionary Oxford University Press, Fifth   Edition, 1996
2. Dr. M.B.Shukla, Kulshreshtha on Accounting, Indian Accounting   Association Varanasi Branch,
3. ibid
4. F.W.Taussig: op. cit. pp.
5. Ravi M. Kishore, Management Accounting, Taxmann, 1994
6. ibid
7. ibid
8. Hampton John J, "Financial Decision Making ", Edition 1977
9. Dr. S.N.Maheshwari, Financial Management: Principles   & Practice, Sultan Chand & Sons, 1997
10. ibid
11. ibid
12. ibid
13. http://www.finpipe.com/ calculations
14. http://www.onlinewbc.gov/ratios
15. Chopde, Choudhari, Parikh, Patel, Kajarekar and Dhingreja, Introduction to management Accounting Sheth Publishers Pvt. Ltd, 1995
16. http://www.americanexpress.com /accounting
17. http://www.bized.ac.uk/copfact/ratios
18. ibid
19. Chopde, Choudhari, Parikh, Patel, Kajarekar and Dhingreja, Introduction to management Accounting Sheth Publishers Pvt. Ltd, 1995

Chapter 2

A STUDY OF PHARMACEUTICAL INDUSTRY

Content

1. Introduction & International Pharmaceutical Industry

The multinational pharmaceutical industry is unique in that it is largely organized and operated by privately owned companies, created to realize profits for its stockholders. The industry deals in life-and-death issues, and its products not only relieve illness, but can often improve the quality of life. In addition to the life-giving aspect, the composition of products usually consists of highly toxic chemicals, which, when mixed discriminately, can cause serious health problems and even death. Since public health is of concern to all governments, the pharmaceutical industry is heavily regulated on the national level worldwide. This regulation takes the form of prior approval in order to market a new product and in some countries the establishment of a price for the product.

At the global level, the pharmaceutical industry is divided into two kinds of firms, the innovative firm and the generic firm (producer of generic drugs).[1]

The first, the innovative or patent-protected firms, rely heavily on patent protection. These firms believe that in order to carry out the intensive research required to produce new products, patent protection is essential. As a result of the extensive research and cost to produce a patent-protected drug, patent-protected firms tend to be located in highly developed and industrialized countries. Not all research efforts are successful. It is only a small fraction that reaches the market. It is through the period of exclusivity provided under the patent, generally twenty years from the date of filing, that the firm can recoup its research and development (R&D) costs to continue new and innovative research. Actually, the effective term of the patents is more like 14-15 years due to delays in the patent approval process and in obtaining rights to

market the new drug. These firms are dependent on patent protection and are reluctant to introduce new products in countries that deny such protection. Because the patent grant provides a period of exclusivity, the patent owning firm can establish a higher price for the product since no competition is allowed. This is true when patent protection exists, even in countries where the government regulates the price of the product.

The second, the generic pharmaceutical firm, manufactures and markets pharmaceutical products that are not subject to patent protection. In countries with patent protection, generic firms come into their own at the expiration of the patent. At such time, the technology is in the public domain (as referred in US) and anyone is free to manufacture the product. Generic products are subject to some government regulation before any sales can be made, (in the United States the manufacturer must demonstrate to the satisfaction of the Food & Drug Administration (FDA) that the generic version is the bio-chemical equivalent of the patented product).

Generally speaking, once the generic drug appears on the market, it will be available at a lower cost than the original patented version. Often, several generic products will appear on the market within the same timeframe, thus causing even larger price reductions. In countries lacking pharmaceutical patent protection, the entire industry could be said to be generic. In such countries, the profile of the industry will include firms that may manufacture, internationally used drugs, which are in the public domain in the country of origin. In such a case, the industry is similar to the generic firm in the United States. However, many firms in countries that do not recognize pharmaceutical product patents manufacture products that are still under patent

protection in the country of origin, thus diluting the value of the patent. This practice is viewed negatively by the country providing patent protection and is often characterized as piracy or counterfeiting by the firm whose patent is not being recognized. Yet it is perfectly legitimate and legal in the country where the drug is being manufactured and sold.

Both the patent-protected and generic industries are patent-driven. The former rely on strong, effective patent laws and extending patent protection as long as possible both at home and abroad. The generic industry (as in the United States) is eager to begin manufacturing the generic equivalent as quickly as possibly so as to gain market access at the earliest time, and is obviously opposed to any form of patent term extension. Each, however, is convinced that it is providing unique service to the public: the patent-protected firm by introducing the newest, breakthrough product and the generic firm by offering quality products at lower costs.

The Pharmaceutical Research Manufacturers Association (P*h*RMA) located in Washington, DC, is a trade association representing the interests of the innovative or patent-protected manufacturers of pharmaceuticals. Its mission:

…is to help the research-based pharmaceutical industry successfully meet its goal of discovering, developing, and bringing to market medicines to improve human health, patient satisfaction, and the quality of life around the world, as well as to reduce the overall cost of health care. [2]

Currently, "P*h*RMA" membership consists of substantially all of the patent-protected pharmaceutical firms. A partial list of names and addresses of P*h*RMA member firms is provided in Exhibit 1**.** High on P*h*RMA's agenda is obtaining strong and effective

patent protection in all countries where its members are active. In addition, P*h*RMA addresses such concerns as price control and generic competition, issues that could adversely affect the interests of its members domestically and abroad. On a global level, P*h*RMA keeps careful track of the availability and effectiveness of intellectual property protection throughout the world. Annually, it notifies the United States Trade Representative (USTR) of the outcome of its review and makes recommendations as to what action the United States government should take against countries believed to be deficient in meeting international standards.

For years, India had been a problem country and high on P*h*RMA's list because of failure to grant pharmaceutical product patents. As a result of the intellectual property environment in India, P*h*RMA members tended to be low profile, and principally marketed drugs no longer protected by patent, as opposed to their premier, innovative products.

Global pharmaceutical firms watched developments in India closely after 1991. The situation in India may be changing. In 1995 India became a signatory of the Uruguay Round Agreement, Trade Related Aspects of Intellectual Property (TRIPS), and thereby showing willingness to accept one of its requirements, the issuance of pharmaceutical product patents. India's adherence to TRIPS would become effective in 2005 as a result of a provision of the Agreement granting developing countries an additional period if it is required "to extend patent protection to areas of technology not so protectable in its territory." In an important first step towards full compliance, India acceded to the Paris Convention for Protection of Industrial Property (Paris Convention) and the Patent Co-operation Treaty (PCT).[3] Adherence to the Paris

Convention is required under the TRIPS, and membership in the PCT provided instant benefits to Indian firms seeking multiple country patent protection. As the year 2005 approached, the global pharmaceutical industry watched India with new interest and the Indian pharmaceutical

industry positioned itself, for the first time, to face international competition.[4]

Before moving ahead let us clarify the basic production of pharmaceutical industry. Be it anywhere in the world, a pharmaceutical company, producing pharmaceutical products will be engaged in basically two types of products:

(a) **Bulk Drugs**, which is the therapeutic molecule(molecules are the bulk drugs that are the active component in any pharmaceutical product) in powder form in the drugs, in other words chemicals having therapeutic value and used for production of pharmaceutical formulations, and

(b) **Formulations**, which is the final compound. Formulations can be tablets, injections and syrups or in the form of plasters where the therapeutic drug is absorbed through the skin. In other words formulations are medicines ready for consumption by patients.

2. Indian Pharmaceutical Industry

The Indian Pharmaceutical Industry is no less than a success story as it has provided employment for millions and made the drugs available to the vast population of the country at very affordable prices. The Indian pharmaceutical industry with a domestic market turnover of Rs 18,000 Crores and growing at five per cent as per the MAT - ORG September 2003 is poised for a paradigm shift. The Indian pharmaceutical industry has moved through several phases of ups and downs.

The evolution and growth of the Indian pharmaceutical industry has been largely driven by regulatory forces — the DPCO (Drug Price Control Order), which regulated the prices of bulk drugs and formulations, and the Indian Patent Act, which granted process patents but not product patents.

Pharmaceutical Business came into existence in India in the year 1901 when Bengal Chemicals and Pharmaceutical Company started its production in Calcutta. Since then there is no looking back and today India has become one of the leading pharmaceutical products manufacturing nation. This fact would become evident by the current scenario of the industry, wherein it is not just meeting the increasing demand of the huge population of the country, but also exporting the products to other developing and developed countries of the world including the USA. Starting from the humble beginning of repacking imported raw materials; the Indian pharmaceutical industry has graduated to become a net foreign exchange earner, making its presence felt in the global pharmaceutical arena. India is the fourth largest producer of bulk drugs and formulations in terms of volumes though not in terms of value. Indian drugs have the distinction of being the most competitive in terms of price causing much heartburn to the MNCs. In spite of the impressive statistics of the Indian

pharmaceutical industry, our per capita consumption of drugs is one of the lowest in the world and only 30 per cent of the population mostly in the urban areas has access to modern drugs. The shortcomings of the Indian pharmaceutical industry are in the fields of R&D and new drug discovery.

3. Features of Indian Pharmaceutical Industry

1.   Self Sufficient to meet the domestic demand

Looking to the features of Indian Population, like, huge size, majority of lower income group, less personal budget for medical treatment, adverse climatic conditions, etc, it is very important that they get quality medical treatment and medical products , not only that but at affordable prices. Indian Pharmaceutical Industry is called a Success Story, because it has served the population of the country in spite of the above limiting features.

The pharmaceutical industry in India meets around 70% of the country's demand for bulk drugs, drug intermediates, pharmaceutical formulations, chemicals, tablets, capsules, orals and injectibles.[5] More than 85% of the formulations produced in the country are sold in the domestic market. India is largely self-sufficient in case of formulations. Some life saving, new generation under-patent formulations continue to be imported, especially by MNCs, which then market them in India. Overall, the size

of the domestic formulations market is around Rs160bn and it is growing at 10% p.a.[6]

The pharmaceutical industry today is in the front rank of India's science-based industries, with wide ranging capabilities in the complex field of drug manufacturing and technology. It is a front-runner in the third world in terms of technology, quality and range of medicines manufactured. Almost all types of medicines – ranging from simple pain relieving pills to sophisticated antibiotics and complex cardiac compounds – are now made in the country. These have made India fairly self-sufficient in this field.

2.   Gigantic Size

Over 20,000 registered pharmaceutical manufacturers exist in the country.[5] The leading 250 pharmaceutical companies control 70% of the market with market leader holding nearly 7% of the market share. Over the four decades between 1969-70 and 1998-99 the number of business units engaged in the production of drugs and pharmaceuticals grew nearly ten times from 2257 to 20053 (OPPI, 1998-99). Indian Pharmaceutical Industry is one of the largest and most advanced among the developing countries.

The data shown in the following table, will give an idea of how the size of the industry has increase over the period of 30 to 35 years:

Table 2.1 [5]   Growth of Pharmaceutical Industry in India

(Rs. In Crores)

Particulars	1965-66	1999-00
Capital Investment	140.00	2,500
Production of Bulk Drugs	18.00	3,777
Production of Formulations	150.00	15,960
Import	8.20	3,441
Export	3.05	6,631
R&D Expenditure	3.00	320

(**Source:**www.pharmaceutical-drug-manufacturers.com/pharmaceutical-industry)

3.   High volume of production

Between 1965-66 and 1998-99 the production of formulations rose from a value of Rs.1.5 million to almost Rs. 139 billion, and that of bulk drugs from Rs.180 million to more than Rs. 31 billion.

Table 2.2: Production of Bulk Drugs and Formulations in India [7]

(Rs.Million

Year	Value		
	Bulk Drugs	**Formulations**	**Total**
1980-81	2400	12000	14400
1990-91	7300	38400	45700
1994-95	15180	79350	94530
1998-99	31480	138780	170260

(**Source:** *Indian Pharmaceutical Guide, 1998*; *Annual Report (1999-2000),*
Department of Chemicals and Fertilizers.)

4.Low Prices

Another significant factor characterizing India's pharmaceutical market is its extremely low drug prices, among the lowest in the world. In a country of almost one billion people, price controls served as a means of ensuring that even the poorest had access to drugs. A price comparison of certain drugs is illustrated in the following table of U.S. prices and Indian prices.

Table 2.3 [4] Price Comparison of Certain Drugs in U.S. & India

Brand Name /Generic Name	Dosage	U.S. Price per Tablet ($)	Indian Price per Tablet ($)
Prilosec/Astra Merck Omeprazole	20 mg	$3.76	$0.09
Prozac/Eli Lilly Fluoxetine	10 mg	$2.28	$0.63
Zocor/Merck Simvastatin	10 mg	$2.07	$0.21
Zantac/Glaxo-Wellcome Ranitidine	150 mg	$1.72	$0.02

(**Source**: Investing in the Indian Pharmaceutical Industry: The American Graduate School of International Management, Professor Robert Tancer   and student Srinivas Josyula, 1999 Thunderbird)

The Indian Patents Act (IPA) of 1970 only recognized process patents.

Thus, the market became highly competitive with extremely low drug prices. Drug prices in India were sometimes 1/10th of U.S. prices.[4]

5.   Growth in Exports

Over 60% of India's bulk drug production is exported. The balance is sold locally to other formulators. India's pharmaceutical exports are to the tune of Rs87bn, of which formulations contribute nearly 55% and the rest 45% comes from bulk drugs. In financial year 2000, exports grew by 21%. India's pharmaceuticals imports were to the tune of Rs20.3bn in financial year 2001. Imports have registered a CAGR of only 2% in the past 5 years. Import of bulk drugs have slowed down in the recent years. The exports of Pharmaceuticals during the year 1998-97 were Rs 49780 million. From a meager Rs 46 crores worth of Pharmaceuticals, Drugs and Fine Chemicals exports in 1980-81, pharmaceutical exports has risen to approximately Rs 6152 Crores (Prov.1998-99), a rise of 11.91% against the last year exports. Amongst the total

exports of India, the percentage share of Drugs, Pharmaceuticals and Fine Chemicals during April-October (2000-2001) was 4.1%, an increase of 7%.

Exports have been rising at around 30% CAGR over last five years. There is a shift in export profile towards value added formulations from low value bulk drugs.[8]

Table 2.4 [9]

Export of Bulk Drugs and Formulation   [Rs. Million]

Year	Exports of Bulk Drugs	Exports of Formulations	Total
1980-81	113	351	464
1984-85	293	995	1288
1989-90	3505	3142	6647
1990-91	4134	3714	7848
1991-92	7226	5586	12812
1992-93	4095	9655	13750
1993-94	5308	13108	18416
1994-95	7601	15055	22656
1995-96	11329	20448	31777
1996-97	15811	25092	40903
1997-98	17379	33432	50811
1998-99	23277	30385	53662

(Source: *Indian Pharmaceutical Guide, 1998*; *Annual Report (1999-2000)*, Department of Chemicals and Fertilizers, OPPI, *33rd Annual Report 1998-99*)

India exported drugs and pharmaceuticals to more than 200 countries in 1998-99. The share of Indian exports to the USA remained eleven per cent over the years 1994-95 to 1998-99. Exports to Germany and Hong Kong increased by nearly two percentage points, whereas that to Russia came down by seven percentage points. In 1998-99, drugs and pharmaceuticals constituted 28 per cent of India's exports to Vietnam, 21 per cent to Nepal and 20 per cent to Nigeria. As far as the major trade blocs are concerned, in 1998-99 Latin American Integration Association had the largest combined share (14.7 per cent), followed by ASEAN (8.1 percent), CIS (7.6 per cent) and SAARC (6.1 per cent) countries in that order.

The process of economic reforms introduced in India in 1991 had a clear accent on trade and industry liberalisation, economic reform and macroeconomic stabilisation. Internationally, the midnineties proved to be a watershed, with the approval at the 1994 GATT summit of the Dunkel proposals, which envisaged drastic changes in the intellectual property laws and investment policies of India, which were known to have lenient rules and weak enforcement mechanisms. The developed countries were insistent that many aspects of IPRs were 'trade related' and thus had to be negotiable at the multilateral level. India's domestic programme of liberalisation, coupled with the global pressure for stricter regulatory norms, have redefined the contours of the business environment facing many industries, including pharmaceuticals.

6. Drug Price Control Order

Manufacturers are free to produce any drug duly approved by the Drug Control Authority. The Drug Pricing Control Order (DPCO) has been the millstone around the neck of Indian industry as it has severely restricted profitability and hence innovation. However, the government has been relaxing controls in a slow but progressive manner. The span of control of DPCO has come down from 90% in 1980s to 50% in 1995 and is likely to be further reduced as per the latest proposed changes.

The central government remained a key influence and a controlling factor in the direction of India's pharmaceutical industry. The inward-looking policies adopted by politicians since independence had slowed foreign direct investment into Industries of India, and pharmaceuticals were no exception. The Drug Price Control Order (DPCO) was established in 1985, enabling the government to dictate drug prices for 143 basic drugs, with the purpose of ensuring the availability of medicines at low prices. Price controls disrupted free-market forces further because there was no control over the price of any raw materials needed for manufacturing drugs. In 1999, there were 76 bulk drugs under the DPCO and approximately 260 formulations that use these bulk ingredients. [10]

In a country of almost one billion people, price controls served as a means of ensuring that even the poorest had access to drugs. A drug would be controlled if its overall annual turnover exceeded $1.05 million or if there were less than five bulk drug manufacturers or ten formulation manufacturers of that specific drug. However, with the liberalization of the industry, the government felt strongly encouraged to dissolve the price controls in favor of natural market economic pricing.

The main argument against the DPCO was that it did not leave any scope for sufficient returns to be reinvested in research and development. Domestic firms argued that unless the permissible profit margins increased, they would be unable to

be competitive in 2005 when product patent legislation took effect and they could no longer produce copies of existing drugs.[10]

7.   Patents and the Patent Act(which granted process patents but not product patents)

Patent refers to an official document giving the holder the sole right to make, use or sell an invention and preventing others from copying it.[11] The basic obligation in the area of patents is that, inventions in all fields of technology whether products or processes shall be patentable if they meet the three tests of being novel, involving an inventive step and being capable of industrial application. In addition to the general security exception, which applies to the entire TRIPS Agreement, specific exclusions are permissible from the scope of patentability. These are available in the areas of inventions whose commercial exploitation is to be prevented to protect public order or morality, human, animal plant life or health or to avoid serious prejudice to the environment. In addition, we can exclude from patentability diagnostic, therapeutic and surgical methods for the treatment of human and animals, plants and animals other than microorganisms, and essentially biological process for the production of plants and animals other than non-biological and micro biological processes. To meet our TRIPS obligations as on 1.1.2000, the Patents (Second Amendment) Bill, 1999 has been introduced in the Parliament in December 1999 and is before the Joint Committee of the Houses.

Patents are granted after considerable time and money have been invested in a particular invention. At one extreme, the patent represents a basic property right granted to the inventor in recognition of an achievement. Under such a system, the inventor is granted the exclusive right to exploit the patent for a designated period of

time. Under the TRIPS, the term is twenty years from the date of filing for the patent. The public interest is minimized and is recognized only by publication of the patent to promote further knowledge in the field of the invention. This is typically the view of the developed, industrialized countries of the world. At the other extreme are those countries that do not protect any kind of intellectual property. Thus, in the case of patents, the inventor does not receive any form of protection and a work may be copied with impunity. Generally, the least developed and poorest countries fall into this category.[10]

The growth of the Indian pharmaceutical industry over the last three decades or so is to a great extent due to the 1970 Act, which allowed the domestic marketing of patented products without a license. By following a process patent system, India's pharmaceutical industry has sharpened its competence in applied research for developing production-process technology.

The Indian Patents Act (IPA) of 1970 only recognized process patents.
Thus, the market became highly competitive with extremely low drug prices. Drug prices in India were sometimes 1/10th of U.S. prices.[10]

Patents play an important role in encouraging Research and Development. The new WTO rules imply that India will have to switch to a product patent regime post 2005 from its current process patent regime. This would alter the scenario in the Indian market over the next 10-15 years.[12]

The production of pharmaceutical products increased several times between the early 1970s and early 1990s, and the country could attain near self-sufficiency in bulk drug production. Also, the time lag between new product introduction in the world market by the inventor and in the Indian market by domestic producers was found to be only about 4.5 years on average (Keayla, 1994). For most Indian companies, more than 20 per cent of sales came from products that were less than two years old.13

Patent applications filed declined from 5100 in 1970-71 to an annual average of about 3500 between 1985 and 1992, during the post-1995 period patent applications increased two-fold as compared to the previous years. Two notable aspects of this substantial rise in patent applications after 1995 are:

i. This indicates the clear advantage the new IPR regime would offer to foreign

   firms, who are already endowed with R&D capabilities; and

ii. The number of Indian patent applications has certainly increased, a large

   number having come from public sector organizations, notably, the CSIR and

   IITs.[13]

8.   Research and Development

Research and Development is the key to the future of pharmaceutical industry. The pharmaceutical advances for considerable improvement in life expectancy and health all over the world are the result of a steadily increasing investment in research. The Pharmaceutical Industry is such an industry which is very much dependent on

Research and Development and this industry is a typical case where the Research and Development and Profit are closely interrelated. Ironically, the shortcomings of the Indian pharmaceutical industry are in the fields of Research and Development and new drug discovery. Research and development has always taken the back seat amongst Indian pharmaceutical companies.

Despite the large base of scientific manpower, India's pharmaceutical industry did not invest heavily in Research and Development. One of the major reasons for this was that there were no product patent laws in place for pharmaceutical products in India. Without product patents, domestic Indian firms have grown their indigenous market through the creation of different processes. The Research and Development expenditure by the Indian pharmaceutical industry is around 1.9% of the industry's turnover. This obviously, is very low when compared to the investment on Research and Development by foreign research-based Pharma companies. They spend 10 - 16% of the turnover on Research and Development. However, now that India is entering into the Patent protection area, many companies are spending relatively more on Research and Development. [14]

Major players such as Ranbaxy, Dr. Reddy's, and Torrent, are recognizing that to remain viable once product patent laws took effect, they must begin developing their own molecules to compete effectively in India and abroad. [15]

There is considerable scope for collaborative Research and Development in India. India can offer several strengths to the international Research and Development community. These strengths relate to availability of excellent scientific talents who can develop combinatorial chemistry, new synthetic molecules and plant derived

candidate drugs.

Research and Development in the pharmaceutical industry in India is critical to find answers for some of the diseases peculiar to a tropical country like India and also for finding solutions for unmet medical needs. Industrial Research and Development groups can carry out limited primary screening to identify lead molecules or even candidate drugs for further in vivo screening, pre-clinical pharmacology, toxicology, animal and human pharmacokinetics and metabolic studies before taking them up for human trials. In such collaborations, harmonized standards of screening can be assured following established good laboratory practices.

When it comes to clinical evaluation at the time of multi-center trials, India would provide a strong base considering the real availability of clinical materials in diverse therapeutic areas. Such active collaboration will be mutually beneficial to both partners. According to a survey by the Pharmaceutical Outsourcing Management Association and Bio/Pharmaceutical Outsourcing Report, pharmaceutical companies are utilizing substantially the services of Contract Research Organizations (CROs). Indian Pharmaceutical Industry, with its rich scientific talents, provides cost-effective clinical trial research. It has an excellent record of development of improved, cost-beneficial chemical syntheses for various drug molecules. Some MNCs are already sourcing these services from their Indian affiliates.

The Pharmaceutical and Biotechnology Industry is eligible for weight deduction for Research and Development expense up to 150%. These Research and Development companies will also enjoy tax holiday for 10 years. A promotional research and

development fund of Rs.150 crores is set up by the Government to promote research and development in the pharmaceuticals sector.[14]

Although the domestic R&D intensity has improved during the later part of the 1990s, the level of investment has remained very low (Pradhan, 2002: 650). Moreover, much of this investment has been made by a few dominant pharmaceutical firms, such as Ranbaxy, Lupin, Dr. Reddy's Labs and Nicholas Piramal. That majority of Indian pharmaceutical units, mostly small, have no resources to invest in R&D remains the hard fact.

9.   TRIPS (Trade Related Aspects of Intellectual Property Rights)

Proposed and formalised by a select group of industrialised countries way back in 1883 (and subsequently revised in 1967), in what is called the Paris Convention for Protection of Industrial Property, international legal protection for intellectual property rights (IPRs) became prominent on the global economic agenda only in 1986, during opening summit for the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). The IPR regime, as it is often referred to in the literature, is a mega proposition on comprehensively enforcing and regulating, on a global scale, protections for patents, copyrights, designs and the entire system of intellectual property. The stakeholders who would if affected include manufacturing sector, government, etc. This is especially the case when the activities involve the so-called knowledge-based sectors, e.g., biotechnology, pharmaceuticals and microelectronics. The coming into being of the World Trade Organisation (WTO) in 1995, through the Final Act of the Uruguay Round of GATT negotiations, has posed formidable

challenges to member-states, especially those classified as developing countries or least developed countries (LDCs). Among these challenges is the need to accommodate the provisions of the much debated Trade-Related Aspects of Intellectual Property Rights (TRIPs) Agreement.

The Agreement sets out minimum standards to be adopted by the parties, though they are free to provide higher standards of protection. A transition period of five years is available to all developing countries to give effect to the provisions of the TRIPS Agreement. This period ended on 1.1.2000. No transitional period is available, however, for grant of national treatment and most-favoured-nation treatment. Countries that did not provide product patents in certain areas of technology as on 1.1.1995, can delay the grant of product patents in those areas for another five years i.e. up to 1.1.2005.[14]

The shift away from the patents and Design Act of 1911, that was both 'exploitative' and framed to serve the western capitalist/imperialist interests, was fraught with intense debates in the public sphere as also both the Houses of the Parliament. The pressure to come up with a new patent law in 1970 stemmed from the fact that 'A number of cases highlighted that foreign patent owners were neither using their patents for domestic manufacture nor allowing them to be used by local firms' (Kumar 2003:217). As S. Velaraman, the director of the Indian Patent Office and a key driver behind the enactment of the Patents Act of 1970, observed, 'We are not against patent. And we are prepared to pay decent license fees. But we in India cannot afford monopolies'(quoted inGester n.d: 4).

The operationalisation of the new patent regime in 2005 is likely to bring about fundamental changes in the composition of the pharmaceutical industry. The reintroduction of product patent would mean that companies would not be able to copy drugs patented after 1995. In other words, most Indian companies may face an acute decline in market opportunities after 2005. It is also pointed out that a shift to a product patent regime would demand that basic capabilities of indigenous research be developed. Big companies have started preparing themselves for improving their R&D standard as well as R&D budget and also making tie-ups with the leaders for the R&D, but the real test is for the small units because they not only lack financial resources but also lack trained manpower and accessible testing facilities.

It has also been argued that in the changed patent scenario, the compulsory licensing provisions are diluted considerably to ensure 'working' of patents. As importation is considered as working of a patent, the failure to meet the obligation of import alone would be seen as the legitimate condition to issue a compulsory license. This means that the government will not be able to use the compulsory licensing provision to facilitate technology transfer. These have grave implications for the reform measures underway in the country with respect to technology transfer (DRPSCC, 1993).

The passage of the Patents (Amendment) Act, in 1999 was the first important step in facilitating product patents in the country by accepting product patents applications since 1995 and providing for the grant of exclusive marketing rights (EMR) in India.[13]

After decades of denial, in 1999 India became party to the Paris Convention and the Patent Cooperation Treaty. It has been argued that the IPR regime can significantly

constrain access to technology by developing countries and increase dependence on imports. The local firms would, under such circumstances, be left with no option other than collaborating with the foreign firms or simply giving up business. Similarly, a stronger patent system can dissuade innovative activity by local firms whose R&D function, dependent on the spill over effects of other firms and important in itself, would be affected adversely by the restricted access to these spillovers (Kumar, 2003: 221).

Due to the process patent system domestic manufacturers could produce inexpensive, generic versions of on-patent regimes . The product patent regime would disallow such production and trade. It is apprehended that the prices of newly patented drugs would increase substantially, thereby imposing tremendous social and economic costs on the poor on these countries. The argument that higher prices would induce greater innovative activity by the patent protected developed nations is highly flawed. Even if a large part of the expenditure by multinational firms on R&D is geared towards the many so-called 'poor' country diseases (viz., tuberculosis, malaria, cholera, HIV/AIDS, etc), the developing country consumers would still find the cost of medicines prohibitive; consequently, through low sales, R&D investment would be reduced. In any case, prices of medicines for the 'global' ailments (viz., cancer, cardiac diseases, etc.) would also be high for new drugs in developing countries, irrespective of the patent regimes. The R&D activity shall, evidently, continue to derive strength from consumers in the developed nations. In fact, a recent UNDP report estimates that once TRIPs comes into force, it could induce a price hike ranging between 12 per cent and 68 per cent. It concludes: 'To expect developing countries to accept such price spirals without adequately addressing their concerns of access to

cheaper medicines to fight life threatening diseases, particularly in a public health emergency, seems unfair' (Polycarp, 2003: 37).

Changes in India's policy regime did not come about automatically with the signing of the WTO-TRIPs Agreement. However, the Indian pharmaceutical majors were both aware of and prepared for the implications of the new regime. But the shift in policy away from the established and much-favoured process patent system involved a gradual reorientation of political and business mindsets. An important contributing factor was the initiation of India's general programme of economic reforms in mid 1991. This process increased general understanding of market mechanisms, global business trends, the role of international organisations, new perspectives on trade, the evolution of patent systems and other issues that have a bearing on public debates about economic policymaking.[13]

One unintended consequence of the dissent emanating from both the political and business circles had been that a lot of information on such issues as patents and world trade became available in the popular media; this enhanced awareness in the public mind.

By the late 1990s, sections of the Congress and BJP were gradually beginning to grasp the implications of the proposed global IPR regime. Moreover, as argued by Pederson (2000), even while the reform process *per se* was described as 'half-hearted' – and opposed by business groups that stood to gain from deregulation, the loss of subsidies, high tariff barriers and other forms of protectionism – a certain section of Indian industry, which adopted advanced technological and management practices, in fact

had a 'global' outlook and came out in support of the reforms process. In keeping with the growing needs of such industries, by the early 1990s, the major industry bodies, such as the Confederation of Indian Industry (CII), the Associated Chambers of Commerce and Industry (ASSOCHAM) and the Federation of Indian Chambers of Commerce and Industry (FICCI), had been building a strong case for upholding global norms that favoured a strict form of IPR protection. The Council of Scientific and Industrial Research (CSIR) also played a crucial role in creating awareness, encouraging domestic patent protection and making its presence felt in international fora, especially in a number of cases concerning agricultural produce. Hence, by the late 1990s the implications and challenges of the IPR regime were fairly known. The active political debates in India – manifested in terms of both partisan conflict and a wider public discussion – a had generated widespread concern amongst various stakeholders, including the NGOs.

10.   Dichotomous Structure of Industry [14]

As a result of the manner in which the pharmaceutical industry has grown in India, it has resulted in a clearly dichotomous industry structure. A small number of large enterprises and MNC subsidiaries have come to coexist with a very large number of small units. These two broad groups have distinct styles of functioning as they not only operate at substantially different levels technological and managerial sophistication, but also access very different market segments. These factors largely determine their stances with reference to TRIPs-related issues.

11.   Growing Industry (include information on investment)

With a humble beginning more than a century ago(in1901), and with a total sales volume of only Rs.10 million in 1948, the industry is currently capable of meeting about 70 per cent of the domestic requirement of bulk drugs and almost the entire demand for formulations. The growth in the production of bulk drugs and formulations in the country has been quiet impressive. [15]

The Indian pharmaceutical industry is highly fragmented, but has grown rapidly due to the friendly patent regime and low cost manufacturing structure. Intense competition, high volumes and low prices characterize the Indian domestic market. Starting from the repacking imported raw materials; the Indian pharmaceutical industry has graduated to become a net foreign exchange earner, making its presence felt in the global pharmaceutical arena. India is the fourth largest producer of bulk drugs and formulations in terms of volumes though not in terms of value. [16]

The number of pharmaceutical firms in India multiplied dramatically from 3,000 in 1977 to over 24,000 in 1997.[17] By 1999, India's pharmaceutical market was growing at 15% per year in terms of sales revenues, which was among one of the highest growth rates in the world.[18] According to Dr. Parvinder Singh, Chairman of Ranbaxy, one of India's largest pharmaceutical companies, India's pharmaceutical sales were expected to grow to $8 to $10 billion by the year 2005.[19]

Table 2.5 Indian Pharmaceutical Industry Growth Indicators

Particulars	1965-66(in $000)	1996-97(in $000)
Capital Investment	36,842	4,21,053
Production:		
Formulations	39,474	24,01,316
Bulk Drugs	4,737	4,79,474
Import	2,158	4,84,211
Export	803	10,76,316
R&D Expenditure	789	48,684

(Source: OPPI Directory 1997, p. 56.)

Table 2.6 Investment in Pharmaceutical Industry: Selected Years [Rs. Million]

Year	Investment
1965	1600
1973	2250
1979	5000
1985	6500
1988	10600
1994	12000
1996	16500
1998	21500

(Source: *Indian Pharmaceutical Guide, 1998*; *Annual Report (1999-2000)*,
Department of Chemicals and Fertilizers, OPPI, *33rd Annual Report 1998-99*)

India is one of the largest pharmaceutical markets in the world by volume, and ranks amongst the top 15 by value. The size of the Indian drugs and pharmaceutical products market, in terms of its value, is estimated at Rs. 142 billion (US$ 3.2 billion) in 1998-99. The Indian pharmaceutical industry is essentially volume driven rather than value driven. Even a slight variation in the volume of sales has a direct bearing on the overall growth of the market. For instance, when unit sales of pharmaceutical packs rose by 10 per cent in 1998 from their 1997level, the corresponding increase in sales value was 14.1 per cent. In the first six months of 1999, unit sales decreased by 4.2 per cent compared to 1998, and the corresponding growth in rupee terms dropped to 5.4 per cent. Hence, despite its large size, India's share in the global market is insignificant due to low product prices. The prices are low because of the limited ability of India's consumers to pay higher prices. Price rises are also controlled by both severe price competition (with small units entering into what would be highly regulated markets in many other countries), and government-controlled prices for many products.

The Indian pharmaceutical market is also very fragmented. The top 400 produce 80 per cent of the drug requirements of the country, and the remaining 20 per cent is met by the rest, with a good share accounted for by small- scale manufacturers. Twenty per cent of the drugs produced by the small -scale manufacturers are supplied to 70 per cent of the population, as these manufacturers largely depend upon the supplies to the government agencies. This is mainly due to the regulatory provision requiring the government to purchase on a 'rate contract' basis. The market is dominated by low-end pharmaceutical products.

Antibiotics constitute 24 per cent of the drugs sold in the country as compared to 13 per cent in the developed world. Cardiovascular treatments, the largest selling therapeutic category in the developed market (16 per cent of annual drug sales), constitutes only six per cent of the Indian market.

Over the years the drugs and pharmaceuticals sector has emerged as a net foreign exchange earner, a status it has maintained since 1988-89. The average annual growth rate of exports between 1980-81 and 1998-99 was about 33 per cent as against 22 per cent in the case of Imports.[20]

4. Strengths of Indian Pharmaceutical Industry[21]

It needs to be emphasized at the outset that the pharmaceutical industry in India, almost
uniquely, has not only performed exceedingly well in terms of production, domestic R & D, value addition, regional spread and diversification but also in contributing to better health for millions of people by being largely cost-effective and, hence, providing medicines at affordable prices. Moreover, the Indian pharmaceutical industry has been able to export its products to a number of countries where Indian medicines have been popular a due both to their low cost and effectiveness.

The pharmaceutical industry today is in the front rank of India's science-based industries,
with wide ranging capabilities in the complex field of drug manufacturing and technology. It is a front-runner in the third world in terms of technology, quality and

range of medicines manufactured. Almost all types of medicines – ranging from simple pain relieving pills to sophisticated antibiotics and complex cardiac compounds – are now made in the country. These have made India fairly self-sufficient in this field. A large domestic market and relatively inexpensive trained manpower have also enabled the country to emerge as a low-cost production centre. The Indian pharmaceutical industry has registered significant increases in capital investment over the years. It has also been a net export earner and a major source of employment.[22]

1.   Competent workforce:

India has a pool of personnel with high managerial and technical competence as also skilled workforce. It has an educated work force and English is commonly used. Professional services are easily available. One of the reasons of the progress of Indian Pharmaceutical Industry is its relatively large resource of well educated and trained scientist and engineers, compared to other developing countries, which enabled domestic companies to develop new methods to produce even complicated pharmaceutical products.

2.   Cost-effective chemical synthesis:

Its track record of development, particularly in the area of improved cost-beneficial chemical synthesis for various drug molecules is excellent. It provides a wide variety of bulk drugs and exports sophisticated bulk drugs.

3.   Legal & Financial Framework:

India has a 53 year old democracy and hence has a solid legal framework and strong financial markets. There is already an established international industry and business community.

4.   Consolidation:

For the first time in many years, the international pharmaceutical industry is finding great opportunities in India. The process of consolidation, which has become a generalized phenomenon in the world pharmaceutical industry, has started taking place in India.

5.   Technologically Strong

Despite of severe criticism of Indian pharmaceutical industry by the foreign companies and the foreign media the fact remains clear that Indian Pharmaceutical industry has made noteworthy progress in the technological side of the industry. Looking to the limited resources available to the Indian firms and the low profit margin business, they have not spent enough money on R&D as they would have liked but some of the fine discoveries in the field of medicine has been made by the Indian scientists. This would be evident by the fact that the number of Indian patent applications has certainly increased, a large number

having come from public sector organizations, notably, the CSIR and IITs. And

a notable move was by the Council of Scientific Industrial Research, the apex national organisation, when its scientists were particularly encouraged to apply for patents and not just to publish scientific papers. This transformation of approach, it was argued by

the CSIR director-general, has give Indian scientists an edge over their competing counterparts elsewhere (Jolly, 2001). As the debate on the proposed new patent legislation came to a hear, it was possible for those advocating the product-patent system to point to the definite rise in patent applications observed during the post-1995 era – and this despite the significant presence of foreign firms in India.

6. Low cost of Production

One of the highlighting features of Indian pharmaceutical market is its low price. This low price situation is achieved by the extremely low cost of production. Plenty availability of labour at cheap rates and there is no shortage of highly skilled talented scientists in India, this has made the production significantly cheaper. India is a developing nation and majority of its population is middle-class and lower-middle-class income group, hence it was a challenge to provide medicines to this major population of the country, as such they cannot afford costly medicines and highly sophisticated medical treatment. Pharmaceutical industry of India has definitely contributed to the better health of millions of people of India by providing medicines at affordable prices.

Moreover, the Indian pharmaceutical industry has been able to export its products to a number of countries where Indian medicines have been popular due both to their low cost and effectiveness.

A large domestic market and relatively inexpensive trained manpower have also enabled the country to emerge as a low-cost production centre.

5. Achievements of Indian Pharmaceutical Industry[23]

Pharmaceutical industry in India, almost uniquely, has not only performed exceedingly well in terms of production, domestic R & D, value addition, regional spread and diversification but also in contributing to better health for millions of people by being largely cost-effective and, hence, providing medicines at affordable prices. Moreover, the Indian pharmaceutical industry has been able to export its products to a number of countries where Indian medicines have been popular due both to their low cost and effectiveness.

The phenomenal progress, technological capabilities, and cost and production efficiencies achieved by the Indian drug industry are demonstrated by the facts: -

1. Indian researchers have developed more than a dozen new drugs in the past four decades and released in the market;

a. One of them is Guggulipid (a blood cholesterol reducing drug) extracted and purified from the plant Guggul (Commiphora Mukul).

b. Another such new drug developed by Indian Scientists from CDRI is Drug Memory Plus, this memory reinforcing drug contains Baculosides (a chemical extracted from family of the Brahmi plant).

c. NCL scientists have developed indigenous technology for extracting a cancer curing drug Vincristine from Sadabahar (Vinca Rosea) plants.

2. One of the very important medicines, Vitamin B6, which is required for many medicinal formulations as well as by food industries, was not earlier produced in sufficient quantity in India and it was imported till the 1980 at a price of US$1000 per

kilogram. This was produced by only two producers, who were not ready to share the know-how of this product with India, but scientists at IICT took the challenge and in just two years of time they set up a factory for producing Vitamin B6. The result is, today the price of this chemical is US $ 80 per kilogram, and India has not just became self-reliant but she is also exporting this chemical. Same case is with the anti-AIDS drug AZT (also called zidovudine), once it was imported at a whopping price and today India is self reliant in that very same drug, due to the development of the process by the scientists of IICT.

3.   A very useful painkiller Paracetamol was once imported, but in 1960s the scientists of CDRI found out the new process of developing the drug.

4.   Today world is looking to India as a major supplier of important drugs like Ethambutol, Metronidazole (used for diarrhea and other gastrointestinal infections), Tinidazole and Paracetamol.

5.   After independence , India has acquired a strong hold over the biomedical research, following are the examples of its feat:

a.   Jaipur foot, an entirely indigenous artificial limb-prosthesis that can be flexed just   like a natural foot. This foot has lent support to thousands of handicapped to lead a   normal life by freeing them from using rigid prosthesis.

b.   The Chitra Heart Valve developed by the Sri Chitra Tirunal Institute of Medical Technology, Trivandrum is not only of world standard but is quite affordable and   offers better chances of survival for patients of rheumatic heart disease.

c.   Sri Chitra Tirunal Institute of Medical Technology has also developed disposable polymeric bags for storage and transport of blood. This bag has, besides reducing the risks of contamination, also helped easy transportation and storage.

d.   DRDO scientists have developed biomedical stent which is used as a shunt during heart surgeries.

e.   DRDO scientists have also developed a heat pace maker device.

f.   Central Glass and Ceramics Research Institute, Kolkata has developed a hybrid hip-prosthesis using titanium metal and ceramic materials, is used in patients of   arthritis who need hip replacement.

6.   One of the major problems for India after independence is the Population Explosion, and thus the top most priority of the government was to slow down the population growth rate. CDRI scientists have proved their mite in this regard by developing a once-a-week contraceptive pill, now marketed as Saheli, which has the distinction of being the ONLY NON-STEROIDAL CONTRACEPTIVE PILL IN THE WORLD. Besides, being user-friendly (it is needed to taken only once in a week instead of everyday as is the case with other pills), Saheli also protects women from developing breast cancer.

7.   National Institute of Immunology, New Delhi, have come up with a vaccine developed from much revered Neem Tree which acts like a contraceptive. NII also has the distinction of producing the second immunological contraceptive, a vaccine based on HCG (a human hormone), which is now being tested on humans. A group of

researchers at the Indian Institute of Science, Bangalore have developed a male injectable vaccine which has been found quite effective on monkeys.

8.   In February 2001, CIPLA offered to supply one year course of the triple combination drug required for treatment of AIDS/HIV to countries in Africa, @ US $ 350, as against the patent holder's price of US $ 10,000 to 12,000 for the same quantity of the same drug.

9.   Even under the continuing process patent regime of Patent Act 1970, many of the national sector units like Ranbaxy, Dr. Reddy's Laboratories, CIPLA, Sun Pharma, Wokhardt, Zydus Cadila, J. B. Chem., and others have come out with original research on development of new drugs, delivery systems and even new molecules, acquiring patents in countries like USA and others;

10.   Some of the multinational corporations have entered into arrangements with some of these Indian Companies for research or co-marketing such new products for other countries, confirming the value of such research;

11.   The products of Indian manufacturers are accepted on WHO lists of essential drugs and also approved by regulatory authorities in USA, and EU countries;

12.   Some of the Indian companies have set up their own associate companies or entered into collaboration for production, marketing or research in other countries; and

that the exports of drugs have gone Rs.1490crores in 1992-93, to Rs.8730crores in 2000-2001 i.e. more than six times in 8 years.

13.   Some of the other significant achievements include availability of most sophisticated medical facilities in every major city of India, like every other city of India has an Ophthalmologist using laser knives to mend defective sight. Transplantation of organs such as kidneys and hearts has also become common. Diagnostic techniques like Ultrasonography, Magnetic Imaging (MRI), CT scan and so on are available in major cities.

6. International Pharmaceutical Industry, CHINA and INDIA

China has got the largest population in the world, ranking second among the producers of pharmaceutical ingredients and first in the production of Penicillin, Cephalosporin, Doxycycline HC1, Terramycin, and Vitamin C in the world.

The Chinese pharmaceutical market is currently the 7th largest in the world (worth $14 bn), and by the year 2010, it is estimated to be the 5th largest. Considering the Chinese economic boom and the pace with which the country is growing, it is surely a market which cannot be ignored. The high incidence of diseases in china on account of the consistently changing lifestyles and consumption patterns, and ultimately, the demands for drugs are also rising consistently.

The economical manufacturing and operational costs add to the attractiveness of the Chinese market. Globalization being the primary motive of Indian firms, china offers huge opportunities to tap other markets world over. The increasingly congenial trade ties between India and china have also fueled investments by Indian companies in china. The pharmaceutical industries play an important role in the economic development of both the countries. Thus the Indian pharmaceutical players are making the most of these opportunities and are entering china. However, the Chinese pharmaceutical market is unique in many ways and the Indian players have to play their cards with utmost care to sustain their business in the long term.

7. Understanding the Chinese Pharmaceutical Market

A variety of factors make the Chinese pharmaceutical market an enticing option. The pharmaceutical industry in china is one of the fastest growing industries with an average annual growth of 17.7%. According to a survey by the Boston Consultancy Group (BCG), the Chinese pharmaceutical market is likely to emerge as the fifth largest market globally, with revenues over of over $24. Approximately, 70% of the Chinese market (6800 firms) is controlled by the domestic firms (in terms of value). There are about 1700 sino-foreign joint ventures, with an investment of around $2 bn, according to IMS Health, a global source for pharmaceutical market intelligence. These foreign companies include some of the world's leading players. The subsidiaries set up by top players like GlaxoSmithKline, Novartis, Pfizer, and Roche, are among the top 10 marketing companies in china, in terms of sales.

Some of the important factors that make the Chinese market attractive are low labour costs and better infrastructure for manufacturing when compared to India. According to DFID Health Systems Resources Center, with the acceleration of patent expiries, about $60 bn worth of blockbusters will open up to legitimate generic competition in the regulated markets. It will lead to a gradual global migration of manufacturing companies to china, which has the expertise and infrastructure for low-cost generic manufacturing. As Chenthir K, CEO, Plutus Pharma Network Pvt. Ltd. Opinies, " Indian pharma companies are searching for a destination where cost of manufacturing base in china would help Indian companies to compete in generics business in regulated markets and fulfil their dreams in export of Active Pharmaceutical Ingredients (APIs) with non-infringing processes."

Though India is becoming an R&D hub in itself, China also provides excellent opportunities for research activities. And with both the countries becoming TRIPS compliant, R&D is the key to develop new formulations for drugs. Neeraj Bharadwaj, CEO, RocSearch Ltd., a global research support service company, says, "Beyond pharma sales, China is also an attractive for clinical research services and contract manufacturing. As a low cost R&D base, with a huge pool of PhDs and scientists, and dedicated infrastructure, Indian pharma companies may also explore China for outsourcing research and development."

The demographic and socio-economic factors of china make its pharmaceutical market a unique proposition in itself. China is the world's most populous country with around 1.33 billion population, which is ageing at an estimated rate of 3% per annum. The country has more than 88.1 million people aged 65 or over, more than in any

other country in the world. It ranks second among the largest producers of pharmaceutical ingredients in the world and ranks first in the world in the production of important medicines like penicillin, cephalosporin, vitamin c, etc. These factors are adding attractiveness of doing business in china's pharmaceutical market.

One of the factors typical in Chinese Pharmaceuticals is that hitherto, there have been no private clinics; doctors were available only at hospitals. Therefore, companies have to sell their products primarily through hospitals. In India, drugs are sold mainly through doctors' recommendation and 4,00,000 medical stores. While as in China, interestingly, 85% of the drugs are sold through hospitals and for this to happen, the firms have to first register their products with concerned medical authorities in each province. This is lengthy and tiring processes for the firms. Therefore, it requires great levels of patience and commitment on part of the venturing companies. However, this scenario is also gradually changing with the onset of economic reforms. Some private clinics and hospitals have been established in the last 3-4 years, though they are very costly for the consumers.

China is becoming a major competitor to India, especially in exports of Active Pharmaceutical Ingredients (APIs). China's Pharmaceutical Industry ranks 7th in the world and is expected to become world's 5th largest by 2010. China's domestic drug sales have been estimated at about US $ 8 billion in 2003 and the exports are growing at 20% per annum.[24]

The reasons for Chinese competitive advantage are:

- The electricity costs are lower in China as compared to India. The power costs range from Rs.1.50 to 2.50 per KWH as against Indian cost of Rs.4.5 to 6.0 per KWH. Labour charges are 40% lower in China than India.

- More favourable labour policies like policy of hire and fire in China

- On the whole China is more cost competitive in manufacturing sector.

- China has already implemented clear intellectual property laws and data exclusivity rules that take it one step ahead of India in attracting foreign players. In 1992, a pact was signed with US, which heralded the Product patent regime coming in force in China.

- China has established a large number of profit oriented research and development institutions, which are today independent of government funding in contrast to institutions in India, which are mostly dependant on government funding.

- The Chinese government provides an income tax holiday of 100 per cent for the first two winning years (profit making years) and 50 per cent for the next three years.

- The companies are also allowed duty free import of capital equipment.

- Lower turnaround time for ships at Chinese ports make it conducive as a base for exports.

8. Indian Ventures in China

A lot of Indian pharmaceutical companies have ventures into China and most of them exist as joint ventures with Chinese Pharmaceutical companies. The joint ventures are necessary considering the complex and fast changing nature of the market. Indian companies are leveraging china as an effective platform to make their exports

activities more efficient. Initially companies enter china and gain market share, then companies make it as home base and finally, as manufacturing base to export globally.

Dr. Reddy's Laboratories entered the Chinese market in the year 2000 as a joint venture between Dr. Reddy's (51%), Canada Rotam Enterprise (47.41%), and Kunshan Double Crane Pharma Co. (1.59%). The partnership venture is known as Kunshan Rotam Reddy Pharmaceutical Co. Ltd. (KRRP), is involved in producing and repackaging bulk formulations, tablets, ointments, gels, etc. KRRP currently supplies its products to more than 100 distributors across 18 provinces. The firm registered a turnover of $9 mn during 2004-05, and now it is targeting a turnover of $12 mn and gradually $15 mn, which would then create profits for the firm. Globalization is the primary motive of Dr. Reddy's as C V Narayan Rao, Chief Representative, KRRP said, " We want to be a global company and we can't claim to be one without being in China." Dr. Reddy's has its manufacturing facilities only in India and China, though it has its subsidiaries in other countries as well.

Ranbaxy entered china in the year 1993; in fact, it is one of the earliest Indian Companies to enter China. It formed a joint venture with Guangzhou Qiaoguang Pharmaceutical co. and HK New Chemic, with an initial investment of $17 mn. It currently holds an 83% stake in the subsidiary (Ranbaxy Guanghou China Ltd. RGCL) and manufactures and unlimited number of capsules, tablets, infusion bottles, etc. Today Ranbaxy has become a brand to reckon with in china, with its drug cepodem (Cefpodoxine Proxetil) becoming the market leader in the first year of its launch. Cifran (ciprofloxacin) has also emerged as the market leader in the country with a market share of 40% (app. In the year 2003). RGCL improved its ranking from

31 to 27 amongst the leading joint venture companies operating in china and achieved sales of $12.3 mn, showing a growth of 87% in the year 2003. the firm reaches out to 500 hospitals and more than 20,000 doctors in the country. RGCL has been consistently trying to expand its market reach by venturing into varied therapeutic segments and introducing new drugs.

Orchid Chemical and Pharmaceuticals is another Indian Pharma player that has ventured into the Chinese market. It started its operations in 2002 as a $25 mn manufacturing and marketing joint venture (50:50) with the leading Chinese Pharma Company North China Pharmaceutical Group Corporation (NCPC). The firm has a 30 million ton manufacturing capacity and offers a product range of six cephalosporin bulk actives. The business strategy followed by Orchid is to target more regulated markets like the US and Europe, having high value generics that are out of patent. The JV was able to add $20 mn to the top line in just one year and it is expected to increase to $30 mn by 2006.

It is not easy going for in fact every Indian Pharmaceutical Company. Aurobindo Pharma has invested a huge sum of $75 mn, one of the largest investments by an Indian company. It was already buying huge quantities of Penicillin G from china and thus, thought it was wiser to set up a branch in China itself. The company entered china in the year 2000 as a $10 mn 50:50 venture with the Chinese pharma company Shanxi Tongling Pharmaceutical to form Aurobindo Tongling Pharmaceutical. However in, 2002, Aurobindo acquired its partner's stake and thus, formed a 100% owned subsidiary. Aurobindo Pharma has another entity in China, Aurobindo Bio-Pharma. The combined turnover of both entities is Rs. 270 cr, which is one of the

highest. Aurobindo also employs one of the highest numbers of people. Though all this seems to give a rosy picture, the unfortunate part is that the subsidiary is not making profits. Aurobindo Bio-Pharma ran into a loss of Rs. 4.2 cr. on a turnover of Rs.123 cr. and Aurobindo Tongling made a loss of Rs. 8.4 cr on a turnover of Rs. 147.9 cr. Though the subsidiaries were making money a few years back, this sudden turn of events is due to the fact that Chinese drug market is very price sensitive. A well defined market segmentation can be used to market different drugs (and prices) to different segments of the population. Price of Penicillin G, which can be called the flagship drug of Aurobindo's china operations, has taken a dip and, therefore the losses. The company has invested a huge sum of $75 mn. hence it can never think of packing its bags from china. Even the objective of every Indian company to venture in Dragon Land is to expand their operations globally and make their presence felt world over.

9. Reasons for Indian Pharmaceutical Companies Venturing into the Chinese Market.

The Chinese pharmaceutical market is quickly evolving into a large market due to the rising incomes of a significant portion of the Chinese population. Even if one assumes that only 5% of the Chinese population has the purchasing power to acquire certain pharmaceuticals, this is still a huge market of 65 million consumers. This is a larger market than most European countries, and it is certainly growing a lot faster. One of the key reasons for Indian Pharmaceutical companies foraying into China is the huge Chinese domestic market, and the low operational costs. In addition, china is providing an excellent infrastructure and speedy implementation of new projects.

References

1. Professor Robert Tancer and student Srinivas Josyula, Investing in the Indian Pharmaceutical Industry: The American Graduate School of International Management, 1999 Thunderbird
2. P*h*RMA *Annual Report,* l997-8.
3. Robert S. Tancer, "The Pharmaceutical Industry in India, Adapting to TRIPS," *The Journal of World Intellectual Property*, 1999, p. 177.
2.4. Professor Robert Tancer and student Srinivas Josyula, Investing in the Indian Pharmaceutical Industry: The American Graduate School of International Management, 1999 Thunderbird
5. http://www.pharmaceutical-drug-manufacturers.com/pharmaceutical-industry/
6. http://www.pharmaceutical-drug-manufacturers.com

7. *Indian Pharmaceutical Guide, 1998*; *Annual Report (1999-2000)*, Department of Chemicals and Fertilizers.
8. http://www.indiainfoline.com

9. *Indian Pharmaceutical Guide, 1998*; *Annual Report (1999-2000)*, Department of Chemicals and Fertilizers, OPPI, *33rd Annual Report 1998-99*
10. Professor Robert Tancer and student Srinivas Josyula, Investing in the Indian Pharma Industry: The American Graduate School of International Management, 1999 Thunderbird
11. A.S.Hornby, Oxford Advanced Learner's Dictionary Fifth Edition, Oxford University Press
12. http://www.indiainfoline.com

13. Keshab Das, The Domestic Politics of TRIPs: Pharmaceutical Interests, Public Health, and NGO Influence in India. By:,Gujarat Institute of Development Research Ahmedabad ,July 2003, Paper Prepared for the Research Project on 'Linking the WTO to the Poverty-Reduction Agenda' (Part of the DFID-funded Globalisation and Poverty Research Programme)
14. http://www.pharmaceutical-drug-manufacturers.com/pharmaceutical-industry/

15. Professor Robert Tancer and student Srinivas Josyula, Investing in the Indian Pharmaceutical Industry: The American Graduate School of International Management, 1999 Thunderbird
16. From internet www.google.com search

17. Professor Robert Tancer and student Srinivas Josyula, Investing in the Indian Pharmaceutical Industry: The American Graduate School of International Management, 1999 Thunderbird
18. Warren, Robert. "India." *Chemical Marketing Reporter*. August 5, 1996, p. 6. See also, "Indian Pharmaceutical Industry: Current Status and Suggestions for Faster Growth," *IDMA Bulletin XXiX (8),*January 13-14, 1998.
19. Warren, Robert. "India." *Chemical Marketing Reporter*. August 5, 1996, p. 6.
20. Keshab Das, The Domestic Politics of TRIPs: Pharmaceutical Interests, Public Health, and NGO Influence in India. By:,Gujarat Institute of Development Research Ahmedabad ,July 2003, Paper Prepared for the Research Project on 'Linking the WTO to the Poverty-Reduction Agenda' (Part of the DFID-funded Globalisation and Poverty Research Programme)
21. http://www.pharmaceutical-drug-manufacturers.com/pharmaceutical-industry/

22. FICCI Report for National Manufacturing competitiveness council: "Competitiveness of Indian
    Pharmaceutical Industry in the new Product Patent regime", March 2005
23. OPPI Directory 1997, p. 56.
24. Science Reporter, August 1997, By K.C.Kanwar: Pharmaceutical Industry in India

Exhibit 1: Partial list of PhRMA Member Firms

AMERICAN HOME PRODUCTS CORPORATION

Five Giralda Farms

Madison NJ 07940

(973) 660-5000

BAYER CORPORATION

One Mellon Center

500 Grant Street

Pittsburgh, PA 15219-2502

(421) 394-5500

BOEHRINGER INGELHEIM CORPORATION

900 Ridge bury Road

P.O. Box 368

Ridgefield, CT 06877

(203) 798-9988

BRISTOL-MYERS SQUIBB COMPANY

345 Park Avenue

New York, NY 10154

(212) 546-4000

GLAXO WELLCOME, INC.

Five Moore Drive

Box 13408

Research Triangle Park, NC 27709

(919) 248-2100

HOECHST MARION ROUSSEL, INC

9300 Ward Parkway

P.O. Box 8480

Kansas City, MO 64114-0480

(816) 966-4000

HOFFMANN-LA ROCHE, INC.

340 Kingsland Street

Nutley, NJ 07110

(973) 235-5000

Exhibit 2: Abbreviations used in the chapter

1. **IPR =** Intellectual Property Rights
2. **GATT** = General Agreement on Tariffs and Trade
3. Paris Convention for Protection of Industrial Property,
4. **CII** = Confederation of Indian Industry
5. **ASSOCHAM** = the Associated Chambers of Commerce and Industry
6. **FICCI** = the Federation of Indian Chambers of Commerce and Industry
7. **CSIR** = the Council of Scientific and Industrial Research
8. **CoS** = Committee of Secretaries (Drawing upon senior secretaries from the Industries of Commerce, Finance, External Affairs, Economic Affairs and Industries.)
9. **CCEA** = Cabinet Committee on Economic Affairs
10. **IDMA** = Indian Drug Manufacturers' Association
11. **OPPI** = Organisation of Pharmaceutical Producers of India
12. **IPA** = Indian Pharmaceuticals Association
13. **IPA** = Indian Pharmaceutical Alliance
    (IPA is a group of research-based national pharmaceutical Companies, It consists of the following members: Alembic Limited, Nicholas Piramal India Limited, Cipla Limited, Ranbaxy Laboratories Limited, Dr. Reddy's Laboratories Ltd., Sun Pharmaceutical Industries Limited, Lupin Laboratories Limited, Wockhardt Limited. These companies' annual R & D spend, at Rs. 250 crore, accounts for 90 per cent of total private sector spending in pharmaceutical R and D. These companies contribute one-fourth of the country's exports of drugs and pharmaceuticals and share over 23 per cent of the domestic market.)
14. **FIEO** = Federation of Indian Export Organisation
15. **IFPMA** = International Federation of Pharmaceutical Manufacturers

16. IGPA = International Generic Pharmaceutical Association [located at Brussels]
17. AIOCD = All India Organisation of Chemists and Druggists
18. MDMA = Medical Disposables Manufacturers Association
19. CSIR = Council of Scientific Industrial Research,

Exhibit 3

Indian Pharma Market: Market Share of Top Companies

Ranking	Company	Value (in 00's Indian Rupees)	Market Share (%)
	Total Market	113018645	100
1	Glaxo-Wellcom	7477107	6.62
2	Cipla	4783702	4.21
3	Ranbaxy	3985928	3.51
4	Hoechst-Roussel	3576615	3.17
5	Torrent Pharma	2648258	2.34
6	Wockhardt-Merind	2642186	2.34
7	Alembic	2640003	2.34
8	Lupin Labs	2428777	2.33
9	Knoll Pharmaceutical	2501779	2.21
10	Pfizer	2495387	2.21
11	Nicholas Piramal	2456205	2.17
12	Zyous-Cadila	2294898	2.03
13	Novartis India Ltd	2194014	1.94
14	Cadila Pharma	2138017	1.89
15	Wyeth Lederle Ltd	2026379	1.79
16	Alkem Laboratories	1980530	1.75
17	Smithkline Beecham	1917397	1.70
18	Aristo Pharma	1885731	1.67
19	Sun Pharma	1821173	1.61
20	Parke Davis	1717831	1.52
21	E Merck	1654896	1.46
22	Dr. Reddys Laboratory	1593352	1.41
23	Unichem Labs	1551258	1.37
24	Himalaya Drug	1402590	1.24
25	German Remedies	1354380	1.20

Source: ORG-MARG Research Ltd., India Pharma Market.
Note: Companies were ranked based on their market value for period covered, September 1997-August 1998.

Exhibit 4

Indian Pharma Market: Market Share of Top Companies

- Others 45%
- Top 5 Companies 19%
- 6-10 Companies 11%
- 11-15 Companies 10%
- 16-20 Companies 9%
- 21-25 Companies 6%

Source: ORG-MARG Research Ltd., *India Pharma Market.*
Note: Companies were ranked based on their market value for period covered, September 1997-August 1998.

Exhibit 5

Indian Pharma Market: Market Share Based on Country of Origin

- Indian 68%
- U.K. 10%
- American 9%
- German 9%
- Other European 4%

Source: ORG-MARG Research Ltd., India Pharma Market.
Note: Companies were ranked based on their market value for period covered, September 1997- August 1998.

Chapter 3

RESEARCH METHODOLOGY

Contents

1. Introduction

It is very well said that in order to speak with confidence you need to have evidences and concrete reasons to support your say. In any serious work you need to take help of some expert and in the same way in order to provide some new knowledge to the world which is the basic objective of any Ph.D. degree we need to use some strong technical way to come to some conclusion.

To know the details and to come to some conclusions and provide some suggestion to the businesses this research work is a humble effort. This work which is basically done for the Ph.D. Degree is dealing with the Pharmaceutical Industry of India. The main parameter or measurement of any business activity is Profit and hence in order to assess the performance of this industry in the past decade we have made an analysis of profitability of the companies of the Pharmaceutical Industry of India.

In this study a comparison has been done in between different Pharmaceutical companies, selected for the study. Financial details for the period from 1997-98 to 2004-05 have been taken into consideration.

2. Period of the Study

The following research work is carried out on the 8 (Eight) selected units of Pharmaceutical Industry of India for the period of 8 (Eight) years from 1997-98 to 2004-05. The duration of the period is good enough to cover the short term fluctuations and is enough to provide insights into the performance of the different selected companies.

The new Patent Protection would be operational from the year 2005, and hence the entire scenario of Indian Pharmaceutical Industry would change from then. In the light of this change how Indian Pharmaceutical Industry is poised to face the challenge; the study period is taken close to a decade just before the new patent protection comes into force in India.

The reintroduction of product patent would mean that companies would not be able to copy drugs patented after 1995. In other words, most Indian companies may face an acute decline in market opportunities after 2005. It is also pointed out that a shift to a product patent regime would demand that basic capabilities of indigenous research be developed. Big companies have started preparing themselves for improving their R&D standard as well as R&D budget and also making tie-ups with the leaders for the R&D, but the real test is for the small units because they not only lack financial resources but also lack trained manpower and accessible testing facilities.

The passage of the Patents (Amendment) Act, in 1999 was the first important step in facilitating product patents in the country by accepting product patents applications since 1995 and providing for the grant of exclusive marketing rights (EMR) in India.[1]

After decades of denial, in 1999 India became party to the Paris Convention and the Patent Cooperation Treaty. It has been argued that the IPR(Intellectual Property Rights) regime can significantly constrain access to technology by developing countries and increase dependence on imports. The local firms would, under such circumstances, be left with no option other than collaborating with the foreign firms or simply giving up business. Similarly, a stronger patent system can dissuade innovative activity by local firms whose R&D function, dependent on the spill over effects of other firms and important in itself, would be affected adversely by the restricted access to these spillovers. [1]

Due to the process patent system domestic manufacturers could produce inexpensive, generic versions of on-patent regimes. The product patent regime would disallow such production and trade. *It is apprehended that the prices of newly patented drugs would increase substantially, thereby imposing tremendous social and economic costs on the poor on these countries.* The argument that higher prices would induce greater innovative activity by the patent protected developed nations is highly flawed. Even if a large part of the expenditure by multinational firms on R&D is geared towards the many so-called 'poor' country diseases (viz., tuberculosis, malaria, cholera, HIV/AIDS, etc), the developing country consumers would still find the cost of medicines prohibitive; consequently, through low sales, R&D investment would be reduced. In any case, prices of medicines for the 'global' ailments (viz., cancer, cardiac diseases, etc.) would also be high for new drugs in developing countries, irrespective of the patent regimes. The R&D activity shall, evidently, continue to derive strength from consumers in the developed nations. In fact, a recent UNDP report estimates that once TRIPs comes into force, it could induce a price hike ranging

between 12 per cent and 68 per cent. It concludes: 'To expect developing countries to accept such price spirals without adequately addressing their concerns of access to cheaper medicines to fight life threatening diseases, particularly in a public health emergency, seems unfair' (Polycarp, 2003: 37).

Changes in India's policy regime did not come about automatically with the signing of the WTO-TRIPs Agreement. However, the Indian pharmaceutical majors were both aware of and prepared for the implications of the new regime. But the shift in policy away from the established and much-favoured process patent system involved a gradual reorientation of political and business mindsets. An important contributing factor was the initiation of India's general programme of economic reforms in mid 1991. This process increased general understanding of market mechanisms, global business trends, and the role of international organisations, new perspectives on trade, the evolution of patent systems and other issues that have a bearing on public debates about economic policymaking.[2]

3. Scope of the Study

As the current study is for the pharmaceutical industry of India all the companies of pharmaceutical industry of India can be included in the study. But the companies with meager investments or very less market are excluded from the scope. Hence the selection was to be done from the public limited companies from the entire pharmaceutical industry.

There are further classifications in the public limited companies as those who are into business of:

1. Bulk Drugs

2. Formulations

3. Bulk Drugs & Formulations.

Hence the selection of the companies has been done from the last type of companies in the pharmaceutical industry of India. In order to understand the pulse of Indian Pharmaceutical Industry it was essential to select the major players of the Industry and as still the industry was driven by volumes it was imperative on the part of the researcher to select those companies which are having the highest market share in terms of volumes.

The annual sales figures for the year ended on 2003-04 were ranging from Rs. 12 crores (Wintac) to Rs. 3474 Crores, hence the selection was done for the Top 10 companies. But the biggest player in terms of sales (Ranbaxy) was not fulfilling the requirements of accounts getting closed on 31st March and hence unfortunately could not be included in the selection. All the selected companies have annual sale figures of more than Rs. 500 Crores.

The selected 8 (Eight) companies are as under:

1. Aurobindo Pharmaceuticals Ltd.

2. Cadila Healthcare Ltd.

3. Cipla Ltd.

4. Dr. Reddy's Laboratories Ltd.

5. IPCA Laboratories Ltd.

6. Matrix Laboratories Ltd.

7. Nicholas Piramal India Ltd.

8. Sun Pharmaceuticals Industries Ltd.

4. Objectives of the Study

- To understand the basic nature and composition of Pharmaceutical Industry.

- To understand the various ways to measure the profitability and thereby the financial performance.

- To calculate different measures of profit for different companies under study for the study period [From 01-04-1997 to 31-03-2005].

- To identify any relationship in-between companies in the various measures of profit.

- To identify any relationship in-between different years for the trend of various measures of profit. In other words to identify any trend in the profit in the study period.

- To derive conclusions about the performance of the companies with regard to several criteria.

- To provide some suggestion to the companies under study.

5. Data Collection

All data which are necessary for the research have been collected from the annual reports of different companies under study. Additional information required was collected by Personal interviews with the executives of the companies and other dignitaries and also from various Journals, Magazines and other publications. This research is based on secondary data.

Companies selected for the research are on the basis of sales figures of the year 2003-04 year from the various financial magazine like "Capital Market" and "Fortune India".

6. Research Methodology for the Interpretation of the Data

The research work is based on data taken from the annual reports of the selected companies for the period of study. Various other publications for the Pharmaceutical Industry have also been taken into consideration. The data obtained have been duly classified, edited and tabulated under various groups and sub-groups, as per requirement of the study.

Statistical measures like Arithmetic Mean, Index Numbers, F-test and various ratios are used as per requirement. Following is the chapter plan for the study:

7. Hypothesis

Hypothesis for different Companies for the Study Period

In order to observe some concrete conclusions by comparing the annual results between the selected Pharmaceutical companies under study following hypothesis are made.

1. "The individual cost to total cost ratio is same among different companies during the period of study."
2. "The profit margin ratio is same among different companies during the period of study."

3. "The assets turnover ratio is same among different companies during the period of study."

4. "The return on investment ratio is same among different companies during the period of study."

Hypothesis for each (individual) Pharmaceutical Company among different years.

By comparing annual financial results of each (individual) Pharmaceutical company for all consecutive years of the study period, following hypothesis are made in order to derive conclusions.

1. "The individual cost to total cost ratio of each individual company is same during all the years of the study period."

2. "The profit margin ratio of each individual company is same during all the years of the study period."

3. "The asset turnover ratio of each individual company is same during all the years of the study period."

4. "The return on investment ratio of each individual company is same during all the years of the study period."

9. Tools for Analysis

a)   Ratio Analysis

When we use ratio analysis we can work out how profitable a business is, it can also help us to check whether a business is doing better this year than it was last year; and it can tell us if our business is doing better or worse than other businesses doing and

selling the same things. Financial ratios are useful indicators of a firm's performance and financial situation.[3] Most ratios can be calculated from information provided by the financial statements. Financial ratios can be used to analyze trends   and   to compare the firm's financials to those of other firms. In some cases, ratio analysis can predict future bankruptcy. [4]

Financial ratios can be classified according to the information they provide. The following types of ratios frequently are used:

- Liquidity ratios

- Asset turnover ratios

- Financial leverage ratios

- Profitability ratios

- Dividend policy ratios

b)   Arithmetic Mean

The arithmetic mean of a set of values is the quantity commonly called "the" mean or the average. In mathematics and statistics, the arithmetic mean (or simply the mean) of a list of numbers is the sum of all the members of the list divided by the number of items in the list. If one particular number occurs more times than others in the list, it is called a mode. The arithmetic mean is what students are taught very early to call the "average". If the list is a statistical population, then the mean of that population is called a population mean.[5] If the list is a statistical sample, we call the resulting statistic a sample mean.

c)   Index Numbers

Index number, in econometrics, is a figure reflecting a change in value or qauntity as compared with a standard or base. The base usually equals 100 and the index number is usually expressed as a percentage. For example, if a commodity cost twice as much in 1970 as it did in 1960,its

index number would be 200 relative to 1960. Index numbers are used especially to compare business activity, the cost of lving, and employment. They enable economists to reduce unwieldly business data into easily understood terms.

d)   F-Test

Analysis of variance (ANOVA) is used to uncover the main and interaction effects of categorical independent variables (called "factors") on an interval dependent variable. The new general linear model (GLM) implementation of ANOVA also supports categorical dependents. A "main effect" is the direct effect of an independent variable on the dependent variable. An "interaction effect" is the joint effect of two or more independent variables on the dependent variable. Whereas regression models cannot handle interaction unless explicit crossproduct interaction terms are added, ANOVA uncovers interaction effects on a built-in basis. For the case of multiple dependents, discussed separately, multivariate GLM implements multiple analysis of variance (MANOVA), including a variant which supports control variables as covariates (MANCOVA).[6]

The key statistic in ANOVA is the F-test of difference of group means, testing if the means of the groups formed by values of the independent variable (or combinations of values for multiple independent variables) are different enough not to have occurred by chance. If the group means do not differ significantly then it is inferred that the independent variable(s) did not have an effect on the dependent variable. If the F test shows that overall the independent variable(s) is (are) related to the dependent variable, then multiple comparison tests of significance are used to

explore just which values of the independent(s) have the most to do with the relationship.

If the data involve repeated measures of the same variable, as in before-after or matched pairs tests, the F-test is computed differently from the usual between-groups design, but the inference logic is the same. There are also a large variety of other ANOVA designs for special purposes, all with the same general logic.

Note that analysis of variance tests the null hypotheses that group means do not differ. It is not a test of differences in variances, but rather assumes relative homogeneity of variances. Thus some key ANOVA assumptions are that the groups formed by the independent variable(s) are relatively equal in size and have similar variances on the dependent variable ("homogeneity of variances"). Like regression, ANOVA is a parametric procedure which assumes multivariate normality (the dependent has a normal distribution for each value category of the independent(s)). 7

F-test, also called the F-ratio. The F-test is an overall test of the null hypothesis that group means on the dependent variable do not differ. It is used to test the significance of each main and interaction effect (the residual effect is not tested directly). A "Sig." or "p" probability value of .05 or less on the F test conventionally leads the researcher to conclude the effect is real and not due to chance of sampling. For most ANOVA designs, F is between-groups mean square variance divided by within-groups mean square variance. (Between-groups variance is the variance of the set of group means from the overall mean of all observations. Within-groups variance is a function of the variances of the observations in each group weighted for group size.) If the computed F score is greater than 1, then there is more variation between groups than within groups, from which we infer that the grouping variable does make a difference. If the

F score is enough above 1, it will be found to be significant in a table of F values, using df=k-1 and df=N-k-1, where N is sample size and k is the number of groups formed by the factor(s). That is, the logic of the F-test is that the larger the ratio of between-groups variance (a measure of effect) to within-groups variance (a measure of noise), the less likely that the null hypothesis is true.

If the computed F value is around 1.0, differences in group means are only random variations. If the computed F score is significantly greater than 1, then there is more variation between groups than within groups, from which we infer that the grouping variable does make a difference. Note that the significant difference may be very small for large samples. The researcher should report not only significance, but also strength of association, discussed below.

10. Survey of the existing literature

The analysis of Profitability of Pharmaceutical Industry of India is a particular area of work hence not a very popular matter to write on. There are number of articles and research papers published for Profitability and for Pharmaceutical Industry of India but nothing is specifically of relevance for the present study.

The present study is a unique work of research which is for selected companies under study and for a specified period. There are some technical points included apart from the financial research. These are TRIPS, WTO, Patent Regime, various national and international pharmaceutical manufactures' association.

The work of Keshab Das on TRIPS and its political implication has been referred by the researcher to get the insights into the matter. [8]Professor Robert Tancer has worked on Indian Pharmaceutical Industry as an investment destination. Robert Warren has worked for the pharmaceutical industry. [9]

Similar sort of work has been carried out in the same university before a long time period of 16 years. The study was emphasized on the working capital management, entitled "Working Capital Management of Pharmaceutical Industry in India" by Dr. Shashi A. Jain in the year 1990.[10]The study tried to make an in-depth analysis of the working capital management of the selected pharmaceutical companies for a period of time.

Another major research work has been carried out in the year 1992 by Dr. Akhileshwar Sharma on the topic "Profitability Analysis of Drugs and Pharmaceutical Companies in India" in May 1992. [11]This study tried to find out the profitability position of various selected units during that period of time using several criteria.

But the above work were carried out in the scenario when economy was in a closed state. The steps for liberalization by privatisation and globalisation were initiated by then Prime Minister of India Lt. Shri Narsimha Rao, and afterwards a gradual shift was found in the entire economy of India.

With the WTO agreement and de-regulation of prices and the implementation of Patent Act there is a dramatic change observed in the pharmaceutical industry of India which makes the background for the study.

There are lot of information available about the industry at national and international level from the Internet and it can be accessed through various search engines.

11. Limitations of the Study

The present study is based on data taken from the annual reports of the company and all the conclusions and suggestions are given from the statistical analysis of the several ratios calculated.

The basic inherent limitations of figures, calculations, statistical analysis and human error are the limitations of the study. Much care and diligence have been exercised in making all the calculations, calculating various ratios for various companies for various years, statistical analysis and deriving conclusions from it but then also there can be some human error, which will make the study weaker to that extent.

The study is carried out for limited number of companies only. But it is difficult to draw conclusions from sample. Hence although much care has been taken to have a nice representation of population in the sample but then also a sample survey is not as good as a population survey. Hence the limitations of sample survey apply to this research also.

The study is carried out for a period of 8 (Eight) years to derive conclusions about the performance of the companies and industry as a whole. But this number of years is not enough for a thorough understanding of business movements and their reactions to the changes of the economy.

Reference

1. Kumar, 2003: 221

2. Keshab Das, the Domestic Politics of TRIPs: Pharmaceutical Interests, Public Health, and NGO Influence in India.,Gujarat Institute of Development Research, Ahmedabad, July 2003 Paper Prepared for the Research Project on 'Linking the WTO to the Poverty-Reduction Agenda' (Part of the DFID-funded Globalisation and Poverty Research Programme)
3. Beirman, "Management Accounting" Cornell University Ithaka, New York, 1962
4. Anthony and Reece, "Management Accounting Principles", Homewood, Illionois, 1985
5. Aczel, Amir; Sounderpandian, Jayavel: Complete Business Statistics, Tata McGraw Hill, 2006
6. Baisnab: Elements of Probability and statistics, Tata McGraw Hill, 2004
7. Robert V. Hogg, Elliot A. Tanis, M. Jagan Mohan Rao: Probability and Statistical Inference, Pearson Education, 2006
8. Keshab Das, the Domestic Politics of TRIPs: Pharmaceutical Interests, Public Health, and NGO Influence in India.,Gujarat Institute of Development Research, Ahmedabad, July 2003 Paper Prepared for the Research Project on 'Linking the WTO to the Poverty-Reduction Agenda' (Part of the DFID-funded Globalisation and Poverty Research Programme)
9. Professor Robert Tancer and student Srinivas Josyula, Investing in the Indian Pharmaceutical Industry: The American Graduate School of International Management, 1999 Thunderbird
10. Dr. Shashi A. Jain, "Working Capital Management of Pharmaceutical Industry in India" 1990, Ph. D thesis submitted to Saurashtra University, Rajkot
11. Dr. Akhileshwar Sharma, "Profitability Analysis of Drugs and Pharmaceutical Companies in India" May 1992, Ph. D. thesis submitted to Saurashtra University, Rajkot.

Chapter 4

COST AND SALES TREND ANALYSIS

Content

1. Introduction to Financial Statements

At the end of the accounting period, every business unit prepares certain statements which narrate the entire story of financial activities carried out by that business unit, during the year. In other words they narrate the entire financial effect of all the activities. As these statements narrate the financial story, they are known as "Financial Statements", and they are prepared by the experts, as per the norms applicable for that business unit. Financial Statements refer to at least two statements which the accountant prepares at the end of the financial period:

      a. Profit and Loss Account

      b. Balance Sheet

The basic objective for preparing these statements is to see the effect of operations and management decisions made by the managers on financial health of the unit. Financial statements are prepared for the purpose of presenting a periodical review or report on the progress by the management and deal with the:

      a. Status of the investment in the business, and

      b. Results achieved during the period under review.[1]

Financial statements once prepared do not serve the purpose of the management, as such figures have no value unless and until they are made understandable. Hence in order to draw some meaningful conclusion from financial statements, it is important to analyse the financial statements.

2. Analysis and Interpretation of Financial Statements

As financial statements are prepared by following certain format as well as certain norms applicable to entity, it may not directly speak the story! In other words we need to decode the information already there in the financial statements. And hence we need a system of mechanism which decodes the information already present in the statements into some form which is understandable and which can be useful in coming to some conclusions and make decisions. Analysis and interpretation of financial statements refers to such a treatment of the information contained in the income statement and the balance sheet so as to afford full diagnosis of the profitability and financial soundness of the business.[2]

Hence to know the real message conveyed by financial statements, it is essential to analyze and interpret them. Among various tools of financial statement analysis, trend analysis is one of the most important tools to analyze the financial statements.

3. Trend Analysis

Trend analysis is the tool which analyses the financial statements by comparing the figures of several years and examining their trend. As per the dictionary meaning of the word "Trend", it means, "a general tendency or direction"[3]

As such no conclusion can be reliable if they are drawn from the figures of a particular year or two. But if figures of same items for a number of years are methodically

arranged and if some analysis is made, then that analysis would definitely give some very authentic and reliable conclusive piece of information.

Trend analysis can be carried out with the help of several methods:[4]

1. Year to Year Comparison
2. Index Number
3. Trend Series
4. Trend Ratio

4. Advantages of Trend Analysis

1. Huge figures can be converted into percentages; hence brevity and readability are achieved.

2. Figures of individual year's financial statements have much less significance, but if figures of several years are put together, give meaningful information.

3. Trend analysis can be done of any financial statements.

4. Any year which is stable can be taken as base year. This may be in the beginning, mid or end of period of study.

5. Trend Analysis can be carried out with the number of tools, like :

    a. Year to Year Comparison
    b. Index Number
    c. Trend Series
    d. Trend Ratios
    e. Etc.

6. Conclusion regarding favourable or unfavourable tendencies can be easily made with the help of trend analysis.

5. Limitations of Trend Analysis

1. Trend Analysis can be logical only if the accounting principles and practices followed are constant throughout the period for which analysis is made. In the absence of such consistency, the comparability will be adversely affected.[5]

2. Base year is to be selected very carefully; it should be a normal year without any internal or external major fluctuation.

3. Although financial analysis gives some useful information regarding the performance, but still it is not the final thing. After analysis, proper interpretation is required for coming to any final conclusion.

4. Trend Analysis is carried out on the figures of financial statements which are prepared on historical cost basis. Hence the price level changes are not given effect, thus whatever results are obtained are not up-to-date.

6. Cost Structure of Pharmaceutical Companies under study

1. **Raw Materials Consumed**
2. **Employee Cost**
3. **Excise Duty**
4. **Factory Overheads**
5. **Administrative Cost**
6. **Selling & Distribution Cost**

7. Method to carry out Trend Analysis

In order to study the movement of total costs of all the companies under study, total cost of each year has been taken as 100, and each element of cost is taken as percentage of total cost. This would enable us to identify the importance or contribution of each item of cost in the total cost of each company over the entire period of study.

8. Analysis of Individual Cost to Total Cost of sample units.

1. **Raw Material Consumed**

Every production unit normally converts the raw material into finished goods and then sells it into the market. This raw material either may be purchased from the market or it can even be manufactured by the unit itself, depending upon particular situation.

The term "Material" refers to the commodities supplied to an undertaking for the purpose of consumption in the process of manufacture or of rendering service or for transformation into products.[6] There are two types of materials: Direct Materials and Indirect Materials. All the materials which becomes an internal part of the finished product and which can be conveniently assigned to specific physical units is termed as "Direct Material"[7] While all material which is used for purpose ancillary to the business and which cannot be conveniently assigned to specific physical units is termed as "Indirect Material"[8] For example: Consumable Stores, Oil and waste, etc

The calculation of raw material cost is done as under:

The opening stock of raw material is taken as the base for the current year's total expenses on raw materials consumed. Additional purchases of raw materials are added to this opening stock of raw materials. Purchase of trading goods is also added to the total expenses for the raw materials. Further direct expenses on the purchases of this raw material like the expenses paid on freight or such incidental expenses made for the purchase of raw material is added to the raw material expenses. Finally the closing stock of raw materials is adjusted in order to arrive at the final figure of raw material consumption of the year.

Table: 4.1

Table Showing Proportion of Raw Materials Cost to Total Cost of Pharmaceutical

Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co.Name	**97-98**	**98-99**	**99-00**	**00-01**	**01-02**	**02-03**	**03-04**	**04-05**
Aurobindo	73.66	76.86	75.25	76.85	74.55	72.88	68.78	63.05
Cadila	55.98	58.1	56.98	48.43	48.5	45.17	40.02	45.48
Cipla	63.07	58.12	59.59	59.72	58.32	58.86	59.27	58.5
Dr. Reddy	40.42	43.99	37.22	40.92	39.18	35.85	36.41	32.73
IPCA	61.45	56.92	54.04	52.64	52.95	52.23	53.35	50.36
Matrix	84.57	70.96	71.42	69.39	67.03	58.59	63.21	62.68
N.Piramal	47.94	51.02	53.55	51.93	50.94	50.54	48.99	47.24
Sun	52.01	58.39	56.03	55.08	54.01	52.73	55.19	59.55

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the above Table no. 4.1 it is evident that proportion of raw material cost to total cost for Aurobindo Pharma for the year 1997-98 was73.66% it increased to 76.86% in the year 1998-99 to 76.86 and showed a stead trend until in the year 2001-02 declining

trend started which continued till the end. The ratio is between 76.86% (1998-99) to 63.05%(2004-05) with an average of 72.74% which is very high as compared to the overall average of 56.09% for the study period. For six years the ratio was higher than the average and it remained lower than the average for two years of the study period.

The proportion of raw material cost to total cost for Cadila Healthcare for the year 1997-98 was 55.98% and it increased to 58.1% which was the highest throughout the study period. The lowest ratio was observed in the year 2003-04 as 40.02% with an average of 49.83. There are three instances where the ratio was higher than the average otherwise in the remaining five years the ratio was lower as compared to the average.

The proportion of raw material cost to total cost for Cipla Ltd. was 63.07% in the year 1997-98 which was highest for the entire study period, the lowest value observed was 58.12 which was in the year 1998-99. The average for the entire study period was 59.43% which is slightly higher than the overall average 56.09% for the study period. There are three instances in which the ratio is higher than the average otherwise for the five years the ratio has remained lower than the average.

The proportion of raw material cost to total cost for Dr. Reddy's Laboratories was 40.42% in the year 1997-98 which increased to 43.99% in the next year i.e. 1998-99 which was the highest value for the entire study period. The lowest value was 32.73% which occurred in the year 2004-05. The average value is 38.34 and there are four instances in which the ratio was higher than the average otherwise remaining four

times the ratios were lower than the average. The average is lower than the overall average of 56.09% for the same study period.

The proportion of raw material cost to total cost for IPCA Labs was 61.45% for the year 1997-98 which remained the highest value for the entire study period, while the value 50.36% in the year 2004-05 was the lowest observed during the study period. The average ratio for the company is 54.24% and there are two instances when the ratio was higher than the average otherwise in the remaining six instances the ratio remained lower than the average.

The proportion of raw material cost to total cost for Matrix Laboratories was 84.57% in the year 1997-98 which was highest in the entire study period. The lowest ratio 58.59% was observed in the year 2002-03. The average is 68.48 which is higher than the overall average of 56.09.

The proportion of raw material cost to total cost for Nicholas Piramal was 47.94 in the first year of the study period. It was highest 53.55 in the year 1999-2000 while it was lowest 47.24 in the year 2004-05. The average is 50.27 which is lower than overall average 56.09 for the same study period.

The proportion of raw material cost to total cost for Sun Pharmaceuticals lies in between 59.55(2004-05) and 52.01(1997-98) with an average of 55.37 which is lower than the overall average of 56.09 for the same study period. For three years the ratio was higher as compared to average and for rest four year the ratio remained lower than the average.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of raw material cost to total cost among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of raw material cost to total cost among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of raw material cost to total cost between different companies under study during the study period is same."

Alternate Hypothesis (H_1):-   "The ratio of raw material cost to total cost between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of raw material cost to total cost between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):-   "The ratio of raw material cost to total cost between different years during the study period in each company under study is not same."

In the following Table 4.1(a) the calculation of F Test (ANOVA) is shown of raw material cost to total cost ratio for the pharmaceutical companies under study, during the study period.

Table: 4.1(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	6670.360425	952.9086321	68.18768486
Between Years	7	468.1026	66.8718	4.785173594
Error	49	684.76475	13.97479082	
Total	63	7823.227775		

The above Table 4.1(a) shows the F value of 68.19 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of raw material cost to total cost. F value of 4.79 at 5% level of significance and at (7,49) degree of freedom is also greater than the Table value of 2.16 hence null hypothesis is rejected and alternate hypothesis is accepted, which means that there is a significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that the raw material to total cost ratio among different companies under study is not same and the raw material to total cost ratio between different years of each company is also not same.

2.   Employees Cost

Once raw materials are arranged, it is required to convert them into finished product; this conversion can be done only by human labour or in some cases partly by human labour and partly by machines. Even fully automatic machines require human beings to operate them and monitor it.

Labourers may be of different category, depending upon their expertise and skill. And for the services they render, they are paid. This payment may be of two types :

        a.   Monetary Payment

        b.   Non-Monetary Payment

Any amount paid as wages or salary or other allowance or bonus is referred as monetary payment. Amount paid at the time of retirement, i.e. Gratuity or after retirement is also one of the forms of monetary payment. While any facility like housing, medicines, free education and other benefits given by the employer to employee refers to non-monetary payment. It also includes staff welfare expenses, VRS compensation and other employee cost.

Table :   4.2

Table Showing Proportion of Employees Cost to Total Cost of Pharmaceutical

Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co.Name	97-98	98-99	99-00	00-01	2001-02	2002-03	2003-04	2004-05
Aurobindo	2.19	1.77	2.09	2.28	2.69	3.12	4.3	6.08
Cadila	9.34	9.32	8.25	8.9	8.85	10.57	10.7	12.49
Cipla	5.05	5.74	5.17	5.72	4.63	4.72	5.11	5.06
Dr. Reddy	9.1	8.58	9.37	9.78	9.79	10.64	10.63	11.51
IPCA	9.37	10.61	10.04	10.66	10.62	10.82	10.57	12.84
Matrix	1.53	2.52	1.92	2.65	4.94	4.95	4.62	7.07
N.Piramal	15.7	13.64	13.1	11.25	10.15	9.74	11.75	10.86
Sun	9.87	9.19	7.53	7.15	7.59	7.86	9.34	8.72

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the above Table No. 4.2 it is evident that proportion of employees cost to total cost for Aurobindo Pharma is in between 6.08(2004-05) and 1.77(98-99) with an average of 3.07 which is lower than the overall average of 7.86. For five years the ratio has remained lower than the average while for three years the ratio was higher than the average.

The proportion of employees cost to total cost for Cadila Healthcare lies in between 12.49(2004-05) and 8.25(1999-2000) with an average of 9.80 which is higher than the overall average of 7.86 for the same study period.

The proportion of employees cost to total cost for Cipla Ltd. is in between 5.74(98-99) and 4.63(2001-02) with an average of 5.15 which is lower than the overall average of 7.86 for the same study period.

The proportion of employees cost to total cost for Dr. Reddy's Laboratories lies in between 11.51(2004-05) and 8.58(98-99) with an average of 9.93 which is lower than overall average 7.86 for the same study period.

The proportion of employees cost to total cost for IPCA Labs lies in between 12.84(2004-05) and 9.37(97-98) with an average of 10.69 which is higher than overall average of 7.86.

The proportion of employees cost to total cost for Matrix Labs lies in between 7.07(2004-05) and 1.53(1997-98) with an average of 3.78 which is lower than overall average of 7.86 for the same study period.

The proportion of employees cost to total cost for Nicholas Piramal lies in between 15.7(97-98) and 9.74(2002-03) with an average of 12.02 which is higher as compared to the overall average of 7.86.

The proportion of employees cost to total cost for Sun Pharmaceuticals lies in between 9.87(97-98) and 7.15(2000-01) with an average of 8.41 which is higher than overall average of 7.86 for the same period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of employee cost to total Cost among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Employee cost to total cost among different years for each (individual) company, F-Test ANOVA is used. The statements of

hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of employee cost to total cost between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of employee cost to total cost between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of employee cost to total cost between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of employee cost to total cost between different years during the study period in each company under study is not same."

In the following Table 4.2(a) the calculation of F Test (ANOVA) is shown of employee cost to total cost ratio for the pharmaceutical companies under study, during the study period.

Table : 4.2(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	645.6947859	92.24211228	59.93226134
Between Years	7	27.59321094	3.941887277	2.561153606
Error	49	75.41620156	1.539106154	
Total	63	748.7041984		

The above Table 4.2(a) shows the F value of 59.93 at 5% level of significance and at (7,49) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of employee cost to total cost. F value of 2.56 at 5% level of significance and at (7,49) degree of freedom is also greater than the Table value of 2.16 hence null hypothesis is rejected and alternate hypothesis is accepted, which means that there is a significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that the employee cost to total cost ratio among different companies under study is not same and the employee cost to total cost ratio between different years of each company is also not same.

3. Excise Duty

The Central Board of Excise & Customs (CBEC) (Department of Revenue, Ministry of Finance - Government of India) is responsible for formulation of policy relating to levy and collection of Indirect Taxes namely Customs, Central Excise and Service

Tax. The CBEC also exercises overall supervision over Customs, Central Excise and Service Tax field formations located all over the country. The Board discharges various tasks assigned to it, with the help of various Directorates headed by officers of the rank of Director General (Addl. Sec. Rank) and Director (Jt. Sec. Rank)

Generally, excise is a duty on excisable goods manufactured or produced in India. Central Excise Act is the basic act providing for charging of duty, valuation, powers of officers, provisions of arrests, penalty, etc. In the following events excise duty is applicable:

1. Article must be goods i.e. the article must be movable and marketable.

2. Article must be 'excisable goods' i.e. it must be included in central excise Tariff Act, 1985.

3. Must be produced.

4. Manufacture or production must be in India.

Table : 4.3

Table Showing Proportion of Excise Duty to Total Cost of Pharmaceutical Companies

under Study [in percentage]

Period: 1997-98 to 2004-05

Co.	97-98	98-99	99-00	00-01	2001-02	2002-03	2003-04	2004-05
Aurobindo	11.12	9.54	7.61	5.89	7.05	7.61	7.41	6.98
Cadila	6.59	5.91	6.81	11.76	10.83	9.49	7.44	6.11
Cipla	7.58	9.89	10.51	9.26	9.4	8.35	8.12	7.37
Dr. Reddy	13.16	13.46	14.12	9.13	7.68	7.12	5.46	4.99
IPCA	6.62	9.24	6.44	6.94	6.65	6.05	4.42	4.08
Matrix	0	11.47	11.31	10.99	10.68	6.23	5.2	5.36
N.Piramal	13.61	13.52	12.7	12.67	10.4	9.29	5.49	5.04
Sun	10.45	7.6	9.7	10.45	10.48	11.55	7.44	5.22

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the above Table no. 4.3 it is evident that proportion of Excise Duty to Total cost for Aurobindo Pharma lies in between 11.12(97-98) and 5.89(2000-01) with an average of 7.9 which is higher than overall average of 8.45 for the same period.

The proportion of Excise Duty to Total cost for Cadila Healthcare lies in between 11.76(2000-01) and 5.91(98-99) with an average of 8.12 which is lower than overall average of 8.45 for the same period.

The proportion of Excise Duty to Total cost for Cipla Ltd. lies in between 10.51(1999-2000) and 7.37(2004-05) with an average of 8.81 which is higher than overall average of 8.45 for the same study period.

The proportion of Excise Duty to Total cost for Dr. Reddy's Laboratories lies in between 14.12(1999-2000) and 4.99(2004-05) with an average of 9.39 which is higher than overall average of 8.45 for the same period.

The proportion of Excise Duty to Total cost for IPCA Labs lies in between 9.24(98-99) and 4.08(2004-05) with an average of 6.31 which is lower than the overall average of 8.45 for the same period.

The proportion of Excise Duty to Total cost for Matrix Labs lies in between 11.47(98-99) and 5.2(2003-04) with an average of 7.66 which is lower than overall average of 8.45 for the same period.

The proportion of Excise Duty to Total cost for Nicholas Piramal lies in between 13.61(97-98) and 5.04(2004-05) with an average of 10.34 which is very high as compared to 8.45 for the same period.

The proportion of Excise Duty to Total cost for Sun Pharmaceuticals lies in between 11.55% (2002-03) and 5.22% (2004-05) with an average of 9.11% which is higher than overall average of 8.45 for the study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Excise Duty to Total Cost among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Excise Duty to total cost among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of excise duty to total cost between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of excise duty to total cost between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of excise duty to total cost between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of excise duty to total cost between different years during the study period in each company under study is not same."

In the following Table 4.3(a) the calculation of F Test (ANOVA) is shown of excise duty to total cost ratio for the pharmaceutical companies under study, during the study period.

Table : 4.3(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	85.337375	12.19105357	2.271834535
Between Years	7	151.454325	21.63633214	4.031986758
Error	49	262.9424	5.366171429	
Total	63	499.7341		

The above Table 4.3(a) shows the F value of 2.27 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of excise

duty to total cost. F value of 4.03 at 5% level of significance and at (7,49) degree of freedom is also greater than the Table value of 2.16 hence null hypothesis is rejected and alternate hypothesis is accepted, which means that there is a significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that the excise duty to total cost ratio among different companies under study is not same and the excise duty to total cost ratio between different years of each company is also not same.

4. Factory Overheads

There are three elements of cost; materials, lobour and other expenses. Any of these or all, if attributable or which can be identified with cost unit refers to direct cost. While Indirect cost constitutes the overhead cost, which is the aggregate of indirect material cost, indirect wages and indirect expenses.[9] Hence the cost which cannot be allocated to a particular cost unit, but only can be apportioned is referred as "Overheads".

Now this indirect cost or overheads pertaining factory or manufacturing process are known as factory overheads. Hence, factory overhead is the indirect cost of factory or manufacturing process, which includes indirect factory wages, indirect factory materials as well as indirect factory expenses. Following are some examples of factory overheads in the pharmaceutical companies under study:

Power, oil, fuel, electricity, water, freight, transport, packing material, repairing expenses, technical expenses, drilling, etc

Table : 4.4

Table Showing Proportion of Factory Overheads to Total Cost of Pharmaceutical

Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co. Name	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	7.41	6.81	8.46	9.32	9.81	10.11	11.35	14
Cadila	3.42	3.74	4.36	5.7	4.29	4.39	4.27	4.82
Cipla	10.37	11.46	10.36	10.74	11.95	12.65	12.16	12.46
Dr. Reddy	13.59	11.03	12.45	12.27	11.28	12.05	11.86	12.04
IPCA	7.32	7.62	9.1	8.92	9.61	10.4	9.38	8.5
Matrix	8.4	9.65	10.7	9.66	8.8	10.38	10.9	9.78
N. Piramal	7.3	5.18	4.36	4.9	4.18	3.82	4.3	6.64
Sun	4.68	3.55	6.28	6.63	6.1	6.5	5.75	5.74

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the above Table No. 4.4 it is evident that proportion of factory overheads to total cost for aurobindo pharma lies in between 14% (2004-05) and 6.81% (98-99) with an average of 9.66 which is higher than overall average of 8.38 for the same period.

It is evident that proportion of factory overheads to total cost for cadila healthcare lies in between 5.7(2000-01) and 3.42(97-98) with an average of 4.37 which is lower than overall average of 8.38 for the same period.

It is evident that proportion of factory overheads to total cost in cipla ltd. lies in between 12.65(2002-03) and 10.36(1999-2000) with an average of 11.52 which is higher than overall average of 8.38 for the same period.

It is evident that proportion of factory overheads to total cost of Dr. Reddy's Laboratories lies between 13.59(97-98) and 11.03(98-99) with an average of 12.07 which is higher than overall average of 8.38 for the same period.

It is evident that proportion of factory overheads to total cost in IPCA Labs lies between 10.4 (2002-03) and 7.32(97-98) with an average of 8.86 which is almost equal to the overall average of 8.38 for the same period.

It is evident that proportion of factory overheads to total cost of Matrix Labs lies in between 10.9(2003-04) and 8.4(97-98) with an average of 9.78 which is higher than overall average of 8.38 for the same period.

It is evident that proportion of factory overheads to total cost of Nicholas Piramal lies in between 10.9(2003-04) and 8.4(97-98) with an average of 5.09 which is lower than the overall average of 8.38 for the same period.

It is evident that proportion of factory overheads to total cost of Sun Pharmaceuticals lies in between 6.63(2000-01) and 3.55(98-99) with an average of 5.65 which is lower than overall average of 8.38 for the same study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of factory overheads to total cost among different pharmaceutical companies under study during the study period and for establishing relationship in the ratio of factory overheads to total cost among different years for each (individual) company, F-Test ANOVA is used. The statements of

hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of factory overheads to total cost between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of factory overheads to total cost between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of factory overheads to total cost between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of factory overheads to total cost between different years during the study period in each company under study is not same."

In the following Table 4.4(a) the calculation of F Test (ANOVA) is shown of factory overheads to total cost ratio for the pharmaceutical companies under study, during the study period.

Table : 4.4(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	493.1913859	70.45591228	55.6294434
Between Years	7	19.40723594	2.772462277	2.18903607
Error	49	62.05957656	1.266521971	
Total	63	574.6581984		

The above Table 4.4(a) shows the F value of 55.63 at 5% level of significance and at (7,49) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of factory overheads to total cost. F value of 2.19 at 5% level of significance and at (7,49) degree of freedom is also greater than the Table value of 2.16 hence null hypothesis is rejected and alternate hypothesis is accepted, which means that there is a significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that there is a significant difference in the factory overheads to total cost ratio among different companies under study and there is a significant difference in the factory overheads to total cost ratio between different years of each company.

5.   Administrative Overheads

Normally cost accounting is focused on production or manufacturing cost. But administration and the expenses incurred on that is equally important. Without administration whatever produced cannot be sold in the market. All planning and controlling of any organization is dependent upon the administration. And this administration expenses are normally in the nature of indirect cost.

Administrative overheads, termed administration costs by some accountants, are mainly in the nature of indirect costs and refer to all expenditure incurred in formulating the policy, directing the organization and controlling the operation of an undertaking which is not directly related to research and development, production, distribution and selling activity functions.[10]

Some examples of administrative overheads are as follows:

Accounts office expenses, audit fees, bank charges, depreciation of office building and equipment, legal expenses, stationery, telegram and telephone, internet expenses, etc.

Table : 4.5

Table Showing Proportion of Administrative Overheads to Total Cost of

Pharmaceutical Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co.	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	2.04	2.42	3.27	2.71	2.84	3.47	4.68	6.05
Cadila	13.54	12.37	11.92	13.97	14.33	18.64	25.27	16.24
Cipla	5.57	6.72	5.32	4.21	5.09	5.83	6	7.15
Dr. Reddy	8.86	9.22	10.52	14.53	18.79	20.68	22.61	25.74
IPCA	6.94	6.96	7.36	7.74	8.65	8.34	9.63	9.78
Matrix	2.3	2.65	2.61	3.34	4.32	7.66	8.86	9.84
N. Piramal	11.38	10.71	11.93	13.13	6.94	7.67	11.06	12.58
Sun	6.33	5.94	6.74	7.3	6.35	6.81	8.12	9.53

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the above Table no. 4.5 it is evident that proportion of administration overheads to Total cost for Aurobindo Pharma lies in between 6.05(2004-05) and 2.04(97-98) with an average of 3.44 is lower than overall average of 9.06 for the same period.

From the above Table no. 4.5 it is evident that proportion of administration overheads to total cost for Cadila Healthcare lies in between 25.27(2003-04) and 11.92(1999-2000) with an average of 15.79 which is higher than overall average of 9.06 for the same period.

From the above Table no. 4.5 it is evident that proportion of administration overheads to total cost for Cipla Ltd. lies in between 7.15 (2004-05) and 4.21(2000-01) with an average of 5.74 which lower than overall average of 9.06 for the same period.

From the above Table no. 4.5 it is evident that proportion of administration overheads to total cost for Dr. Reddy's Laboratories lies between 25.74(2004-05) and 8.86(97-98) with an average of 16.37 which is very high as compared to the overall average of 9.06 for the same study period.

From the above Table no. 4.5 it is evident that proportion of administration overheads to total cost for IPCA lies between 9.78(2004-05) and 6.94(97-98) with an average of 8.18 which is low as compared to the overall average of 9.06 for the same study period.

From the above Table no. 4.5 it is evident that proportion of administration overheads to total cost for Matrix Laboratories lies between 9.84(2004-05) and 2.3(97-98) with

an average of 5.20 which is low as compared to the overall average of 9.06 for the same study period.

From the above Table no. 4.5 it is evident that proportion of administration overheads to total cost for Nicholas Piramal lies between 13.13(2000-01) and 6.94(2001-02) with an average of 10.68 which is high as compared to the overall average of 9.06 for the same study period.

From the above Table no. 4.5 it is evident that proportion of administration overheads to total cost for Sun Pharmaceuticals lies between 9.53(2004-05) and 5.94(98-99) with an average of 7.14 which is low as compared to the overall average of 9.06 for the same study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of administrative overheads to total cost among different pharmaceutical companies under study during the study period and for establishing relationship in the ratio of administrative overheads to total cost among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of administrative overheads to total cost between different companies under study during the study period is same."

Alternate Hypothesis (H_1):-   "The ratio of administrative overheads to total cost between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of administrative overheads to total cost between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):-   "The ratio of administrative overheads to total cost between different years during the study period in each company under study is not same."

In the following Table 4.5(a) the calculation of F Test (ANOVA) is shown of Administrative Overheads to Total Cost ratio for the Pharmaceutical Companies under study, during the study period.

Table : 4.5(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	1306.624119	186.6605884	27.5723452
Between Years	7	238.3926688	34.05609554	5.030555354
Error	49	331.7225563	6.769848087	
Total	63	1876.739344		

The above Table 4.5(a) shows the F value of 27.57 at 5% level of significance and at (7,49) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of administrative overheads to total cost. F value of 5.03 at 5% level of significance and at (7,49) degree of freedom is also greater than the Table value of 2.16 hence null hypothesis is rejected and alternate hypothesis is accepted, which means that there is a significant difference between different years' ratios for all the individual companies. Hence it can be concluded that there is a significant difference in the administrative overheads to total cost ratio among different companies under study and there is a significant difference in the administrative overheads to total cost ratio between different years of each company.

6.   Selling and Distribution Overheads

Selling and Distribution overheads are also one of the important indirect costs. As such every business unit has to incur this cost, be it a manufacturing concern of a trading concern, and be it a retail shop or wholesale business.

The nature of selling and distribution overheads is different from any manufacturing overheads. Even sometimes selling and distribution overheads are given more importance than any other manufacturing overheads, because whatever is produced cannot be sold unless the promotional efforts are made. Selling and Distribution overheads includes market research expenses, advertisement expenses, salaries and

commission of salesmen, sales office expense, packing and shipping expenses, warehouse expenses etc.

Even before production a business unit which is relatively new has to incur expenses on market research and after production proper advertisement and sales promotion expenses are to be made in order to sell the produce. As every business unit has a objective of profit maximization, it can be achieved only by increasing sales, which can be achieved by making selling and distribution expenses very tactfully. With increased efforts for promoting sales and also due to increase in competition, considerable expenditure is incurred on selling and distribution and this sometimes exceeds even the cost of manufacture.[11]

Table : 4.6

Table Showing Proportion of Selling & Distribution Overheads to Total Cost of

Pharmaceutical Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co.	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	3.58	2.6	3.31	2.95	3.05	2.8	3.48	3.83
Cadila	11.13	10.56	11.68	11.23	13.21	11.73	12.3	14.87
Cipla	8.37	8.06	9.04	10.35	10.6	9.58	9.34	9.46
Dr .Reddy	14.87	13.72	16.32	13.37	13.29	13.66	13.03	12.98
IPCA	8.3	8.65	13.02	13.1	11.52	12.15	12.65	14.42
Matrix	3.18	2.75	2.04	3.97	4.24	12.2	7.21	5.27
N. Piramal	4.07	5.92	4.36	6.12	17.39	18.94	18.41	17.65
Sun	16.67	15.33	13.73	13.38	15.47	14.55	14.17	11.25

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the above Table no. 4.6 it is evident that proportion of Selling and Distribution Overheads to Total cost for Aurobindo Pharma lies between 3.83(2004-05) and 2.6(98-99) with an average of 3.20 which is low as compared to the overall average of 10.16 for the same study period.

It is evident that proportion of Selling and Distribution Overheads to Total cost for Cadila Healthcare lies between 14.87(2004-05) and 10.56(98-99) with an average of 12.09 which is high as compared to the overall average of 10.16 for the same study period.

It is evident that proportion of Selling and Distribution Overheads to Total cost for Cipla Ltd. lies between 10.35(2000-01) and 8.06(98-99) with an average of 9.35 which is low as compared to the overall average of 10.16 for the same study period.

It is evident that proportion of Selling and Distribution Overheads to Total cost for Dr. Reddy's Laboratories lies between 16.32(1999-2000) and 12.98(2004-05) with an average of 13.91 which is high as compared to the overall average of 10.16 for the same study period.

It is evident that proportion of Selling and Distribution Overheads to Total cost for IPCA lies between 14.42(2004-05) and 8.3(97-98) with an average of 11.73 which is high as compared to the overall average of 10.16 for the same study period.

It is evident that proportion of Selling and Distribution Overheads to Total cost for Matrix Laboratories lies between 12.2(2002-03) and 2.04(99-00) with an average of

5.11 which is very low as compared to the overall average of 10.16 for the same study period.

It is evident that proportion of Selling and Distribution Overheads to Total cost for Nicholas Piramal lies between 18.94(2002-03) and 4.07(97-98) with an average of 11.61 which is high as compared to the overall average of 10.16 for the same study period.

It is evident that proportion of Selling and Distribution Overheads to Total cost for Sun Pharmaceuticals lies between 16.67(97-98) and 11.25(2004-05) with an average of 14.32 which is high as compared to the overall average of 10.16 for the same study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Selling and Distribution Overheads to Total Cost among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Selling and Distribution Overheads to total cost among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H$_0$):- "The ratio of selling and distribution overheads to total cost between different companies under study during the study period is same."

Alternate Hypothesis (H$_1$):- "The ratio of selling and distribution overheads to total cost between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H$_0$):- "The ratio of selling and distribution overheads to total cost between different years during the study period in each company under study is same."

Alternate Hypothesis (H$_1$):- "The ratio of selling and distribution overheads to total cost between different years during the study period in each company under study is not same."

In the following Table 4.6(a) the calculation of F Test (ANOVA) is shown of Selling and Distribution Overheads to Total Cost ratio for the Pharmaceutical Companies under study, during the study period.

Table : 4.6(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	913.7126734	130.5303819	16.26002689
Between Years	7	104.6594734	14.95135335	1.862473731
Error	49	393.3565891	8.027685491	
Total	63	1411.728736		

The above Table 4.6(a) shows the F value of 16.26 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of Selling and Distribution Overheads to total cost. F value of 1.86 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that there is a no significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that he selling and distribution overheads to total cost ratio among different companies under study are not same and the selling and distribution overheads to total cost ratio between different years of each company are same.

9. Sales trend of sample units

After making an in-depth analysis of cost structure of pharmaceutical companies under study and its trend analysis for the period of 8 years, we have got very clear indication regarding the importance of each cost element in the total cost and their movements over the years. Now we will study sales in detail.

Sales are the major source of revenue for majority of businesses. Hence it occupies an important position in any business performance analysis. The present study is a study

on profitability of selected pharmaceutical companies of Indian pharmaceutical industry, and therefore sales and its trend of the selected companies during the period of study is of immense importance for this study.

A sole contributor to the financial growth of the company needs to be tracked on regular interval to monitor the progress. Profit margins and their effects on overall profitability is also dependent on sales. Profits have got dual relationship with sales, one with regard to the margins which means with the increase in sales profit will increase in the ratio of profit margin and the other relationship is that of volumes, with the increase in sales the income would increase due to volumes. During times when profit margins are shrinking most businesses play the game of margins.

For the purpose of studying the trend of sales we have used the index analysis. In index analysis, the figures of sales are expressed as an index relative to the base year sales. All items in the base year are assumed a value of 100. Here year 1997-98 has been taken as the base year and sales of all other consequent years are compared with that of base year and their index numbers have been calculated on that basis.

Table : 4.7:

Table Showing Indices of Sales in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[Base Year= 1997-98 = 100]   **[Sales = Rs. in Crores]**

SampleCo.	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	295.31	550.03	739.9	972.52	1007.96	1180.33	1334.83	1153.43
Indicies	100.00	186.26	250.55	329.32	341.32	399.69	452.01	390.58
Cadila	303.58	358.4	475.7	502.3	581.7	1005.2	1116	1125.3
Indicies	100	118.06	156.70	165.46	191.61	331.12	367.61	370.68
Cipla	514.43	617.16	759.75	1047.51	1385.84	1549.79	1974.63	2327.63
Indicies	100.00	119.97	147.69	203.63	269.39	301.26	383.85	452.47
Dr. Reddy	331.62	425.86	493.02	984.11	1557.78	1598.32	1740.2	1625.08
Indicies	100.00	128.42	148.67	296.76	469.75	481.97	524.76	490.04
IPCA	282.74	335.66	363.31	385.38	444.18	506.51	649.32	721.74
Indicies	100.00	118.72	128.50	136.30	157.10	179.14	229.65	255.27
Matrix	27.51	40.73	45.19	60.78	102.18	416.93	556.86	671.69
Indicies	100.00	148.06	164.27	220.94	371.43	1515.56	2024.21	2441.62
N.Piramal	534.64	429.99	486.48	566.76	946.48	1136.13	1434.66	1384.68
Indicies	100.00	80.43	90.99	106.01	177.03	212.50	268.34	258.99
Sun	279.77	358.11	478.35	613.78	753.1	864.65	998.16	1263.86
Indicies	100.00	128.00	170.98	219.39	269.19	309.06	356.78	451.75

From the above Table no. 4.7 it is evident that trend for the sales in Aurobindo Pharma is increasing in majority of cases. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period. There is minor decrease observed in the last year but apart from that overall increasing trend in evident from the table.

The trend for the sales in Cadila Healthcare is increasing in majority of cases. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period.

The trend for the sales in Cipla Ltd. is increasing in majority of cases. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period. There is tremendous increase observed in the sales of last year of the study period which is more than 450.

The trend for the sales in Dr. Reddy's Laboratories is increasing in majority of cases. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period. There is minor decrease observed in the last year but apart from that overall increasing trend in evident from the table.

The trend for the sales in IPCA Labs is increasing in majority of cases. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period.

The trend for the sales in Matrix Laboratories is increasing in majority of cases. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period. There is more than significant increase observed in the sales figures of the company for the last three years of the study period, making it a very big company as far as sales volumes are concerned.

The trend for the sales in Nicholas Piramal is showing a decline in the second year but after that there is a steady increasing trend observed in the sales of the company for

the study period. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period.

The trend for the sales in Sun Pharmaceuticals is increasing in majority of cases. Taking 100 as index for the base year the sales have shown positive growth in all the years of the study period.

10. Conclusion

From the above calculation of individual cost to total cost ratio there can be some general conclusions drawn from the statistical analysis. From the study of six individual cost to total cost ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

- The ratio of raw material cost to total cost among companies is not same and the ratio of raw material cost to total cost between different years of each individual company under study for the study period is also not same.

- The ratio of Employee cost to total cost among companies is not same and the ratio of Employee cost to total cost between different years of each individual company under study for the study period is also not same.

- The ratio of excise to total cost among companies is not same and the ratio of Excise to total cost between different years of each individual company under study for the study period is also not same.

- The ratio of factory overheads to total cost among companies is not same and the ratio of factory overheads to total cost between different years of each individual company under study for the study period is also not same.

- The ratio of administrative overheads to total cost among companies is not same and there is ratio of administrative overheads to total cost between different years of each individual company under study for the study period is also not same.

- The ratio of selling & distribution cost to total cost among companies is not same but the percentage of selling & distribution cost to total cost between different years of each individual company under study for the study period is same.

References

1. AICPA: Examination of financial statements by Independent Public Accountants,p.1
2. S.N.Maheshwari, Advanced Accountancy:, Volume II, 6th Edi, pg-504
3. A.S.Hornby, Oxford Advanced Learner's Dictionary: 5th Edi, Oxford Uni. Press,
4. R.M.Srivastava "Financial Decision Making" (Sterling Publication Ltd. New-Delhi, 1984)
5. Dr. S.N.Maheshwari, Financial Management: Principles and Practice, 5th Edi,Sultan Chand & sons
6. N.K.Prasad,Principles & Practice of Cost Accounting:,8th Edi, Book Syndicate Pvt.Ltd.,Pg-16
7. Dr. S.N.Maheshwari,Financial Management: Principles & Practice,5thEdi,Sultan Chand & sons, Pg-c4
8. ibid
9. N.K.Prasad, Principles and Practice of Cost Accounting:, 8th Edi, Book Syndicate Pvt. Ltd.
10 ibid, pg-287
11. ibid., pg-297

Chapter 5

ANALYSIS OF PROFIT MARGIN

Contents

1. Concept

Profit is the guiding light for so many managerial decisions. Almost all the major business decisions are directly or indirectly dependent on profit and profitability. For example, dividend payments, bonus to employees, expansion of business, raising of additional finance, etc. Apart from manager there are other parties also who are interested in profit and profitability like the shareholders, general public, government, creditors, bankers, financial institutions, etc. The shareholder has to make decision regarding holding or selling the shares, creditors have to decide regarding the credit policy and further credit to the firm, etc. Hence profit can be considered as an important criterion for various business decisions making by the internal and external parties. But profit when seen and observed individually fails to convey any significant message, and can be meaningful when compared with other figures. These other figures may be profits of other companies in the same industry, average industry profits figures, or the profit compared with the average investment made in the firm.

Fulfilling the social responsibility towards various classes of society would also be not possible without the surplus funds which can be collected only if the company is earning profit. Social responsibilities can be fulfilled by offering the goods or services at lower rates in times of natural calamities or provide the assistance to government and other non-government organizations (NGOs) in their relief work, constructing and maintaining public schools, public hospitals, public libraries, etc.

Profit earning can also be viewed as a cushion for the future unexpected situation of market. A negative change in demand or negative change in the prices of inputs or the

resources may be balanced by the sufficient profit earned in the earlier years. Sudden decision with regard to the above situation can be taken if the company is earning profit regularly.

Profitability is the ability to earn profit but any firm can be termed profitable only when compared with someone. Hence profitability is definitely a relative term. A simple example will explain the difference between profit and profitability: two similar amounts of profits for two different firms may be referred to as two firms having similar amounts of profits but in no case can be stated to have similar profitability; profitability can only be known when the operating profit margins are compared with the investment.

Return on Investment (ROI) is one of the key profitability ratio.1 ROI is the percentage of profit to capital employed and is the product of two ratios: (i) Percentage of profit to sales and (ii)sales to capital employed, i.e. the rate of asset turnover. Thus

$$\text{ROI} = \frac{\text{Profit}}{\text{Capital Employed}} = \frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}}$$

Return on Investment can be considered as the ultimate measure of profitability; as such it uses profit margin as well as the productivity to measure the real profitability of any business enterprise. Hence for the present study this measure will be the most important to measure the profitability situation of the companies of pharmaceutical industry of India.

Hence we can conclude that Return on Investment is the factor of Profit Margin as well as Asset Turnover. Hence if there is any change in Return on Investment it may be either due to the change in the proportion of profit to sales or the proportion of sales to capital employed.

2.   Calculation of Gross Profit Margin of sample units

The gross profit margin is a measurement of a company's manufacturing and distribution efficiency during the production process. Gross profit is the profit in sales after deducting all the trading expenses like the cost of raw materials, the direct expenses on purchases, excise duty, etc. The effect of stock adjustment is also given along with deducting factory overheads at this stage, and the result is Gross Profit. In other words when manufacturing cost of goods sold is deducted form the sales the resultant profit are referred to as Gross Profit. The gross profit margin informs an investor about the percentage of revenue / sales left after subtracting the manufacturing cost of goods sold. A company that boasts a higher gross profit margin than its competitors and industry is more efficient.

$$\text{Gross Profit Margin Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \text{ X } 100$$

Gross Profit margin is an indicator of the percentage of sales revenue which is above the cost. For making a pricing decision this margin can be utilized for decreasing the price. Theoretically it can be said that the price of a product can be decreased maximum up to the extent of gross profit margin, decrease in price up to this margin would give the firm enough revenue to continue the operations.

Profit is more of a motivator or a driving force rather than bread and butter. To make the total profitability analysis we have chosen to analyze the profitability (of the selected companies of pharmaceutical industry of India) step by step i.e. to start with the calculation and analysis of Gross Profit margin will be done and then net profit margin and operating profit margin will be calculated and analyzed.

Table: 5.1:

Gross Profit to Sales Ratio in Pharmaceutical Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co.	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	20.21	19.88	21.39	17.73	15.97	22.07	26.16	22.77
Cadila	37.03	38.16	37.78	39.88	42.07	44.08	48.81	51.85
Cipla	38.65	38.33	36.77	37.14	38.05	35.57	33.28	36.05
Dr. Reddy	47.64	46.55	49.46	53.4	62.54	60.5	55.89	54.72
IPCA	32.19	33.68	38.31	38.34	40.49	41.81	44.27	47.25
Matrix	13.16	14.61	-2.85	9.56	22.6	47.67	46.23	41.17
N.Piramal	42.77	43.74	41.31	42.58	43.74	47.26	50.71	49.33
Sun	46.36	45.12	44.09	46.76	46.81	50.24	52.38	47.88

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

There is no particular trend observed in the Gross Profit Margin of Aurobindp Pharma. It lies in between 26.16(03-04) and 15.97(01-02) with an average of 20.77 which is lower compared to the overall average 38.75 of the selected companies for the same study period. Apart from the year 2001-02 where the margin showed a tremendous down trend all the years have shown pretty consistent rate of gross profit margin.

Cadila Healthcare has shown a constant increasing trend in the Gross Profit Margin for the study period. It lies between 37.03 (1997-98) and 51.85 (2004-05) with an average of 42.46 which is a very fine average by all standards especially the overall average is 38.75 for all the selected companies for the study period. The company can be said to be reliable and consistent as far as Gross Profit Margin is concerned as it has shown a steady increasing trend for the study period.

Cipla Ltd. has shown the consistent gross profit margin ratio for the entire study period. There is neither any increasing trend visible nor any decreasing trend in the ratio. The ratio lies between 38.65(1997-98) and 33.28(2003-04) with an average of 36.73 which is close to the overall average 38.75 of all the selected companies for the study period. The gap between the highest and lowest value shows the absence of any major fluctuation in the gross profit margin of the company.

Dr. Reddy's Laboratories is showing a mixed trend for the study period. As there is a constant increasing trend observed till the year 2001-02, but after that year there was a downfall in the gross profit margin which continued till the end of the study period. The eight year high for the company is 62.54(2001-02) while the lowest value is 47.64(1997-98). And the average is 53.84 which shows that its performance is far higher than the overall average of 38.75 but the downtrend observed in the latter part of period is concerning.

IPCA Laboratories is showing a continuous increasing trend for the gross profit margin for the study period. This is the first company which is showing a clear and continuous increasing trend of gross profit margin for the study period. This can be nothing but the reason for the continuous improvement in the financial management of

the business. The highest value is at the end of the study period 47.25 (2004-05) and lowest is at the beginning of the study period 32.19 (1997-98) with an average of 39.54 which is higher than the overall average of 38.75 for the selected companies for the same study period. Although the average is little bit higher than the overall average but there is much more potential in the company than what is visible if it continues to operate like in the past.

Matrix Laboratories has made a successful attempt to stabilize after few very weak period especially 1999-2000 when it made a gross loss but ever since then it has tried to recover and it has successfully done with an increasing trend. But overall there is an amount of fluctuation observed in the gross profit margin of the company as after loss period there were very high profits and then a slight declining trend has been observed in the last two years of the study period. This un-stability can cause a serious concern to the stakeholders of the company. It lies between 47.67(2002-03) and -2.85(1999-2000) with an average of 24.03 which is quite lower than the overall average 38.75 for the same study period. But more than the average the fluctuation can cause some serious problems for the company.

Nicholas Piramal Pharmaceuticals is neither showing any clear positive or negative trend of gross profit margin for the study period but is showing a semi consistent trend which is a good sign for the financial stability of any company. The ratio lies between 50.71(2003-04) and 41.31(1999-2000) with an average of 45.18 which is far better than the overall average 38.75 for all the selected companies for the same study period.

Sun Pharmaceuticals is showing a very fine consistent trend for the study period with no major fluctuations. There is only one big downfall in the ratio in the last year apart from that there is good amount of consistence observed. The ratio is highest at 52.38 (2003-04) and lowest at 44.09 (1999-2000) with an average of 47.46 which is a very impressive and much better than the overall average of 38.75 for the same study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Gross Profit to Sales Ratio among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Gross Profit to Sales Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of Gross Profit to Sales between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Gross Profit to Sales between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of Gross Profit to Sales between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Gross Profit to Sales between different years during the study period in each company under study is not same."

In the following Table 5.1(a) the calculation of F Test (ANOVA) is shown of Gross Profit to Sales ratio for the Pharmaceutical Companies under study, during the study period.

Table : 5.1(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	7225.7978	1032.256829	24.20289293
Between Years	7	1242.027425	177.4324893	4.160185161
Error	49	2089.856975	42.65014235	
Total	63	10557.6822		

The above Table 5.1(a) shows the F value of 24.20 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a

significant difference among the different companies under study in the ratio of Gross Profit to Sales. F value of 4.16 at 5% level of significance and at (7,49) degree of freedom is also greater than the Table value of 2.16 hence null hypothesis is rejected and alternate hypothesis is accepted, which means that there is a significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that there is a significant difference in the Gross Profit to Sales Ratio among different companies under study and there is a significant difference in the Gross Profit to Sales ratio between different years of each company.

3. Calculation of Operating Profit Margin for sample units

Among the various measures of profitability, this ratio has got its own importance. Operating profit margin is calculated in order to find the operating efficiency of the company. When total operating costs are deducted from total operating or business income the result is Operating Profit or Operating Loss. The name itself suggests that the result which is obtained from the operations of the business is the Operating Profit Margin. In this study we have tried to calculate the Operating Profit Margin by adjusting all the operating expenses against operating income.

The expenses that are adjusted to gross profit margin are Employees Cost, which includes Salaries, Wages, Bonus, Contribution to funds, Staff welfare expenses, VRS compensation, Gratuity and other employee costs. Second expense head that has been

adjusted to find out operating profit is Selling and Administrative Expenses, which includes Insurance Expenses, Advertisement Expenses, Marketing Expenses, Distribution Expenses, Legal Expenses, Selling Expenses, Communication Expenses, Travel Expenses, Audit Expenses, Printing and stationery, Technical fees and other administrative expenses.

$$\text{Operating Profit Margin Ratio} = \frac{\text{Operating profit}}{\text{Sales}}$$

Table : 5.2:

Operating Profit to Sales Ratio in Pharmaceutical Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co.	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	13.41	13.77	14	10.21	8.25	13.7	15.28	7.95
Cadila	14.32	16.13	16.3	15.91	15.58	14.85	12.1	12.64
Cipla	23.29	22.51	20.32	20.24	20.68	18.08	16.4	17.56
Dr. Reddy	22.74	21	20.79	23.49	35.05	26.99	17.42	7.18
IPCA	8.51	9.32	9.91	7.78	12.73	14.65	14.61	14.32
Matrix	6.51	7.05	-8.65	0.53	9.39	30.58	30.04	23.91
N.Piramal	17.18	19	15.87	16.94	15.61	16.22	15.58	10.74
Sun	21.1	20.58	22.08	23.79	25.66	29.37	29.57	26.1

Source: Annual Reports of Companies from the year 1997-98 to 2004-05

Aurobindo Pharma is showing a fluctuating trend of Operating Profit Margin Ratio for the study period. It lies between 15.28(2003-04) and 7.95(2004-05) with an average of 12.07 which is very low compared to overall average of 16.64 for the same study

period. The company could never get stability as far as its operating profit margin is concerned and this should be of serious concerns to all the stakeholders.

Cadila Healthcare is showing a mixed trend for the operating profit margin in the study period. As there is a positive trend observed in the initial years for three years and then there is a continuously downtrend observed for the rest of the years. The highest is 16.30 (1999-2000) and lowest is 12.1 (2003-04) with an average of 14.73 which is lower than overall average of 16.64.

Cipla Ltd. is very consistent for the initial five years but the last three years were not equally good for the company as the operating profit margin started to decline in the last three years. Although the decrease is not too sharp but it can damage the average of the company. The ratio lies between 23.29 (1997-98) and 16.4 (2003-04) with an average of 19.89 which is better than the overall average of 16.64 but company need to rectify its declining trend and then it can continue its success story.

Dr. Reddy's Laboratories has shown a mixed trend but the latter years proved to be worst for the company. The margins were best in the year 2001-02 35.05 but after that a serious fall has been observed which was as low as 7.18(2004-05) and hence the average works out to be 21.83 which is although better than overall average of 16.64 but the figures are not that reliable. Company needs to improve a lot on its operating margins.

IPCA Labs. is showing a mixed increasing trend in the study period. The best part is the stability of its operating margins in the latter part of the period. The margins lie between 14.65 (2002-03) and 7.78(2000-01) with an average of 11.48 which is lower

than overall average of 16.64 but if IPCA continues its success story than it can do wonders for all the stakeholders.

Matrix Laboratories Ltd. has again a sad story to narrate especially with a loss in the study period but after that it has tried to recover a lot in the last five years and improved its operating margins to a great extent. Its eight year low is -8.65(1999-2000) and high is 30.58(2002-03) with an average of 12.42 which is lower than the overall average of 16.64 for the same study period. Rather than the average the fluctuations in the initial period can be of serious concerns. But there is a ray of hope if company continues with its positive trend in the coming years.

Nicholas Piramal is showing a fluctuating trend for the operating margins in the study period. It lies between 17.18(97-98) and 10.74(2004-05) with an average of 15.89 which is not much lower than overall average of 16.64 but the fluctuations can make it an unstable company as far as operating margins are concerned.

Sun Pharmaceuticals a very fine consistent and positive trend for the study period. Except a decline in the last year it has shown either positive or constant trend. It lies between 29.57(2003-04) and 20.58(1998-99) with an average of 24.78 which is far better than the overall average of 16.64 by any means. The company can do wonders if it continues its increasing trend of its operating profit margin ratio.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of operating profit to sales ratio among different pharmaceutical companies under study during the study period and for establishing relationship in the ratio of operating profit to sales ratio among different

years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of operating profit to sales between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of operating profit to sales between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of operating profit to sales between different years during the study period in each company under study is same"

Alternate Hypothesis (H_1):- "The ratio of operating profit to sales between different years during the study period in each company under study is not same."

In the following Table 5.2(a) the calculation of F Test (ANOVA) is shown of Operating Profit to Sales ratio for the Pharmaceutical Companies under study, during the study period.

Table : 5.2(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	1386.43145	198.0616357	5.160853458
Between Years	7	289.832625	41.40466071	1.078873178
Error	49	1880.506825	38.37769031	
Total	63	3556.7709		

The above Table 5.2(a) shows the F value of 5.16 at 5% level of significance and at (7,49) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that among the different companies under study the ratio of operating profit to sales are not same. F value of 1.07 at 5% level of significance and at (7,49) degree of freedom is smaller than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that different years' ratios for all the individual companies are same.

Hence it can be concluded that the operating profit to sales ratio among different companies under study are not same but the operating profit to sales ratio between different years of each company is same.

4. Calculation of Net Profit Margin of sample units

The final step of profit is the calculation of net profit margin. gross profit was the profit in sales after deducting manufacturing cost of goods sold, whereas the operating profit is the profit after deducting the employees cost, administrative overheads and selling overheads from the gross profit. Finally the Net Profit margin is arrived after the gross profit margin and operating profit margin. Net Profit is arrived at after making adjustments on both the sides, i.e. income as well as expenses side. All other income except the operating income and all other expenses other than operating expenses including depreciation are adjusted to arrive at the final profit which we refer to as Net Profit.

The profit margin tells how much profit a company makes for every Re. 1 it generates in revenue. Profit margins vary by industry, but all else being equal, the higher a company's profit margin compared to its competitors, the better.

Net profit is one of the most important indicators of a company's efficiency and ability. A high net profit margin will lead to higher payments to the shareholders and thus increasing the shareholders' wealth. High net profits also mean the company and its products are accepted by the society at large and it could continue its endeavour in serving the society.

Profit is the reward for the efficiency of the management in doing the financial activity. A profit earning business enterprise has the resources and funds to make efforts in the direction of improving the products and services and provide better products and services to the society.

Net Profit Margin Ratio = $\dfrac{\text{Net Profit}}{\text{Sales}}$ X 100

Just like the gross profit margins, the net profit margins also vary from business to business and from industry to industry.

Table : 5.3 :

Net Profit to Sales Ratio in Pharmaceutical Companies under Study [in percentage]

Period: 1997-98 to 2004-05

Co.	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	8.09	9.12	10.07	7.08	6.04	7.93	9.53	3.05
Cadila	5.55	8.76	7.95	12.91	11.64	8.31	13.51	12.54
Cipla	19.78	18.53	17.35	16.65	16.53	15.45	15.72	15.44
Dr. Reddy	16.63	12.21	12.27	14.76	29.53	24.53	16.61	3.9
IPCA	6.87	7.36	7.23	5.33	7.82	12.22	12.27	10.79
Matrix	0.55	1.03	-19.01	6.91	4.38	18.21	22.6	19.42
N.Piramal	8.54	9.86	10.74	12.02	8.03	14.62	14.55	7.22
Sun	19.91	16.5	17.48	22.05	23.15	26.43	23.44	23.73

Source: Annual Reports of Companies from the year 1997-98 to 2004-05

The most important profit margin ratio of net profit margin can be considered as the most important indicator of the profitability of any company. Hence this ratio holds much more importance in this study as it focuses basically on the profitability analysis of the selected pharmaceutical companies for the study period.

Aurobindo Pharma is showing a fluctuating trend in the net profit margin ratio for the study period. It lies between 10.07(1999-2000) and 3.05(2004-05) with an average of 7.61 which is lower than the overall average 12.35 for all the selected companies for the same study period. For the initial three years the company has showed an increasing trend but then there was a fluctuating trend ending at the eight year low of 3.05 in the last year of the study period.

Cadila Healthcare is showing a mixed trend of increasing and little fluctuating in between years. It lies between 13.51(2003-04) and 5.55(97-98) with an average of 10.15 which is lower than the overall average of 12.35 for the same study period. But the positive about the story of Cadila Healthcare is the positive trend in the last three years observed.

Cipla Ltd. is showing a clear declining trend in this net profit margin. Although a very fine Profit margin but the declining nature makes its lesser attractive. It lies between 19.78(97-98) and 15.44(2004-05) with an average of 16.93 which is far better than the overall average of 12.35 for the same study period. The declining trend of the net profit margin ratio can be of serious concerns.

Dr. Reddy's Laboratories Ltd. is showing a tremendous fluctuating trend in the study period. The margins were stable in the initial years of the study period and improved in the middle part but declined and declined drastically 77% in the last year of the study period. It lies in between 29.53(2001-02) and 3.9 (2004-05) with an average of 16.31 which is better than overall average of 12.35 for the same study period. The sudden decrease in the net profit margin in the last year can be attributed to the decline in sales by 7% and increase in expenses like interest expenses increased by 200%,

miscellaneous expenses increased by 80%, selling and administration expenses increased by 14% and interestingly raw material cost decreased by 5%.

IPCA is showing a mixed trend of fluctuation and increasing trend of net profit margin in the study period. It lies between 12.27 (2003-04) and 5.33(2000-01) with an average of 8.74 which is very low compared to the overall average 12.35 for the same study period. There has been a positive increasing trend observed from the period 2001-02 to 2003-04 but the last year showed a decline which ended the positive trend. If company can work out properly and continue its positive trend it can definitely improve its margins in the coming times.

Matrix Laboratories is showing a very high fluctuating trend in the net profit margin ratio with a loss in one of the year in the study period. It lies between 22.6(2003-04) and   -19.01(1999-2000) with an average of 6.76 which is almost 50% lesser than the overall average of 12.35 for the same period.

Nicholas Piramal has shown a clear positive trend except in two years 2001-02 and 2004-05 where it declined. It lies between 14.62(2002-03) and 7.22(2004-05) with an average of 10.70 which is lower than overall average of 12.35 for the same period. There is a 50% decline observed in the net profit margin in the last year making it more un-stable in the study period.

Sun Pharmaceuticals has shown a positive trend in the study period except in two year 1998-99 and 2003-04. It lies between 26.43(2002-03) and 16.5(98-99) with an average of 21.59 which is very high compared to the overall average of 12.35 for the same study period. The company has very fine consistency in the net profit margin compared to other companies in the study period which shows that it has fairly good

control over its cost and given no major fluctuations in the prices it can maintain its profit margin pretty consistently.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of net profit to sales ratio among different pharmaceutical companies under study during the study period and for establishing relationship in the ratio of net profit to sales ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of net profit to sales between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of net profit to sales between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of net profit to sales between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of net profit to sales between different years during the study period in each company under study is not same."

In the following Table 5.3(a) the calculation of F Test (ANOVA) is shown of Net Profit to Sales ratio for the Pharmaceutical Companies under study, during the study period.

Table : 5.3(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between companies	7	1570.006219	224.2866027	6.920023522
Between Years	7	423.5678938	60.50969911	1.866935145
Error	49	1588.151181	32.4112486	-
Total	63	3581.725294		-

The above Table 5.3(a) shows the F value of 6.92 at 5% level of significance and at (7,49) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of Net Profit to Sales.

F value of 1.86 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that there is no significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that the net profit to sales ratio among different companies under study is not same but the net profit to sales ratio between different years of each company is same.

5. Conclusion of Statistical Analysis

From the above calculation of profit to sales ratio there can be some general conclusions drawn from the statistical analysis. From the study of three individual profits to sales ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

- The gross profit to sales ratio among companies is not same and the gross profit to sales ratio between different years of each individual company under study for the study period is also not showing any common trend.

- The operating profit to sales ratio among companies is not same but the operating profit to sales ratio between different years of each individual company under study for the study period is showing the similar trend.

- The net profit to sales ratio among companies is not same but the net profit to sales ratio between different years of each individual company under study for the study period is showing the similar trend.

Reference

1. Gupta R.L.& M.Radhaswamy, "Advanced Accountancy",New Delhi,Sultan Chand&   Sons.,1993

2. Wixon Rufus, "Accountants Handbook" Harper, Ronald Press, New York, 1987

3. Kuchhal S. C., "Financial Management" Chaitanya Publishing House, Allahabad

4. Aggarwal N.P. "Analysis of Financial Statements" National Publishing House, New Delhi 1981

5. Dalton, D.R., Daily, C.M. Certo, S.T., & Roengpitya, R. 2003. Meta-analyses of financial performance and equity: Fusion or confusion? Academy of Management Journal, 46: 13-26.

6. Fox, M.A., & Hamilton, R. 1994. Ownership and diversification: Agency theory or stewardship theory. Journal of Management Studies, 31:69-81.

7. Ghoshal, S., & Moran, P. 1996. Bad for practice: A critique of the transaction cost theory. Academy of Management Review, 21: 13-47.

8. Jensen. M.C. & Meckling. W.Y. 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure. Journal of Financial Economics 3: 305-360.

Chapter 6

ASSETS TURNOVER

Contents

1. Introduction

Profit has always remained the topic of the business discussions because of its major utility as an effective measure of efficiency of managers and the measure of effective utilization of resources. The latter refers to the use of assets employed in the business for the business and the rate of conversion of investment into income.

In the preceding chapter, i.e. chapter 5 we have discussed the utility and importance of Return on Investment as a tool to measure the profitability. ROI consists of two factors (i) the profit margin and (ii) the assets turnover. In the preceding chapter we have already discussed the profit margin and its effects on profitability, in this chapter we will discuss the second part i.e. the assets turnover and its impact on profitability.

2. Asset Turnover

Asset Turnover is the percentage of sales to capital employed, in other words Asset turnover refer to the percentage of investment got converted to sales. ROI is the factor of Profit margin and the Asset Turnover. Profit margin shows the operational efficiency while the Asset turnover represents productivity. By productivity we mean the conversion of input into output, here it means conversion of assets into sales. As success of any business unit can be measured by increase in profit and profit can only increase if the sales volume increases hence calculation of productivity is an important part of calculating the profitability of any company.

Whenever there is a change in the ROI of any company it may be attributable to either volumes or margins. Either the profitability is increased or decreased due to increased

or decreased margins or due to increased or decreased volumes. Different types of profit margin and their calculation we have studied in the chapter of profit margin. In this chapter we would like to emphasize on the second part i.e. Volumes.

The response of volume of sale to the capital employed is basically what we mean as Asset turnover ratio.

$$\text{Asset Turnover} = \frac{\text{Sales}}{\text{Capital Employed}}$$

Hence the second part of ROI is the asset turnover or in other words we can say that apart from the operating profit margin whatever factor which affects the ROI refers the asset turnover, i.e. Productivity. Turnover ratios which are also referred as activity ratios, shows the relationship between sales and the assets and judges the effective utilization of asset. In an analysis of profitability to reason the decreased productivity various further ratios can be calculated.

3. Assets Turnover Ratios

Assets turnover is calculated by dividing sales by capital employed. Now further analysis of assets turnover can be done by classifying the assets into different other categories. Total assets are made up of two types of assets on the basis of its nature, i.e. fixed assets and current assets. Once again current assets consists items like Debtors, Cash, Inventory, etc. Another major classification can be done of the total assets from the view point of its type, i.e. operating assets and non-operating assets. We shall discuss each of the above turnover ratios and calculate the same for all the selected companies under study.

4. Calculation of Total Assets Turnover Ratio of sample units

This ratio indicates the amount of sales generated from the use of total assets employed in the business. This ratio shows the overall picture of productivity in terms of revenue. Any profitability analysis would not be complete without making a total assets turnover ratio analysis. A high asset turnover ratio indicates efficient management and thus higher the ratio more efficient is the operation in the terms of conversion of total assets into sales or income. One more important area of importance here is the proportion of fixed as well as the non-fixed asset in the total assets. As such this ratio tries to evaluate the amount of sales with reference to the total assets, in order to make a detailed analysis of the exact impact of asset on revenue generation; we need to study the fixed asset turnover ratio as well as the current asset turnover ratio. Total Assets Turnover ratio can be calculated as under:

$$\text{Total Assets Turnover} = \frac{\text{Net Sales}}{\text{Total Assets}}$$

Table : 6.1:

Table Showing Total Assets Turnover Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in Crores]

Company	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
AurobindoSales	295.31	550.03	739.9	972.52	1007.96	1180.33	1334.83	1153.43
Total Assets	140.91	235.69	360.62	502.32	708.63	1058.86	1374.77	1617.71
Turnover(times)	2.10	2.33	2.05	1.94	1.42	1.11	0.97	0.71
Cadila - Sales	303.58	358.4	475.7	502.3	581.7	1005.2	1116	1125.3
Total Assets	145.85	228.3	737.44	596.7	818.4	904.1	945.2	985.9
Turnover(times)	2.08	1.57	0.65	0.84	0.71	1.11	1.18	1.14
Cipla - Sales	514.43	617.16	759.75	1047.51	1385.84	1549.79	1974.63	2327.63
Total Assets	382.92	496.02	595.09	748.69	924.03	1164.86	1474.63	1748.67
Turnover(times)	1.34	1.24	1.28	1.40	1.50	1.33	1.34	1.33
DrReddy- Sales	331.62	425.86	493.02	984.11	1557.78	1598.32	1740.2	1625.08
Total Assets	401.74	494.86	609.82	928.63	1471.81	1835.68	2105.24	2347.32
Turnover(times)	0.83	0.86	0.81	1.06	1.06	0.87	0.83	0.69
IPCA - Sales	282.74	335.66	363.31	385.38	444.18	506.51	649.32	721.74
Total Assets	228.11	252.61	272.25	334.63	301.61	342.09	430.33	558.33
Turnover(times)	1.24	1.33	1.33	1.15	1.47	1.48	1.51	1.29
Matrix - Sales	27.51	40.73	45.19	60.78	102.18	416.93	556.86	671.69
Total Assets	21.53	29.61	22.77	27.07	40.49	232.24	385.69	669.42
Turnover(times)	1.28	1.38	1.98	2.25	2.52	1.80	1.44	1.00
N.Piram.-Sales	534.64	429.99	486.48	566.76	946.48	1136.13	1434.66	1384.68
Total Assets	673.6	425.16	480.04	517.06	621.47	663.13	781.3	899.78
Turnover(times)	0.79	1.01	1.01	1.10	1.52	1.71	1.84	1.54
Sun - Sales	279.77	358.11	478.35	613.78	753.1	864.65	998.16	1263.86
Total Assets	263.12	383.38	412.86	501.04	535.79	705.46	1171.82	2920.1
Turnover(times)	1.06	0.93	1.16	1.23	1.41	1.23	0.85	0.43

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Table 6.1 provides information about Total Assets Turnover Ratio(TATR). This ratio implies the amount of sales generated by the use of total assets. In other words, how much sales revenue company could generate by using total assets. The ratio has been calculated for the study period from 1997-98 to 2004-05.

TATR of Aurobindo Pharma shows a continuous downward trend. The TATR varies from 2.33 (in the year 1998-99) to 0.71 (in the year 2004-05) with an average of 1.58. The overall average of TATR for all the companies under study for the same study period is worked out at 1.30. Hence although a continuous down trend but the average TATR of Aurobindo Pharma is better than the industry average for the same period.

Sales of Aurobindo Pharma during the study period has shown a steady increasing trend , but the investment was much more than the increase in sales, hence the increase in sales has been offset by higher increase in investment which resulted ultimately in declining TATR. Even sales shown a decline in the last year of the study hence the TATR came to the 8 year low value.

TATR of Cadila Healthcare shows a mixed trend in the ratio. There is no specific movement in this company. TATR varies from 2.08 (1997-98) to 0.65(1999-2000) with an average of 1.16. It is interesting to note that its average for the study period i.e. 1.16 is closer to the least value 0.65 (1999-2000). The highest value is much higher in the base year if it is compared with all the other years of the study period. The highest TATR of the base year is not able to uplift overall average of the company for the study period and ultimately average TATR of Cadila is 1.16 which is lower than the average TATR of the selected eight companies which is 1.30.

Cipla Ltd. is showing quiet an impressive trend for the TATR as although there is no particular trend of this ratio in the study period but the ratio is quiet consistent. This shows the equal weightage of increase in investments along with increase in sales. The value of TATR for all the years is very close to the average of 1.35. Although it varies

from 1.50 (2001-02) to 1.24 (1998-99) but the variation is quiet normal looking to the time period of eight years. This is an indicator of highest level of efficiency of the company to maintain the same rate of revenue even at increased investments. The shareholders can be rest assured for the returns as the company has the habit of earning uniform rate of revenues on its total investments.

Dr. Reddy's Laboratories Ltd. is also fairly consistent on TATR. Except the extra fall in the ratio in the last year of period (2004-05) the ratio is around and above the average 0.88. TATR varies from 1.06 in (2000-01, 2001-02) to 0.69 in the last year. Although the average for the study period 0.88 is quite lower than the overall average of 1.30 but there is not doubt in the consistent performance of the company as far as generating revenues are concerned. It is interesting to note that the sales almost doubled in the year 2000-01 compared to its previous year and that made the TATR to reach to its eight year high of 1.06 , the company maintained the ratio for the next year but could not cope up to increase the sales with the increase in assets and TATR showed a significant decline in the year 2002-03 to 0.87. Since then it has shown a declining trend.

IPCA Laboratories Ltd. has shown a positive growth in the study period in TATR. Fairly consistent in the first three years of the study period but could not continue the momentum in the year 2000-01 and showed a eight year low TATR of 1.15 due to increased investment in that year. After that year the company has toiled hard to improve the figures of TATR with constant positive growth story again by reaching at eight year high of 1.51 but the last year 2004-05 was not that good for IPCA as well.

TATR of IPCA varies from 1.51 (2003-04) to 1.15 (2000-01) with an average of 1.35 which is very close to the overall average of 1.30.

Matrix Laboratories had all the great going for the first five years with a continuous increase in TATR but the smooth ride was not continued due to some short fall of revenues compared to huge investments in the year 2002-03. The heavy investments did not turn out to be very profitable for the company as after that year of huge investments the company has shown a constant downfall in the TATR, which shows that company could not meet its own expectations. Its like the entire study period can be divided into two parts: One before huge investments with a continuous increasing trend of TATR and second of from the year of heavy investments which showed a constant decline in the TATR. The TATR of Matrix Laboratories varies from 2.52 (2001-02) to 1.00 (2004-05). Again the lowest TATR is recorded in the last year of the study period. The average TATR of this company 1.71 is higher than that of the overall average of 1.30 but seems to go down in the couple of years if proper steps are not taken!

Nicholas Piramal has got a very clear increasing trend of TATR from the start of the study period until the year 2003-04 but like some of the other companies of the study it could not continue this increasing trend in the last year of the period and showed a little decline in the last year i.e. 2004-05. TATR for Nicholas Piramal varies from 1.84 (2003-04) to 0.79 (1997-98) with an average of 1.32 which is very close to the overall average of 1.30.

Sun Pharmaceutical Ltd has got a story which is almost similar to that of Matrix Laboratories. Starting from the first year of the study period it has shown a relatively increasing trend of TATR but in the year 2002-03 it could not increase its revenue in

response to the increased investments. Although the investments were not too huge like that of Matrix and hence the fall is also lesser but has happened in the same time period. And once again Sun has joined the club of least in the last year, as the least TATR is observed in the last year 2004-05. The TATR varies from 1.41 (2001-02) to 0.43 (2004-05) with an average of 1.04 which is lower than 1.30 overall averages.

Out of eight companies four companies has more or less similar trend of positive growth from 1997-98 to 2001-02 and then sudden start of downtrend of TATR from 2002-03 and therefore it is reflected in the overall TATR of all the selected companies. The increasing trend ended at the eight year high of 1.45 (2001-02) and the decreasing trend brought the ratio to the bottom i.e. 1.02 in the last year of the study. The overall average is 1.30 which is lower than average of five companies and higher than three companies under study.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Total Assets Turnover among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Total Assets Turnover among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of Total Assets Turnover between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Total Assets Turnover between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Total Assets Turnover between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Total Assets Turnover between different years during the study period in each company under study is not same."

In the following Table 6.1(a) the calculation of F Test (ANOVA) is shown of Total Assets Turnover ratio for the Pharmaceutical Companies under study, during the study period.

Table : 6.1(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	4.136569811	0.590938544	4.108889818
Between Years	7	0.912766224	0.130395175	0.906658419
Error	49	7.047156279	0.143819516	
Total	63	12.09649231		

The above Table 6.1(a) shows the F value of 4.10 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of Total Assets Turnover . F value of 0.9 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that different years' ratios for all the individual companies are same.

Hence it can be concluded that the Total Assets Turnover Ratio among different companies under study are not same but the Total Assets Turnover ratio between different years of each company is same.

5. Calculation of Fixed Assets Turnover Ratio of sample units

The earlier ratio was a total ratio which measures the sales generated compared to the total investment made in fixed as well as non-fixed assets. While Fixed Assets Turnover ratio compares the sales with only the fixed assets. This ratio is much important in the sense that the major portion of investment is normally in the fixed part of the assets. And from Fixed Assets Turnover ratio only we can identify the effect of fixed assets on the total income. As such earlier ratio failed to quantify the positive or negative effect of fixed assets on the sales, this ratio clearly makes a distinction between the fixed assets and non-fixed assets in terms of their contribution towards income. More specific relationship can be established between the investment

and return from this ratio with regard to the fixed assets. Fixed assets turnover ratio can be calculated as under:

$$\text{Fixed Assets Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}}$$

One important consideration in this regard is the stage of asset in the books of the company or the age of assets with the company. Here while calculating the ratio the fixed assets are taken after deducting depreciation and hence if the firm has more of old assets a the firm will have a higher fixed assets turnover ratio compared to the firm having comparatively newer assets and thus less depreciated. Hence this ratio cannot be blindly used for making the comparison between the two firms, but should be carefully analysed.

Along with the Net Block, Capital Work-in-progress is also added to make the total fixed assets. Hence in the present study total fixed assets are taken as the sum of these two items. A high fixed assets turnover ratio reflects a positive situation wherein the fixed assets are efficiently utilized to generate revenue. In the situation of expansion of business this ratio can be quite effective as well as in the situation of decreasing revenue this ratio can provide a useful guideline for making effective decision

Table: 6.2:

Table Showing Fixed Assets Turnover Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05   [All amounts = Rs. in

Crores]

Company	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo-Sales	295.31	550.03	739.9	972.52	1007.96	1180.33	1334.83	1153.43
Fixed Assets	54.68	90.7	133.9	171.46	226.03	413.77	584.6	771.28
Turnover(times)	5.40	6.06	5.53	5.67	4.46	2.85	2.28	1.50
Cadila - Sales	303.58	358.4	475.7	502.3	581.7	1005.2	1116	1125.3
Fixed Assets	61.79	142.08	254.75	263.27	382.6	682.9	689.2	718.4
Turnover(times)	4.91	2.52	1.87	1.91	1.52	1.47	1.62	1.57
Cipla - Sales	514.43	617.16	759.75	1047.51	1385.84	1549.79	1974.63	2327.63
Fixed Assets	122.49	144.89	161.75	188.12	299.43	399.88	603.57	844.87
Turnover(times)	4.20	4.26	4.70	5.57	4.63	3.88	3.27	2.76
DrReddy- Sales	331.62	425.86	493.02	984.11	1557.78	1598.32	1740.2	1625.08
Fixed Assets	116.5	179.77	191.31	331.01	395.96	447.17	563.35	622.67
Turnover(times)	2.85	2.37	2.58	2.97	3.93	3.57	3.09	2.61
IPCA - Sales	282.74	335.66	363.31	385.38	444.18	506.51	649.32	721.74
Fixed Assets	104.12	117.81	135.14	154.85	143.27	149.88	195.91	322.46
Turnover(times)	2.72	2.85	2.69	2.49	3.10	3.38	3.31	2.24
Matrix - Sales	27.51	40.73	45.19	60.78	102.18	416.93	556.86	671.69
Fixed Assets	7.49	12.18	12.16	12.16	28.37	151.06	266.99	371.11
Turnover(times)	3.67	3.34	3.72	5.00	3.60	2.76	2.09	1.81
N.Piram.-Sales	534.64	429.99	486.48	566.76	946.48	1136.13	1434.66	1384.68
Fixed Assets	475.09	164.81	213.85	227.61	296.53	315.39	530.06	687.93
Turnover(times)	1.13	2.61	2.27	2.49	3.19	3.60	2.71	2.01
Sun - Sales	279.77	358.11	478.35	613.78	753.1	864.65	998.16	1263.86
Fixed Assets	110.5	164.73	182.91	205.46	249	301.71	393.26	487.09
Turnover(times)	2.53	2.17	2.62	2.99	3.02	2.87	2.54	2.59

Aurobindo Pharmaceuticals has shown a positive trend for its Fixed assets turnover

ratio (FATR) in the initial years but declined quite sharply in the latter stage of the

period. As in the year 2002-03 there was inclusion of new fixed assets of 200 crore

rupees but it could not be utilized for generating sales and sales increased by mere 180

Crores thus could not continue with the ratio of 4 and above and hence it went down

to 2.85. After this year it went on to decrease more and ended at the eight year low in

the last year at 1.50 raising questions on the efficiency of the company with regard to utilization of its main assets – fixed assets. FATR lies between 6.06(98-99) and 1.50(2004-05) with an average of 4.22 which is interestingly higher than the overall average of 3.10 which indicates that the initial higher FATR for the company helped the company to have a higher average.

After showing a reasonable performance in the earlier stage of study period the FATR of Cadila Healthcare declined. The FATR for the company lies in between 4.91 (1997-98) and 1.47(2002-03) with an average of 2.17 which is lower than the overall average of 3.10. There is no particular trend visible for the study period in this company. It can be termed as a mixed trend with many ups and downs. But overall cannot be termed as very efficient as far as utilization of fixed assets is concerned. One relative fine performance is observed in the year 2002-03 wherein company increased its fixed assets by 300 crores and managed to maintain its earlier ratio of 1.5, but there is ample scope available for the company to improve its fixed capacity utilization.

Cipla Ltd. is showing two trends in the entire study period. In the initial four years there is clear increasing trend and last four years are showing continuous declining trend. This trend is observed in other ratios as well for the same company. The highest FATR 5.57

is observed in 2000-01 after that there is constant decline till the last year which is having the lowest FATR of 2.76. The average is 4.16 which is still much better than overall average of 3.10. This decline can cause a serious damage to the company if it is not rectified; even there are chances to decline further.

There are no particular trends visible in the FATR of Dr. Reddy's Laboratories Ltd. for the study period. The FATR lies between 3.93(2001-02) and 2.37(98-99) with an average of 3.00 which is close to overall average of 3.10. There is a constant increasing trend in the investment in the fixed assets and similar trend is observed in the sales trend except in the last year in spite of increase in the fixed assets the sales could not increase and decreased by 6.5%. And the year 2001-02 show a sharp increase in the sales by as high as 58% responding to mere 19% increase in the fixed assets. That was the year wherein the FATR was highest for the company in the study period.

There is an almost increasing trend observed in the FATR for the IPCA Labs for the study period. The FATR lies between 3.38(2002-03) and 2.24(2004-05) with an average of 2.85 which is lower than the overall average of 3.10 for the study period. There is a constant increasing trend observed in the fixed assets as well as sales figures of the company for the study period. For the year 2001-02 the company's efficiency was highest when the decrease in fixed assets was also not able to stop the growth the increase in sales of the company. And the next year also showed a sharp increase in the sales with a slight increase in fixed assets.

Matrix Labs is also showing two trends for FATR in the study period. For the first four years it showed a positive trend which ended with a eight hear high at 5.00 but after that there was a constant negative trend observed which ended at the eight year low at 1.81. The negative trend started with the additional heavy investments done in the year 2002-03 of Rs. 125 crores more, this sudden major investment was not utilized and it resulted in negative trend implying company could not tackle the

increased capacity and increased scale of business. The average FATR for the company is 3.25 which is slightly higher than the overall average 3.10.

Nicholas Piramal is showing a mixed trend of FATR for the study period as there are no particular trends observed but a relatively increasing trend in the initial period and decreasing trend is observed in the latter stage of the study period. The FATR for the company lies between 3.19(2001-02) and 1.13(97-98) with an average of 2.50 which is quite low than the overall average of 3.10. The fixed assets were decreased in the second year after that there is a constant increase in the fixed assets with corresponding increase in sales.

Sun Pharmaceuticals Ltd. is showing a mixed trend in the FATR for the study period. There is no particular trend observed for the FATR. It lies in between 3.02(2001-02) and 2.17(98-99) with an average of 2.67 which is lower compared to the overall average of 3.10. There is a constant increase in the trend of fixed assets as well as sales observed in the study period with no major fluctuations. The company can be considered as consistent in utilizing its fixed assets with a fairly uniform rate.

Overall FATR for all the selected pharmaceutical companies under study has shown a pretty consistent trend with the highest 3.64 in the year 2000-01 and lowest 2.14 in the year 2004-05 with the average of 3.10. The overall performance can be considered as normal with Aurobindo and Cipla emerging out as better utilizers of Fixed Assets and Cadila not much efficient in the same.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Fixed Assets Turnover among different Pharmaceutical companies under study during the study period and for establishing

relationship in the ratio of Fixed Assets Turnover among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of Fixed Assets Turnover between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Fixed Assets Turnover between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Fixed Assets Turnover between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Fixed Assets Turnover between different years during the study period in each company under study is not same."

In the following Table 6.2(a) the calculation of F Test (ANOVA) is shown of Fixed Assets Turnover ratio for the Pharmaceutical Companies under study, during the study period.

Table : 6.2(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	30.96604764	4.423721091	5.788066272
Between Years	7	13.80046692	1.971495275	2.579535435
Error	49	37.44987069	0.764283075	
Total	63	82.21638525		

The above Table 6.2(a) shows the F value of 5.79 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that the ratio of fixed assets turnover among different companies under the study is not same. F value of 2.58 at 5% level of significance and at (7,49) degree of freedom is greater than the Table value of 2.16 hence null hypothesis is rejected and alternate hypothesis is accepted, which means that different years' ratios for all the individual companies are not same.

Hence it can be concluded that there is a the Fixed Assets Turnover Ratio among different companies under study is not same and the Fixed Assets Turnover ratio between different years of each company is also not same.

6. Calculation of Current Assets Turnover Ratio of sample units

Any study of figures mainly tries to find out the relationship between two related variables. Similarly here also our effort is to establish a relationship between two variables in order to establish some relationship between the two variables. Current assets turnover ratio is the ratio of sales to current assets, in other words how much sales has been generated compared to the current assets or the non-fixed assets. Current Assets refers to those assets which can be converted into cash within an accounting year and include Cash Balance, Bank Balance, Loans and Advances, Sundry Debtors (accounts receivables or book debts), Bills Receivables and Inventory.

If there are situation of increased sales or the times of decreased sales and the financial analyst tries to locate the reasons for the same in the investment pattern and the changes in it, in that case this ratio would be very useful. As such this ratio gives a specific idea regarding the impact of current assets on sales or the amount of sales that could have been generated by employing the amount of current assets. This ratio is the indicator of utilization of current assets; higher the ratio better is the utilization done of the current assets of the firm.

$$\text{Current Assets Turnover} = \frac{\text{Sales}}{\text{Current Assets}}$$

Table : 6.3:

Table Showing Current Assets Turnover Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in

Crores]

Company	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
AurobindoSales	295.31	550.03	739.9	972.52	1007.96	1180.33	1334.83	1153.43
Current Assets	140.55	252.84	312.23	444.01	585.9	756.89	903.72	992.28
Turnover(times)	2.10	2.18	2.37	2.19	1.72	1.56	1.48	1.16
Cadila - Sales	303.58	358.4	475.7	502.3	581.7	1005.2	1116	1125.3
CurrentAssets	126.44	135.28	570.8	252.19	396.8	404	433.5	466.3
Turnover(times)	2.40	2.65	0.83	1.99	1.47	2.49	2.57	2.41
Cipla - Sales	514.43	617.16	759.75	1047.51	1385.84	1549.79	1974.63	2327.63
CurrentAssets	352.89	389.74	473.61	633.96	970.55	1291.1	1436.23	1752.89
Turnover(times)	1.46	1.58	1.60	1.65	1.43	1.20	1.37	1.33
DrReddy- Sales	331.62	425.86	493.02	984.11	1557.78	1598.32	1740.2	1625.08
CurrentAssets	248.54	291.68	291.44	561.83	1256.04	1547.78	1321.63	1828.37
Turnover(times)	1.33	1.46	1.69	1.75	1.24	1.03	1.32	0.89
IPCA - Sales	282.74	335.66	363.31	385.38	444.18	506.51	649.32	721.74
CurrentAssets	159.66	175.42	178.28	223.86	248.6	275.76	348.57	365.01
Turnover(times)	1.77	1.91	2.04	1.72	1.79	1.84	1.86	1.98
Matrix - Sales	27.51	40.73	45.19	60.78	102.18	416.93	556.86	671.69
CurrentAssets	16.24	24.84	21.96	27.12	39.36	169.88	281.58	442.59
Turnover(times)	1.69	1.64	2.06	2.24	2.60	2.45	1.98	1.52
N.Piram.-Sales	534.64	429.99	486.48	566.76	946.48	1136.13	1434.66	1384.68
CurrentAssets	304.72	255.48	268.94	336.63	443.42	535.45	530.06	550.09
Turnover(times)	1.75	1.68	1.81	1.68	2.13	2.12	2.71	2.52
Sun - Sales	279.77	358.11	478.35	613.78	753.1	864.65	998.16	1263.86
CurrentAssets	154.91	225.26	248.19	324.02	325.88	486.92	480.63	1754.53
Turnover(times)	1.81	1.59	1.93	1.89	2.31	1.78	2.08	0.72

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Aurobindo Pharma is showing two trends in its Current Assets Turnover Ratio

(CATR) for the study period. In the first three years it is showing an increasing trend

and clear decreasing trend in the last five years. The increasing trend is ending at the highest value of 2.37(1999-2000) and the last year of the study period (2004-05) has the lowest value of 1.16. The average of the study period for this company is 1.84 which is almost same as the overall average of 1.81. There are no major fluctuations observed in the employment of current assets and sales hence it can be concluded that the down trend and its continuity can be a result of some sort of in-efficiency which is clearly visible from the year 2000-01 and onwards.

Cadila Healthcare has high fluctuating ratios for the study period. There is no particular trend observed for the CATR for this company. It lies between 2.65(98-99) and 0.83(99-2000), with an average of 2.10 which is better than the overall average of 1.81. There is a sudden decrease observed in the CATR for the year 99-2000 due to increase in the current assets in the form of term deposits with the bank which is making the CATR look dull, otherwise there is a normal movement observed in the ratio for the entire study period.

Cipla Ltd. like in other ratios is very consistent in CATR for the study period. It lies between 1.65(2000-01) to 1.20(2002-03) with an average of 1.45 which is slightly low than the overall average of 1.81. The CATR for Cipla Ltd. can be considered as the most normal, almost without any sort of fluctuation in the ratios or current assets or sales. It has continued to employ the current assets as per requirement and got the sales with almost same percentage of current assets.

Dr. Reddy's Laboratories Ltd. is showing a clear increasing trend in the initial four years but then it declined a bit for the remaining four years. The CATR of the

company for the study period lies in between 1.75(2000-01) and 0.89(2004-05) with an average of 1.34 which is slightly lower than the overall average of 1.81. There is an abnormal increase in the current assets observed in the year 2001-02 due to increase in term deposits with bank and debtors to those sales responded positively but could not respond to the required level and then the downfall started in the next years.

There are not particular trends observed in the CATR of IPCA Labs for the study period. Initially for three years there was a positive trend but then there was no definite trend observed. The CATR lies between 2.04(1999-2000) and 1.72(2000-01) with the average of 1.86 which is close to the overall average 1.81 for the study period. There are no major fluctuations observed in the current assets and sales figures of the company for the study period.

Matrix Labs is showing two trends in the CATR for the study period. It is showing a clear increasing trend in the initial five years and then there is a mixed decreasing trend observed. The CATR of the company for the study period lies between 2.60(2001-02) and 1.52(2004-05) with an average of 2.02 which is higher than the overall average of 1.81 for the same study period. A major investment in current assets is observed in the year 2002-03 which was nicely responded by sales but then later on the momentum was not maintained and ultimately declining trend was observed for the last three years.

Nicholas Piramal is showing a fluctuating trend in the CATR for the study period. It lies in between 2.71(2003-04) 1.68(98-99) with an average of 2.05 which is higher

than overall average 1.81 for the same study period. There are some fluctuations observed in the employment of current assets and as expected the sales has responded to such fluctuations in the same manner.

Sun Pharmaceuticals is having no particular trend in its CATR as it lies between 2.31 (2001-02) and 0.72(2004-05) with an average of 1.76 which is almost near to the overall average 1.81 for the study period. There is a clear increasing trend observed in the employment of current assets for the study period and sales has responded in the similar manner by increasing continuously in the study period.

The overall trend for all the eight companies for the study period is showing a steady and constant trend with a slightly increasing effect. It lies between 1.92(2003-04) and 1.57 (2004-05) with an overall average of 1.81. It can be generally observed that majority of companies are showing some positive trend in the initial period of the study and then there are some downtrend observed in the last part of the study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Current Asset Turnover Ratio among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Current Asset Turnover Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of Current Asset Turnover between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Current Asset Turnover between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of Current Asset Turnover between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Current Asset Turnover between different years during the study period in each company under study is not same."

In the following Table 6.3(a) the calculation of F Test (ANOVA) is shown of Current Asset Turnover ratio for the Pharmaceutical Companies under study, during the study period.

Table : 6.3(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	4.344781153	0.620683022	3.761600195
Between Years	7	0.643634331	0.091947762	0.557242111
Error	49	8.085247367	0.165005048	
Total	63	13.07366285		

The above Table 6.3(a) shows the F value of 3.76 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that the ratio of Current Asset Turnover among different companies is not same. F value of 0.56 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that different years' ratios for all the individual companies.

Hence it can be concluded that in the Current Asset Turnover Ratio among different companies there are no similarities under study but the Current Asset Turnover ratio between different years of each company are same.

7. Calculation of Working Capital Turnover Ratio of sample units

Earlier calculation was based on short term assets or current assets but like short term assets there are short term liabilities also, which are referred as current liabilities. Current liabilities are those claims of outsiders which are expected to mature for payment within an accounting year and include Creditors (accounts payable), Bills Payables, and Outstanding Expenses. If the Current Liabilities are deducted from Current Assets the resultant can be termed as Working Capital.

Working capital has got a very interesting relationship with profit. Sufficient working capital is required for smooth sales and smooth sales will result in maintenance and

increase in sales which will ultimately result in increased and sustained profits for the firm. Working capital can be both positive as well as negative. When the current assets are more than current liabilities, working capital will be positive and if the current liabilities are more than current assets, working capital will be negative. In this ratio we are trying to establish relationship between working capital and sales. If working capital is the factor affecting sales, then sales can be increased by increasing working capital. In other words we are trying to observe the relationship between working capital and sales and find out the degree of effect of increasing working capital on sales.

$$\text{Working Capital Turnover} = \frac{\text{Sales}}{\text{Working Capital}}$$

In the table 6.4 Working Capital turnover ratios are calculated for the study period fore pharmaceutical companies under study:

Table : 6.4:

Table Showing Working Capital Turnover Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05 [All amounts = Rs. in Crores]

Particulars	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo-Sale	295.31	550.03	739.9	972.52	1007.96	1180.33	1334.83	1153.43
WorkingCapital	84.55	142.83	224.31	307.1	430.33	528.73	693.38	751.14
Turnover(times)	3.49	3.85	3.30	3.17	2.34	2.23	1.93	1.54
Cadila - Sales	303.58	358.4	475.7	502.3	581.7	1005.2	1116	1125.3
WorkingCapital	79.45	74.82	457.54	155.63	286.5	200.7	200.5	224.4
Turnover(times)	3.82	4.79	1.04	3.23	2.03	5.01	5.57	5.01
Cipla - Sales	514.43	617.16	759.75	1047.51	1385.84	1549.79	1974.63	2327.63
WorkingCapital	187.18	210.36	238.05	338.35	520.46	694.49	756.64	974.45
Turnover(times)	2.75	2.93	3.19	3.10	2.66	2.23	2.61	2.39
DrReddy- Sales	331.62	425.86	493.02	984.11	1557.78	1598.32	1740.2	1625.08
WorkingCapital	195.29	211.54	223.4	424.08	1055.41	1274.21	972.1	1387.35
Turnover(times)	1.70	2.01	2.21	2.32	1.48	1.25	1.79	1.17
IPCA - Sales	282.74	335.66	363.31	385.38	444.18	506.51	649.32	721.74
WorkingCapital	117.09	128.52	135.01	177.67	179.95	210.11	248.27	268.52
Turnover(times)	2.41	2.61	2.69	2.17	2.47	2.41	2.62	2.69
Matrix - Sales	27.51	40.73	45.19	60.78	102.18	416.93	556.86	671.69
WorkingCapital	12.36	15.78	9.01	13.27	13.78	91.77	143.61	156.34
Turnover(times)	2.23	2.58	5.02	4.58	7.42	4.54	3.88	4.30
N.Piram.-Sales	534.64	429.99	486.48	566.76	946.48	1136.13	1434.66	1384.68
WorkingCapital	167.16	168.77	168	187.13	242.5	327.86	263.27	244.55
Turnover(times)	3.20	2.55	2.90	3.03	3.90	3.47	5.45	5.66
Sun - Sales	279.77	358.11	478.35	613.78	753.1	864.65	998.16	1263.86
WorkingCapital	102.29	155.62	179.83	238.39	230.55	349.87	293.69	1533.07
Turnover(times)	2.74	2.30	2.66	2.57	3.27	2.47	3.40	0.82

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

The above table number 6.4shows the calculation of working capital turnover

ratio(WCTR). This is another ratio calculating the efficiency of a company with

regard to use of its resources and converting them into revenues. The ratio is an indicator of how much sales is generated on an amount of working capital.

The WCTR of Aurobindo Pharma lies between 3.85 (1998-99) and 1.54 (2004-05). Except in the second year there is continuously declining trend in the WCTR of this company. This can be an indicator of decreasing efficiency of working capital to generate sales. The average WCTR of this company for the study period is 2.73 which is lower than 3.02 overall average of all the companies for the entire study period. Although the decline is normal in all the years, there is a sharp fall in the year 2001-02 as it was 2.34 in the year 2001-02 compared to 3.17 in the earlier year 2000-01.

Cadila Healthcare shows a fluctuating trend for its WCTR for the study period. There are no particular trends observed for the company, the ratio lies between 5.57 (2003-04) and 1.04 (1999-2000). The average ratio for the company for the study period is 3.81 which is higher than the overall average 3.02 of all the companies for the study period. There is no consistency observed in the ratio which shows the un-predictable ability of company to use its resources.

Cipla Ltd. shows a mixed trend of WCTR for the study period. For the initial period of 3 years the company has shown an increasing trend of ratio while there is negative trend observed for the next three years. Hence although its not too fluctuating but it's a mixed trend. The WCTR of the company lies in between 3.19(1999-2000) and 2.23(2002-03) with an average of 2.73 which is quite low than the overall average 3.02 of all the companies under study. Although there are no high ratios in this

company but it is fairly consistent and reliable as there is not much difference in the highest and lowest value of WCTR for the study period.

Dr. Reddy's Laboratories Ltd. is showing two clear trend of WCTR for the study period. It is a clear increasing trend for the first four years and decreasing trend for the last four years. The ratio varies between 2.32(2000-01) and 1.17 (2004-05). The company has to remain vigilant in the coming years if the ratio declines in the similar patter, especially its eight year high is not much impressive. The average ratio for the company is 1.74 which is very low compared to the overall average of 3.02 hence as far as WCTR is concerned it is respectfully submitted that this company is not able to utilize its resources in efficient way.

IPCA has partly consistent trend for the WCTR in the study period. The ratio varies from 2.69 to 2.41, but the most interesting part is in the latter stage of the study period it has shown a positive trend which is quite opposite to what is observed in other companies in the study. Also the ratio has never been lower than 2.41 and this value is too close to 2.69 the highest value is suggesting the consistency of the company. Hence to a certain extent we can observe the part consistent trend for the company. The average ratio is 2.51 which is lower than overall average 3.02 but seems to be very promising in the coming years as there is a consistent increasing trend observed. Matrix Laboratories is showing a fairly fluctuating trend for the study period in the calculation of WCTR, as its high is as high as 7.42 (2001-02) and low is very low 2.23 (1997-98). The high ratio can be due to a huge 70% increase in sales in the year 2001-02 without much increase in working capital; this cannot be considered as a true picture of efficient utilization of working capital. There could be several other reasons

which might have influenced a sudden increase in sales. Except that abnormal increase company has made reasonable progress in its utilization of working capital to generate revenues. Its average is 4.32 which is much higher than overall average of 3.02 but this high average is due to the abnormal increase in the ratio in the year 2001-02.

Nicholas Piramal is the only company among all the companies under study which is showing a clear positive trend in the entire study period. It has its eight year low in second year 2.55 (1998-99) and eight year high in the last year 5.66 (2004-05) this shows that in the winds of downtrend of other companies this company is standing tall and continuing its increasing trend in the WCTR. Expectedly its average 3.77 is higher than the overall average of 3.02. But the analysis would be incomplete if we are not observing the figures of sales and working capital. There is a downtrend in the sales of initial two year after base year and then there is a constant increasing trend with a decrease in sales in the last year [Table 4.7], and even working capital as decreased in the last year. It is interesting findings that decrease in working capital led to decrease in sales but the ratio has managed to remain constant. This could be leading us to believe that there is a high degree of relationship between working capital and sales revenues.

The WCTR for the Sun Pharmaceuticals is the most fluctuating one as it increases in one year and decreases in the second year and continues to move in the same manner in the study period. The ratio decreased for four times in the entire study period and increased for three times in the study period which depicts that there is a high amount of fluctuation. The ratio lies between 3.27 (2001-02) and 0.82 (2004-05) and the

amount of fluctuation is also visible in the difference between the highest value and the lowest value. Its average 2.53 is lower than the overall average of 3.02. If we try to analyze this fluctuating nature of WCTR then we can observe that sales trends have no fluctuations as there is a clear increasing trend observed in the sale of Sun Pharmaceuticals in the study period [Table 4.7] but there is a huge amount of fluctuation seen in the working capital for the study period. Working capital decreased for the first time in the year 2001-02 which resulted in the highest WCTR and working capital abnormally increased by 450% which is abnormal by any means which lead to a sudden decline in the WCTR to its eight year low of 0.82. The abnormal increase of 450% of working capital is due to increase in loans given to others and term deposits with bank. Hence huge fluctuations are more present in the ratio of this company.

A small increasing trend is observed in the overall WCTR for the selected companies and the minimum is at the beginning 2.79 (97-98) and highest is at the end 3.40 (2003-04) which consolidates the positive trend of WCTR in the selected pharmaceutical companies under study for the eight year study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Working Capital Turnover Ratio among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Working Capital Turnover Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of Working Capital Turnover between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Working Capital Turnover between different companies under study during the study period is same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Working Capital Turnover between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Working Capital Turnover between different years during the study period in each company under study is not same."

In the following Table 6.4(a) the calculation of F Test (ANOVA) is shown of Working Capital Turnover ratio for the Pharmaceutical Companies under study, during the study period.

Table : 6.4(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	41.39264519	5.913235028	5.28481192
Between Years	7	2.124981094	0.303568728	0.271307266
Error	49	54.82664676	1.118911158	
Total	63	98.34427305		

The above Table 6.4(a) shows the F value of 5.28 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of Working Capital Turnover. F value of 0.27 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that there is no significant difference between different years' ratios for all the individual companies.

Hence it can be concluded that there is a significant difference in the Working Capital Turnover Ratio among different companies under study but there is no significant difference in the Working Capital Turnover ratio between different years of each company.

8. Calculation of Inventory Turnover Ratio of sample units

The Inventory turnover ratio measures the speed with which inventory is converted into sales for the firm. It reflects the efficiency of the firm's inventory management. Inventory refers to stock of goods with the company; it includes Raw Material, Work-in-progress, Finished Goods, Stores, Spares, Packing Materials, Good-in-transit, Other Inventory, etc.

Inventory Turnover ratio refers to number of times that inventory has been sold during the year. Generally a high inventory turnover is an indicator of good inventory management, which means that the funds are not un-necessarily blocked in inventory but the inventory got quickly converted to sales and hence efficiently managed. For maintaining proper levels of inventory it is required to estimate the exact requirement of inventory as well as the speed with which it will be utilized and the time required for receiving the fresh inventory. Efficient management of inventory also requires a good skill set from the manager as such he has to maintain a balance between the minimum requirement of stock and maximum stock which can be stocked. Higher levels of inventory leads to blockage of funds and thus less profitability while lower levels of inventory helps maintain the profitability but there is always a risk of stock out situation. For smooth sales enough inventory levels are like compulsion. A high inventory turnover ratio can also mean there is a shortage of inventory. A low turnover may indicate overstocking or obsolete inventory.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}}$$

Table : 6.5:

Table showing Inventory Turnover Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05 [All amounts = Rs. in Crores]

Company	97-98	98-99	99-00	2000-01	2001-02	2002-03	2003-04	2004-05
AurobindoCOGS	256.16	508.56	614.1	952.92	874.9	1059.18	1167.29	1039.68
Inventory	47.23	81.23	99.92	172.99	125.46	203.52	259.64	323.58
ITR	5.42	6.26	6.15	5.51	6.97	5.20	4.50	3.21
Cadila-COGS	242.91	319.5	386.44	433.8	510.28	848.15	913.5	985.2
Inventory	47.68	62.6	70.7	83.74	105.7	175.6	160.3	193.9
ITR	5.09	5.10	5.47	5.18	4.83	4.83	5.70	5.08
Cipla-COGS	429.1	459.65	660.66	895.07	1248.19	1395.89	1569.38	1997.54
Inventory	147.9	158.42	212.2	275.36	396.28	589.23	568.94	745.68
ITR	2.90	2.90	3.11	3.25	3.15	2.37	2.76	2.68
Dr.Reddy-COGS	240.13	343.69	376.93	767.46	991.51	1153.38	1384.64	1476.68
Inventory	55.7	73.98	69.83	157.61	189.81	240.11	258.01	303.81
ITR	4.31	4.65	5.40	4.87	5.22	4.80	5.37	4.86
IPCA-COGS	265.67	297.09	329.54	368.55	386.54	415.7	578.89	645.48
Inventory	73.71	81.65	70.13	90.2	96.31	102.72	150.22	173.87
ITR	3.60	3.64	4.70	4.09	4.01	4.05	3.85	3.71
Matrix-COGS	26.1	39.31	51.34	65.34	105.94	277.92	470.53	514.42
Inventory	8.15	15.85	16.47	15.27	25.16	70.07	125.11	171.01
ITR	3.20	2.48	3.12	4.28	4.21	3.97	3.76	3.01
Npirmala-COGS	417.51	345.62	422.18	468.25	728.75	965.01	1193.15	1317.61
Inventory	89.48	66.99	86.75	100.06	147.47	170.23	195.59	274.67
ITR	4.67	5.16	4.87	4.68	4.94	5.67	6.10	4.80
Sun-COGS	203.29	284.07	366.28	529.44	505.6	605.25	713.2	900.29
Inventory	50.99	50.1	72.38	147.97	131.05	155.62	161.45	186.62
ITR	3.99	5.67	5.06	3.58	3.86	3.89	4.42	4.82

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

The Inventory Turnover Ratio (ITR) for the Aurobindo Pharma is showing a mixed

trend for the study period. It lies between 6.97 (2001-02) and 3.21 (2004-05) with an

average of 5.40 which is quite higher than the overall average 4.45 of all the

companies under study for the study period. There is positive trend of inventory in the

entire study period but in the year 2001-02 there was a 28% decrease in inventory which was accompanied by 8% decrease in Cost of goods sold which ultimately resulted in improvement of the ITR while as in the last year 2004-05 the 24% increase in inventory was accompanied by 12% decrease in cost of goods sold which led to tremendous decrease in ITR.

The ITR of Cadila Healthcare shows an average consistent trend with decrease in just two years in the study period. It lies between 5.70 (2003-04) and 4.83(2001-02 and 2002-03) with an average of 5.16 which is quiet higher than the overall average of 4.45. Hence this company is performing better and consistently. Although the increase in inventory in the year 2001-02 was responded by equal increase in Cost of goods sold but the increase was not enough to maintain the ratio. There is constant positive trend observed in both inventory levels and the Cost of goods sold for the entire study period which is the reason for the consistent ITR for the study period of Cadila Healthcare Ltd.

Cipla Ltd is once again consistent performer although its ratio declined in the latter years but on the average it stands as a semi consistent performer as far as ITR is concerned. ITR lies between 3.25(2000-01) and 2.37 (2002-03) with an average of 2.89 which is very low compared to the overall average of 4.45 for the study period. Except for the year 2003-04 in all the years the inventory levels have shown a steady increasing trend and there is a constant increasing trend in the cost of goods sold for the company in the study period. This has lead to a semi consistent performance by the company. By the standards of other companies in the study, Cipla is under-

performer in this criteria which is hampering its liquidity as well. It is taking more time compared to other companies in converting its inventories to sales.

Dr. Reddy's Laboratories Ltd. shows a relatively mixed trend but quite higher ITR. It lies between 5.40 (1999-2000) and 4.31(1997-98), although there is a significant difference between the highest and lowest value but comparatively both show an impressive performance of the company with regard to the turnover of inventory. The average for the company is 4.93 for the study period which is near to the overall average of all the companies 4.45 for the study period. There is a constant positive trend visible in the inventory levels for the company for the study period and similar positive increasing trend is observed for the Cost of goods sold figures.

IPCA Laboratories a normal trend of ITR in the study period, except one major fluctuation in the year 1999-2000 which was due to decrease in inventory and increase in sales, which showed the positive picture. ITR for the study period lies in between 4.70 (1999-2000) and 3.60(1997-98) and the average of ITR of IPCA for the study period works out to be 3.96 which is quite lower than the overall average of all the companies for the study period.

Matrix shows a huge amount of fluctuation in the ITR calculation for the study period which is visible from the difference between it's high and low ratio in the study period. ITR lies between 4.28(2000-01) and 2.48 (98-99) and the average of the ITR for the company is 3.50 which is quite low than the overall average of 4.45. There has been a significant increase in scale of production in the year 2003-04 as we can

observe a 80% increase in inventory levels and 70% increase in sales, it is interesting to conclude that in spite of such a huge increase in both the items the company has managed to maintain the relationship between them, which is a good sign for the inventory management.

Nicholas Piramal has shown a very fine performance as far as inventory turnover ratio is concerned and it is pretty consistent also. There are no particular trends visible in the ITR of the company for the study period but it has managed to maintain the rate close to 5.00 which can be considered as an achievement as the overall average is below 4.50 for the study period. Its eight year high is 6.10 (2003-04) and eight year low is 4.67 (1997-98) this shows that in the recent times company is doing well and expected to do well in the coming times as well. Its average is 5.11 which is well above overall average of 4.45 for the study period.

Sun Pharmaceuticals seems to be trying hard to improve its ITR and has remained successful on couple of occasions where it managed to move above 5.00 but could not consistently perform which brought its average 4.41 which is although very close to the overall average of 4.45 for the study period. It lies in between 5.67(98-99) and 3.58 (00-01) and shows increasing trend in inventory levels and cost of goods sold.

No major fluctuations are observed in the group figures for the all eight years of study period as the ITR lies in between 4.73(99-2000) and 4.02 (2004-05) and the overall average is 4.45 which is very good representative of all the companies.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Inventory Turnover Ratio among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Inventory Turnover Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of Inventory Turnover between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Inventory Turnover between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of Inventory Turnover between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Inventory Turnover between different years during the study period in each company under study is not same."

In the following Table 6.5(a) the calculation of F Test (ANOVA) is shown of Inventory Turnover ratio for the Pharmaceutical Companies under study, during the study period.

Table : 6.5(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	53.55958191	7.651368844	13.73177913
Between Years	7	3.795525884	0.542217983	0.973109223
Error	49	27.30287676	0.557201567	
Total	63	84.65798456		

The above Table 6.5(a) shows the F value of 13.73 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is greater than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that among the different companies under study in the ratio of Inventory Turnover is not same. F value of 0.97 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that different years' ratios for all the individual companies are same.

Hence it can be concluded that the Inventory Turnover Ratio among different companies under study are not same but the Inventory Turnover ratio between different years of each company are same.

9. Calculation of Debtors Turnover Ratio of sample units

A company's liquidity position affects the financial position to a great extent. In fact liquidity and profitability are the two extremes between which a financial manager has to make a balance. With reference to debtors, in order to increase sales for earning more profits, customers are offered credit; but by granting credit to customers the funds are blocked for the credit period. Now, it is very much essential for the firm to realize the debtors on time other wise it would hamper its liquidity position. Hence the firm needs to strengthen its collection policy.

Debtor turnover ratio shows the number of times each year a company's debtor turn into cash. The payment made by debtors largely depends upon the relationship the company maintains with the debtors and the type of customers to who company is granting credit. It also highlights the company's efficiency with regard to collecting the dues. The ratio provides some indication of the quality of both the debtors and the company's collection efforts.[1]

Debtors Turnover = $\dfrac{\text{Sales}}{\text{Debtors}}$

Table : 6.6:

Table Showing Debtors Turnover Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in

Crores]

Particulars	97-98	98-99	99-00	00-01	2001-02	2002-03	2003-04	2004-05
Aurobindo-Sales	295.31	550.03	739.9	972.52	1007.96	1180.33	1334.83	1153.43
Debtors	60.35	115.11	142.75	201.3	337.57	407.65	456.85	441.38
DTRatio	4.89	4.78	5.18	4.83	2.99	2.90	2.92	2.61
Cadila-Sales	303.58	358.4	475.7	502.3	581.7	1005.2	1116	1125.3
Debtors	51.8	46.01	59.13	51.61	66.9	136.8	165.9	108.8
DTRatio	5.86	7.79	8.04	9.73	8.70	7.35	6.73	10.34
Cipla-Sales	514.43	617.16	759.75	1047.51	1385.84	1549.79	1974.63	2327.63
Debtors	53.5	59.23	80.85	149.52	254.71	355.57	498.23	587.32
DTRatio	9.62	10.42	9.40	7.01	5.44	4.36	3.96	3.96
Dr.Reddy-Sales	331.62	425.86	493.02	984.11	1557.78	1598.32	1740.2	1625.08
Debtors	117.86	142.08	128.14	284.97	444.95	432.45	444.05	417.64
DTRatio	2.81	3.00	3.85	3.45	3.50	3.70	3.92	3.89
IPCA-Sales	282.74	335.66	363.31	385.38	444.18	506.51	649.32	721.74
Debtors	57.89	62.52	74.61	78.27	98.98	120.18	139.04	157.16
DTRatio	4.88	5.37	4.87	4.92	4.49	4.21	4.67	4.59
Matrix-Sales	27.51	40.73	45.19	60.78	102.18	416.93	556.86	671.69
Debtors	5.47	5.62	2.6	6.11	7.1	56.17	94.15	136.75
DTRatio	5.03	7.25	17.38	9.95	14.39	7.42	5.91	4.91
NicholasP-Sales	534.64	429.99	486.48	566.76	946.48	1136.13	1434.66	1384.68
Debtors	127.32	72.51	84.61	90.16	120.06	171.33	172.85	140.9
DTRatio	4.20	5.93	5.75	6.29	7.88	6.63	8.30	9.83
Sun-Sales	279.77	358.11	478.35	613.78	753.1	864.65	998.16	1263.86
Debtors	40.34	82.37	70.89	93.99	107.76	197.16	128.37	234.97
DTRatio	6.94	4.35	6.75	6.53	6.99	4.39	7.78	5.38

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Debtor's Turnover Ratio calculated in Table 6.6 shows the number of times each year

a company's debtors turn into cash. A high debtor turnover ratio indicates that debtors

were converted frequently into cash and the quality of the company's portfolio of debtors can be considered good.

For Aurobindo Pharma a positive trend of Debtors' Turnover Ratio (DTR) is observed which indicates that company is very vigilant with regard to its collection policies and has maintained a strict collection policy. But from the year 2001-02 there is a serious downfall in the DTR, which has remained stable till the last year of the study period. DTR of the company lies between 5.18 (99-2000) and 2.61 (2004-05) with an average of 3.89 which is very low compared to the overall average of 6.13. Although strong DTR in the initial period, it is no longer satisfactory in the second part of the period. This shows the weak collection efforts and it hampers the overall liquidity position of the company.

Cadila Healthcare has shown impressing DTR for the study period. It lies between 10.34 (2004-05) and 5.86 (1997-98) and has an average of 8.07 which is far better than the overall average of 6.13. The most fascinating thing about DTR for Cadila is it has a constant positive trend throughout the period of study, except in the year 2003-04 it has shown a continuous increasing trend which is very impressive. This shows that company is very conscious regarding its liquidity position and is working very hard on its collection policy.

Cipla Ltd. is showing a declining trend of DTR for the study period. The DTR was as high as 10.42(98-99) but could not continue its strict measures and gradually ended up with a very low DTR of 3.96 (2004-05). There is constant increasing trend observed in

the sales figures and debtors figures also but the funds has remained tied up for long as the years have progressed.

Dr. Reddy's Laboratories a stable but slightly increasing trend of DTR. Although a low DTR throughout the study period but the company is successful in maintaining that low ratio and improved in the latter part of the period. The company is consistent and if it works on its collection policies it can improve its DTR. It lies between 3.92 (2003-04) and 2.81 (97-98) and has an average of 3.52 which is very low compared to the overall average of 6.13.

There is a fluctuating trend observed in the DTR of IPCA Labs but luckily the fluctuations are not too big to make them very in-effective. DTR lies between 5.37 (98-99) and 4.21 (2002-03) with an average of 4.75 which is lesser compared to the overall average of 6.13. There is continuous positive trend observed in both sales and debtors figures but the company has done medium efforts for maintaining its liquidity position but has remained quite consistent.

Matrix Laboratories is showing a mixed trend of DTR with ending at a low ratio. It lies between 17.38(1999-2000) and 4.91(2004-05) with an average of 9.03 which is very high compared to the overall average of 6.13. The company is very vigilant in its collection efforts and its DTR shows it has faster debtors' turnover cycles. But there is constant decline in this ratio in the last four years which might go still lower in the coming years which is a matter to look on for the company.

Nicholas Piramal has shown a constant increasing trend in the DTR for the study period which is exceptionally remarkable. Its clear increasing trend is visible in its eight year high and eight year low. The lowest value 4.20 is observed in the very first year 1997-98 and the highest value is found in the last year 2004-05 which makes us believe in the tremendous collection policies of the company. There are very minimum funds tied up with debtors in this company. It has a very fine average of 6.85 which is as expected higher than the overall average of 6.13 for the study period.

Sun Pharmaceuticals is pretty consistent barring two years in which it could not manage to maintain its DTR. It lies between 7.78 (2003-04) and 4.35 (1998-99) with an average of 6.14 which is exactly same to the overall average of 6.13, hence implying that the company has very fine collection efforts and no much funds are tied up with the debtors.

The overall trend for the study period is showing a continuous increasing trend which is a very positive sign for the liquidity position for all the companies. Barring one year 2002-03 which is having its eight year low of 5.12 all the years have shown a positive upward movement in the DTR. It lies between 7.65 (1999-2000) and 5.12(2002-03) 3with an overall average of 6.13. The companies like Aurobindo, Dr.Reddy's Lab. and IPCA have been under performer as far as DTR is concerned otherwise all the other companies have shown a very fine performance in terms of collection period and ultimately maintaining a better liquidity position.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Debtors Turnover Ratio among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Debtors Turnover Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of Debtors Turnover between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Debtors Turnover between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Debtors Turnover between different years during the study period in each company under study is not same."

Alternate Hypothesis (H_1):- "The ratio of Debtors Turnover between different years during the study period in each company under study is not same."

In the following Table 6.6(a) the calculation of F Test (ANOVA) is shown of Debtors Turnover ratio for the Pharmaceutical Companies under study, during the study period.

Table : 6.6(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	167.5743143	23.93918775	0.930522207
Between Years	7	134.9844259	19.28348941	0.74955405
Error	49	1260.604197	25.72661627	
Total	63	1563.162937		

The above Table 6.6(a) shows the F value of 0.93 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is lower than the table value of 2.16 hence the null hypothesis is accepted and the alternate hypothesis is rejected, which means that among the different companies under study in the ratio of Debtors Turnover is same. F value of 0.75 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that between different years' ratios for all the individual companies is same.

Hence it can be concluded that the Debtors Turnover Ratio among different companies under study is same and the Debtors Turnover ratio between different years of each company is same.

10. Calculation of Cash Turnover Ratio of sample units

Cash is considered to be the life blood for any business organization, without which we cannot even imagine any financial activity. Mere availability of cash does not end the story; efficient management of cash holds the key. Cash management assumes more importance than other current assets because cash is the most significant and the least productive asset that a firm holds.[2] As discussed in debtor turnover ratio, profitability and liquidity are the two opposite sides between which a financial manger has to maintain balance. If excessive cash balance is maintained it will serve the purpose of liquidity and there will be no risk of stoppage of activities owing to shortage of cash, but the funds blocked in form of cash balance or bank balance has got its own cost. And, inadequate cash balance may lead to disastrous situation for the company as it would affect liquidity negatively.

It takes some time for the cash or bank balance to once again get converted into its own form after they are used for several purposes. The important thing here is how much time does this cycle takes i.e. from cash to once again cash. Higher cash turnover ratio (Smaller cash cycle) better the liquidity position, but too much of funds should not be kept for the sake of liquidity which is at the cost of profitability.

$$\text{Cash Turnover} = \frac{\text{Sales}}{\text{Cash}}$$

Table: 6.7:

Table Showing Cash Turnover Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in

Crores]

Particulars	97-98	98-99	99-00	00-01	01-02	02-03	03-04	2004-05
Aurobindo Sales	295.31	550.03	739.9	972.52	1007.96	1180.33	1334.83	1153.43
Cash &Bank	10.23	15.11	14.02	4.55	22.41	33.15	37.41	13.8
Turnover Ratio	28.87	36.40	52.77	213.74	44.98	35.61	35.68	83.58
Cadila-Sales	303.58	358.4	475.7	502.3	581.7	1005.2	1116	1125.3
Cash & Bank	4.06	6.84	378.66	41.87	5.7	9	37.2	26.4
Turnover Ratio	74.77	52.40	1.26	12.00	102.05	111.69	30.00	42.63
Cipla-Sales	514.43	617.16	759.75	1047.51	1385.84	1549.79	1974.63	2327.63
Cash & Bank	3.02	3.54	4.27	5.8	15.57	13.12	6.24	15.38
Turnover Ratio	170.34	174.34	177.93	180.61	89.01	118.12	316.45	151.34
Dr.Reddy Sale	331.62	425.86	493.02	984.11	1557.78	1598.32	1740.2	1625.08
Cash & Bank	14.35	18.88	21.91	19.43	488.56	688.4	408.08	891.72
Turnover Ratio	23.11	22.56	22.50	50.65	3.19	2.32	4.26	1.82
IPCA-Sales	282.74	335.66	363.31	385.38	444.18	506.51	649.32	721.74
Cash & Bank	3.41	2.79	4.31	4.96	3.14	2.44	4.77	4.17
Turnover Ratio	82.91	120.31	84.29	77.70	141.46	207.59	136.13	173.08
Matrix-Sales	27.51	40.73	45.19	60.78	102.18	416.93	556.86	671.69
Cash & Bank	0.11	0.19	0.07	2	2.21	8.72	3.61	8.76
Turnover Ratio	250.09	214.37	645.57	30.39	46.24	47.81	154.25	76.68
Npiramal-Sale	534.64	429.99	486.48	566.76	946.48	1136.13	1434.66	1384.68
Cash & Bank	3.54	31.52	49.76	33.94	23.04	15.99	15.47	7.49
Turnover Ratio	151.03	13.64	9.78	16.70	41.08	71.05	92.74	184.87
Sun-Sales	279.77	358.11	478.35	613.78	753.1	864.65	998.16	1263.86
Cash & Bank	6.37	8.5	4.35	10.56	24.78	78.68	75.75	890.03
Turnover Ratio	43.92	42.13	109.97	58.12	30.39	10.99	13.18	1.42

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Aurobindo Pharma shows a mixed trend for the Cash Turnover Ratio(CTR) for the study period. It lies between 213.74(2000-01) and 28.87 (97-98) with an average of 66.45 which is lower than overall average of 91.36 for the same study period. There are two instances where the cash and bank balances have been reduced to very low levels which have resulted in higher CTR, viz. in the year 2000-010 and 2004-05. Otherwise there are no major fluctuations observed.

Cadila Healthcare is high fluctuating trend of CTR as there have been huge differences in the cash and bank balance with the company in the study period. It lies between111.69(2002-03) and 1.26 (99-2000) with an average of 53.35 which is very low compared to overall average of 91.36 for the same study period. There are abnormal changes observed in the cash and bank balance which has resulted in such a big differences in the CTR for the company for the study period.

Cipla Ltd has a consistent increasing trend in the first four year and then there are no particular trend observed in the CTR for the study period. It lies between 316.45(03-04) and 89.01 (01-02) with the average of 172.27 which is very high compared to the overall average of 91.36. This shows that compared to other companies there are no times where in the company has either maintained abnormally high or abnormally low cash and bank balances.

There is a constant increasing trend observed in the CTR of Dr. Reddy's Laboratories Ltd. for the initial four years and then there are fluctuations observed in the CTR for the next four years. It lies in between 50.65(00-01) and 2.32(02-03) with an average of 16.30 which is very low compared to the overall average of 91.36 for the same study

period. This sort of heavy fluctuations shows the lesser reliability of this ratio as a measure to compare the effect on sales.

IPCA is showing a fluctuating trend of CATR for the study period. It lies between 207.59(02-03) and 82.91 (97-98) with an average of 127.93 which is higher than the overall average of 91.36 for the same study period. It is interesting to note that there are no major fluctuations observed in the cash and bank balances of this company and constant increasing trend of sales can be observed for the study period.

Matrix Laboratories is showing no particular trend for the CTR for the study period. It lies between 645.57(99-2000) and 30.39(2000-01) with an average of 183.18 which is almost double of the overall average of 91.36 for the same study period. Sales is observed as increasing constantly for the study period and some fluctuations are observed in the cash and bank balance.

Nicholas Piramal is showing not major trends for the CTR in the study period, it lies in between 184.87(2004-05) and 9.78(99-2000) with an average of 72.61 which is lower than the overall average of 91.36. There are some fluctuations observed in the cash and bank balance of the company while sales have remained more or less steady but have increased sharply in the year2001-02 and onwards.

Sun Pharmaceuticals is also showing no particular trends in the CTR for the study period. The CTR of the company for the study period lies in between 109.97(99-2000) and 1.42(2004-05) with an average of 38.76 which is very low compared to the overall average of 91.36. Cash and Bank is showing an increasing trend and sales is also

showing a clear increasing trend which proves the utility of cash and bank balance in increasing the sales volume of the company.

Overall there are no major trends identified for all the companies under study which reflects the fluctuating feature of CTR. Almost all the companies have shown the same fluctuation nature of this ratio. CTR lies in between 138 in the year 1999-2000 and 62 in 2001-2002 for the study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Cash Turnover Ratio among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Cash Turnover Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of Cash Turnover between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Cash Turnover between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Cash Turnover between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Cash Turnover between different years during the study period in each company under study is not same."

In the following Table 6.7(a) the calculation of F Test (ANOVA) is shown of Cash Turnover ratio for the Pharmaceutical Companies under study, during the study period.

Table : 6.7(a)

Table showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	217041.5632	31005.9376	3.911141157
Between Years	7	29023.00707	4146.143867	0.523001566
Error	49	388452.0864	7927.5936	
Total	63	634516.6567		

The above Table 6.7(a) shows the F value of 3.91 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is higher than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that among the different companies under study the ratio of Cash Turnover is not same. F value of 0.52 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is

rejected, which means that between different years' ratios for all the individual companies is same.

Hence it can be concluded that the Cash Turnover Ratio among different companies under study is not same and the Cash Turnover ratio between different years of each company is same.

11. Conclusion

From the above calculation of Turnover ratios there can be some general conclusions drawn from the statistical analysis. From the study of seven individual Turnover ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

- The Total Assets Turnover ratio among companies is not same and the Total Assets Turnover ratio between different years of each individual company under study for the study period is same.
- The Fixed Assets Turnover ratio among companies is not same and the Fixed Assets Turnover ratio between different years of each individual company under study for the study period is also not same.
- The Current Assets Turnover ratio among companies is not same and the Current Assets Turnover ratio between different years of each individual company under study for the study period is same.

- The Working Capital Turnover ratio among companies is not same and the Working Capital Turnover ratio between different years of each individual company under study for the study period is same.

- The Inventory Turnover ratio among companies is not same and the Inventory Turnover ratio between different years of each individual company under study for the study period is same.

- The Debtors Turnover ratio among companies is same and the Debtors Turnover ratio between different years of each individual company under study for the study period is same.

- The Cash Turnover ratio among companies is not same and the Cash Turnover ratio between different years of each individual company under study for the study period is same.

References

1. Narayanswamy R: Financial Accounting: A Managerial Perspective, Prentice Hall of India Pvt
    Ltd., New Delhi-2000
2. Pandey, I.M: Financial Management, Vikas Publishing House Pvt. Ltd., New Delhi-2005
3. Anthony N.R.: Management Accounting principles, Homewood, Illinois: Richard D. Irwin Inc.
    1977
4. Aggrawal N.K.: Management of working capital, Sterling Publishers (P) Ltd. New Delhi 1989
5. Anthony & Reece: Management Accounting Principles, Homewood Illinois
6. Wick C.A.West: How to use management ratios, Great Britain 1971
7. Kulkarni P.V.: Financial Management, Himalaya Publishing House, Bombay 1982
8. Gitman L.J.: Principles of Managerial Finance, Harpers & Raw Publishing, 1990
9. Backman T.N.: Credit and collection management and theory, McGraw Hills, New York, 1982
10. Kuchhal S.C.: Financial Management, Chaitanya Publishing House, Allahabad, 1998

Chapter 7

ANALYSIS OF RETURN ON INVESTMENT

Contents

Page

Number

1. Concept

Be it a business or non-business activity, the efforts are put in the expectation of some reward, the expectation of reward may be of different size or variety but there is always a calculation of the reward or return of efforts put in. When we talk with reference to purely business activity the efforts that are put in are of different forms, which include employing different factors of production. Entrepreneur puts his money as well as the borrowed money along with his labour and the paid labour for the business activity and thus it is quiet natural for him to measure the return he is earning for the risk he has taken in the form of the labour he has done and the money he has expended. The discovery of return on investment is necessary irrespective of the fact that the business activity is with or without the profit objective, as such even the non-profit organizations would also want to be efficient in utilizing their resources.

Return on the investment made in the business gives an idea regarding the utilization of the resources employed. This also measures the efficiency of management along with the quality of resources and the marketability of the business. As a prime calculator of profitability the utility of Return on Investment Ratio has already been discussed in chapter 5th – "Analysis of Profit Margin". This chapter is totally designed and prepared for emphasizing and proving the importance of this measure and also for deriving some genuine findings and making serious observations for the present study. As a measure of profitability it can be considered as a superior most ratio as it is made up of two important ratios of profit margin and productivity. Return on Investment is a mixture of profit margin ratio and the asset turnover ratio, the former one is the ratio of profit percentage in sales while the later is a measure of productivity. Hence ROI can be considered as a complete ratio for analyzing the profitability of any firm.

As the present study is entirely devoted to the analysis of profitability of companies of Indian Pharmaceutical Industry, this ratio can be considered as the theme ratio which will be primarily used for the pure analysis of the profitability. Now going into the details of the calculation of the ratio, we find basically two things, i.e. profit and investment, which are essential for this ratio. Profit and Profit margin we have already discussed in the chapter- 5th – "Analysis of Profit Margin", now let us concentrate on the investments part. When the overall profitability is to be compared with the investment, it will not be just one amount that we can take into consideration. Let us discuss the various forms of investment.

2. Capital Employed / Investment

(a) Gross Capital Employed: Total assets comprises two parts, fixed assets and current assets. When we refer to Gross Capital Employed we refer to the sum of both the fixed assets as well as the current assets.

(b) Net Capital Employed: This is an extension of the earlier concept of capital employed. If the current liabilities are deducted from the gross capital employed, the resultant amount is referred as the Net Capital Employed. **In**

other words from the sum of current assets and fixed assets if we deduct the current liabilities we get Net Capital Employed.

(c) Proprietor's Net Capital Employed: This is an extension of the earlier concept of net capital employed. If long term liabilities are also deducted from net capital employed, the resultant amount is referred to as Proprietor's Net Capital Employed. In other words if total liabilities are deducted from total assets the resultant amount is referred to as Proprietor's Net Capital Employed.

Following items are to be excluded while calculating capital employed:

I. Idle asset: The assets which are not used and are idle should be excluded from the calculation of capital employed. Idle assets can also be like Capital Work-in-progress which is an asset under construction, for example a new manufacturing facility is under construction. As this is under-construction it is non-usable for the purpose of production and hence should not be counted with other investments used to earn profits. The non-use may also be due to obsoleteness of the asset or some abnormal situation of strike, lock-out, or other such abnormalities. Eg: Obsolete assets, etc.

II. Fictitious Assets: Capital employed will not include the group of fictitious assets; as such they are basically long term expenses rather than any property for the firm. Hence fictitious assets like preliminary expenses, advertisement account, discount on debentures, etc will be excluded while calculating capital employed.

III. Intangible Assets: The assets which are not real, or which cannot be seen or touched are all referred as intangible assets like patents, copyrights, etc will not be included in calculating capital employed.

IV. Outside Investment (Non-Business): The amount invested outside the business which has no relation with the business activity is referred as outside investment. This happens when the company has some excess funds with it which it invests outside the business which do not have any connection with the business activity.

3. Calculation of Return on Investment

For the present study as discussed earlier we have chosen Return on Investment measure as a prime measure of profitability. For the calculation of Return on Investment for the present study of selected Indian Pharmaceutical companies under study, the operating profits before interest and taxes are used and the gross capital employed in the business as per the previous discussion in this chapter. The importance and utility of operating profits has already been discussed in the Chapter-5th "Analysis of Profit Margin".

ROI is the percentage of profit to capital employed and is the product of two ratios: (i) Percentage of profit to sales and (ii) sales to capital employed, i.e. the rate of asset turnover. Thus

$$ROI = \frac{Profit}{Capital\ Employed} = \frac{Profit}{Sales} \times \frac{Sales}{Capital\ Employed}$$

Hence ROI is a product of profit margin ratio and asset turnover ratio; we have already discussed the profit margin in depth in Chapter-5th "Analysis of Profit Margin" and the asset turnover ratio has been discussed in detail in Chapter-6th "Asset Turnover", hence now we shall move to the detail analysis of Return on Investment Analysis.

In the present study for the calculation of Return on Investment (ROI) the operating profits before interest and taxes are taken as profits and the capital employed is taken as per the earlier discussion about the capital employed in this chapter. Hence the ratio is as under:

$$\text{ROI} = \frac{\text{Operating Profit before Interest \& Taxes}}{\text{Gross Capital Employed}}$$

Table : 7.1:

Table Showing Return on Investment in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in

Crores]

Co.	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Aurobindo	22.59	24.3	25.29	18.16	13.09	17.52	17.29	8.33
Cadila	26.7	23.8	10.79	16.5	13.1	17.13	16.55	16.55
Cipla	27.32	28.65	26.55	27.79	24.28	18.56	18.35	18.61
Dr.Reddy	22.91	22.11	24.96	31.88	37.16	25.33	18.3	7.74
IPCA	11.32	12.99	14.49	10.77	17.21	20.29	20.53	18.5
Matrix	8.81	9.84	-11.46	0.81	16.58	43.59	35.11	23.29
N.Piramal	14.73	21.92	18.43	20.1	22.38	24.67	26.01	17.32
Sun	21.58	19.02	25.33	29.18	33.94	33.87	37.59	16.53

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Aurobindo Pharma is showing an increasing trend in the initial part of the period but then there is fluctuating trend observed in the Return on Investments of the company for the study period. It lies in between 25.29(1999-2000) and 8.33(2004-05) with an average of 18.32 which is lesser than the overall average of 20.37 for the same study period.

There is a constant fluctuation observed in the return on investment figures for Cadila for the study period. The ration lies between 26.7(97-98) and 10.79(1999-2000) with an average of 17.64 which is lower than the overall average 20.37 for the selected companies for the same period.

There is a mixed trend observed in the figures of Cipla Ltd. for the study period. It lies in between 28.65(98-99) and 18.35(2003-04) with an average of 23.76 which is higher than overall average of 20.37 for the same period.

Dr. Reddy's Laboratories is showing an increasing trend in the initial five years but there is a severe downtrend observed in the last three years of the study period. The ratio lies in between 37.16(2001-02) and 7.74(2004-05) for the study period. The average is 23.80 which is higher than the overall average of 20.37 for the same period.

IPCA is showing a mixed trend of increasing trend in the initial three years and there is a constant trend observed and the ratio declines in the last year. It lies between 20.53(2003-04) and 10.77(2000-01) with an average of 15.76 which is quite low compared to the overall average 20.37 for the same study period.

Matrix Laboratories is showing a tremendous fluctuating trend in the return on investment ratios as it includes very low as well as very high values. It lies between 43.59(2002-03) and -11.46(1999-2000) with an average of 15.82 which is very low compared to the overall average of 20.37 for the same study period.

Nicholas Piramal is showing a mixed trend in the return on investment ratios. It lies between 26.01(2003-04) and 14.73(97-98) with an average of 20.70 which is similar to the overall average of 20.37 for the same study period. The ratio seems to be more consistent for the study period compared to other companies in the study.

Sun Pharmaceuticals is showing a mixed trend but has very impressive figures for the return on investments. It lies between 37.59(2003-04) and 16.53(2004-05) with an average of 27.13 which is far more than the overall average 20.37 for the same study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Return on Investment among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Return on Investment among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of Return on Investment between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Return on Investment between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Return on Investment between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Return on Investment between different years during the study period in each company under study is not same."

In the following Table 7.1(a) the calculation of F Test (ANOVA) is shown of Return on Investment ratio for the Pharmaceutical Companies under study, during the study period.

Table Number: 7.1(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Between Companies	7	981.1796437	140.1685205	2.014599519
Between Years	7	575.9826938	82.28324196	1.182632013
Error	49	3409.242106	69.57636952	
Total	63	4966.404444		

The above Table 7.1(a) shows the F value of 2.01 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is lower than the table value of 2.16 hence the null hypothesis is accepted and the alternate hypothesis is rejected, which means Return on

Investment among the different companies is same. F value of 1.18 at 5% level of significance and at (7,49) degree of freedom is also lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that different years' ratios for all the individual companies are same.

Hence it can be concluded that the Return on Investment ratio among different companies under study and the Return on Investment ratio between different years of each company are both same.

4. Calculation of Return on Gross Capital Employed

Gross Capital employed refers to the investment in total assets which includes the fixed assets and the current assets. When gross capital is compared with the operating profits before interest and taxes it gives a clear indication of the return on the total assets invested. We have already discussed the operating margin in the Chapter-5th "Analysis of Profit Margin" and we have also discussed the details of Gross Capital Employed earlier in this same chapter. Now here an attempt has been made to calculate the Return on Gross capital employed for the selected companies. This ratio will measure the returns received on overall investment in the individual companies and will also reveal the overall efficiency which will be shown by the return received on the total investment. The ratio is as under:

$$\textbf{ROGCE=} \frac{\text{Profit before Interest \& Taxes}}{\text{Gross Capital Employed}}$$

Table: 7.2:

Table Showing Return on Gross Capital Employed in Pharmaceutical Companies

under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in Crores]

Co.	97-98	98-99	99-2000	2000-01	2001-02	2002-03	2003-04	2004-05
Aurobindo	20.44	22.25	24.79	19.58	16.16	15.6	13.76	4.7
Cadila	18.46	15.73	7.96	14.26	10.26	13.16	16.29	14.13
Cipla	29.2	29.74	27.61	29.22	24.67	18.75	20	20.26
Dr.Reddy	17.46	15.4	17.23	24.52	29.35	21.92	14.28	2.07
IPCA	12.38	13.07	13.67	10.09	14.23	20.21	21.1	16.91
Matrix	6.62	6.97	-16.79	15.89	14.33	38.3	30.51	20.71
Npiramal	7.08	20.17	18.09	18.17	17.12	19.34	20.85	18.71
Sun	21.92	16.35	20.93	26.95	29.04	29.05	34.05	15.91

Aurobindo Pharma. is showing no particular trend in the ratio of return on gross capital employed. In the initial period there was an increasing trend observed for the first three years but afterwards there was no trend observed. The Return on gross capital employed lies in between 24.79(1999-2000) and 4.7(2004-05) with an average of 17.16 which is lower than the overall average 18.15 for the same study period.

Cadila is also showing a mixed trend of Return on Gross Capital Employed for the study period as there is no particular trend observed in the entire study period. It lies between 18.46(97-98) and 7.96(99-2000) with an average of 13.78 which is very low as compared to overall average 18.15 for the same study period.

Cipla Ltd. is showing a constant consistent rate of return on gross capital employed. There are no major or minor fluctuations observed in the rate for the company in the study period. It lies between 29.74(98-99) and 18.75(2002-03) with an average of 24.93 which is a very good average compared to the overall average of 18.15 for the same study period.

Dr. Reddy's Laboratories is showing a fluctuating trend of Return on Gross Capital Employed for the study period. It ranges between 29.35(2001-02) and 2.07(2004-05)

with an average of 17.78 which is slightly lesser than overall average of 18.15 for the same study period.

IPCA is showing an overall positive trend of return on gross capital employed for the study period. It ranges in between 21.1(2003-04) and 10.09(2000-01) with an average of 15.21 which is lower than the overall average of 18.15 for the same study period.

Matrix Labs is showing fluctuating trend in the initial years of the study period, but in the latter stage of the study period it has shown a very fine performance. It ranges from 38.3(2002-03) and -16.79(1999-2000) with an average of 14.57 which is lower than overall average of 18.15 for the same study period.

Nicholas Piramal is a fairly consistent performance for its return on gross capital employed ratio for the study period. Apart from the very first year in all the years the company has managed to receive a consistent return on its gross capital. It ranges between 20.85(2003-04) and 7.08(97-98) with an average of 17.44 which is slightly lower than overall average of 18.15 for the same study period.

Sun Pharmaceuticals is showing a fairly consistent trend apart from the first year and last year the return on gross capital is showing positive increasing trend. It ranges between 34.05(2003-04) and 15.91(2004-05) with an average of 24.28 which is far better than the overall average of 18.15 for the same study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Return on Gross Capital Employed among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Return on Gross Capital Employed among

different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of Return on Gross Capital Employed between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Return on Gross Capital Employed between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of Return on Gross Capital Employed between different years during the study period in each company under study is same"

Alternate Hypothesis (H_1):- "The ratio of Return on Gross Capital Employed between different years during the study period in each company under study is not same."

In the following Table 7.2(a) the calculation of F Test (ANOVA) is shown of Return on Gross Capital Employed ratio for the Pharmaceutical Companies under study, during the study period.

Table : 7.2(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Column	7	1005.595244	143.6564634	2.387894301
Row	7	511.2620188	73.03743125	1.214046773
Error	49	2947.855231	60.16031084	
Total	63	4464.712494		

The above Table 7.2(a) shows the F value of 2.39 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is higher than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that the ratio of Return on Gross Capital Employed among different companies is not same. F value of 1.21 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that different years' ratios for all the individual companies are showing similar trend or are same.

Hence it can be concluded that there are no similarities in the Return on Gross Capital Employed ratio among different companies under study and there are similarities in the Return on Gross Capital Employed ratio between different years of each company.

5. Calculation of Return on Net Capital Employed

Net capital employed refers to the total assets less the current liabilities, in other words net capital employed refers to the fixed assets plus current assets minus current liabilities. This ratio can be described as one of the significant measure of profitability

as the current liabilities are deducted with a logic that the part of total assets which would be utilized to pay to current liabilities will not be permanently invested in the business. Hence the amount of total assets equaling to current liabilities is deducted from the gross capital employed and thus remaining part of total assets or gross capital employed is the amount which is referred as net capital employed. The concept of net capital employed has been discussed in depth earlier in this chapter and the profit margin used here i.e. the operating profits before interest and taxes has also been discussed in the Chapter-5th "Analysis of Profit Margin". The ratio is as under:

$$\textbf{RONCE} = \frac{\text{Profit before Interest \& Taxes}}{\text{Net Capital Employed}}$$

Table : 7.3:

Table Showing Return on Net Capital Employed in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in

Crores]

Co.	97-98	98-99	99-2000	2000-01	2001-02	2002-03	2003-04	2004-05
Aurobindo	27.56	31.28	30.38	24.48	19.63	18.98	15.77	5.41
Cadila	23.5	19.6	8.97	16.25	11.35	15.51	19.27	16.6
Cipla	33.43	33.59	33.17	36.66	30.63	23.8	24.51	25.02
Dr.Reddy	19.78	18.05	19.5	28.11	32.78	24.61	16.51	2.39
IPCA	14.48	15.29	15.64	11.4	16.59	23.01	24.66	19.29
Matrix	7.91	9.23	-27.07	24.54	22.03	47.56	37.97	27.67
Npiramal	8.17	24.02	21.54	23.04	22	23.71	25.32	22.89
Sun	25.39	18.7	24	30.15	32.6	32.14	39.14	16.94

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the table showing calculation of Return on Net Capital Employed Aurobindo Pharma. is showing a positive trend for the first three years but afterwards for the rest of eight years it has shown a declining trend. It ranges between 31.28(98-99) and 5.41(2004-05) with an average of 21.69 which is almost equal to the overall average of 21.67 for the same study period of all the selected pharmaceutical companies.

Cadila is showing a fluctuating trend for the return on net capital employed for the study period. It ranges between 23.5(97-98) and 8.97(1999-2000) with an average of 16.38 which is quite lower than the overall average of 21.67 for the same study period of all the selected pharmaceutical companies.

Cipla Ltd. is showing a very consistent trend of its Return on net capital employed with a very small decline observed in the last three years of the study period. It ranges between 36.66(2000-01) and 23.8(2002-03) with an impressive average of 30.10 which narrates the story of high and consistent performance of Cipla Ltd. in the study period. The average of the company is very high compared to the overall average of eight companies 21.67 for the same study period.

Dr. Reddy's Laboratories is showing a fluctuating trend for its return on net capital employed for the period under study. It ranges between 32.78(2001-02) and 2.39(2004-05) with an average of 20.22 which is although close to overall average of 21.67 but has lot of fluctuations making it an unstable performer.

Some fluctuations are observed in the Return on net capital employed ratio of IPCA for the study period. It ranges between 24.66(2003-04) and 11.4(2000-01) with an average of 17.55 which is lower than the overall average of 21.67 for the same study period.

Matrix Laboratories is showing some very high fluctuations in the initial three years but after wards the rate has improved in the last five years. It ranges between

47.56(2002-03) and -27.07(1999-2000) with an average of 18.73 which is lower than overall average of 21.67 for the same study period.

Nicholas Piramal is a fairly consistent and better performer barring its performance in the first year for the return on net capital employed. It ranges from 25.32(2003-04) and 8.17(97-98) with an average of 21.34 which is very close to the overall average of 21.67 for the same study period. This company has shown a very fine performance in this ratio making it a reliable and stable company.

Sun Pharmaceuticals has shown a very fine and increasing trend in the return on net capital employed barring two years when its performance was slightly weak. It ranges between 39.14(2003-04) and 16.94(2004-05) with an average of 27.38 which is better than the overall average of 21.67 for the same study period. The company can be given all the credit for being the first company in the study for having a positive increasing trend of return on net capital employed and its fine performance is visible even in its average. If these efforts are continued the company can show wonderful results in the coming times.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Return on Net Capital Employed among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Return on Net Capital Employed among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio of Return on Net Capital Employed between different companies under study during the study period is same."

Alternate Hypothesis (H_1):-   "The ratio of Return on Net Capital Employed between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):-   "The ratio of Return on Net Capital Employed between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):-   "The ratio of Return on Net Capital Employed between different years during the study period in each company under study is not same."

In the following Table 7.3(a) the calculation of F Test (ANOVA) is shown of Return on Net Capital Employed ratio for the Pharmaceutical Companies under study, during the study period.

Table Number: 7.3(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Column	7	1276.589861	182.3699801	1.799259459
Row	7	829.0566609	118.4366658	1.16849435
Error	49	4966.559427	101.3583556	
Total	63	7072.205948		

The above Table 7.3(a) shows the F value of 1.79 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during

the study period which is lower than the table value of 2.16 hence the null hypothesis is accepted and the alternate hypothesis is rejected, which means that there are similarities among the different companies under study in the ratio of Return on Net Capital Employed . F value of 1.17 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that there are similarities between different years' ratios for all the individual companies.

Hence it can be concluded that there are similarities in the Return on Net Capital Employed ratio among different companies under study and there are similarities in the Return on Net Capital Employed ratio between different years of each company.

6. Calculation of Return on Proprietor's Net Capital Employed

This ratio is also referred as return on net worth. This is another profitability measuring ratio which would compare the profit with the amount of investment. Here investment refers only ownership capital. For the objective of profitability in relation to investment, this is another ratio which is used. Every company has a mixture of ownership capital and borrowed capital in their capital structure, but in general the higher the share of proprietors in the total capital of the company (either in the form of share capital or retained earnings), less is the likelihood of insolvency in future.[1] This ratio carries importance especially for the current and prospective investors; as the shareholders are the real owners and it is quite important to find out how much they are earning in relation to their investment.

This ratio has also got specific utility with reference to calculation and analysis of "Trading on Equity", as such the management intends to pass on the benefit of the risk

of borrowed capital to the shareholders, especially the equity shareholders by paying more dividends to them. The ratio is as under:

$$\text{ROPNW} = \frac{\text{Net Profit after Tax}}{\text{P. Net Capital Employed}}$$

Table: 7.4:

Table Showing Return on Proprietor's Net Capital Employed in Pharmaceutical

Companies under Study Period: 1997-98 to 2004-05

[All amounts = Rs. in Crores]

Co.	97-98	98-99	99-2000	2000-01	2001-02	2002-03	2003-04	2004-05
Aurobindo	34.1	40.22	33.91	24.89	16.86	17.54	16.82	4.45
Cadila	25.55	35.57	7.45	11.91	12.27	18.36	27.95	22.97
Cipla	27.92	24.73	22.9	24.07	25.73	22.38	24.56	23.14
Dr.Reddy	16.18	13.54	13.9	26.25	31.71	21.7	14.12	3.06
IPCA	14.17	16.39	16.08	11.7	22.11	29.22	28.91	23.07
Matrix	1.05	2.54	-108.05	34.15	20.83	74.74	70.69	20.95
Npiramal	15.85	13.73	14.1	16.62	26.72	43.78	46.61	17.81
Sun	25.06	18.09	21.51	28.2	32.29	32.77	27.11	27.12

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

This ratio has got a lot many similarities with the earlier ratio hence it would be very interesting to observe how the two ratio show similarity in their results for the study period. Aurobindo Pharma is showing a fluctuating trend in the return on shareholders funds for the study period. It ranges between 40.22(98-99) and 4.45(2004-05) for the study period with the average of 23.60 which is better than the overall average of 21.45. The decreasing trend in the latter part of the study period and a huge decrease in the last year makes the company a bit fluctuating other wise it has good performance to boast off in the first three years of the study period.

Cadila has shown a big downfall in the ratio in the third year of the study period which is as big as 80%. But after that a steady increase is observed for the next four

years. It ranges between 35.57(98-99) and 7.45(1999-2000) with an average of 20.25 which slightly lower than the overall average of 21.45 for the same study period.

Cipla Ltd. is once again perfectly consistent with its performance making it most reliable and stable company among all the selected pharmaceutical companies of the present study. It ranges between 27.92 (1997-98) and 22.38(2002-03) with an average of 24.43 which is even better than the overall average of 21.45 for same study period. The thing which is peculiar about this company is it earns a very fine return on its investment and icing on the cake is it does it always! Thus making this company a very stable company.

Dr. Reddy has shown a mixed trend in the study period but a severe decline of 70% (app.) on return on shareholders fund makes it a very un-stable company in the study. This sudden decline can be attributed to decline in Operating profit margin as well as Net Profit margin. The sudden decrease in the net profit margin in the last year can be attributed to the decline in sales by 7% and increase in expenses like interest expenses increased by 200%, miscellaneous expenses increased by 80%, selling and administration expenses increased by 14% and interestingly raw material cost decreased by 5%. It ranges between 31.71(2001-02) and 3.06(2004-05) with an average of 17.56 which is lower than overall average of 21.45 for the same study period. The decreasing trend observed in the last three years can turnout to be a very dangerous situation for the company if immediate actions are not taken by the company.

IPCA is showing a mixed trend of increasing and decreasing trend of return on shareholders fund for the study period. It ranges between 29.22(2002-03) and

11.7(2000-01) with an average of 20.21 which is slightly lower than the overall average of 21.45 for the same study period.

Matrix Laboratories Ltd. is showing a very huge fluctuation in the return on shareholders funds for the study period. It ranges between 74.74(2002-03) and -108.05(1999-2000) with an average of 14.16 which is lower than the overall average of 21.45 for the same study period.

Nicholas Piramal is showing a very fine increasing trend for five years in between the study period but the decline in the second and last year makes the overall performance bit dull. It ranges between 46.61(2003-04) and 13.73(98-99) with an average of 24.40 which is better than overall average of 21.45 for the same period. If proper steps are taken the company can reach some very fine heights in the future.

Sun Pharmaceuticals is showing a mixed trend on return on shareholders funds but has been able to maintain a certain level of consistency. It ranges between 32.77(2002-03) and 18.09(98-99) with an average of 26.52 which is higher than overall average of 21.45 for the same study period.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Return on Proprietor's Net Capital Employed among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Return on Proprietor's Net Capital Employed among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):- "The ratio of Return on Proprietor's Net Capital Employed between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Return on Proprietor's Net Capital Employed between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Return on Proprietor's Net Capital Employed between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Return on Proprietor's Net Capital Employed between different years during the study period in each company under study is not same."

In the following Table 7.4(a) the calculation of F Test (ANOVA) is shown of Return on Proprietor's Net Capital Employed ratio for the Pharmaceutical Companies under study, during the study period.

Table: 7.4(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Column	7	902.2431609	128.8918801	0.291438063
Row	7	4868.275411	695.4679158	1.572525921
Error	49	21670.82108	442.2616546	
Total	63	27441.33965		

The above Table 7.4(a) shows the F value of 0.29 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is lower than the table value of 2.16 hence the null hypothesis is accepted and the alternate hypothesis is rejected, which means that there are similarities among the different companies under study in the ratio of Return on Proprietor's Net Capital Employed . F value of 1.57 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that there is are similarities between different years' ratios for all the individual companies.

Hence it can be concluded that there are similarities in the Return on Proprietor's Net Capital Employed ratio among different companies under study and there are similarities in the Return on Proprietor's Net Capital Employed ratio between different years of each company.

7. Calculation of Earnings per Share

As the name suggests this ratio refers to the earnings or the profit per share. This is another important measure of profitability; this ratio is different from other ratios in the way that this ratio measures the profitability on the per share basis. This is the ultimate ratio for the investors as well as the prospective investors who are planning to invest with the company. This ratio is calculated by dividing the amount available for equity shareholders by the outstanding number of equity shares. The amount available for equity shareholders refers to Net profits after tax and after paying dividend to preference shareholders (if any). In other words the profit which is remaining after

paying to all the liabilities as well as to the preference shareholders. The ratio is calculated as under:

$$EPS= \frac{\text{Amount available for Equity Shareholder}}{\text{Outstanding number of equity shares}}$$

Table : 7.5:

Table Showing Earnings Per Share in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in Crores]

Co.	97-98	98-99	99-2000	2000-01	2001-02	2002-03	2003-04	04-05
Aurobindo	49.85	52.22	72.86	33.74	33.14	43.92	24.73	6.84
Cadila	11.13	13.49	6.03	10.66	11.24	12.38	21.99	20.08
Cipla	50.46	56.68	21.86	29.4	39.2	40.03	49.22	13.16
Dr.Reddy	18.14	19.24	22.36	45.32	59.56	50.6	36.37	7.85
IPCA	15.06	16.61	20.29	15.46	25.62	48.34	62	31.54
Matrix	0.37	1.28	0	10.55	6.23	76.4	99.72	42.65
Npiramal	8.74	15.26	12.88	18.36	12.69	29.67	47.06	8.33
Sun	35.94	36.08	49.36	27.33	36.3	24.18	24.99	15.94

Aurobindo Pharma is showing a positive trend in the EPS for the first three years of the study period after that there is fluctuation observed in the EPS of the company for the remaining years. It ranges between 72.86(1999-2000) and 6.84(2004-05) with an average of 39.66 which is very high as compared to the overall average of 29.05 for the same study period.

Cadila Healthcare has improved over the years as far EPS is concerned. There is a clear positive increasing trend observed from the year 2000-01 till the end i.e. 2003-04. EPS for the entire period ranges in between 21.99(2003-04) and 6.03(1999-2000) with an average of 13.38 which is although very low as compared to the overall average of 29.05 for the same period, but if company continues on its positive trend it can improve its EPS figures in the coming times.

Cipla Ltd. is showing some wonderful figures in the initial years but then could not continue the momentum and has some fluctuations in its EPS during the study period. It ranges between 56.68(98-99) and 13.16(2004-05) with an average of 37.50 which is even then better than the overall average of 29.05 for the same period.

Dr. Reddy's Laboratories is showing a constant increasing trend in the initial five-six years but it has decline a lot in the last two years. It ranges in between 59.56(2001-02) and 7.85(2004-05) with an average of 32.43 which is better than the overall average 29.05 for the same period.

IPCA Labs is showing an increasing trend for the study period with decline in two years. Excepting these two years there is a steady growth observed in the EPS of the company for the study period. It ranges in between 62(2003-04) and 15.06(97-98) with an average of 29.37 which almost equal to the overall average of 29.05 for the same period.

Matrix Laboratories is showing tremendous fluctuation in the ratio as it has shown fluctuation of over 99% over a period of five years. It ranges between 99.72(2003-04) and 0(1999-2000) with an average of 29.65 which is almost same as the overall average of 29.05 but the high level of fluctuation makes the company more unreliable and un-stable.

Nicholas Piramal is showing an overall trend of increasing excepting two years where it has registered declining EPS. It ranges in between 47.06(2003-04) and 8.33(2004-

05) with an average of 19.12 which is very low as compared to the overall average of 29.05 for the same period.

Sun Pharmaceuticals has shown a constant increasing trend through out the study period except decline in two or three occasions. But then also this company has managed to maintain it's EPS with some degree of consistency. It ranges from 49.36(1999-2000) to 15.94(2004-05) with an average of 31.27 which is higher than the overall average of 29.05 and no major fluctuations Sun Pharma is nicely poised to improve its performances in the coming times.

F – Test (ANOVA) Analysis

In order to establish relationship in the ratio of Earnings Per Share among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Earnings Per Share among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The ratio Earnings Per Share between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "The ratio of Earnings Per Share between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

Null Hypothesis (H_0):- "The ratio of Earnings Per Share between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The ratio of Earnings Per Share between different years during the study period in each company under study is not same."

In the following Table 7.5(a) the calculation of F Test (ANOVA) is shown of Earnings Per Share for the Pharmaceutical Companies under study, during the study period.

Table : 7.5(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Column	7	4360.596819	622.9424027	1.819082973
Row	7	4842.924619	691.8463741	2.020292652
Error	49	16779.98101	342.448592	
Total	63	25983.50244		

The above Table 7.5(a) shows the F value of 1.82 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is lower than the table value of 2.16 hence the null hypothesis is accepted and the alternate hypothesis is rejected, which means that there are similarities among the different companies under study in the ratio of Earnings Per Share. F value of 2.02 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate

hypothesis is rejected, which means that there are similarities between different years' ratios for all the individual companies.

Hence it can be concluded that there are similarities in the Earnings Per Share ratio among different companies under study and there are similarities in the Earnings Per Share ratio between different years of each company.

8.Calculation of Dividend Pay Out Ratio & its Statistical Analysis

A company would be interested in the profit earned and its profitability situation, and this indicates the expectation of return on its investment of resources. After making investment in the form of financial and non-financial resources the company would be definitely interested in knowing and receiving and measuring the returns received. This refers to the profitability analysis and we have been discussing about the same in the current chapter. Now similar logic applies for the owners of the company. We can definitely make the independent analysis of the company as well as its investors as company is having its own identity which is distinct from its owners.

Dividend analysis for the owner (investor) is having the similar significance as the profitability analysis is for the company. The success or the otherwise of their investment and their future relation with the company depends on the dividends received by them; hence dividend policy or dividend decision carries a tremendous importance for the company.

Dividend decision is among the top three core areas of decision to be made by any business enterprise as far as its financial management is concerned. In the eyes of shareholders the real success of company is when they (shareholders) receive hefty amount of dividends, whatever intelligent or aware an investor may be his final view for the company's profitability is the amount of dividend received. It is in this regard that the company makes very calculative decision of paying dividends, because regular payments of dividend would make fewer amounts available for ploughing back of profit. And the company has to make a right balance between the payment of dividends and retaining profits with the company. Ultimately the fact that "how often" a company has declared the dividend and "how much" is counted by the market.

Dividend Payout ratio is the ratio of dividend declared to the amount available for equity shareholders. In other words this ratio measures the proportion of amount declared as dividend out of the total amount available to equity shareholders. As the amount left is ploughed back into the business or reinvested the remaining amount is referred as the retained earnings. If the Dividend Payout ratio is deducted from 100, the ratio of retained earnings is derived. Dividend payout ratio gives a clear indication of the dividend decision made by the financial manager of the company. This ratio is not a dedicated profitability ratio but definitely gives a fine view of profitability situation of the company. Unless the company is having some specific plans for the profits it would like to distribute the profits to the shareholders and earn the increased market price of the shares, along with the investors' confidence. Let us examine this statement by making calculation of the dividend pay out ratio. The ratio is as under:

$$\textbf{Dividend pay out ratio} \quad \frac{\text{Dividend paid to equity shareholders}}{\text{Amount available to equity shareholders}}$$

Table: 7.6:

Table Showing Dividend Payout Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in Crores]

Co.	97-98	98-99	99-2000	2000-01	2001-02	2002-03	2003-04	2004-05
Aurobindio	9.88	6.32	6.55	8.81	9.95	8.49	8.98	7.23
Cadila	22.08	28.44	36.47	27.54	30.71	25.98	25	26.72
Cipla	10.8	13.11	13.49	15.47	18.33	25.04	28.97	29.2
Dr.Reddy	14.41	15.29	13.13	8.7	12.41	9.76	13.24	60.34
IPCA	32.18	25.28	26.17	30.4	19.79	18.18	17.25	17.66
Matrix	220	0	0	0	16.07	12.83	12.01	13.76
Npiramal	60.66	35.93	36.38	35.81	42.48	24.06	27.53	58.65
Sun	16.39	21.57	19.69	17.82	13.52	20.39	25.87	23.21

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Aurobindo Pharma seems to be fairly consistent in paying to its shareholders in the study period. This shows a concern for the shareholders and also the efficiency of the company to manage funds for its expansion and developmental activities. Dividend Payout Ratio (DPR) ranges between 9.95(2001-02) to 6.32(98-99) with an average rate of 8.28 which is although very low compared to the overall ratio of 23.95 for the same period, but the consistency of the company in providing for the dividend is impressive.

Cadila Healthcare is showing a mixed trend of increase and decrease but with no major fluctuations which is good sign for any company. DPR of the company for the study period ranges between 36.47(1999-2000) and 22.08(97-98) with an average of 27.87 which is better than the overall average of 23.95 for the same period.

Cipla Ltd. is showing a very impressive and unique continuously increasing trend in the DPR for the study period. This makes the company the most favorite for the investors. This also proves that with the increasing margins the company is increasing the DPR which in real sense is passing on the profit due to efficiency to the investors who are the real owners of the company. The DPR of the company for the study period ranges in between 29.2(2004-05) and 10.8(97-98) with an average of 19.30 which is although lesser compared to the overall average of 23.95 but the average has got no fluctuations whatever hence it's the real average with which company is paying to its shareholders from the profits which are available to them.

Dr. Reddy's Laboratories is showing some mixed trends and with some amount of fluctuations. It ranges from 60.34(2004-05) to 8.7(2000-01) with an average of 18.41 which is lower than the overall average of 23.95 for the same period. There is a significant increase in the dividend payout ratio of the last year of the study period (2004-05) compared to other previous years.

IPCA is showing better ratio in terms of their values in the initial four years of the study period with no major fluctuations. But from the fifth year (2001-02) there is a decline observed in the dividend payout ratio of the company. It ranges between 32.18 (97-98) to 17.25 (2003-04) with an average of 23.36 which is almost equal to the overall average 23.95 for the same period.

Matrix Laboratories has not declared dividend for three consecutive years i.e. from 98-99 to 2000-01 but is quite consistent for declaring dividends after that period. It ranges between 220(97-98) to 12.01(2003-04) with an average of 34.33 which is although higher than the overall average 23.95 but the amount of fluctuations which are involved in the ratios of the company makes it get counted as unstable as far as dividend declaration is concerned.

Nicholas Piramal is showing a stable and consistent trend of the dividend payout ratio for the study period except in couple of years in between. A very high rate of DPR is observed in the first year of study period. After that a constant positive trend is observed for the four years and then the downfall for the two years but ultimately ended with a positive note in the year 2004-05. It ranges between 60.66(97-98) and 24.06(2002-03) with an average of 40.19 which is far more better than the overall average 23.95 and more importantly the average is much more reliable.

Sun Pharmaceuticals is showing a mixed trend but cannot be termed as a fluctuating ratio. It ranges between 25.87(2003-04) and 13.52(2001-02) with an average of 19.81 which is lower than the overall average of 23.95 but the DPR seems to be promising for the company in the coming years.

F – Test (ANOVA) Analysis

In order to establish relationship in the Dividend Payout Ratio among different Pharmaceutical companies under study during the study period and for establishing relationship in the Dividend Payout Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "The Dividend Payout Ratio between different companies under study during the study period is same."

Alternate Hypothesis (H_1):-   "The Dividend Payout Ratio between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

 Null Hypothesis (H_0):-   "The Dividend Payout Ratio between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The Dividend Payout Ratio between different years during the study period in each company under study is not same."

In the following Table 7.6(a) the calculation of F Test (ANOVA) is shown of Dividend Payout Ratio for the Pharmaceutical Companies under study, during the study period.

Table: 7.6(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Column	7	5618.384344	802.6263348	1.04464823
Row	7	6242.009794	891.7156848	1.160601355
Error	49	37647.78351	768.3221124	
Total	63	49508.17764		

The above Table 7.6(a) shows the F value of 1.04 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is lower than the table value of 2.16 hence the null hypothesis is accepted and the alternate hypothesis is rejected, which means that there are similarities among the different companies under study in the Dividend Payout Ratio. F value of 1.16 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that there are similarities between different years' ratios for all the individual companies.

Hence it can be concluded that there are similarities in the Dividend Payout Ratio among different companies under study and there are similarities in the Dividend Payout Ratio between different years of each company.

9.Calculation of Fixed Charges Cover Ratio

Coverage ratios try to measure the amount available to pay the fixed expenses. Interest coverage ratio tries to find out the ratio of amount available to the interest payable. It can be considered as a margin of safety for the investors, as higher the ratio higher is the safety net for the investors. The ratio should be high, which shows the company's ability to earn on the borrowed capital and also to pass on the additional benefits to the shareholders of the company. But too much of high ratio shows an opportunity missed, as it shows that although the company has enough capacity to pay higher amounts of interest but it did not took the calculated risk of borrowing more funds and earn a better revenues for the shareholders.

Hence it can be said that higher ratio shows a safety for shareholders but too much high ratio shows the company is not able to take the advantage of "Trading on Equity". And the lower ratio can be an alarm for the company towards the risks associated with the use of borrowed funds.

The interest coverage ratio is used to test the firm's debt-servicing capacity.[1] The interest coverage ratio measures the number of times the interest is covered by funds that are available for their payment.

The above ratio is good enough but it has a serious limitation of not considering the principal amount, in only considers the interest as the liability and tries to find the

amount available to pay the interest and the ratio. Therefore a better ratio to interest coverage ratio is fixed charges coverage ratio, which tries to establish a relationship between the actual liability of interest and principal amount with the amount available to pay the liability.

$$\text{Fixed Charge Coverage Ratio} = \frac{\text{Earnings before Interest \& Tax}}{\text{Interest}}$$

Table: 7.7:

Table Showing Fixed Charges Coverage Ratio in Pharmaceutical Companies under

Study Period: 1997-98 to 2004-05

[All amounts = Rs. in Crores]

Co.	97-98	98-99	99-2000	2000-01	2001-02	2002-03	2003-04	2004-05
Aurobindo	2.82	3.62	3.78	3	3.1	4.29	6.35	2.07
Cadila	2.41	5.24	3.13	5.99	5.31	3.38	6.71	7.04
Cipla	35.97	34.8	64.01	90.65	79.32	70.6	30.28	45.13
Dr.Reddy	6.14	5.65	5.09	5.05	34.27	72.27	72.71	4.48
IPCA	2.38	2.31	2.66	2.33	3.48	12.1	15.65	9.61
Matrix	1.12	1.22	-2.16	3.32	4.5	4.32	8.26	20.63
Npiramal	2.37	2.4	2.63	3.51	2.34	4.09	5.77	9.07
Sun	6.16	6.1	9.67	19.91	52.88	269.97	82.22	10.77

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Aurobindo Pharma is showing an almost increasing trend in the FCCR for the study period. A very high ratio of 6.35 in the year 2003-04 shows that there was a scope for "Trading on Equity" but in the next year itself the ratio declines to 2.07 which shows

that the company needs to take care of its earnings or it has to restrict use of borrowed funds. The sudden decline in the ratio can be attributed to decreased profits owing to decreased sales and increased costs. The ratio ranges between 6.35 (2003-04) and 2.07(2004-05) with an average of 3.63 which is fairly lower than the overall average of 20.41 for the same study period.

Cadila Healthcare is showing a mixed trend of FCCR. There is no particular trend observed in the ratio for the study period. It lies in between 7.04(2004-05) and 2.41(97-98) with an average of 4.90 which is very low compared to the overall average of 20.41 for the study period. The ratio shows that company has got a fine balance between the interests and the profits.

A very high ratio for Cipla Ltd. shows the lesser amount of borrowed funds with the company. Company is in a very sound position to pay interests as it is earning very high as compared to its fixed commitment. The ratio is in between 90.65(2000-01) and 30.28(2003-04) with an average of 56.35 which is very high as compared to the overall average of 20.41. One inference can be drawn from the ratio for the company that company is earning very high as compared to its fixed commitment, which means that the company is risk averse ; but has got a lot scope of trading on equity in real sense.

Dr. Reddy's Laboratories is showing an interesting story as far as FCCR is concerned as for the first four years of the study period it is around 5 and suddenly in the year 2001-02 the ratio has climbed to 34.27 and in the next year once again it increased to 72.27. It lies between 72.27(2002-03) and 4.48(2004-05) with an average of 25.71 which is better than the overall average of 20.41.

IPCA Labs is showing a fairly consistent ratio in the first five years of the study period, but showed an increase in the last three years. It lies in between 15.65(2003-04) and 2.31(98-99) with an average of 6.32 which is very low as compared to the overall average of 20.41. Company has to be very conscious with regard to its profit margins as it is too close to the fixed commitment.

Matrix Laboratories is showing a steady increasing trend in the FCCR which can be an indication of its better profits and lesser borrowed funds. It lies in between 20.63(2004-05) and -2.16(1999-2000) with an average of 5.15 which is very low as compared to the overall average of 20.41. There is a negative ratio in the figures for the study period which shows the weak financial state of the company.

Nicholas Piramal is a steady increasing trend in the FCCR for the study period. It ranges in between 9.07(2004-05) and 2.34(2001-02) with an average of 4.02 which is very low as compared to the overall average of 20.41.

Sun Pharmaceuticals is showing a clear increasing trend in the initial five years of the study period which is an indication of its increasing profits and lesser reliance on fixed cost funds. But later on the company has used some fixed cost funds and the ratio has declined. It lies in between 269.97(2002-03) and 6.1(98-99) with an average of 57.21 which is higher as compared to the overall average of 20.41.

F – Test (ANOVA) Analysis

In order to establish relationship in the Fixed Charges Cover Ratio among different Pharmaceutical companies under study during the study period and for establishing

relationship in the Fixed Charges Cover Ratio among different years for each (individual) company, F-Test ANOVA is used. The statements of hypothesis for the comparison among different companies and for comparison among different years for individual companies during the study period are as under:

Hypothesis for comparison between different companies:-

Null Hypothesis (H_0):-   "Fixed Charges Cover Ratio between different companies under study during the study period is same."

Alternate Hypothesis (H_1):- "Fixed Charges Cover Ratio between different companies under study during the study period is not same."

Hypothesis for comparison between different years:-

 Null Hypothesis (H_0):-   "The Fixed Charges Cover Ratio between different years during the study period in each company under study is same."

Alternate Hypothesis (H_1):- "The Fixed Charges Cover Ratio between different years during the study period in each company under study is not same."

In the following Table 7.7(a) the calculation of F Test (ANOVA) is shown of Fixed Charges Cover Ratio for the Pharmaceutical Companies under study, during the study period.

Table: 7.7(a)

Table Showing calculation of F-Test (ANOVA)

S V	d f	S. S.	M. S. S.	F cal
Column	7	31166.46434	4452.352048	4.063395222
Row	7	14047.06704	2006.723862	1.831416758
Error	49	53690.38413	1095.722125	
Total	63	98903.9155		

The above Table 7.7(a) shows the F value of 4.06 at 5% level of significance and at (7,49) degree of freedom for different Pharmaceutical Companies under study during the study period which is higher than the table value of 2.16 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there are no similarities among the different companies under study in the Fixed Charges Cover Ratio. F value of 1.83 at 5% level of significance and at (7,49) degree of freedom is lower than the Table value of 2.16 hence null hypothesis is accepted and alternate hypothesis is rejected, which means that there are similarities between different years' ratios for all the individual companies.

Hence it can be concluded that there are no similarities in the Fixed Charges Cover Ratio among different companies under study and there are similarities in the Fixed Charges Cover Ratio between different years of each company.

10. Conclusion

From the above calculation of ratios there can be some general conclusions drawn from the statistical analysis. From the study of seven individual ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

- There is no significant difference in the Return on Investment ratio among different companies under study and there is no significant difference in the Return on Investment ratio between different years of each company.

- There are no similarities in the Return on Gross Capital Employed ratio among different companies under study and there are similarities in the Return on Gross Capital Employed ratio between different years of each company.

- There are similarities in the Return on Net Capital Employed ratio among different companies under study and there are similarities in the Return on Net Capital Employed ratio between different years of each company

- There are similarities in the Return on Proprietor's Net Capital Employed ratio among different companies under study and there are similarities in the Return on Proprietor's Net Capital Employed ratio between different years of each company.

- There are similarities in the Earnings Per Share ratio among different companies under study and there are similarities in the Earnings Per Share ratio between different years of each company.

- There are similarities in the Dividend Payout Ratio among different companies under study and there are similarities in the Dividend Payout Ratio between different years of each company.

- There are no similarities in the Fixed Charges Cover Ratio among different companies under study and there are similarities in the Fixed Charges Cover Ratio between different years of each company.

References

1. Gupta R.L, Radhaswamy M.: Advanced Accountancy, Sultan Chand & Sons, New Delhi   1993
2. Wick C.A.West: How to use management ratios, Great Britain 1991
3. Myre N. John: Financial statement analysis: Prince and tech, Prentice Hall, Englewood cliffs,   NJ 1985
4. Hampton J. John: Financial Decision making, Prentice Hall of India, New Delhi, 1993
5. Wixon Rufus: Accountants Hand Book, Harper Ronald Press, New York, 1997
6. Betty J: Management Accounting: McDonald & Evans Ltd., London 1983
7. Chandra Prasanna: Financial Management, Tata McGraw Hill, New Delhi 1994
8. Bolton S.E.: Managerial Finance: Houghton, Mifflin Co. Boston 1976
9. Gitman L.J.: Principles of Managerial Finance, Harper & Row Publishing, 1998
10. Wick C.A.West: How to use management ratios, Great Britain 1991
11. Betty J: Management Accounting: McDonald & Evans Ltd., London 1983
12. Gupta R.L, Radhaswamy M.: Advanced Accountancy, Sultan Chand & Sons, New Delhi   1993

Chapter 8

ANALYSIS OF COMMON SIZE INCOME STATEMENT

Contents

Page
Number

1. Concept of Common Size Income Statement

The real test of ability or efficiency of any activity is done when it is compared with something similar to it. In this research work it has been an effort to look into the details of the profit and profitability of the various selected companies. This chapter is an addition to the exercise of making an analysis of profitability of pharmaceutical companies of India. Any assessment is not complete till it is compared with some base; similarly, in this research work also we are now trying to compare the different years' income statements of the companies under study.

In order to carry out some real genuine comparison it needs to convert the different statements into a common measure. Like income of Rs. 1,00,000 cannot be compared with income of 1,00,000 $, as both the figures are in different currencies, similarly the statements of different years cannot be compared directly, they need to have something in common to compare, hence here the comparison is made by preparing a special purpose statement termed as "Common Size Income Statement". As every year the scale of operation can be different of the same company and so the scale of amount expended and the income received would be definitely different, in this situation the income statement of different years cannot be compared directly, it can turn out to be meaningless. Financial statements when read with absolute figures are not easily understandable, sometimes they are even misleading.[1] Hence it is required to convert the figures of income statement into some common base.

This type of analysis is also referred as "Vertical Analysis". In profit and loss account or income statement sales figure is assumed to be equal to 100 and all other figures are expressed as percentage of sales.

2. Steps for preparing the Common size Income Statement

(a)   Net sales are taken as base for every year, for whatever number of years' common size income statement is to be prepared.

(b)   The ratio of each item and each account category is found out by dividing the respective amounts by the base figure and multiplying by 100.

(c)   The common size income statement has been prepared for each selected Pharmaceutical company separately.

3. Advantages of Common Size Income Statements

The following are the benefits or the advantages of common size income statements and thus they have been used as a tool of analysis for the present study.

(a)   A precise and perfect comparison of yearly performance of the company can be done.

(b)   Profitability situation of individual years and of all years can be done.

(c)   The effects of some small, medium or large scale decision on profit can be identified.

(d)   Any abnormalities in any year however meager can be highlighted.

(e)   The effect of any deliberate change made by the management in any area can be traced, if any.

(f)   The progress or otherwise in cost cutting and improved revenue generation exercise can be identified.

4. Limitations of Common Size Income Statements

Although a very method but still it suffers from limitations, which are described as under:

(a)   As per the concept of GIGO (Garbage In Garbage Out) the quality of the common size statement depends totally on the quality of data that are used for preparing the statements.

(b)   A small calculative error could destroy the objective of preparing the statements and will be totally misleading.

(c)   If one or more years are abnormal in terms of some events then the different statements can never be compared.

(d)   This tool cannot be used as an end tool, as such in order to make some

generalizations or some findings it is essential to analyze the statements,

hence an expert and informed analyst is what required even after preparing

this statement.

5. Common Size Income Statements of sample units

9. AUROBINDO PHARMACEUTICALS LTD.

Table: 8.1:

The following page has the Table Showing the Common Size Income Statement for

Aurobindo Pharmaceuticals for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 8.1

Table Showing the Common Size

the period of 8 (E

Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	295.31	100.00	550.03	100.00	739.9	100.00	972.52	100.00	1007.96	100
Less:COGS	253.48	85.84	468	85.09	626.78	84.71	858.44	88.27	909	90.1
Operating Profit	41.83	14.16	82.03	14.91	113.12	15.29	114.08	11.73	98.96	9.82
Add:Non-op. Income	1.48	0.50	2.79	0.51	9.29	1.26	35.23	3.62	54.44	5.40
Total	43.31	14.67	84.82	15.42	122.41	16.54	149.31	15.35	153.4	15.2
Less:Non-op. Exp.	3.41	1.15	8.39	1.53	11.22	1.52	24.2	2.49	22.17	2.20
Profit before Tax&Int.	39.9	13.51	76.43	13.90	111.19	15.03	125.11	12.86	131.23	13.0
Less: Interest	14.13	4.78	21.1	3.84	29.4	3.97	41.68	4.29	42.39	4.21
Profit before Tax	25.77	8.73	55.33	10.06	81.79	11.05	83.43	8.58	88.84	8.81
Less: Tax	1.98	0.67	5.19	0.94	7.19	0.97	15.12	1.55	20.33	2.02
Net Profit	23.79	8.06	50.14	9.12	74.6	10.08	68.31	7.02	68.51	6.80

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From table 8.1 showing the common size profit and loss account it is evident that cost of goods sold has remained steady over a period of four years from 1997-98 to 2000-01 to around 85% but increased in the fifth year of study period to 90.18% but again it became normal for the last three years of the study period.

Operating profit has remained steady for initial four years of the study period but showed decrease in the fifth owing to increased Cost of goods sold. Operating profit have again shown increasing trend in the sixth and seventh year but a decline in the last year i.e. in the year 2004-05.

The non-operating income has shown an increasing trend in the initial five years but a declining trend in the last three years.

The profit before interest and tax is showing an increasing trend for continuous seven years in the study period with a sudden decline in the profit in the last year to almost 50% lesser than the previous year. Even the Profit as percentage of sales has declined from average 15% to 7% in the last year.

Net profit figure lies between Rs. 23.79 crores in the first year and Rs. 127.03 crores in the year 2003-04. There is a clear increasing trend found in the net profit for the company in the initial three years, afterwards both absolute and percentage to sales has shown a fluctuating trend. There is huge fluctuation observed in the last year as the net profit has decreased 70% absolutely and 60% decrease has been observed in the rate of net profit to sales. Costs including non-operating expenses have increased and income has declined which has resulted in decreased profits in the last year.

Hence we can conclude that performance of the company is mixed one! As such there are a good number of ups and downs observed in the absolute and percentage profit to sales during the entire study period and some of the fluctuations are pretty abnormal too.

10. CADILA HEALTHCARE LTD.

Table: 8.2:

The following page has the Table Showing the Common Size Income Statement for Cadila Healthcare Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 8.2

Table Showing the Common S

the period of 8 (Eig

Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	303.58	100.00	358.4	100.00	475.7	100.00	502.3	100.00	581.7	100.0
Less:COGS	256.43	84.47	296.18	82.64	388.28	81.62	408.04	81.23	472.28	81.19
Operating Profit	47.15	15.53	62.22	17.36	87.42	18.38	94.26	18.77	109.42	18.81
Add:Non-op. Income	4.37	1.44	7.45	2.08	10.65	2.24	32.69	6.51	27.3	4.69
Total	51.52	16.97	69.67	19.44	98.07	20.62	126.95	25.27	136.72	23.50
Less:Non-op. Exp.	16.58	5.46	24.87	6.94	31.57	6.64	41.95	8.35	46.42	7.98
Profit before Tax&Int.	34.94	11.51	44.8	12.50	66.5	13.98	85	16.92	90.3	15.52
Less: Interest	14.49	4.77	8.55	2.39	21.27	4.47	14.18	2.82	17	2.92
Profit before Tax	20.45	6.74	36.25	10.11	45.23	9.51	70.82	14.10	73.3	12.60
Less: Tax	3.5	1.15	5	1.40	7.54	1.59	5.25	1.05	6.2	1.07
Net Profit	16.95	5.58	31.25	8.72	37.69	7.92	65.57	13.05	67.1	11.54

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From table 8.2 showing the common size profit and loss account it is evident that Sales have increased over the entire study period and there is a constant increase in the sales in every year. The company has shown a disciplined performance in the cost of goods sold as its proportion to sales has almost remained steady in the study period. The cost of goods sold in the first year was 84.47% of sales which was the highest and the lowest ratio to sales of 81.19% was observed in the fifth year, but it can be easily said that more or less there is not much fluctuation observed in the ratio of cost of goods sold to sales for Cadila Healthcare limited.

There is a constant increase observed in the non-operating income but a un-usual increase was observed in the seventh year (2003-04) which was more than double of the sixth (previous) year.

Profit before interest and tax has shown a constant increase for the study period with a slight fluctuating trend in the last four years. In the first year the rate of profit was 11.51% and the maximum rate of 17.20% was attained in the year 2003-04. Although there is some fluctuating trend observed in the profit in the last four years but absolute profit has decreased for the first time in the last year.

There is a fluctuating trend observed in the payment of interest every year in the study period which shows the in-consistent use of borrowed funds.

There is a clear increasing trend observed in the figures of Net Profit in the initial five years of the study period with a fluctuating trend in the last three years. Where as the rate of net profit to sales has remained more or less fluctuating in the entire study

period. The amount of net profit lies between Rs. 16.95 crores in the first year i.e. 1997-98 and

Rs. 142.9 crores in the seventh year i.e. 2003-04.

Hence we can conclude that performance of the company is fairly good as much effort is done behind maintaining the increasing trend of net profit, which is successful also to a certain extent but even then there is an amount of fluctuation in the rate of net profit to sales during the entire study period although not very high.

11. CIPLA LTD.

Table: 8.3:

The following page has the Table Showing the Common Size Income Statement for Cipla Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 8.3

Table Showing the Com
the period of 8 (1

Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	514.43	100.00	617.16	100.00	759.75	100.00	1047.51	100.00	1385.84	10
Less:COGS	385.94	75.02	464.75	75.30	592.02	77.92	819.89	78.27	1078.01	77
Operating Profit	128.49	24.98	152.41	24.70	167.73	22.08	227.62	21.73	307.83	22
Add:Non-op. Income	26.59	5.17	27.99	4.54	31.64	4.16	38.1	3.64	43.03	3.
Total	155.08	30.15	180.4	29.23	199.37	26.24	265.72	25.37	350.86	25
Less:Non-op. Exp.	16.25	3.16	21.38	3.46	23.97	3.15	25.5	2.43	37.55	2.
Profit before Tax&Int.	138.83	26.99	159.02	25.77	175.4	23.09	240.22	22.93	313.31	22
Less: Interest	3.86	0.75	4.57	0.74	2.74	0.36	2.65	0.25	3.95	0.
Profit before Tax	134.97	26.24	154.45	25.03	172.66	22.73	237.57	22.68	309.36	22
Less: Tax	33	6.41	39.5	6.40	39.6	5.21	58.5	5.58	74.25	5.
Net Profit	101.97	19.82	114.95	18.63	133.06	17.51	179.07	17.09	235.11	16

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From table 8.3 showing the common size profit and loss account it is evident that the sales is increasing every year in the entire period of study with Rs. 514.43 Crores in the first year and Rs. 2327.63 Crores in the last year.

Cost of goods sold which is a collection of several cost is steady in the initial two years after that it is also increasing as a percentage of sales. It was 75.02% of sales in the first year which is lowest in the entire study period and it was highest 81.56% in the seventh year (2003-04).

Operating Profit margin ratio was steady in the initial two years afterwards it has shown a constant decline, albeit decline is very less.

Profit before interest and taxes have increased constantly in the entire study period. The ratio of profit to sales after remaining steady in the initial years have shown slight decline in the middle years and trying to stabilize in the last three years.

Interest expenses have also shown over the study period which shows that company is increasing debt in its capital structure.

Finally net profit has increased in the entire study period for the company, but with decreased rates. The ratio of net profit to sales has declined over the study period with trying to stabilize in the last year. The ratio lies in between 19.82% in the first year to 15.53% in the seventh year i.e. 2003-04 which shows that there is a clear declining trend of net profit to sales ratio for this company.

Finally it can be concluded that the rate of profit to sales is much higher in this company compared to other companies, it is almost double than other companies, but even this company is not successful in maintaining its rate of profit to sales. And there is a clear decreasing trend observed in this ratio in this company.

12. DR. REDDY'S LABORATORIES LTD.

Table: 8.4:

The following page has the Table Showing the Common Size Income Statement for Dr. Reddy's Laboratories Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 8.4

Table Showing the Common Size
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Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	331.62	100.00	425.86	100.00	493.02	100.00	984.11	100.00	1557.78	1(
Less:COGS	249.65	75.28	326.27	76.61	377.43	76.55	710.48	72.20	969.47	62
Operating Profit	81.97	24.72	99.59	23.39	115.59	23.45	273.63	27.80	588.31	37
Add:Non-op. Income	3.57	1.08	5.68	1.33	4.87	0.99	17.49	1.78	85.89	5.
Total	85.54	25.79	105.27	24.72	120.46	24.43	291.12	29.58	674.2	43
Less:Non-op. Exp.	21.82	6.58	32.67	7.67	37.29	7.56	72.19	7.34	197.24	12
Profit before Tax&Int.	63.72	19.21	72.6	17.05	83.17	16.87	218.93	22.25	476.96	3(
Less: Interest	10.38	3.13	12.84	3.02	16.35	3.32	43.38	4.41	14.15	0.!
Profit before Tax	53.34	16.08	59.76	14.03	66.82	13.55	175.55	17.84	462.81	29
Less: Tax	4.5	1.36	8	1.88	6.5	1.32	31.08	3.16	11.12	0.1
Net Profit for the Year	48.84	14.73	51.76	12.15	60.32	12.23	144.47	14.68	451.69	29

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From table 8.4 showing the common size profit and loss account it is evident that the sales is increasing every year in the entire period of study with Rs. 331.62 Crores in the first year and Rs. 1625.08 Crores in the last year.

Cost of goods sold which is a collection of several cost is steady in the initial three years after that it is decreasing as a percentage of sales. It was 75.28% of sales in the first year and 87.22% in the last year of the study period. COGS showed a very fine performance in three year from 2000-01 to 2002-03 wherein it touched the lowest 62.23%. But last two years showed an increasing trend in the Cost of Goods sold including a eight year high(87.22%) in the last year.

Operating Profit margin ratio is closely related to the Cost of Goods sold and hence the operating margin ratio was maximum when the cost of goods sold ratio was minimum. Operating profit margin ratio is maximum 37.77% in the year 2001-02 and minimum 12.78% in the last year when cost of goods sold was maximum.

Normally it is found that Profit before interest and taxes increases constantly. But in the case of this company the absolute amount of profit before interest and taxes is showing decline from 2002-03 and ended at the eight year low in the last year of the study period. Even as a ratio profit before interest and taxes is showing a clear declining trend from the year 2002-03 and the ratio is least in the last year of the study period.

Interest expenses have also shown over the study period which shows that company is increasing debt in its capital structure.

Finally net profit has increased in the initial five years but with the decline from sixth year the profit has been declining till end. The ratio of net profit to sales has remained quite fluctuating over the study period. The ratio lies in between 29% in the fifth year to 3.92% in the eighth year i.e. 2004-05 which shows that there was a clear increasing trend in the performance in the initial five years and then the decline has started in the last three years taking to minimum in the last year.

Finally it can be concluded that the expenses were in control in the initial period of five years and then they have shown an increasing trend, which makes it clear that the company has failed to control its costs. The revenues have increased but at a declining rate and the last year has been miserable for the company in more than one ways. From the sixth year 2002-03 the margins are declining and hits bottom in the last year of the study period. This gives an alarming signal to the financial performance of the company and it needs to improve on several fronts to get things back on track.

13. IPCA LABORATORIES LTD.

Table: 8.5:

The following page has the Table Showing the Common Size Income Statement for IPCA Laboratories Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 8.5

	97-98		98-99		99-2000		2000-01		2001-02	
Particulars	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	282.74	100.00	335.66	100.00	363.31	100.00	385.38	100.00	**444.18**	**10(**
Less:COGS	252.59	89.34	297.35	88.59	319.12	87.84	345.21	89.58	376.7	84.8
Operating Profit	30.15	10.66	38.31	11.41	44.19	12.16	40.17	10.42	67.48	15.
Add:Non-op. Income	11.03	3.90	10.36	3.09	10.1	2.78	11.4	2.96	13.27	2.9
Total	41.18	14.56	48.67	14.50	54.29	14.94	51.57	13.38	80.75	18.
Less:Non-op. Exp.	7.77	2.75	9.56	2.85	11.16	3.07	13.13	3.41	24.71	5.5
Profit before Tax&Int.	33.41	11.82	39.11	11.65	43.13	11.87	38.44	9.97	56.04	12.
Less: Interest	14.01	4.96	16.94	5.05	16.21	4.46	16.47	4.27	16.12	3.6
Profit before Tax	19.4	6.86	22.17	6.60	26.92	7.41	21.97	5.70	39.92	8.9
Less: Tax	-0.05	-0.02	0.75	0.22	0.8	0.22	1.5	0.39	7.9	1.7
Net Profit for the Year	19.45	6.88	21.42	6.38	26.12	7.19	20.47	5.31	32.02	7.2

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From table 8.5 showing the common size profit and loss account of IPCA Labs it is evident that the sales is increasing every year in the entire period of study with Rs. 282.74 Crores in the first year and Rs. 721.74 Crores in the last year.

Percentage of Cost of goods sold to sales can be considered as a strong area for the company. It was 89.34% of sales in the first year and 83.05% in the last year of the study period. COGS showed a very fine performance in the entire study period which is evident as it has decreased as a ratio over the period of study

Operating Profit margin ratio is closely related to the Cost of Goods sold and hence the operating margin ratio is also showing a positive trend in the entire study period. The ratio of operating margin to sales was 10.66% in the first year of the study period and it was 16.95% in the last year of the study period which shows that there is an increasing trend found in the operating profit margin ratio.

Profit before interest and taxes amount is increasing constantly and along with it the ratio of profit to sales is also more or less increasing found in the study period. Although the ratio is not too consistent but there are no major fluctuations observed in this ratio for the study period.

Net profit has shown an increasing trend in the entire study period, with just one year 2000-01 as exception. As cost of goods sold have also increased as a ratio to sales in that year and hence the percentage of net profit to sales has also decreased in that year. Although there is no clear increasing trend observed in the ratio of net profit to sales

but even then the company is fairly consistent. The net profit margin ratio lies between 5.31 in the year 2000-01 and 12.21 in 2003-04.

Finally it can be concluded that the major expenses were in control in the entire period of study. The revenues have shown increase but the company is not able to maintain a consistent increasing rate of profit margin. Except couple of deviations the company has shown a reasonably good performance during the study period.

14. MATRIX LABORATORIES LTD.

Table: 8.6:

The following page has the Table Showing the Common Size Income Statement for Matrix Laboratories Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 8.6

Table Showing the Common Size I

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Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	27.51	100.00	40.73	100.00	45.19	100.00	60.78	100.00	102.18	100.00
Less:COGS	25.42	92.40	37.27	91.51	49.1	108.65	60.46	99.47	91.06	89.12
Operating Profit	2.09	7.60	3.46	8.49	-3.91	-8.65	0.32	0.53	11.12	10.88
Add:Non-op. Income	0.14	0.51	0.01	0.02	0.01	0.02	7.12	11.71	1.89	1.85
Total	2.23	8.11	3.47	8.52	-3.9	-8.63	7.44	12.24	13.01	12.73
Less:Non-op. Exp.	0.66	2.40	0.89	2.19	1.83	4.05	1.2	1.97	3.19	3.12
Profit before Tax&Int.	1.57	5.71	2.58	6.33	-5.73	-12.68	6.24	10.27	9.82	9.61
Less: Interest	1.4	5.09	2.11	5.18	2.65	5.86	1.88	3.09	2.18	2.13
Profit before Tax	0.17	0.62	0.47	1.15	-8.38	-18.54	4.36	7.17	7.64	7.48
Less: Tax	0.02	0.07	0.05	0.12	0.21	0.46	0.16	0.26	3.16	3.09
Net Profit for the Year	0.15	0.55	0.42	1.03	-8.59	-19.01	4.2	6.91	4.48	4.38

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From table 8.6 showing the common size profit and loss account of Matrix Labs it is evident that the sales is increasing every year in the entire period of study with Rs. 27.51 Crores in the first year and Rs. 671.69 Crores in the last year of the study period.

A fluctuating trend is visible in the cost of goods sold for the company in the beginning of the study period and it is trying to stabilize in the end of the period. In the year 1999-2000 the cost is more than revenues which caused a situation of loss, but after that year the cost of goods sold as a percentage to sales is continuously declining. This is an indicator of how the company has made a come-back and that too very effective.

Except two years i.e. 1999-2000 and the next year 2000-2001 operating profit margin have been showing an increasing trend. The ratio of operating margin to sales was 2.09 in the first year 1997-98 and it was 26.87 in the last year 2004-05. This shows the company has made noteworthy progress in its net profit margin.

There is a huge amount fluctuation observed in the profit before interest and taxes. Profit has increased by more than 10 times in the year 2002-03 compared to its previous year 2001-02. Afterwards it has shown a constant trend. There is a significant increase observed in the profit before interest and taxes, as it was 1.57 crore in the first year 1997-98 and it was 168.47 in the last year of the study period.

Net profit has shown an increasing trend in the entire study period, with those two years as exception. As cost of goods sold have also increased as a ratio to sales in that year and hence the percentage of net profit to sales has also decreased in that year. After the year in which company recovered from the loss it has made significant progress in the profits. The net profit for the company was just 15 lakhs in the first year of the study period and in the last year of the study period the profit was 129.54 crores which shows the speedy and strong recovery of the company from the financial difficulty.

Finally it can be concluded that although there are some big fluctuations observed in the profit during the study period but in the last three years company has recovered very well and is able to compete with the big giants of the industry. The ability to come out so quickly and strongly from the losses can be a strong ability for the company.

15. NICHOLAS PIRAMAL INDIA LTD.

Table: 8.7:

The following page has the Table Showing the Common Size Income Statement for Nicholas Piramal Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 8.7

Table Showing the Common S

the period of 8 (E

	97-98		98-99		99-2000		2000-01		2001-02	
Particulars	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	534.64	100.00	429.99	100.00	486.48	100.00	566.76	100.00	946.48	100
Less:COGS	424.33	79.37	339.38	78.93	398.68	81.95	456.83	80.60	781.85	82.
Operating Profit	110.31	20.63	90.61	21.07	87.8	18.05	109.93	19.40	164.63	17.
Add:Non-op. Income	14.89	2.79	39.73	9.24	40.6	8.35	34.03	6.00	60.14	6.3
Total	125.2	23.42	130.34	30.31	128.4	26.39	143.96	25.40	224.77	23.
Less:Non-op. Exp.	70	13.09	45.55	10.59	41.04	8.44	41.41	7.31	98.11	10.
Profit before Tax&Int.	55.2	10.32	84.79	19.72	87.36	17.96	102.55	18.09	126.66	13.
Less: Interest	23.3	4.36	35.38	8.23	33.22	6.83	29.22	5.16	54.07	5.7
Profit before Tax	31.9	5.97	49.41	11.49	54.14	11.13	73.33	12.94	72.59	7.6
Less: Tax	4.9	0.92	5.44	1.27	7.16	1.47	6.87	1.21	24.36	2.5
Net Profit for the Year	27	5.05	43.97	10.23	46.98	9.66	66.46	11.73	48.23	5.1

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the common size statement of Nicholas Piramal it can be observed that the sales figures are not stable in the initial three years, after that it has shown a steady increase. As far as cost of goods sold is concerned it is also showing an increasing trend as a percentage of sales. It was 79.37% of sales in the first year of the study period and it was 85.83% of sales in the last year of the study period, which shows that costs have increased and company is not much successful in controlling the costs. Although the increase is of 5% but it does matter when it is already around 80%, as this would affect the overall profitability.

Operating profit as a percentage of sales has also decreased a bit due to increase in cost of goods sold. It was 20.63% in the first year and 21.07% of sales in the second year but it is found as low as 18.44% and 14.17% in the last years of the study period.

There is one positive point observed, which is the decrease in the percentage of non-operating expenses ratio to sale. It was 13.09% in the first year which is found reduced to 7.41% in the last year of the study period, which shows that company has controlled its other costs.

There is also an increase observed in the figures of Profit before interests and taxes. It was 10.32% in the first year of the study period and 16.73% in the last year of the study period, which shows that margins have improved over the period.

There is also significant improvement observed in the ratio of net profit to sales, which can be considered as a major and important indicator of profitability of the

company. It was mere 5.05% in the first year (1997-98) of the study period which has improved to 12.25% in the last year (2004-05) of the study period.

Hence it can be concluded that although the company has not been able to control its main costs but it has successfully control and reduced its non-operating costs and also increased its revenues which has led to improvement in the overall profit margin of the company over the period of time.

16. **SUN PHARMACEUTICALS INDUSTRIES LTD.**

Table: 8.8:

The following page has the Table Showing the Common Size Income Statement for Sun Pharmaceuticals Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table Number 8.8

Table 8.8

Table Showing the Common Size Incor
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Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	279.77	100.00	358.11	100.00	478.35	100.00	613.78	100.00	753.1	100.0
Less:COGS	214.75	76.76	275.73	77.00	359.78	75.21	451.58	73.57	542.48	72.03
Operating Profit	65.02	23.24	82.38	23.00	118.57	24.79	162.2	26.43	210.62	27.97
Add:Non-op. Income	14.7	5.25	8.58	2.40	12.23	2.56	7.33	1.19	5.88	0.78
Total	79.72	28.49	90.96	25.40	130.8	27.34	169.53	27.62	216.5	28.75
Less:Non-op. Exp.	11.53	4.12	18.02	5.03	30.09	6.29	17.25	2.81	25.61	3.40
Profit before Tax&Int.	68.19	24.37	72.94	20.37	100.71	21.05	152.28	24.81	190.89	25.35
Less: Interest	11.07	3.96	11.95	3.34	10.41	2.18	7.65	1.25	3.61	0.48
Profit before Tax	57.12	20.42	60.99	17.03	90.3	18.88	144.63	23.56	187.28	24.87
Less: Tax	1	0.36	1.95	0.54	6.64	1.39	9.45	1.54	16	2.12
Net Profit	56.12	20.06	59.04	16.49	83.66	17.49	135.18	22.02	171.28	22.74

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

There is a noteworthy increase observed in the sales of the Sun Pharmaceuticals Ltd. for the period of study. The sales was Rs. 279.77 Crores in the first year (1997-98) of the study period which went on to increase to Rs. 1263.86 Crores in the last year of the study period (2004-05).

The company has made significant improvement in its percentage of cost of goods sold to sales margin. It was as high as 76.76% in the first year which went as low as 68.07% in 2003-04, this shows that company has made serious efforts in controlling its cost and successfully brought down its costs over the period of time.

Ratio of operating margin to sales has also shown considerable improvement. It was 23.24% in the first year which went on to increase to 31.93%, although a decrease was observed in the last year of the study period, overall the ratio has shown improvement in the entire study period which is a healthy sign for the company.

Profit before interest and taxes has also shown improvement as it lies in between 21.05 (99-2000) and 29.82 (2003-04) during the period of study. A minor decrease is observed in the last year but as it's a last year no trend can be observed from the movement of the ratio in the last year. As far as amounts are concerned it was Rs.68.19 crores in the first year and Rs. 356.6 crores in the last year of the study period.

The final indicator of the overall profitability is Net Profit in the common size statement. The ratio of net profit to sales has improved over the period of time from 20.06% (1997-98) to 24.19% (2004-05). This improvement is due to controlling the

costs and improvement in the revenues. Even company has reduced the use of fixed charged funds which helped them to reduce their costs too and hence overall profits have shown much improvement.

Hence it can be concluded that overall profitability and financial performance of the company has improved. Although the improvement is not very significant but it indeed is eye-catching. If revenues can be increased and costs can be controlled like in the past then the company can still do better in the coming times.

The non-operating income is showing a fluctuating trend with highest Rs. 53.36 in the last year of study period while lowest of Rs. 5.88 in the year 2001-02. Profit before interest and tax is showing a clear increasing trend with highest in the last year of study period which narrates a positive growth story of the company. Even the rate of profit before interest and tax is increasing at although lesser rate, but it is steadily increasing. Finally net profit is also having increasing trend with the increasing rate.

6. Conclusion

Aurobindo Pharmaceuticals has shown a mixed performance. As such there are a good number of ups and downs observed in the absolute and percentage profit to sales during the entire study period and some of the fluctuations are pretty abnormal too.

Performance of Cadila Healthcare is fairly good as much effort is done behind maintaining the increasing trend of net profit, which is successful also to a certain

extent but even then there is an amount of fluctuation in the rate of net profit to sales during the entire study period although not very high.

For Cipla Ltd. it can be concluded that the rate of profit to sales is much higher in this company compared to other companies, it is almost double than other companies, but even this company is not successful in maintaining its rate of profit to sales. And there is a clear decreasing trend observed in this ratio in this company.

As per final analysis of Dr. Reddy's Laboratories it can be concluded that the expenses were in control in the initial period of five years and then they have shown an increasing trend, which makes it clear that the company has failed to control its costs. The revenues have increased but at a declining rate and the last year has been miserable for the company in more than one ways. From the sixth year 2002-03 the margins are declining and hits bottom in the last year of the study period. This gives an alarming signal to the financial performance of the company and it needs to improve on several fronts to get things back on track.

For IPCA Labs it can be concluded that the major expenses were in control in the entire period of study. The revenues have shown increase but the company is not able to maintain a consistent increasing rate of profit margin. Except couple of deviations the company has shown a reasonably good performance during the study period.

As far as Matrix Laboratories is concerned it can be concluded that although there are some big fluctuations observed in the profit during the study period but in the last three years company has recovered very well and is able to compete with the big

giants of the industry. The ability to come out so quickly and strongly from the losses can be a strong ability for the company.

For Nicholas Piramal it can be concluded that although the company has not been able to control its main costs but it has successfully control and reduced its non-operating costs and also increased its revenues which has led to improvement in the overall profit margin of the company over the period of time.

For Sun Pharmaceuticals overall profitability and financial performance has improved. Although the improvement is not very significant but it indeed is eye-catching. If revenues can be increased and costs can be controlled like in the past then the company can still do better in the coming times.

References

2. Gupta R.L.&RadhaswamyM., "Advanced Accountancy",Sultan Chand&sons,NewDelhi 1993
3. Aggarwal N.P. "AnalysisofFinancialStatements"NationalPublishingHouse,NewDelhi 1981
4. 3. Dalton, D.R., Daily, C.M. Certo, S.T., & Roengpitya, R. 2003. Meta-analyses of financial performance and equity: Fusion or confusion? Academy of Management Journal, 46: 13-26.
5. Hampton J. John: Financial Decision making, Prentice Hall of India, New Delhi, 1993
6. Wixon Rufus: Accountants Hand Book, Harper Ronald Press, New York, 1997
7. Betty J: Management Accounting: McDonald & Evans Ltd., London 1983
8. Chandra Prasanna: Financial Management, Tata McGraw Hill, New Delhi 1994
9. Bolton S.E.: Managerial Finance: Houghton, Mifflin Co. Boston 1976

Chapter 9

VALUE ADDED STATEMENT

Contents

Page Number

1. Development of Value Added Concept

In order to gauge the efficiency or performance of the pharmaceutical companies under study, we have used several profit and profitability measures. Value Added Statement is a relatively newer concept in the field of accounting. Value added concept is based on the theory of value addition to the input to become output. When the various resources are utilized for the production of goods or services and till it becomes the final product, there are several resources utilized in it. The resources are of different types and varieties and are utilized to convert input into output; hence the effort put in by management, employees and by capital in adding the value to the input refers to value addition.

Value added statement has in recent times occupied a very prominent position in modern corporate reporting. The preparation of this statement can be termed as an innovation in the field of corporate reporting. Economists are using the concept since long but for the accounting it's not long that the concept has been into use. The concept is said to be originated in U.S.A. Treasury in 18th Century, but it has been used with greater frequency in Europe and more particularly in U.K. The discussion paper "Corporate Report" published in 1975 by the then Accounting Standard Steering Committee (now Accounting Standard Board) of the U.K. advocated the publication of value added statement along with the conventional annual report. The Department of Trade, U.K. published in 1977, "The Future of Company Reports" which stated to all the leading companies of U.K to include the Value added statement in their annual reports.

2. Concept of Gross Value Added and Net Value Added

Value Added Concept is the emerging accounting concept which has been discussed since long, but applied in practice in the recent past. Very few Indian companies are showing the value addition compared to some foreign companies. Value addition is show by way of preparing a Value Added Statement.

Value Added Concept is as the name suggests, regarding what value has been added to the goods which are purchased and sold. Value added is the wealth an entity has been able to create through the utilization of land, labour, capital and management. In the words of Ravi M. Kishore, "The 'Value Added' is a basic and broad standard of judging the performance of an enterprise."

First the goods and services are purchased from the market, than some changes are made to these purchases, that is to say their form is changed and they are sold at some other place, which is nothing but changing the availability location of the goods. Hence these alterations made to the goods and services purchased are known as value addition or value generation, which is nothing but the extra price realized by selling these (altered) goods and services in the market.

The excess of turnover plus income from services over the cost of bought in materials and cost of services is termed as 'Gross Value Added'. The annual charge of depreciation is deducted from the gross value added and the remainder is known as 'Net Value Added'.

Here is the Performa of a Value Added Statement:

XYZ LTD.

Value Added Statement for the year ended 31st March 20xx

Particulars	Rs.	Rs.

CREATION OF ADDED VALUE:

a. **Sales** (including Excise Duty and Sales Tax)   xxx

    Less: Rebate   xxx
          Returns   xxx
          Commission   xxx
          Discounts   xxx
          Goods used for self consumption   xxx
    xxxx

b. **Income from Services**

    Royalty   xxx
    Dividends and Interest   xxx
    Rent Received   xxx
    Other miscellaneous Income   xxx
          xxx
    Less: Scrap Realized   xxx
          Increase in stock of finished goods and WIP   xxx
    xxxx
                    xxxx

Particulars	Rs.	Rs.

c. **Cost of bough-in materials and services:**

Add: Cost of bought-in materials: xxxx

       Opening stock of raw materials   xxx

Add: Purchases   xxx

    xxx

Less: Closing Stock   xxx

Raw Material Consumed   xxx

Other materials:

Consumables   xxx

Packing   xxx

Stationery   xxx

Fuel & Oil   xxx

Electricity   xxx

Repairs to plant and building   xxx

xxxx

d. **Cost of Services**

Audit fees   xxx

Insurance   xxx

Rent, Rates, etc   xxx

Travelling Expenses   xxx

Advertisement   xxx

Postage and telegram   xxx

Printing   xxx

Subscriptions   xxx

Carriage Outwards   xxx

Other Expenses   xxx

xxxx

Added Value Created $(a + b - c - d)$

xxxx

Particulars	Rs.	Rs.

DISTRIBUTION OF ADDED VALUE

a.   **To Employees:**

Wages and Salaries	xxx	
MD's Remuneration	xxx	
Directors Sitting fees etc	xxx	
Contribution to PF, ESI and other benefits	xxx	
Staff welfare etc.	xxx	
	xxxx	

b.   **To Government:**

Customs Duty	xxx	
Excise Duty	xxx	
Sales Tax	xxx	
Income Tax	xxx	
Wealth Tax	xxx	
Rates and taxes etc	xxx	
		xxx
Less: Subsidizing on exports etc.	xxx	
	xxxx	

c.   **To Providers of Capital:**

Interest on bank borrowings	xxx	
Interest on term loans	xxx	
Interest on debentures	xxx	
Other interest	xxx	
Dividends	xxx	
	xxxx	

d.   **Retained in Business:**

Depreciation	xxx	
Retained Profit	xxx	
	xxxx	
Disposal of Total Added Value (a+b+c+d)	xxxx	

----

3. Generation of Value Added

Value added is an excess of turnover plus income from services over the cost of bought-in-materials and services. Turnover includes all sales including sales of manufactured goods and sales of traded goods. Income from services includes number of items like: Export Incentives, Dividend Income, Interest Income, Interest on Application money, Rent Received, Lease Rent and hire charges, Compensation and Reimbursement income, Refunds or claims received, Income from subsidiaries, Fees income, Income from guarantee commission, income from underwriting commission, Other commission income, Income from leasing operations, Income from hire purchase operations, Income from merchant banking operation, etc.

Hence income from sales and income from services are added up and they make up the total income. From the total income cost of Materials and Services are to be deducted. Cost of materials includes purchases of raw materials, purchases of trading goods, direct expenses on purchases, etc. Cost of Services includes power and fuel cost, electricity expenses, water charges, freights and transportation charges, packing charges, job work and other contract charges, etc. Finally adjustment from closing stock is done.

After deducting cost of materials and services from the total income we derive GROSS VALUE ADDED. From this GVA Depreciation is deducted and finally we get NET VALUE ADDED.

4. Application of Value Added

The total value added is distributed among four major parties, they are Employees, Government, Providers of Capital and the fourth part is retained in business.

The value distributed to Employees includes Directors Remuneration, Salaries, Wages, Bonus, Contribution to funds, Staff Welfare Expenses, VRS Compensation, Gratuity Paid, and other employees cost.

The value distributed to Government includes Excise Duty, Wealth Tax, Cess, Sales Tax, Income tax, etc

The value distributed to Providers of capital includes: Interest on bank borrowings, Interest on term loans, Interest on debentures, Other interests and Dividends.

Finally the balance is retained in the business for expansion and any other contingency requirements of the business. This is also value which belongs to the shareholders but is not distributed to them.

5. Advantages of Value Added Statement

1. Value added statement is an innovative and proficient tool to measure the performance or efficiency of any organization. A study of value added by an organization over the number of years can give a very useful insight into the direction in which the company is moving towards.

2. When any information however unbiased is kept secret, arouses doubts in the minds of related parties. Hence as the value added statement reveals all the information of value creation and distribution, this creates a positive attitude of employees and other related parties towards a company and its operations.

3. Value added statement of a company is directly related to the total national income of any country. Hence the information of company's contribution to national income is provided in value added statement.

4. For comparative analysis of various expenses and income to value added, this statement becomes quite a useful tool. For example what is the percentage of taxes to value added, what is ratio of value added to sales or what amount of value added is distributed to employees or how much value added is transferred to the share holders?

5. Value added statement provides a useful guide with regard to the ultimate objective of any company – "Wealth Maximization of its shareholders".

6. Value added statement can be utilized as an internal evaluation statement. For the decision making, as well as for the evaluation and analysis of past performance and making predictions about future, the value added statement can be very useful.

6. Limitations of Value Added Statement

1. Not a very popular mode for measuring the performance or profitability, hence not much acceptable method.

2. Value creation talk about profitability; but in different language, but not the other way. Value creation can be there without increase in profitability situation.

3. Other than the concept there is nothing new in the value added statement, just the same items with the same figures from the financial statements are utilized.

4. There is no standard way of preparing the value added statement; hence it has lot of subjectivity involved.

5. As there is no compulsion from any legal front; it is still in its primary stage of development. There is time for the statement to become the most accepted document.

7. Generation and Application of Value Added of sample units

10. **AUROBINDO PHARMACEUTICALS LTD.**

Table: 9.1:

The following page has the table showing the Value Added Statement for

Aurobindo Pharmaceuticals Ltd. for the period of 8 (Eight) years from 1997-98 to 2004-05

Table 9.1

Table Showing the Valu
the period

GENERATION OF VALUE ADDED								
Particulars	97-98		98-99		99-00		00-01	
	Amt	%	Amt	%	Amt	%	Amt	%
Sales	295.31	99.51	550.03	99.50	739.9	98.774	972.52	96.78
Add:Service Income	1.46	0.49	2.76	0.50	9.18	1.2255	32.33	3.22
Total: A	296.77	100.00	552.79	100.00	749.08	100	1004.9	100.0
Cost of M&S : B	215.34	72.56	404.73	73.22	554.84	74.07	772.4	76.86
Gross (A-B)	81.43	27.44	148.06	26.78	194.24	25.93	232.45	23.13
Less:Depreciation	2.22	0.75	6.29	1.14	9.52	1.2709	14.78	1.47
Net Value Added	**79.21**	26.69	**141.77**	25.65	**184.72**	24.66	**217.67**	21.66
APPLICATION OF VALUE ADDED								
Particulars	97-98		98-99		99-00		00-01	
	Amt	%	Amt	%	Amt	%	Amt	%
To Employees	6.44	8.13	10.34	7.29	15.68	8.49	21.63	9.94
To Government	30.85	38.95	52.77	37.22	57.94	31.37	71.62	32.90
To Prov of cap	16.49	20.82	24.27	17.12	34.28	18.56	47.74	21.93
Retained in Busines	25.43	32.10	54.39	38.36	76.82	41.59	76.68	35.23
N.Value Distributed	**79.21**	**100.00**	**141.77**	**100.00**	**184.72**	**100.00**	**217.67**	**100.0**

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

From the table it is evident that Sale of goods consists of major share in the overall income of the company as it ranges from 99.51% (1997-98) to 98.25% (2004-05). The income from service comprises of a very meager share in the total income of the company for the study period. The share of income from services in total income is in between 0.49% (1997-98) and 3.47% (2001-02) which shows that company has confined its activities to product selling only and not ventured much into the sale of services.

There is an increasing trend in the percentage of cost of material and services to total income. The increase in observed in a constant manner in the first five years of the study period. It was 72.56% in the first year and it went up to 77.17% in the fifth year but after that some decline in this ratio was observed   as in the sixth year it went down to 71% and in the seventh year it further went down to 68% which shows that there is a considerable amount of cost reduction compared to sales in these years.

The trend of ratio of percentage of cost of materials and services to sales is visible in the Net value added too. Hence the net value added is showing decreasing trend in the first five years. And from sixth year the net value added is showing an increasing trend as a percentage of sales. However in the declining trend of the first five years the absolute figures show increase howsoever. The net value added in the first year was Rs. 26.69 Crore in the first year and it was highest Rs. 29.18 Crores in the year 2003-04 and least Rs. 21.31 in the year 2001-02.

In the application of value added shows the distribution of value added during the year. The first part describes the value distributed to employees of the companies.

There is a significant increase observed in the proportion of employees in the total value added. It was 8.13% in the first year of the study period which increased to 22.12% in the last year of the study period. Hence over the period of year there is a significant increase in the employees participation in the value addition. And this shows a very fine positive trend as employees are to a great extent in the value creation in any business and their participation in the earnings as partners is a welcome changes which is observed in Indian scenario and our value added statement is a fine example of that.

The second party to whom the value is distributed is Government in form of various taxes. There are no major fluctuations or trends observed in this ratio but this ratio is very high in the entire study period. It lies in between 38.95% (1997-98) and 28.53% (2004-05) during the period of the study.

The providers of capital are provided with some portion of the value added. It lies in between 21.93% (2000-01) and 11.05% (2003-04) during the study period. There are no particular trends observed in this ratio.

For retained earnings in the business there is a positive trend observed in the initial three years of the study period. Afterwards there are some minor fluctuations observed in the ratio of retained earnings to total value added during the year. It lies in between 41.59% (1999-2000) and 28.14% (2001-02).

Hence it can be observed that there is an increasing trend in the share of employees in the value added in this company. And there is overall improvement observed in the retained earnings ratio to total value. Apart from these there are no major trends observed in the other places.

11. **CADILA HEALTHCARE LTD.**

Table: 9.2:

The following page has the Table Showing the Value Added Statement for

Cadila Healthcare Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 9.2

Table Showing the Value Added S
the period of 8 (Eight) Ye

GENERATION OF VALUE ADDED										
Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	303.58	98.73	358.4	97.99	475.7	98.11	502.3	94.90	581.7	95
Add: Service Income	3.91	1.27	7.37	2.01	9.18	1.89	26.99	5.10	25	4.1
Total: A	307.49	100.00	365.77	100.00	484.88	100.00	529.29	100.00	606.7	10
Cost of M&S: B	204.02	66.35	230.86	63.12	315.97	65.16	297.38	56.18	351.38	57
Gross VA (A-B)	103.47	33.65	134.91	36.88	168.91	34.84	231.91	43.82	255.32	42
Less:Depreciation	3.68	1.20	4.4	1.20	9.86	2.03	14.33	2.71	18.8	3.1
Net Value Added	**99.79**	32.45	**130.51**	35.68	**159.05**	32.80	**217.58**	41.11	**236.52**	38
APPLICATION OF VALUE ADDED										
Particulars	97-98		98-99		99-00		00-01		2001-02	
	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%
To Employees	27.91	27.97	35.58	27.26	39.63	24.92	50.25	23.09	55.3	23
To Government	23.24	23.29	27.09	20.76	38.22	24.03	62.41	28.68	68.2	28
To Prov of cap	18.21	18.25	17.48	13.39	35.06	22.04	32.04	14.73	37.8	15
Retained in Busines	30.43	30.49	50.36	38.59	46.14	29.01	72.88	33.50	75.22	31
Net Value Distributed	**99.79**	100.00	**130.51**	100.00	**159.05**	100.00	**217.58**	100.00	**236.52**	10

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

The sales figures reveal that with the passage of time there is a minor improvement in the income from services. The sales percentage in the overall incomes were 98.73% in the first year 1997-98 whereas it was 93.35% in the last year 2004-05 of the study period, this reveals that the company is earning income from other than sales sources as well.

The ratio of cost of materials and services to total income has gradually shown a declining trend during the period of study. This is an indicator of the cost effectiveness of the company and the measures the company must be taking to reduce its costs to improve the profitability. It was 66.35% in the first year 1997-98 and 56.18% in the year 2000-01, this shows that the costs have reduced by 10% in just 4 years time period, although it again showed increase and it was 59.60% in the last year of the study period.

There are no clear trends observed in the trend of the Net Value added during the study period for the company. But a considerable improvement in the ratio is observed over the period of time. It was 32.45% in the first year and it reached as high as 41.11% in the year 2000-01 which shows that due to reduction in cost there is a direct advantage available by way of improved Net Value Added and hence to the related parties.

For the distribution of value added the first party is employees. There is slight improvement in the ratio of distribution of added wealth to the employees. It was 27.97% in the first year (1997-98) and 31.15% in the last year (2004-05) of the study period. Hence it shows that there is quiet improvement in the ratio of wealth distributed to employees.

The second party to whom the value is distributed is Government in form of various taxes. There are no major fluctuations or trends observed in this ratio. It lies in between 23.29% (1997-98) and 20.30% (2004-05) during the period of the study. It did touch the high of 31.99% in the year 2002-03, but then again it came down to the normal levels.

There are also no major fluctuations observed in the distribution of wealth to the providers of capital. It lies between 18.25% (1997-98) to 14.54% (2004-05) during the study period. The lowest ratio was 13.39 in the year 1998-99. The highest ratio 22.04% was observed in the year 1999-2000.

A considerable amount of wealth created has been retained in the business for most of the year during the study period. This is a big achievement for the company as this is a provision for development and contingencies hence more the retained earnings more sound the financial situation of any company. It lies between 22.98% (2002-03) and 38.59% (1998-99).

Hence there is a positive trend observed in the retained earnings over the period of study. Even the cost of material and services has declined which has led to improvement in the ratio of net value added during the period of the study for the company.

12. **CIPLA LTD.**

Table: 9.3:

The following page has the Table Showing the Value Added Statement for

Cipla Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 9.3

VALUE

	97-98		98-99		99-2000		2000-01		2001-02		2002-03	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
	514.43	95.19	617.16	95.95	759.75	96.20	1047.5	97.04	1385.8	97.56	1549.79	97.73
	25.99	4.81	26.06	4.05	30.01	3.80	31.96	2.96	34.72	2.44	36.07	2.27
	540.42	100.00	643.22	100.00	789.76	100.00	1079.5	100.00	1420.6	100.00	1585.86	100.00
	306.25	56.67	351.98	54.72	447.32	56.64	619.36	57.38	792.43	55.78	934.26	58.91
	234.17	43.33	291.24	45.28	342.44	43.36	460.11	42.62	628.13	44.22	651.6	41.09
	8.69	1.61	13.5	2.10	13.34	1.69	15.63	1.45	21.28	1.50	28.36	1.79
	225.48	41.72	277.74	43.18	329.1	41.67	444.48	41.18	606.85	42.72	623.24	39.30

VALUE

	97-98		98-99		99-00		00-01		2001-02		2002-03	
	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%
	22.48	9.97	29.12	10.48	34.96	10.62	49.93	11.23	63.28	10.43	73.49	11.79
	69.03	30.61	77.74	27.99	95.76	29.10	172.12	38.72	215.22	35.47	207.2	33.25
	14.85	6.59	19.56	7.04	20.52	6.24	29.64	6.67	45.93	7.57	64.46	10.34
	119.12	52.83	151.32	54.48	177.86	54.04	192.79	43.37	282.42	46.54	278.09	44.62
	225.48	100.00	277.74	100.00	329.1	100.00	444.48	100.00	606.85	100.00	623.24	100.00

ports of Companies from the year 1997-98 to 2004-05)

The total income of company comprises majority of sales income which lies in between 95.06% (2003-04) to 97.73% (2002-03). There are no major fluctuations observed in the percentage of sales to total income, it has more or less remained stable over the period of time during the period of study. There is more of income of sales in the total income in the years as the years move ahead.

There are no clear trends visible in the ratio of cost of material and services to total sales income. It lies between 59.97% (2003-04) and 54.72 (1998-99). The percentage share of cost of materials and services to sales does not show major fluctuations during the period of study. It was 56.67% in the first year of the study period and it was 59.12% in the last year of the study period. This shows that over the period of time there is an increase observed in the ratio but not of a big amount.

With the increase in the percentage of cost of materials and services there is a decline observed in the ratio of net value added to the total income. It was 41.72% in the first year which increased to 43.18% in the second year of the study but it was 38.61% in the last year which shows a small but declining trend in the percentage of Net Value Added to sales. Value wise there is an increase observed to the extent of, it was Rs. 225.48 crores in the first year and Rs. 934.21 crores in the last year of the study period.

Similarly there are no clear directions seen in the trend of the Net Value Added for the company during the study period. It lies between 43.18% in the year 1998-99 and 38.09 % in the year 2003-04.

After the generation of net value added, the second part of value added statement shows the distribution of net value added. The first distribution is shown to Employees. Interestingly enough there is an increasing trend observed in the ratio of employees cost to net value added. Hence every year the ratio of value distributed to employees to total net value added is increasing. Employees are backbone of any organization and they can be rewarded best by increasing their share in the profits. This type of trend is visible from the value added statement of the company for the study period. There is a clear increasing trend observed in the percentage of employees cost to net value added during the period of study. It was 9.97% in the first year (1997-98) of the study period and it was 12.48% in the last year (2004-05) of the study period. This shows that employees are getting increased shares in the net value added in the company.

Another distribution of net value added is to the Government in form of various taxes etc. The percentage of value distributed to government to total net value added is not showing any particular trend. It was 30.61% in the first year and the highest ratio observed was 38.72% in the year 2000-01 and it was least in the last year 27.62%.

The percentage of value contributed to providers of capital to the total net value added is also showing some increasing trend which reflects that there is an increase in the payments of dividends along with the use of fixed charges funds must also have increased which is responsible for the increasing trend. It was 6.59% in the first year and it was 12.48% in the last year of the study period.

The last portion of the distribution is the distribution as retained in the business which is also popularly known as Ploughing Back of Profit. It can easily be inferred from the value added statement that majority of the value added during the year is retained in the business. This is always important as there can always be bigger plans and strategies for the implementation of which you need to have sufficient funds. Although there is a slight decrease observed in this ratio over the period of time but it is already a significant ratio. It was 52.83% in the first year and it increased to 54.48% in the second year which was highest during the entire study period. And it was recorded at 47.41% in the last year of the study period.

Hence it can be observed that the employees share is increasing and company has the policy to retain maximum of its retained earnings. This also shows that company is not a too liberal dividend distributor. But as the ratio of distribution to providers of capital is also positive in a way it shows that company is passing on the benefits to the employees as well as the providers of capital and thereafter also managing to keep reserves for business. This shows a very bright picture of the company during the study period.

13. **DR. REDDY'S LABORATORIES LTD.**

Table: 9.4:

The following page has the Table Showing the Value Added Statement for

Dr. Reddy's Laboratories Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-

05

Table 9.4

Table Showing the Value Added St
the period of 8 (Eight)

GENERATION OF VALUE ADDED									
Particulars	97-98		98-99		99-2000		2000-01		2001
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.
Sales	331.62	98.93	425.86	98.68	493.02	99.02	984.11	98.69	1557.8
Add: Service Income	3.57	1.07	5.68	1.32	4.87	0.98	13.1	1.31	62.31
Total: A	335.19	100.00	431.54	100.00	497.89	100.00	997.21	100.00	1620.1
Cost of M&S: B	188.78	56.32	237.21	54.97	237.71	47.74	550.71	55.23	761.26
Gross Value Added (A-B)	146.41	43.68	194.33	45.03	260.18	52.26	446.5	44.77	858.83
Less:Depreciation	6.55	1.95	10.16	2.35	13.07	2.63	42.5	4.26	47.42
Net Value Added	139.86	41.73	184.17	42.68	247.11	49.63	404	40.51	811.41
APPLICATION OF VALUE ADDED									
Particulars	97-98		98-99		99-00		00-01		2001
	Amt	%	Amt	%	Amt	%	Amt	%	Amt
To Employees	24.9	17.80	31.82	17.28	39.07	15.81	83.09	20.57	121.07
To Government	39.24	28.06	57.83	31.40	65.02	26.31	107.76	26.67	98.26
To Prov of cap	18.33	13.11	20.79	11.29	24.29	9.83	56.02	13.87	71.54
Retained in Busines	57.39	41.03	73.73	40.03	118.73	48.05	157.13	38.89	520.54
Net Value Distributed	139.86	100.00	184.17	100.00	247.11	100.00	404	100.00	811.41

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Sales occupy a major source of income for the company which is visible from the

ratio of sale to total income. But in the later part of the years it is showing a very small

decrease. It was 98.93% in the first year (1997-98) and it went on to increase to

99.02% in the year 1999-2000 and declined to 96.46% in the last year (2004-05) of

the study period.

There is no particular trend visible for Dr. Reddy's Laboratories Ltd. regarding its cost

of materials and services. The ratio of this cost to total income is varying at different

years. It was observed as 56.32% in the first year (1997-98) of the study period which

decreased for two year and went to as low as 47.74% (1999-2000). The least ratio

observed is 46.99% (2001-02) and the highest ratio is 68.56% in the last year of the study period.

Net value added is reflecting the trend of the cost of materials and services and hence there is an increasing trend observed in the initial three years of the study period wherein the net value added increased. It was 41.73% in the first year and it increased to 49.63% in the third year and went on to increase 50.08% in the year 2001-02 and it was least 25.95% in the last year (2004-05) of the study period.

After the value creation now it is the turn of distribution of value added. For the first case where the value is distributed to employees there is no clear particular trend visible. It was 17.80% in the first year and least 14.92% in the year 2001-02. It was highest 40.88% in the last year of the study period.

There is a sudden downfall observed in the ratio of value distributed to government. It was 28.06% in the first year and it increased to 31.40% in the second year itself, but afterwards it went on decreasing and drastically to 12.11% in the year 2001-02 and it was 14.31% in the last year of the study period.

There is a decline observed in the ratio of value distributed to providers of capital. It was 13.11% in the first year which went on to decrease to 9.83% in the third year (1999-2000) after some more fluctuations it was showing 11.67% in the last year of the study period. Hence there are lot amount of fluctuations observed in this part of distribution of value added to providers of capital. This also shows that company does not have a steady dividend policy and it is also not using the debt on an uniform basis.

The last distribution of value added is retained in the business. There is no particular trend observed in this but quite an amount of fluctuations observed. It was 41.03% in the first year and the highest was 64.15% (2001-02) and 33.15% in the last year (2004-05) of the study period.

The first three years showed a positive trend with regard to creation of value but after that there are no particular trend identifiable in the value addition and even in the distribution of value added.

14. **IPCA LABORATORIES LTD.**

Table: 9.5:

The following page has the Table Showing the Value Added Statement for

IPCA Laboratories Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 9.5

GENERATION OF VALUE ADDED								
Particulars	97-98		98-99		99-2000		2000-01	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	282.74	96.29	335.66	97.03	363.31	97.33	385.38	97.14
Add: Service Income	10.9	3.71	10.28	2.97	9.98	2.67	11.36	2.86
Total: A	293.64	100.00	345.94	100.00	373.29	100.00	396.74	100.0
Cost of M&S : B	204.86	69.77	231.17	66.82	247.78	66.38	262.78	66.23
Gross Value Added (A-B)	88.78	30.23	114.77	33.18	125.51	33.62	133.96	33.77
Less:Depreciation	6.1	2.08	7.03	2.03	8.18	2.19	10.18	2.57
Net Value Added	82.68	28.16	107.74	31.14	117.33	31.43	123.78	31.20
APPLICATION OF VALUE ADDED								
Particulars	97-98		98-99		99-00		00-01	
	Amt	%	Amt	%	Amt	%	Amt	%
To Employees	25.48	30.82	32.99	30.62	34.27	29.21	39.99	32.31
To Government	22.2	26.85	33.94	31.50	37.87	32.28	43.94	35.50
To Prov of cap	20.26	24.50	23.19	21.52	23.08	19.67	22.72	18.36
Retained in Busines	14.74	17.83	17.62	16.35	22.11	18.84	17.13	13.84
Net Value Distributed	82.68	100.00	107.74	100.00	117.33	100.00	123.78	100.0

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

In the entire study period the contribution of sales to total income has remained almost

uniform. It was 96.29% in the first year (1997-98) and it was 97-92% in the last year

(2004-05) of the study period. There are no major fluctuation observed in this ratio for

the period of study.

Cost of Materials and Services have shown a continuous decline for first six

consecutive years in the study period. This shows a very positive result in the margin

of costs to total income and icing of the cake is the fact that there is a constant decline

in this ratio. Even in the last year this downfall in the cost to income ratio is declining.

It was 69.77% in the first year (1997-98) of the study period which declined

continuously and it was 62.66% in the last year (2004-05) of the study period. This

can be regarded as excellent by any standards. With the ever increasing sales if the

costs are reduced as a percentage of income then it would definitely help a lot in creating value.

The incredible efforts of reducing costs every year has shown its results in the creation of Net Value Added. There is a constant increase observed in the creation of value added throughout the study period. It was 28.16% in the first year and it was 34.76% in the last year of the study period. During all these eight years there is a constant increasing trend observed. This also makes one point clear that the decrease of costs lead directly to value creation, so any steps taken to decrease the costs helps directly.

For the distribution of value added the first party is the Employees. During the period of study there is no particular trend identifiable in the distribution of value added to the employees. It lies in between 30.82% in the first year and 33.35% in the last year of the study period.

The distribution of value added to government is showing a mixed trend of increasing in the initial phase and then constant. It lies in between 26.85% in the first year 29.62% in the last year of the study period.

There is a constant decreasing trend observed in the ratio of distribution of value to providers of capital to total value added. It was 24.50% in the first year of the study period and it was mere 9.55% in the seventh year (2003-04) of the study period. This could be an indicator of the company's policy to reduce debt from its capital structure gradually and hence it is showing up in the value added statement.

For the last portion of retained earnings, there is an overall increasing trend observed but not on a continuous basis, as there are some fluctuating ratios in between during the period. It lies in between 17.83% in the first year of the study period and 26.93% in the last year of the study period.

Hence it can be concluded that the company has controlled its cost throughout the study period and improved on its value addition and finally increased its retained earnings throughout the study period. Even the expenses on interests have declined along with decline in the dividend distribution.

15. MATRIX LABORATORIES LTD.

Table: 9.6:

The following page has the Table Showing the Value Added Statement for

Matrix Laboratories Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 9.6

GENERATION OF VALUE ADDED										
Particulars	97-98		98-99		99-2000		2000-01		2001-02	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	27.51	99.49	40.73	99.98	45.19	99.98	60.78	89.51	102.18	98.1
Add: Service Income	0.14	0.51	0.01	0.02	0.01	0.02	7.12	10.49	1.89	1.82
Total : A	27.65	100.00	40.74	100.00	45.2	100.00	67.9	100.00	104.07	100.
Cost of M&S : B	24.51	88.64	31	76.09	41.26	91.28	50.09	73.77	72.1	69.2
Gross Value Added (A-B)	3.14	11.36	9.74	23.91	3.94	8.72	17.81	26.23	31.97	30.7
Less:Depreciation	0.3	1.08	0.59	1.45	0.73	1.62	0.86	1.27	1.53	1.47
Net Value Added	2.84	10.27	9.15	22.46	3.21	7.10	16.95	24.96	30.44	29.2
APPLICATION OF VALUE ADDED										
Particulars	97-98		98-99		99-00		00-01		2001-02	
	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%
To Employees	0.42	14.79	1.02	11.15	1.02	31.78	1.76	10.38	5.14	16.8
To Government	0.51	17.96	5.12	55.96	6.7	208.72	8.36	49.32	16.49	54.1
To Prov of cap	1.73	60.92	2.11	23.06	2.65	82.55	1.88	11.09	2.9	9.53
Retained in Busines	0.18	6.34	0.9	9.84	-7.16	-223.05	4.95	29.20	5.91	19.4
Net Value Distributed	2.84	100.00	9.15	100.00	3.21	100.00	16.95	100.00	30.44	100.

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Income from sales occupies a predominant position in the total income of the company which is visible from the value added statement of Matrix Laboratories for the period under study. It was 99.49% in the first year of the study and 97.85% in the last year of the study period. And there were no major fluctuations observed in these figures during the study.

There is a fluctuating observed in the cost of materials and services. It is 88.64% in the first year and it was 91.28% in the third year of the study period. Afterwards it has declined for continuous four year and at the end increased by a small margin. The least ratio was 57.37% (2003-04) which shows the amount of fluctuations observed in the company during the period of study. But as the fluctuation is showing positive trends it is always acceptable.

The amount of fluctuation experienced in the cost of materials and services, same is observed in the net value added. It was 10.27% in the first year which went down to 7.10% in the third year of the study period, afterwards it started showing an upward movement and till the end of the period. It was highest 40.58% in the seventh (2003-04) year of the study period.

For the distribution of value created the first party is employee. It includes payment of salaries, bonuses, and all other payments to the work force. It is showing a complete fluctuating picture throughout the study period from which no inference can be made and no trends can be established. It lies in between 31.78% (1999-2000) and 9.23% (2002-03)

For payment to government also there is no particular trend visible, neither any sort of stability is observed from the figures in the value added statement. But in the last three years it has stabilized with decreased ratios. It lies between 17.96% (1997-98) and 26.21% (2004-05) during the period of study.

For payment to the providers of capital also there is no particular trend visible, neither any sort of stability is observed from the figures in the value added statement. But in the last three years it is showing some declining trend. It lies between 60.92% (1997-98) and 10.32% (2004-05) during the period of study.

As far as retained earnings are concerned there is no particular trend visible, neither any sort of stability is observed from the figures in the value added statement. But in the last three years it is showing some stability. It lies between 6.34% (1997-98) and 47.32% (2004-05) during the period of study.

Hence we can conclude that although there are huge fluctuations in the figures of the company but they are all leading to the positive financial situation of the company. After those uncertain fluctuating and negative trend years the company has made noteworthy progress in the last five years during the study period of eight years.

16. **NICHOLAS PIRAMAL INDIA LTD.**

Table: 9.7:

The following page has the Table Showing the Value Added Statement for

Nicholas Piramal India Ltd. for the period of 8 (Eight) Years from 1997-98 to 2004-05

Table 9.7

Table Showing the Value Added
the period of 8 (Eigh

GENERATION OF VALUE ADDED									
Particulars	97-98		98-99		99-2000		2000-01		200
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.
Sales	534.64	97.44	429.99	92.02	486.48	92.82	566.76	94.34	946.48
Add: Service Income	14.02	2.56	37.27	7.98	37.63	7.18	34.03	5.66	56.86
Total: A	548.66	100.00	467.26	100.00	524.11	100.00	600.79	100.00	1003.3
Cost of M&S : B	266.28	48.53	219.86	47.05	260.26	49.66	305.54	50.86	547.64
Gross Value Added (A-B)	282.38	51.47	247.4	52.95	263.85	50.34	295.25	49.14	455.7
Less:Depreciation	18.46	3.36	8.92	1.91	10.58	2.02	13.9	2.31	16.89
Net Value Added	263.92	48.10	238.48	51.04	253.27	48.32	281.35	46.83	438.81
APPLICATION OF VALUE ADDED									
Particulars	97-98		98-99		99-00		00-01		200
	Amt	%	Amt	%	Amt	%	Amt	%	Amt
To Employees	70.5	26.71	49.63	20.81	56.81	22.43	55.74	19.81	82.47
To Government	92.45	35.03	75.33	31.59	88.77	35.05	102.42	36.40	176.1
To Prov of cap	51.01	19.33	50.62	21.23	52.23	20.62	53.62	19.06	86.37
Retained in Busines	49.96	18.93	62.9	26.38	55.46	21.90	69.57	24.73	93.87
Net Value Distributed	263.92	100.00	238.48	100.00	253.27	100.00	281.35	100.00	438.81

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Apart from sales there are other incomes also which are adding up to the total income.

The ratio of sales to total income is showing that other incomes are having their share

in the total income during the period of study. The ratio of sales to total income is

97.44% in the first year and it was 91.21% in the last year of the study period.

The ratio of cost to total income is shown by cost of Material and services ratio. It is

48.53% in the first year and 57.12% in the last year of the study period. This ratio

shows that how much portion of income is eaten up by the cost of materials and

services. In this case this ratio is showing an increasing trend during the period of

study which is a negative sign for the company.

The negative trend of cost of material and services is directly showing its effect on the ratio of net value added to total income. As the cost of material and services are increasing as a percentage of total income it is very obvious that the percentage of net value added to total income is would be declining. This means that over the period of study the company's performance is deteriorated as per this Value Added Statement. The ratio in the first year was 48.10% and in the last year it was 39.76%.

After the calculation of net value added in the value added statement the value added would be distributed. The first party to whom the value would be distributed would be the employees. There is considerable amount (26.71% in 97-98) of value distributed to the employees of the companies in the initial period of study, but gradually this ratio is showing decline and at the end it is showing some improvement as it is 23.86% in the year 2004-05. There is no particular trend observed in this distribution.

After distribution to employees the net value added is distributed to government. The ratio of value distributed to government has remained constant almost throughout the period of study. It was 35.03% in the first year (1997-98) and it was 35.46% in the last year (2004-05) of the study period.

After distributing to government the value is distributed to the providers of capital. There are no major fluctuations observed in this ratio over the period of study and the ratio is showing some declining trend in the last years of the study period. It was 19.33% in the first year of the period and 13.68% in the last year of the period. This shows that over the years the payments to government have reduced.

Finally the value created is retained in the business. It was 18.93% in the first year and 27.01% in the last year. The amount of value created which is retained in the business is very less and it is showing some increase during the period of study is really a matter of fine value for the company.

During the period of study year by year the ratio of cost to total income has increased which means the share of cost to income has increased. This reflects that either the company has not made serious efforts to control costs or it shows that whatever efforts are made were un-successful and that leaded to decrease in the rate of net value added from the income, during the study period. The improvement in the retained earnings over the period of years as a percentage of total value created is a positive sign for the financial health of the company.

17. SUN PHARMACEUTICALS INDUSTRIES LTD.

Table: 9.8:

The following page has the Table Showing the Value Added Statement for

Sun Pharmaceuticals Industries Ltd. for the period of 8 (Eight) Years from 1997-98 to

2004-05

Table 9.8

Table Showing the Value ...
the period...

GENERATION OF VALUE ADDED								
Particulars	97-98		98-99		99-2000		2000-01	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Sales	279.77	95.14	358.11	97.66	478.35	97.55	613.78	98.98
Add: Service Income	14.28	4.86	8.58	2.34	12.03	2.45	6.31	1.02
Total: A	294.05	100.00	366.69	100.00	490.38	100.00	620.09	100.0
Cost of M&S :B	157.39	53.52	211.72	57.74	274.02	55.88	332.01	53.54
Gross Value Added (A-B)	136.66	46.48	154.97	42.26	216.36	44.12	288.08	46.46
Less:Depreciation	5.98	2.03	8.67	2.36	12.94	2.64	16.21	2.61
Net Value Added	130.68	44.44	146.3	39.90	203.42	41.48	271.87	43.84
APPLICATION OF VALUE ADDED								
Particulars	97-98		98-99		99-00		00-01	
	Amt	%	Amt	%	Amt	%	Amt	%
To Employees	21.61	16.54	27.12	18.54	29.14	14.33	37.15	13.66
To Government	34.87	26.68	36.9	25.22	56.39	27.72	81.54	29.99
To Prov of cap	20.2	15.46	24.29	16.60	25.83	12.70	31.03	11.41
Retained in Busines	54	41.32	57.99	39.64	92.06	45.26	122.15	44.93
Net Value Distributed	130.68	100.00	146.3	100.00	203.42	100.00	271.87	100.0

(Source: Annual Reports of Companies from the year 1997-98 to 2004-05)

Income from sales occupies a predominant position in the total income of the company which is visible from the value added statement of Sun Pharmaceuticals Industries Ltd. for the period under study. It was 95.14% in the first year of the study and 96.90% in the last year of the study period. And there were no major fluctuations observed in these figures during the study.

Cost of Materials and Services have not shown any particular trend during the period of study. It was 53.52% in the first year then it increased to 57.74% in the second year and then it showed decrease for the next two years, afterwards it was stabilized at around 50% and in the last year it was 54.69%. This shows that there are small fluctuations in this ratio but overall it has neither shown any increase nor any decrease in the ratio of cost of material and services to total income.

The trend of ratio of percentage of cost of materials and services to sales is visible in the Net value added too. Hence the net value added is also not showing any particular trend throughout the study period for the ratio of net value added to total income in the value added statement for Sun Pharmaceutical Industries Ltd. It was 44.44% in the first year and 42.80% in the last year of the study period.

After the calculation of net value added in the value added statement the value added would be distributed. The first party to whom the value would be distributed would be the employees. There is a small decline visible in the value distributed to employees over the period of time. It was 16.54% in the first year, although it showed increase in the second year but afterwards there is a decreasing trend observed in the ratio of

employees cost to net value added. In the last year the ratio is 14.83%. It should be the matter of concern for the company if this ratio declines, on the other hand more use of machinery may also lead to such a situation if manpower is reduced in business operations.

After distribution to employees the net value added is distributed to government. There are no major fluctuations observed in this ratio. It was 26.68% in the first year and it was 29.99% in the year 2000-01. It is showing an increase but the increase is not much higher.

After distributing to government the value is distributed to the providers of capital. There are no major fluctuations observed in this ratio over the period of study and the ratio is showing some declining trend in the middle of the study period. It was 15.46% in the first year of the period and 18.40% in the last year of the period. This shows that over the years the payments to government have increased.

Finally the value created is retained in the business. It was 41.32% in the first year and 47.17% in the last year. The amount of value created which is retained in the business is significant and it is showing some increase during the period of study is really a matter of fine value for the company. In the year 2001-02 the amount of value added retained was 49.72% which is an example that company believes in retaining the earnings rather than distributing as dividends.

Hence it can be concluded that there are no major positive or negative movements observed in the entire vale added statement for Sun Pharmaceuticals Industries Ltd.

Only significant item is regarding a considerable big amount (nearly 50%) is retained by the company in almost all the years during the period of the study. The company has not been very successful in controlling the cost and has not been rewarded with improved value creation. Even employees are not getting any improved share from the value created, in fact over the years the share of employees in the net value added has reduced. Hence it shows an overall mix picture for the company from the Value Added Statement.

8. Conclusion

In Aurobindo Pharmaceuticals Ltd. it can be observed that there is an increasing trend in the share of employees in the value added in this company. And there is overall improvement observed in the retained earnings ratio to total value. Apart from these there are no major trends observed in the other places.

For the company Cadila Healthcare Ltd. there is a positive trend observed in the retained earnings over the period of study. Even the cost of material and services has declined which has led to improvement in the ratio of net value added during the period of the study for the company.

For Cipla Ltd. it can be observed that the employees share is increasing and company has the policy to retain maximum of its retained earnings. This also shows that company is not a too liberal dividend distributor. But as the ratio of distribution to providers of capital is also positive in a way it shows that company is passing on the benefits to the employees as well as the providers of capital and thereafter also

managing to keep reserves for business. This shows a very bright picture of the company during the study period.

In Dr. Reddy's Laboratories the first three years showed a positive trend with regard to creation of value but after that there is no particular trend identifiable in the value addition and even in the distribution of value added.

For IPCA Laboratories Ltd. it can be concluded that the company has controlled its cost throughout the study period and improved on its value addition and finally increased its retained earnings throughout the study period. Even the expenses on interests have declined along with decline in the dividend distribution.

For Matrix Laboratories Ltd. we can conclude that although there are huge fluctuations in the figures of the company but they are all leading to the positive financial situation of the company. After those uncertain fluctuating and negative trend years the company has made noteworthy progress in the last five years during the study period of eight years.

For Nicholas Piramal India Ltd. during the period of study year by year the ratio of cost to total income has increased which means the share of cost to income has increased. This reflects that either the company has not made serious efforts to control costs or it shows that whatever efforts are made were un-successful and that leaded to decrease in the rate of net value added from the income, during the study period. The improvement in the retained earnings over the period of years as a percentage of total value created is a positive sign for the financial health of the company.

For Sun Pharmaceutical Industries Ltd. it can be concluded that there are no major positive or negative movements observed in the entire vale added statement for Sun Pharmaceuticals Industries Ltd. Only significant item is regarding a considerable big amount (nearly 50%) is retained by the company in almost all the years during the period of the study. The company has not been very successful in controlling the cost and has not been rewarded with improved value creation. Even employees are not getting any improved share from the value created, in fact over the years the share of employees in the net value added has reduced. Hence it shows an overall mix picture for the company from the Value Added Statement.

References

1. S.N.Maheshwari, Advanced Accountancy:, Sultan Chand & Sons, Volume II, 6th Edi
2. R. N. Anthony / G. A. Walsh : Management Accounting
3. M. Y. Khan. K. P. Jain : Management Accounting
4. I. M. Pandy : Management Accounting
5. J. Betty : Management Accounting
6. Sr. K. Paul : Management Accounting
7. Dr. Jawharlal : Management Accounting
8. Manmohan Goyal : Management Accounting
9. S. N. Maheshwari : Principles of Management Accounting
10. Ravi M. Kishore : Financial Management (Taxmann,New Delhi)
11. R. K. Sharma and Shashi K. Gupta : Management Accounting
12. Richard M. Lynech and Robert Williamson : Accounting for Management Planning and Control
13. Dr. Mahesh Kulkarni : Management Accounting Career Publications, Nasik

Chapter 10

SUMMARY, FINDINGS & SUGGESTIONS

Contents

1. Prelude of the Study

A highest academic degree and the biggest formal research project; this is what a Ph.D. means in a very concise form. If I try to define Philosophy in my words it also refers to some unique and fresh knowledge which is brought into world for the very first time. Interestingly this is not *out-of-the-blue* thoughts, but are the results of some concrete work in a particular direction using some appropriate way or method.

The following research, which is although a *post-mortem* of things happened with selected units, but the new flow of conclusions that are derived from this work are showing a way ahead and hence can be futuristic.

The operationalization of the new patent regime in 2005 is likely to bring about fundamental changes in the composition of the pharmaceutical industry for the coming times especially the next decade. The reintroduction of product patent would mean that companies would not be able to copy drugs patented after 1995. In other words, most Indian companies may face an acute decline in market opportunities after 2005. It is also pointed out that a shift to a product patent regime would demand that basic capabilities of indigenous research be developed. Big companies have started preparing themselves for improving their R&D standard as well as R&D budget and also making tie-ups with the leaders for the R&D, but the real test is for the small units because they not only lack financial resources but also lack trained manpower and accessible testing facilities.

In the light of the above status of Pharmaceutical Industry of India with reference to the Patent regime, the present research is objected to study and observe that:

"How the Industry is poised to face this change in the Patent laws" And for that purpose it was essential to study the working of the industry before the patent law comes into force, i.e. 1st April 2005.

In order to study the status of industry, sample units were selected on some criteria which nearly reflected the population. The sample is a good representation of the population and the period for which study is undertake is as big as 8 [Eight] Years.

After making a detailed analysis of the research work this chapter brings the gist or essence of the entire work. Even a humble endeavor has been done to present some suggestions to the companies under study to improve the present state of affairs and financial performance.

2. Findings

CHAPTER 1: CONCEPT AND MEASUREMENT OF PROFITABILITY

In order to arrive at exact conclusions and observations and for finding out something new from a given set of things, one needs to go into the details of the things. Going into detail does not only mean intensive study but also extensive study.

Similarly, for going into the detail of the financial performance of the selected pharmaceutical companies of India it was required to work intensively and extensively on the profits and profitability of these companies.

Several relational dimensions of profit margin, several dimensions of sales volume and finally several dimensions of profitability needs to be used to do an in-depth study of profit and profit earning capacity of the companies.

Finally using all the above described ways an effort has been made to measure the profitability of the selected companies under study for a specified period.

CHAPTER 2: A STUDY OF PHARMACEUTICAL INDUSTRY

1.   Self sufficient to meet domestic demand.

2.   Huge Size

3.   Huge Volume of Production

4.   Low Prices

5.   Growth in Exports

6.   Drug Price Control Order

The Drug Price Control Order (DPCO) was established in 1985, enabling the government to dictate drug prices for 143 basic drugs, with the purpose of ensuring the availability of medicines at low prices.   Price controls disrupted   free-market forces further because there was no control over the price of any raw materials needed for manufacturing drugs.

7.   Patents and Patents Act

Patent refers to an official document giving the holder the sole right to make, use or sell an invention and preventing others from copying it

8. Research and Development

The major shortcomings of the Indian pharmaceutical industry are in the fields of Research and Development and new drug discovery. Research and development has always taken the back seat amongst Indian pharmaceutical companies.

9. TRIPS

The IPR regime, as it is often referred to in the literature, is a mega proposition on comprehensively enforcing and regulating, on a global scale, protections for patents, copyrights, designs and the entire system of intellectual property.

10. Dichotomous Structure of Industry

A small number of large enterprises and MNC subsidiaries have come to coexist with a very large number of small units.

11. Growing Industry

The Indian pharmaceutical industry is highly fragmented, but has grown rapidly due to the friendly patent regime and low cost manufacturing structure. Intense competition, high volumes and low prices characterize the Indian domestic market.

CHAPTER 3: RESEARCH METHODOLOGY

For genuine decision making genuine informational base is essential. Same applies to research oriented projects wherein the major objective is to find out some sort of new identity of things which have happened in past.

In this research work an effort has been made to check the dual relationship establishing profit and profitability base among selected pharmaceutical companies for the study period. First aspect was to find out the relation between several companies during the period of study on the front of their performance, taking several performance measurement criteria. Second aspect was to find out the relationship or trend between several years of study of the same company on the front of their performance, taking several performance measurement criteria.

In the best of the knowledge of the researcher and the informational knowledge collected from various sources, it was believed that F-Test should be used to check the dual relationship establishing profit and profitability base among selected pharmaceutical companies for the study period.

Eight companies are selected for the purpose of research and their eight years' data are collected, analyzed and applied statistical tools on those data. And finally from the statistical analysis some conclusions can be drawn for the profit and profitability of the selected companies for the study period.

CHAPTER 4: COST AND SALES TREND ANALYSIS

From the calculation of individual cost to total cost ratio there can be some general conclusions drawn from the statistical analysis. From the study of six individual cost to total cost ratio and their comparison among companies for the study period and

individual companies comparison for different years, following conclusions can be drawn:

- There is a significant difference in the Percentage of raw material cost to total cost ratio among companies and there is also a significant difference in the Percentage of raw material cost to total cost between different years of each individual company under study for the study period.

- There is a significant difference in the Percentage of Employee cost to total cost ratio among companies and there is also a significant difference in the Percentage of Employee cost to total cost between different years of each individual company under study for the study period.

- There is a significant difference in the Percentage of Excise to total cost ratio among companies and there is also a significant difference in the Percentage of Excise to total cost between different years of each individual company under study for the study period.

- There is a significant difference in the Percentage of Factory Overheads to total cost ratio among companies and there is also a significant difference in the Percentage of Factory Overheads to total cost between different years of each individual company under study for the study period.

- There is a significant difference in the Percentage of Administrative Overheads to total cost ratio among companies and there is also a significant difference in the Percentage of Administrative Overheads to total cost between different years of each individual company under study for the study period.

- There is a significant difference in the Percentage of Selling & Distribution cost to total cost ratio among companies but there is no significant difference in the

Percentage of Selling & Distribution cost to total cost between different years of each individual company under study for the study period.

Hence all the null hypotheses are rejected and alternate hypotheses are accepted that that there is a significant difference found in the individual cost to total cost ratio for all the companies under study for the study period.

Even for each company the null hypothesis is rejected and alternate hypothesis is accepted that there is a significant difference found in each company among several years in the ratio of individual cost to total cost.

CHAPTER 5: ANALYSIS OF PROFIT MARGIN

From the calculation of Profit to Sales ratio there can be some general conclusions drawn from the statistical analysis. From the study of three individual Profit to Sales ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

- There is a significant difference in the Gross Profit to Sales ratio among companies and there is also a significant difference in the Gross Profit to Sales   ratio between different years of each individual company under study for the study period.
- There is a significant difference in the Operating Profit to Sales ratio among companies but there is no significant difference in the Operating Profit to Sales

ratio between different years of each individual company under study for the study period.

- There is a significant difference in the Net Profit to Sales ratio among companies but there is no significant difference in the Net Profit to Sales ratio between different years of each individual company under study for the study period.

CHAPTER 6: ASSETS TURNOVER

From the calculation of Turnover ratios there can be some general conclusions drawn from the statistical analysis. From the study of seven individual Turnover ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

- There is a significant difference in the Total Assets Turnover ratio among companies and there is no significant difference in the Total Assets Turnover ratio between different years of each individual company under study for the study period.

- There is a significant difference in the Fixed Assets Turnover ratio among companies and there is a significant difference in the Fixed Assets Turnover ratio between different years of each individual company under study for the study period.

- There is a significant difference in the Current Assets Turnover ratio among companies and there is no significant difference in the Current Assets Turnover ratio between different years of each individual company under study for the study period.

- There is a significant difference in the Working Capital Turnover ratio among companies and there is no significant difference in the Working Capital Turnover ratio between different years of each individual company under study for the study period.

- There is a significant difference in the Inventory Turnover ratio among companies and there is no significant difference in the Inventory Turnover ratio between different years of each individual company under study for the study period.

- There is no significant difference in the Debtors Turnover ratio among companies and there is no significant difference in the Debtors Turnover ratio between different years of each individual company under study for the study period.

- There is a significant difference in the Cash Turnover ratio among companies and there is no significant difference in the Cash Turnover ratio between different years of each individual company under study for the study period.

CHAPTER 7: ANALYSIS OF RETURN ON INVESTMENT

From the calculation of ratios there can be some general conclusions drawn from the statistical analysis. From the study of seven individual ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

- There is no significant difference in the Return on Investment ratio among different companies under study and there is no significant difference in the Return on Investment ratio between different years of each company.

- There is a significant difference in the Return on Gross Capital Employed ratio among different companies under study and there is no significant difference in the Return on Gross Capital Employed ratio between different years of each company.

- There is no significant difference in the Return on Net Capital Employed ratio among different companies under study and there is no significant difference in the Return on Net Capital Employed ratio between different years of each company

- There is no significant difference in the Return on Proprietor's Net Capital Employed ratio among different companies under study and there is no significant difference in the Return on Proprietor's Net Capital Employed ratio between different years of each company.

- There is no significant difference in the Earnings Per Share ratio among different companies under study and there is no significant difference in the Earnings Per Share ratio between different years of each company.

- There is no significant difference in the Dividend Payout Ratio among different companies under study and there is no significant difference in the Dividend Payout Ratio between different years of each company.

- There is a significant difference in the Fixed Charges Cover Ratio among different companies under study and there is no significant difference in the Fixed Charges Cover Ratio between different years of each company.

CHAPTER 8: ANALYSIS OF COMMON SIZE INCOME STATEMENT

Common size statement presents a clear picture of a company's profit and its comparison with the sales and other expenses. This common size statement prepared for all the eight companies for all the eight years has enabled researcher to understand the details of the profit and its relationship with sales over a period of time for the selected companies under study.

- Aurobindo Pharmaceuticals has shown a mixed performance. As such there are a good number of ups and downs observed in the absolute and percentage profit to sales during the entire study period and some of the fluctuations are pretty abnormal too.

- Performance of Cadila Healthcare is fairly good as much effort is done behind maintaining the increasing trend of net profit, which is successful also to a certain extent but even then there is an amount of fluctuation in the rate of net profit to sales during the entire study period although not very high.

- For Cipla Ltd. it can be concluded that the rate of profit to sales is much higher in this company compared to other companies, it is almost double than other companies, but even this company is not successful in maintaining its rate of profit to sales. And there is a clear decreasing trend observed in this ratio in this company.

- As per final analysis of Dr. Reddy's Laboratories it can be concluded that the expenses were in control in the initial period of five years and then they have shown an increasing trend, which makes it clear that the company has failed to control its

costs. The revenue has increased but at a declining rate and the last year has been miserable for the company in more than one ways. From the sixth year 2002-03 the margins are declining and hits bottom in the last year of the study period. This gives an alarming signal to the financial performance of the company and it needs to improve on several fronts to get things back on track.

- For IPCA Labs it can be concluded that the major expenses were in control in the entire period of study. The revenues have shown increase but the company is not able to maintain a consistent increasing rate of profit margin. Except couple of deviations the company has shown a reasonably good performance during the study period.

- As far as Matrix Laboratories is concerned it can be concluded that although there are some big fluctuations observed in the profit during the study period but in the last three years company has recovered very well and is able to compete with the big giants of the industry. The ability to come out so quickly and strongly from the losses can be a strong ability for the company.

- For Nicholas Piramal it can be concluded that although the company has not been able to control its main costs but it has successfully control and reduced its non-operating costs and also increased its revenues which has led to improvement in the overall profit margin of the company over the period of time.

- For Sun Pharmaceuticals overall profitability and financial performance has improved. Although the improvement is not very significant but it indeed is eye-

catching. If revenues can be increased and costs can be controlled like in the past then the company can still do better in the coming times.

CHAPTER 9: VALUE ADDED STATEMENT

Value added statement is a useful measure to find out the value added by the organizational activities. It is a special tool which tries to measure the additions called the "Value" added and its relationship with the revenues over the period of time.

- In Aurobindo Pharmaceuticals Ltd. it can be observed that there is an increasing trend in the share of employees in the value added in this company. And there is overall improvement observed in the retained earnings ratio to total value. Apart from these there are no major trends observed in the other places.

- For the company Cadila Healthcare Ltd. there is a positive trend observed in the retained earnings over the period of study. Even the cost of material and services has declined which has led to improvement in the ratio of net value added during the period of the study for the company.

- For Cipla Ltd. it can be observed that the employees share is increasing and company has the policy to retain maximum of its retained earnings. This also shows that company is not a too liberal dividend distributor. But as the ratio of distribution to providers of capital is also positive in a way it shows that company is passing on the benefits to the employees as well as the providers of capital and thereafter also

managing to keep reserves for business. This shows a very bright picture of the company during the study period.

- In Dr. Reddy's Laboratories the first three years showed a positive trend with regard to creation of value but after that there is no particular trend identifiable in the value addition and even in the distribution of value added.

- For IPCA Laboratories Ltd. it can be concluded that the company has controlled its cost throughout the study period and improved on its value addition and finally increased its retained earnings throughout the study period. Even the expenses on interests have declined along with decline in the dividend distribution.

- For Matrix Laboratories Ltd. we can conclude that although there are huge fluctuations in the figures of the company but they are all leading to the positive financial situation of the company. After those uncertain fluctuating and negative trend years the company has made noteworthy progress in the last five years during the study period of eight years.

- For Nicholas Piramal India Ltd. during the period of study year by year the ratio of cost to total income has increased which means the share of cost to income has increased. This reflects that either the company has not made serious efforts to control costs or it shows that whatever efforts are made were un-successful and that leaded to decrease in the rate of net value added from the income, during the study period. The improvement in the retained earnings over the period of years as a

percentage of total value created is a positive sign for the financial health of the company.

- For Sun Pharmaceutical Industries Ltd. it can be concluded that there are no major positive or negative movements observed in the entire vale added statement for Sun Pharmaceuticals Industries Ltd. Only significant item is regarding a considerable big amount (nearly 50%) is retained by the company in almost all the years during the period of the study. The company has not been very successful in controlling the cost and has not been rewarded with improved value creation. Even employees are not getting any improved share from the value created, in fact over the years the share of employees in the net value added has reduced. Hence it shows an overall mix picture for the company from the Value Added Statement.

3. Suggestions

- There are no trends identified in the ratio of individual cost to total cost which states that company is not consistent in its procuring prices of materials and the use of materials. As such either of them are fluctuating and hence they are having not having any standard proportion to total costs. All the companies can have standardization in the type of material, prices at which they are available and also other expenses which are incurred needs to make standardized.

- Despite being an essential commodity, excise duty for the pharma sector remains at 16%. The industry was expecting a reduction in excise duty to 8%, especially now that the excise duty is MRP based. Hence excise duty need to be reduced to less than 10%.

-     Extension of deduction of 150% of R&D expenses. This would encourage more and more companies to invest in R&D.

-     An academic –industrial relationship need to be further explored, like the U.S., where the universities innovate and the industry commercialize the product. The universities are permitted to own the Intellectual Property Rights (IPR) and get a share of the profits. Academic institutions will then become the engines of entrepreneurship. This also requires setting up of greater number of centers of academic excellence throughout India in different states, so that people from across the country can avail of such education and make their contributions without feeling the need to look beyond India for achieving academic excellence.[1]

-     Income tax exemptions should be given on clinical trials and contract research done outside the company and abroad. This is because India is seen as emerging as a major center for outsourcing of clinical trials for the Pharmaceutical MNCs.[2]

- The government should encourage setting up of USFDA-compliant plants by providing tax holidays for a specified period (as given in regions like Baddi), so that the Indian companies can exploit the opportunity arising out of patented drugs and take up marketing of generics in the developed countries like USA.[3]

- Raw materials consists the major portion of total cost for all the companies, which means that this cost should be checked to improve margins. Even backward integration of value chain can be a good idea if it is a feasible one.

- There have been a number of instances of mergers and acquisition in Pharmaceutical Industry in India in recent times. For decreasing the input cost and for better marketing and other advantages, the companies can strengthen itself by acquiring strategic pharma units.

- If government can be instrumental in providing the raw materials at subsidized rates to the companies, the companies can reduce their prices of drugs which can provide relief to the general public and would increase the competitiveness of Indian firms in global markets.

- Proper equilibrium must be maintained between the pays and performances of work-force, this would provide twin benefit. Firstly would check the increasing salary and wages cost and secondly it would improve the qualitative work from the workers.

- Promotional activity must be carried out with the objective of disease awareness and disease prevention messages in association with NGOs.

- Government can boost the exports by giving extra benefits to the export oriented units.

- Extra incentives can be awarded to the companies working for the social causes in rural area. Government can procure drugs in bulk for its various medical programmes in rural areas.

- Sales promotion activity can be carried out by the sample units in rural areas where maximum population of the country resides. This can also be clubbed with the efforts done by government and the social responsibility activities of the companies.

1.FICCI Report for National Manufacturing competitiveness council: "Competitiveness of Indian Pharmaceutical Industry in the new Product Patent regime", March 2005
2.ibid
3.ibid

List of Tables

Bibliography

Books

1.   Aczel, Amir; Sounderpandian, Jayavel: Complete Business Statistics, Tata McGraw Hill, 2006

2.   Aggrawal N.K.: Management of working capital, New Delhi, Sterling Publication, 1993

3.   Aggrawal N.P.: Analysis of financial statements, National publishing house, New Delhi, 1981

4.   Anthony N.R.: Management Accounting Principles, Homewood, Illionis: Richard D. Irwin Inc. 1977

5.   Anthony & Reece: Management Accounting Principles, Homewood Illionios, Richard D. Irwin Inc 1977

6.   Anthony Robert Reece, James. S., Accounting Principles, A.I.T.B.S. Publishing Delhi - 6th Ed.2003

7.   A.S.Hornby, Oxford Advanced Learner's Dictionary Oxford University Press, Fifth Edition, 1996

8.   Backman T.N.: Credit and collection management and theory, McGraw Hills, New York, 1962

9.   Baisnab: Elements of Probability and statistics, Tata McGraw Hill, 2004

10.   Beirman: Management Accounting, Cornell uni. Ithaka, New York, 1962

11.   Betty J.: Management Accounting, McDonald and Evans Ltd., London, 1963

12.   Bolton S.E.: Managerial Finance, Houghton, Mifflin Co: Boston 1976

13.   Braverman J.D.: Fundamental of business statistics, New York, Academic Press, 1987

14. Bhabutosh Banerjee: Cost Accounting, Calcutta, The world press, 1983

15. Bhalla V.K., International Financial Management Taxt & Cases, Anmol Publishing House, 4th Ed.2004

16. Bhattacharya S.K., Accounting For Management Taxt & Cases, Vikas Publishing New Delhi, 2nd Rep.Ed.2002.

17. Bhattacharyya Ashish K., Principles and Practice Of Cost Accounting, Prentice Hill New Delhi.

18. Brealey Richard & Myers Stewart, Principal Of Corporate Finance, Tata McGraw Hill Publishing New Delhi - 5th Rep. 2003.

19. Brealey Richard A., Principles of Corporate Finance, Tata Mc Graw Hill Publishing New Delhi - 7th Ed.2005.

20. Buckley Adrian, Multinational Finance (3rd Ed.), Prentic Hill

21. Chandra Prasanna, Financial Management, Tata McGraw Hill, New Delhi, 1994

22. Chatterjee B.K., Costing And Managerial Accounting For Managers, Jaico Publication Mumbai - 3rd Ed.-1999.

23. Dalton, D.R., Daily, C.M. Certo, S.T., & Roengpitya, R. 2003. Meta-analyses of financial performance and equity : Fusion or confusion ? Academy of Management Journal, 46 : 13-26.

24. Das, Gupta: Economic & Commercial Geography, Sultan Chand & Sons, New Delhi 1994

25. Dr. M.B.Shukla, Kulshreshtha on Accounting, Indian Accounting Association Varanasi Branch,

26. Dr. S.N.Maheshwari, Financial Management: Principles & Practice, Sultan Chand & Sons, 1997

27. Dr. V.Venkataiah: Cost Accounting, Delhi, Dhanpatrai & Sons, 1991

28. Davies David, Finance and Accounting For Managers, Jaico Publication Mumbai - 2nd Ed.-1999.

29. Elteman, David K. And Others, Multinational Business Finance, Pearson Education - 10th Ed.2004

30. Eun Cheol S. & Resnick Bruce, International Financial Management, Tata McGraw Hill Publising New Delhi - 3rd Rep. 2003.

31. F.W.Taussig: op. cit. pp.

32. Foster G: Financial Statement Analysis, New Delhi, Prentice Hall of India (P) India, 1988

33. Fox, M.A., & Hamilton, R. 1994. Ownership and diversifica-tion: Agency theory or stewardship theory. Journal of Management Studies, 31:69-

34. Ghoshal, S., & Moran, P. 1996. Bad for practice: A critique of the transaction cost theory. Academy of Management Review, 21: 13-47.

35. Ghosh T.P., Financial Accounting For Management, Taxmann Pub.New Delhi

36. Gupta Shashi K. & Sharma R.K., Financial Management Theory & Practice, Kalyani Publication New Delhi - 4th Rev.Ed.2003.

37. Gitman L.J.: Principles of Managerial Finance, Harpers & Raw Publishing, 1990

38. Gupta R.K.: Profitability, financial structure and liquidity, Jaipur, Printwell Publishers, 1990

39. Gupta R.L. & Radhaswamy M.: Financial Statement Analysis, New Delhi, Sultan Chand & sons, 1985

40. Hampton John J, "Financial Decision Making ", Edition 1977

41. Icfai, Financial Management For Managers , Icfai Center Hyderabad

42. Icfai, Management Accounting And Control Systems, Icfai Center Hyderabad

43. Icfai, Financial Accounting And Financial Statement Analysis , Icfai Center Hyderabad

44. Jensen. M.C., & Meckling. W.Y. 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure. Journal of Financial Economics. 3: 305-360.

45. Kaplan Robert S. Advanced Management Accounting, Pearson Education - 3rd.Rep.-2004.

46. Keshab Das, The Domestic Politics of TRIPs: Pharmaceutical Interests, Public Health, and NGO Influence in India. By:,Gujarat Institute of Development Research   Ahmedabad ,July 2003, Paper Prepared for the Research Project on 'Linking the WTO to the Poverty-Reduction Agenda' (Part of the DFID-funded Globalisation and Poverty Research Programme)

47. Kuchhal S. C., "Financial Management" Chaitanya Publishing House, Allahabad

48. Kulkarni P.V.: Financial Management, Himalaya Publishing House, Bombay 1982

49. Maheshwari S.N. (Dr.), Financial Management Principles And Practice, S.Chand & Company Ltd. New Delhi - 9th Rev.Ed.2004.

50. Maheshwari S.N. (Dr.), Principles Of Management Accounting, S.Chand & Company Ltd. New Delhi - 14th Rev.Ed.2003.

51. Maheshwari S.N. (Dr.), Principles Of Management Accounting, S.Chand & Company Ltd. New Delhi - 13th Rev.Ed.2001.

52. Mantravadi Pramod M., E-Finance, Icfai Press Hyderabad - Vol-1 (2003)

53. Myre N. John: Financial Statement Analysis: Principles and techniques, Prentice Hall , Englewood cliffs, 1985

54. Prof. T.J.Rana & Others: Advanced Accountancy, A Text Book, Ahmedabad, Sudhir Prakashan, 1999

55. Professor Robert Tancer and student Srinivas Josyula, Investing in the Indian Pharmaceutical Industry: The American Graduate School of International Management, 1999 Thunderbird

56. Rachlin Robert: Return on Investment- strategies for profit, new jersey, Prentice Hall, Eaglewood cliffs, 1976

57. Ravi M. Kishore, Management Accounting, Taxmann, 1994

58. Rao S.B.: Financial Management, Sahibad, Vikas Publishing House, 1983

59. Robert V. Hogg, Elliot A. Tanis, M. Jagan Mohan Rao: Probability and Statistical Inference, Pearson Education, 2006

60. Stevenson H.W. & Nelson J.R.: Profits in the modern economy, Bombay, Vora & Publishers, 1969

61. Sharma Akhileshwar: Profitability analysis of Drugs and Pharmaceutical companies in India, A thesis submitted to Saurashtra University, Rajkot for the Degree of Ph.D.

62. Satish D., Corporate Finance, Concepts And Cases, Icfai Press Hyderabad - Vol-3 (2003)

63. Saxena V.K., Cost Accounting Text Book, S.Chand & Company Ltd. New Delhi - 6th Ed.2003.

64. Shapiro Alan C., Multinational Financial Management, Prentice Hill - 4th Ed.2002.

65. Sharan Vyuptakesh, International Financial Management, Prentice Hill - 3rd Ed.2005.

66. Sharma R.K.& Gupta Shashi K., Management Accounting Principle & Practice, Kalyani Publication New Delhi - 9th Rev.2003 & 1st Ed.1991.

67. Sharma R.K.& Gupta Shashi K., Management Accounting, Kalyani Publication New Delhi - 9th.Rev.Ed.2003.

68. Wick C.A.West: How to use management ratios, Great Britain 1971

69. Wixon Rufus, "Accountants Handbook" Harper, Ronald Press, New York, 1987

70. Yorston R.K. & Smyth E.B. & others: Advanced Accounting, The Law book company of Australia (P) Ltd. 1953

Journals and Magazines

1. Indian Pharmaceutical Guide, Pampose Publication, New Delhi, 1988

2. Stock Exchange official factory, Volume 14, 1988

3. Indian Journal of Accounting, Journal of the Indian Accounting Association, June 2005

4. Investors India, A Bajaj Capital Publication, May 2006

5. Business India, August 2006

6. Business Today, May 2006

7. Outlook Money, March 2005

8. Capital Market, February 2005

9. Fortune India, January 2005