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“A STUDY OF FINANCIAL PERFORMANCE OF ALUMINIUM INDUSTRY IN INDIA”

A THESIS

SUBMITTED TO THE SAURASHTRA UNIVERSITY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN MANAGEMENT UNDER THE FACULTY OF BUSINESS MANAGEMENT

SUBMITTED BY

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UNDER THE SUPERVISION OF

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JANUARY 2009
DECLARATION

I declare that the conceptual framework of the business of the thesis has been developed based on the detailed literature review as shown in the bibliographical references. I have quoted several statistics, notes, opinions and other information directly from various books, journals, periodicals and other reference material with clear mention of the sources of the information in the footnotes references. Apart from these, all the opinions, hypothesis, remarks, inferences, analysis and interpretations in the thesis are my own and original creation.

Moreover I also declare that for the work done in the thesis, entitled "A STUDY OF FINANCIAL PERFORMANCE OF ALUMINIUM INDUSTRY IN INDIA" is a record of independent research work carried out by me under the supervision and guidance of Dr. Sanjay Bhayani, Associate Professor, Department Of Business Management, (MBA Programme), Saurashtra University, Rajkot.

This work has not been previously submitted for the award of any diploma, degree, association or other similar title.

Date: 7th January, 2009
Place: Rajkot

(……………………)
R. V. KESHWARA
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PREFACE

The present study deals with the analysis of financial performance of alluminuim industry in India, which are mainly engaged in production of Alluminium Products. This study is aimed at exploring the financial performance of alluminuim industry in India.

The Indian aluminium industry is blessed with an abundant supply of quality bauxite, the key raw material, at a very low cost. The industry has a ready domestic and overseas market for the finished product. India has the fifth largest bauxite deposits, accounting for 7.5% of the global deposits. But its installed capacity is only 3% of the global capacity. The per capita consumption of Aluminium in India is relatively poor at 0.6 kg as against 16-35 in Developed countries like UK, Japan, USA, Germany and France. Hence, there is enough scope for India to become a favorite location for building alumina refineries and smelters. As the government continues to give a thrust to the electrification process, estimated to cost Rs 900 billion over the next decade, the aluminium industry stands to gain the maximum because 31% of the demand for aluminium comes from this sector.

The industry consists of five primary aluminium producers. They are Nalco (a PSU), Balco (wherein Sterlite group acquired strategic stake), Hindalco, Indal and Malco. Besides them, there are other downstream producers. The total installed capacity of primary aluminium is 7.47 lakh tonnes which may reach 10 lakh tonnes by the end of 2003 with Nalco's and Hindalco's greenfield and Brownfield expansions.
The consolidation in the industry is likely to bring down the number of major payers to two or three in the medium term. The aluminium production increased by 6.95% to 498625 tonne in the nine months ended Dec'02 over the corresponding previous year period. Part of the increase in production is attributed to lower base of the last year, when production was disrupted in Balco, on account of labour strike post divestment of strategic stake by government in favour of Sterlite Group. Except for Hindalco, all other domestic aluminium producers - Nalco, Malco, Indal and Balco reported increase in production during the nine months ended Dec'02 over the corresponding previous half-year period. However, Hindalco reported modest 0.14% fall in production to 190935 tonne during this period, due to interruption in power supply with disrupted production. For ascertaining financial performance of alluminium industry in India liquidity, five (5) leading companies of alluminium industry having a large plant have been selected. The period covered under the study extends over seven years from 2000-01 to 2006-07. Adopting various techniques such as ratio analysis trend analysis has made analysis of selected units.

In order to analysis the profitability, capital structure working capital position and operational efficiency of the alluminium industry in India which the help of published accounting annual reports, some publications. Most useful information has been gathered from the various journals reports, periodicals and daily newspapers. It is hoped that the thesis will be of immense help and use to practicing financial Managers, Management, Government officials, employees, Shareholders, Academicians and research scholars.
The present study is divided into eight chapters. The first chapter is the Conceptual Framework of financial performance. The second chapter focuses on Profile of alluminium industry in India. The third chapter is related with the Research Methodology. In the fourth chapter, profitability of the alluminium industry has been analyzed. The Financial Structure of selected alluminium units has been critically analyzed in the fifth chapter. The sixth chapter explained working capital position of selected alluminium units. The seventh chapter deals with the Activity Analysis of selected alluminium units. Finally, in the last chapter suitable and significance suggestions have been made and conclusion drawn.

I owe a deep gratitude to Dr. Sanjay J. Bahyani, Associate Professor, Department of Business Management, Saurashtra University, Rajkot who has guided me through out my research work.

I am thankful to Dr. Pratapsinh L. Chauhan Professor & Head, Department of Business Management, Saurashtra University, Rajkot for inspiring and providing valuable guidance in my research work.

I am also obliged to Dr. Daxaben Gohil, Professor and Head, Department of Commerce, Saurashtra University, and Rajkot for giving me valuable suggestions and moral boosting.
For completing the present study, I got assistance, valuable advice and suggestions, directly or indirectly from many of my teacher, well-wishers, colleagues, officials and a special indebts of gratitude is due to my parents, who took keen interest through the work and inspired me.

Finally, I acknowledge that this work would never been possible without the consistent support and inspiration of God “KRISHANA”

Date: 17th January, 2009

Place: Rajkot
Acknowledgement

It gives me a great pleasure to submit this Thesis to the Saurashtra University for the Award of Ph.D. Degree. I express my sincere thanks and gratitude to Dr. Sanjay J. Bhayani, Associate Professor, Department Of Business Management (MBA Programme) Saurashtra University who has provided me remarkable guidance and support in carrying out my research work throughout the research period.

I also express my heartfelt thanks and gratitude to Dr. Pratpsinh L. Chauhan, Professor, Head & Dean of Management Faculty at Saurashtra University Rajkot who has provided me valuable guidance and inspiration in my research work. I am thankful to our Principal Dr. J. S. Ramdatti & my dear colleague Dr. D. J. Parmar who are the sources of inspiration for my research work.

I deeply express my sense of gratitude to my students who have supported me in preparing this report. Special thanks to Amit Raninga a student of MBA, Saurashtra University Rajkot.

Last but not least my late parents, my life partner Shanta, my kids. Hiral, Nishita & Thruv who have inspired me with an opportunity and full cooperation and freedom in doing my work so I should not forget them at this stage.

Date :

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CHAPTER - 1

CONCEPTUAL FRAMEWORK

OF

FINANCIAL PERFORMANCE
CHAPTER – 1

CONCEPTUAL FRAMEWORK OF FINANCIAL PERFORMANCE

1.1 Concept of Financial Performance

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1.3 Operational Efficiency

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1.5 Objective of Financial Performance Appraisal

1.6 Concept and Measurement Of Profitability

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CHAPTER – 1

CONCEPTUAL FRAMEWORK OF FINANCIAL PERFORMANCE

1.1 CONCEPT OF FINANCIAL PERFORMANCE:

Financial Performance is the snapshot of a concern's position and ability to withstand the ever-changing environment. It is the blueprint of the financial affairs of the concern and reveals how a business has prospered under the leadership of its management personnel. In fact, it can be said that financial performance is the medium of evaluation of management performance.

The overall objective of a business is to earn satisfactory returns on the funds invested in it. Consistent with maintaining a sound financial position, an evaluation of such performance is done in order to measure the efficiency of operations or the profitability of the organization and to appraise the financial strength as compared with a similarly situated concern.

Thus, Financial Appraisal is generally directed towards evaluating the liquidity, stability and profitability of a concern which put together symbolizes the financial efficiency of a concern.
The overall objective of a business is to earn satisfactory returns on the funds invested in it. Consistent with maintaining a sound financial position, an evaluation of such performance is done in order to measure the efficiency of operations or the profitability of the organization and to appraise the financial strength as compared with a similarly situated concern.

Thus, Financial Appraisal is generally directed towards evaluating the liquidity, stability and profitability of a concern which put together symbolizes the financial efficiency of a concern.

Financial performance of analysis financial statements, viz balance sheet and profit and loss account aimed at diagnosing the liquidity, profitability, productivity, activity and financial condition of a business concern. Satisfactory diagnosis can rarely be made on the basis of such information which are included in these financial statements alone because figure are dumb. But, if they are analyzed, they get a tongue and therefore they help the management and other interested parties in assessing the financial adventure of an enterprise.

Information contained in balance sheet and profit and loss accounting is often in the form of raw material data rather than as information useful for decision-making. The process of converting the raw data contained in the financial statements in to meaningful information for decision making is known as financial statement analysis
Profit and loss account is a dynamic statement, which shows income and expenses between two balance sheet dates. Likewise balance sheet is a ‘static’ statement that shows the financial position on a certain date. It is an instantaneous photograph of the assets and liabilities of an enterprise at particular units of time. It is somewhat similar to the view one gets when a motion picture projector is stopped and a single frame appears of the screen.

Financial performance analysis is process of synthesis and intellectual activity. It is a technique of X-raying the financial position as well as the progress of a company. An analysis both these statements give a comprehensive understanding of business operations and their impact on the financial health. If the business operations result in profits, the total investment is enhanced, bringing prosperity to shareholders, increase in goodwill and strengthening on credit. On the other hand, if these are losses, capital invested to the extent of loss is lost or dissipated ability to pay creditors and lenders is weakened and the business concern operates under a ‘handicap’ Financial statements are analyzed through liquidity, for that the concept of liquidity is expresses below.

1.2 CONCEPT OF EFFICIENCY AND PERFORMANCE

The word efficiency as defined by the Oxford dictionary states that: "Efficiency is the accomplishment of or the ability to accomplish a job with minimum expenditure of time and effort".1
It refers to the internal process that leads to output. It focuses on the means to achieve the desired end. As expressed by Peter Drucker "Doing the things the right way is Efficiency." This denotes the fulfillment of the objective with minimum sacrifice of the available scarce resource.

Fatless and speedy compliance to the process or system procedure is a measure of efficiency. Providing a specified volume and quality of service with the lowest level of resources capable of meeting that specification, performance measures and or indicators are required. These include measures of productivity, unit o volume of service etc. These measures help in minimizing of the resources in achieving the organizational objectives i.e., things rightly.

Performance is the execution or accomplishment of work feats etc. or a particular, action, deed or proceeding is refers as performance.² However, the manner in which or the efficiency with which something reacts or fulfils its intended purpose is defined as performance. Performance may thus, mean different things to different businesses. Success or failure in the economic sense is judged in relation to expectations, return on invested capital and the objective of the business concern.

In understanding the term performance, a clear distinction needs to be drawn between Performance Measures and Performance Indicators. Performance measures need to be based on cat evaluation of the causes and effects of policy intervention whereas a performance indicator is less precise and usually provides only intermediate measure of achievement.
1.2.1 Financial Performance

Financial Performance is the blue print of the financial affairs of a concern and reveals how a business has prospered under the leadership of its management personnel performance of any organization can always be judged in the light of its objectives and the main objective of a bank is to earn profit and to enlarge profit by making the most efficient use of the resources available to them. The Indian Public Sector did run with the object of maximizing profits. They were making due contribution towards the fulfillment of socio-economic objectives lay down by the government and SEBI.

The financial performance of companies could be analyzed by a composite index of not only quantifiable selected trends and ratios, an analysis of the financial statements, a study of the cash flow and the fund flow statements etc. but also qualitative factors like operational efficiency and effectiveness and socio-economic development of the country.

1.2.2 Financial Efficiency

Financial Efficiency is a measure of the organization’s ability to translate its financial resources into mission related activities. Financial Efficiency is desirable in all organizations regardless of individual mission or structure.²
It measures the intensity with which a business uses its assets to generate gross revenues and the effectiveness of producing, purchasing, pricing, financing and marketing decisions.

At the micro level, Financial Efficiency refers to the efficiency with which resources are correctly allocated among competing uses at a point of time.³

Financial Efficiency is a measure of how well an organization has managed certain tradeoffs (risk and return, liquidity and profitability) in the use of its financial resources.⁴

Financial Efficiency is regarded efficiency and is a management guide to greater efficiency the extent of profitability, productivity, liquidity and capital strength can be taken as a final proof of financial efficiency.

It is interesting to note that sometimes, even sufficient profits can mask inefficiency and conversely, a good degree financial efficiency could be dressed with the absence & profit.

1.3 OPERATIONAL EFFICIENCY

Operational Efficiency of an organization is the ability utilizes its available resources to the maximum extent Operational Efficiency can be judged in the light of financial efficiency.
It can be said that neither profitability ratios nor turnover ratios by themselves provide good indicators measure operational efficiency.

Operational Efficiency of a bank is associated with diverse aspects such as operational cost effectiveness profitability, customer services, priority sector lending, and deployment of credit in rural and backward regions and mobilization of deposits.\textsuperscript{5}

In short, it is said that it is the ability to utilize the available resources in order to carry out operational activities of the aluminium industry, which reveal its success failure in providing aluminium products to its customers.

1.4 FINANCIAL PERFORMANCE APPRAISAL: THE CONCEPT

Simply, financial appraisal is a scientific evaluation of the profitability and financial strength of any business concern. In fact, financial analysis is the process of making an anatomical study of the financial and operational data contained in the profit and loss account and the balance sheet of a given concern and thereby satisfying the information needs of the internal and external users of such data. On the other hand, financial appraisal is the process of scientifically making a proper and comparative evaluation of the profitability and financial health of the given concern on the basis of summarized and analyzed data, i.e., the output of financial analysis.
Thus, it follows from the above that the analysis of financial statements (or financial analysis) is a preliminary step towards the financial evaluation of the results drawn by the analysts or management accountants. Obviously, the appraisal of such results is made of the management for decision-making process.

Thus, it is evident that the financial appraisal begins where the financial analysis ends, and financial analysis starts where the summarization of financial data in the form of profit and loss account and balance sheet ends. In other words, financial appraisal is the end of that continuous flow of accounting cycle, which starts from classification, recording, summarizing, presentation and analysis of data and ends with the interpretations of the results obtained from such an analysis. Notably, in practice the accounts division of a business enterprise performs the entire exercise, up to the point of analysis of the financial and accounting data whereas appraisal or evaluation part is the major concern of management. Because, ultimately, decision-making and policy-formulation are the prerogative of management.

Plainly, the analysis and interpretation of financial statements is an attempt to determine the meaning and significance of the financial statement data. so that forecast may be made of the prospects for future earnings, ability to pay interest and debt maturities (both current and long-term) and profitability of a sound dividend policy.3 Financial statements of a business enterprise are valuable in the sense that they depict how the financial data of the related enterprise fit into the fabric of its accounting system.
The analysis and interpretation of the financial statements result in the presentation of information that will aid in decision-making by business managers, investors and creditors as well as other groups who are interested in the financial status and operating results of a business.

According to Moore, financial analysis is a process of syntheses and summarization of financial and operative data embodied in the financial statements, with a view of getting an insight into the operative activities of a business enterprise. Weasel views it as a technique of X-raying the financial position as well as the progress of the company. By establishing strategic relationships between the components of balance sheet and profit and loss account and other operative data, financial analysis eventually unveils the meaning and significance of the various items embodied in the financial statements, also known as the financial Blue Prints of a business concern.

As mentioned earlier, the major and the most significant financial statements of a business concern are the profit and loss account and the balance sheet. While the profit and loss account is a dynamic statement that records income(s) and expense(s) between the two balance sheets dates, the balance sheet is a static statement, which shows the financial position on a certain date. Thus, the latter is an instantaneous photograph of the assets, liabilities and net worth of an enterprise at a particular unit of time.
The analysis of both these statements gives a comprehensive understanding of business operations of a related concern as also of their impact on the financial health. A careful examination of profit and loss account throws ample light on the operating efficiency, inventory management, and control over indirect overheads and dividends policies pursued by the concern.

Moreover, a study of the major individual items of a statement in relation to some other items of other statements will measure the activity and the profitability of the enterprise. Since both the major financial statements are interrelated, the exclusive analysis of either of them would not lead to any purposive exercise.

The main purpose of financial analysis is to make available to creditors, stockholders and the general public adequate information about and evaluation of a corporation's financial conditions. Of special interest to banks and other traders of funds to corporations are the various ratios that enable creditors and investors to appraise the progress of a company. These ratios help in comparing current accomplishments and financial prospects of a business corporation with those of its past as well as with those of similar corporations.

The public and particularly the investors in corporate securities are concerned about the soundness of a business in which they have purchased, or contemplate purchasing, a share of ownership. The analysis of a corporation's securities requires evaluation of its past performance as reflected in the previous financial statements and of its probable future progress considering the overall business environment and futuristic trends.
1.5 OBJECTIVE OF FINANCIAL PERFORMANCE APPRAISAL

Performance appraisal involves a broad area of coverage. The perspective throughout is on the effective management of company resources.

Performance appraisal can be done through a careful and critical analysis of the financial statement of an enterprise. Usually the financial statement of a business concern comprises two statements: balance sheet or position statement and profit and loss account or income statement. However, in big concerns two more statements are prepared. They are profit and loss appropriation account and fund flow statement. The overall performance of a business cannot be judged without a systemic analysis and interpretation of its financial statements. The advantages of such an analysis are as follows.

Objectives of the performance appraisal

(i) To find out the financial stability of a business concern
(ii) To assess its earning capacity
(iii) To estimate and evaluate its stock and fixed assets
(iv) To assess its capacity and ability to repay short and long term loans
(v) To estimate and examine the possibilities of its future growth
(vi) To estimate the administrative efficiency of its management

Performance appraisal is a close and a critical study of various measures observed in the operation of Business Organization. The concept of human body is similar to the concept and case of business organization.
Human body requires medical check up and examination for maintaining fitness of bodies, similarly the performance of a business organization has got to be assessed periodically. Erich A. Helfert organization has got to be assessed periodically. Erich A. Helfert started "The person analyzing business performance has clearly in mind which tests should be applied and for what specific reasons.

One must define the view points to be taken, the objectives of the analysis and possible Standard Comparison". Business Organization have the "Balance Sheet" and the "Profit and Loss Account" by the statements of change in financial position value added statements are also prepared for annual reports. They may be considered as additional financial statements. The data embodied in financial statements are rearranged in order to facilitate the appraisal of performance. The financial figures are approximated to the nearest rupee to simplify the process of appraisal.

However, no single attempt can give firm results of appraising the performance of a business organization. Business conditions differ according to location, type of facilities, products and services, plant capacity, capital structure, accounting policies, caliber of management and levels of efficiency. Such conditions of business organizations have become more complicated in the event of multi-product and multi business organizations. All these differences are part and parcel at the time of appraising the performance of a business organization.
1.6 CONCEPT AND MEASUREMENT OF PROFITABILITY

Profit is the main goals for establishing business concern. Profit is the primary motivating force for economic activity. Profit has to be earned and they have got to be earned on a regular basis. Business concerns that are unable to generate efficient profit from their operation cannot remunerate the providers of their capital and this makes it difficult for them to maintain the continuity of their existence. Profits are needed not only to remunerate capital but also to finance growth and expansion.

Insure the survival of a firm in a growing economy. If the firm is to survive in competitive and expanding environment, it has to go on expanding the scale of its operations on a regular and continuing basis. “Profits are the record card of the past, the inventive lode star for the future. If an enterprise fails to make profit, capital invested is eroded and in this situation prolongs the enterprise ultimately ceases to exist.”\(^\text{12}\) Thus profit is the soul of the business concern without which it becomes weak and lifeless. “The gain resulting from the employment of capital, the excess of returns over expenditure, pecuniary gain in any transactions or occupation”

Profit can rise when the price paid by the customers for the product of the business firm exceeds the cost that has been incurred from it. Accountants, economists, and others have defined profit in a number of ways as per its use and purpose.
There have been many theoretical discussions of the concept of profit, but there is no consensus on the precise definition of this theoretical construct.\textsuperscript{13} There are mainly two concepts: one is the accounting concept and the other is the economics concept.

**Accounting Profit**

“The excess of revenue over related costs applicable to a transaction, a group of transactions, or an operating profit is profit.”\textsuperscript{14} In accounting profit is generally known as the excess of total revenue over total costs associated with these revenues for the period. As such, the residue of income after meeting all the “explicit”, items of expenditure is termed as profit.\textsuperscript{15} Explicit items of expenditure generally include raw material consumed, direct expenses, salaries, & wages, administrative expenses, selling and distribution expenses, depreciation and interest on capital of a business firm. “The difference between the sales and the costs of producing and selling that product is its profit.”\textsuperscript{16}

**Economic Profit**

Back in 1939, the famous economist J.R. Hicks defined a man’s income as “the maximum value, which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning.” Economic profit is the residual of income meeting all the ‘explicit’ and ‘implicit’ items of expenditure for a given period.
The term explicit item of expenditure has the same meaning that have discussed in “accounting profit” but the implicit item of expenditure includes the amount of those factors of production, which are owned by owner. For examples the rent of own land and building, the interest of own capital and salary of owner are termed as “implicit costs” or “opportunity costs”. However, the term economic profit in the form of equation can be represented as under:

Economic profit = accounting profit - implicit costs

OR

Economic profit = total revenue - (Explicit costs + implicit costs)

In economic the accounting profit known as gross profit while the profit remaining after subtracting the implicit cost of owner’s times and capital invested is known as “pure profit”

**Business Profit Or Income:**

Businessmen and accountants usually look upon the entire return to stakeholders’ profit or income, and do not regard any part of return as a cost. Thus business profit plus the normal return on investment, which is also the different between end-of – period wealth and initial investment.

**SOCIAL PROFIT:**

The business units are using scares resources of the society. So they should be accountable towards the society, which provided the resources. Therefore social responsibility of the enterprise has been stressed.
An increasing awareness of the social responsibilities on the part of business units has led to the discussion of “social profit”, Eichror and clerk about associates of US has suggested “social statement approach for social accounting in which the term ‘social profit’ or surplus has been defined. Unearths approach the excess of social benefits over social cost is termed as “social profit” or social surplus.

The social benefits made available to the society by the business unit include the employment generation, payment for goods and other services, taxes paid contributions, dividends and interest paid, additional direct employee benefits like creating good township, offering good condition of work environmental improvements. Any cost, sacrifice that proves a detriment to society, whether economic or non-economic, internal or external is termed as social costs. Social costs include goods and materials acquired, buildings and equipment purchased, labor and services used, work related to injuries and illness, public services and pollution, water pollution noise pollution solid waste visual and aesthetic pollution. However there is no clear concept for measuring social benefits and social costs.

**Accounting Profit and Economic Profit:**

The concept of accounting profit and economic profit differ from each other from the view point of opportunity cost of capital invested and cost of owner’s time .for calculation of economic profit, opportunity cost capital and owner’s time is considered while calculating accounting profit it is ignored by accountants.
In accounting “the profit is deemed to be the joint result of various factors of production while in economics, it is termed as the rent liability, wages of owner and the reward of risk bearing.

**Value Added Concept:**

The concept of value added is a concept broader than the concept of accounting profit and economic profit; it is a basic and broad measure of judging the performance of an enterprise.

It is infect a measure of the utility that a business enterprise adds to the bought in materials and services. No business enterprise can survive or grow, if it fails to generate wealth. The business firm may exist without making profit but cannot survive without adding value. Thus shows the greater importance of value added devices which led a large number of western countries and many Indian companies to present value Added Statements (VAS) in their annual reports.

Value added is an excess of turnover plus income from service over the cost of bought in material and services. The term ‘turnover’ means the total amount of sales of goods plus duties and sales taxes less the amount of sales returns Goods plus used for self consumption, commission, rebates and discount allowed etc.

The term ‘income from services’ include the rewards for services to subsidiary companies in the form of dividends from it rent received compensation and miscellaneous income etc.
The term “bought – in –materials includes costs of finished goods purchase, the cost of raw material consumed and the cost of stores and spare consumed during manufacturing process. This figure is further adjusted stocks of work in progress” and finished goods. The term cost of services includes the cost of production services, power, fuel, repair & maintenance, bank charges, commission, insurance premium, selling and distribution expenses, postages & telephone bills, printings, auditing fees. Legal expenses and traveling expenses, it should be kept in mind that the employees, cost depreciation and excise duty are not included in the cost of bought-in-material & services. They are separately shown.

**Concept of Profitability:**

The word “profitability is modulation of two words “profit’ and “ability”. In another words it referred to “Earning power” of “operating efficiency” of the concerned investment concept of profitability may be defined as “The ability of a given investment to earn a return from its use”.

Measurement of profitability is the overall measure of performance profits known, as bottom lines are also important for financial institutions. Analyzing and interpreting various types of profitability ratios can obtain creditor performance of portability.

**Profitability and Efficiency:**

‘Profitability is also not synonymous with ‘efficiency’ though it is an index of efficiency; it is regarded as a measure of efficiency and management guide to greater efficiency.
No doubt, profitability is an important yardstick of efficiency, but the extent of profitability cannot be taken as a final proof of efficiency. Some times satisfactory profits can mask inefficiency and conversely, a proper degree of efficiency can be accompanied by an absence of profit. The net profit figure simply reveals a satisfactory balance between the values receive and value given. The change in operational efficiency is merely one of many factors on which profitability of an enterprise largely depends besides efficiency, which affects the profitability.

1.7 CONCEPT OF FINANCIAL STRUCTURE:

“Financial structure” of a business as consisting three elements assets, liabilities and capital. The financial structure provides an insight into the various types of sources tapped to finance the total assets employed in a business enterprise that part of financial which represents long-term sources is known as “capital structure.” This term refers to make up of long –term funds as represented by the equity share capital, preference share capital and long-term debt. To circumscribe the real area of the term “Capital structure.” It may be necessary to distinguish it from term “assets structure,” the assets structure refers to make-up of total assets as represented by fixed assets and current assets.

Since the balance sheet is a detailed form of fundamental or structure equation. It sets forth the financial structure of an enterprise. It states the nature and amount of each of the various assets of the liabilities and of the property interest of the owner. Stating the nature of the assets, liabilities and capital is not difficult as their amount.
The capital structure is used to represent the proportionate relationship between the various long-term forms of financing, such as debentures, long-term debt, Preference capital and equity capital reserve and surplus. The term capital structure is frequently used to indicate the long-term sources of funds employed in a business enterprise. In other words, it can be said that it represents permanent financing of the concern. This is usually measured by subtracting current liabilities from total assets. Thus, capital structure, general reserve, preference share and long-term debts.

1.8 CONCEPT OF LIQUIDITY

The concept of liquidity within a business is important to understand the financial management, as it is the basic criteria to test the short-term liquidity position of the enterprise. Liquidity may be defined as the ability to realize value in money the real liquid asset. It has two dimensions [A] the time required to convert the assets money and [B] The certainty of the realizable price.

Generally the term ‘liquidity’ means conversion of assets in to ‘cash’ during the normal course of business and to have regular uninterrupted flow of cash to meet outside current Liability (generally maturing within a year) as and when due and payable and also the ensure money for day to day business operations. Hence the flow of current assets should circulate with such a rapid speed that they are converted into cash within a year so that timely payment may be made to outsiders for interest, dividends, etc.
If a major part of current assets is blocked in inventories and credit cells (Sundry debtors), not only ready cash will not be available to pay current debt but there is a risk shrinkage in the total current assets available because of possible fall in the value of inventories or possible losses an account of bad debts. The quality of current assets is therefore very important for analyzing liquidity.

**Significance of The Liquidity Analysis:**

The importance of adequate liquidity in the sense of the ability of a firm to meet current/short-term obligations when they become due for payment cash hardly is over-stressed. In fact liquidity is a pre-requisite for the very survival of a firm.

The short-term creditors of the firm are interested in the sort-term solvency or liquidity of a firm. But liquidity implies, from the viewpoint of utilization of funds of the firm that funds are idle or they earn very little. A proper balance between the two contemporary requirements i.e. liquidity and profatibility is required for efficient financial management. The liquidity ratio measures the ability of a firm to meet its short-term obligation and reflects the short-term financial strength/solvency of a firm.

**1.9 CONCEPT OF ACTIVITY ANALYSIS :**

Sale of product is the primary object of any business enterprise. It is pivot around which all business operations are cluster.
The increase or decrease of the business profits depends upon the magnitude of sale because it is the key figure in the business enterprise. Income from net sales is the lifeblood of business.

More sales more profit and less sales less profit or even there may be loss. Thus-sale are to a business enterprise what oxygen is to the human being, a very material increase in the volume of net sales has the same effect upon the business organization as an increase in the quantity of inhaled oxygen has upon the human organism. The quantity quality and regularity of flow of sales revenue govern the physical appearance and the internal conditions of the business organism. In fact with the higher volume of sales, The business operates with greater profits and effectiveness and operations are speeded.

It is apparent, therefore that the significance of any business activity can be measured in terms of its contribution towards sales. Activity ratios are turnover ratios where the significance of financial figure is measured in terms of sales of business enterprise. The approach to the activity analysis is done as follows:

1. The growth of activity and its measurement in terms of investment.
2. Activity in relations to total resources
3. The conduct of activity

**Growth of Activity:**

The growth in the firm has been measured in terms of the growth of average year’s sales over the period of study.


**Activity In Relations To Total Resources:**

Activity ratios are concerned with how efficiently the assets of the firm are managed or utilized. These ratios indicate the rate at which different assets are turned over in the process of doing business. The greater rate of turnover or conversion, the more efficient the utilization or management, other things being equal, resulting in higher profitability. Sometimes these ratios are called efficiency ratios, or investment turnover ratios. Thus, Turnover ratios reflect the relationship between the level of the sales and the various assets and a proper balance between assets and sales shows better management of assets. Different activity ratio have been computed for judging the effectiveness of assets utilization.

**Conduct of Activity:**

The conduct of activity of an enterprise is related to the efficiency of conducting business operations. The efficiency of the conduct of activity depends upon the capacity to keep the operating cost at minimum possible level. An efficient conduct of business operations requires that expenses should always be kept at the minimum so that they may also remain below revenue resulting in profit thereby.

The operating ratio is an index of the efficiency of the conduct of business operations and analysis of operating ratio to judge the operating efficiency of an enterprise, requires a study of the main component ratio.
1.10 SIGNIFICANCE OF A STUDY FOR STAKEHOLDERS:

The above study is made for the point of all live participants who are interested in the routine of the business organization. Those are as under.

(1) Management Point of View:

The above study plays vital role in providing such information to the management, which needs for planning decision-making and control e.g. operational efficiency analysis provides gross profit, operating expenses analysis and profit margin.

Asset management outlines asset turnover, working capital under inventory turnover, accounts receivable and payable profitability position shows return on assets, earning before interest and taxes (EBIT), and return on assets. Gesternberg stated that “management can measure the effectiveness of its own policies and decisions, determine the advisability of adopting new policies and procedures and documents to owners as result of their management efforts”\(^{19}\)

(2) Important To Investor:

According to Erich A.Helfert “Importance of performance lies for owners/potential investors should know easily.
The financial position of the company by return on net worth, return on common equity, Earnings per share, Cash flow per share, Dividend yield, dividend coverage, Price earning ratio, market to book value, Pay out/retention. The potential investors of the business organization in turn are interested in the current features.

(3) Creditors Point of View:

Creditors doing business with company simply study its performance by current ratio, acid test ratio, and debt to assets, equity and capitalization, interest coverage and principal coverage before lending the finance. The study of these describes real features of business organization to the creditors.

(4) Government Point of View:

Government has significance to study liquidity productivity and financial efficiency of an individual organization or industry as a whole. Various taxes, revenues, financial assistance, sanctioning, subsidy, to a business organization or industry as well as price fixing policies, frame outlines the key role of study for the Government lies in planning, decision making and control process.

(5) Employees And Trade Unions Point of View:

Employees are resources of the company and are interested to know the financial position and profit of the company.
Generally they analyze by the comparison between past and present performance, profit margin and cash flow of the company. Trade unions are interested to know the data of financial performance pertaining to their demands for increase in wages, salaries, facilities, and social welfare.

(6) Society and Others:

Society and others are including in external environment of the company and every business organization has a greater responsibility towards society. In this context performance should be studied through various types of social elements such as customers investors, media, credit institutions, labour bureaus, taxation authorities, economists are interested for the study of a business organisation while society as whole also looks forward to know about the social contribution, i.e., environmental obligations, social welfare etc.

1.11 EVALUATION METHODS:

A study of liquidity, productivity and financial efficiency through profitability is made by using the following tools and techniques

1.11.1 RatioAnalysis:

Ratios analysis is the process of determining and presenting in arithmetical terms the relationships figures and groups of figures drawn from these statements. A ratio expresses the results on the basis of comparison of two figures in numerical terms.
A ratio is a statistical yardstick that provides a measure of relationship between two accounting figures. According to Batty “Accounting ratios describe the significant relationship which exists between figures shows on a balance sheet in a profit and loss account in a budgetary control system or in any other part of accounting organization.” 21. The ratio is customarily expressed in following ways:

1. It may be obtained by dividing one value by other. This expression is known as “Times”
2. If hundred then the unit of multiply the above expression becomes percentage.
3. It may be expressed in the form of “proportion” between the two figures or known as pure ratio.
4. It may also be depicted in the form of graphs like ratio graph.

**Importance:**

A ratio is known as symptom like blood pressure. The pulse rate of the temperature of an individual often ratio analysis is used as a devices to diagnose the financial position of an enterprise. It shall point out if the financial condition is very strong, good, partly good, and poor. As such the ratio analysis is a powerful tool of financial analysis through it economic and financial position of a business unit can be fully x-rayed.

Ratio analysis becomes meaningful to judge the financial condition and profitability. Performance of a firm only when there is comparison of present in fact analysis involves two types of comparison.
First a comparison of present ratio with past and expected future ratios for the same firm, the second method of comparison involves comparing the ratio of the firm with those of similar firms or with industry average at the same point of time.

Further “Ratio analysis” presents the figures in which the net result of the financial position and problems is concentrated. They provide a co-ordinate frame of reference for the financial manager. They tell the entire story of the ‘Financial adventures of the enterprise as heap of financial data are buried them. They simplify the comprehensive of financial statistics.

On the basis of above it may be concluded that ratios are very important for interpretation as they give valuable and very useful information about business.

**Limitations:**

Every flower of rose has its own beauty in spite of numberless thorns in the same way ratio analysis has a variety of advantages, though it is not free from limitations, some of which are as below:

1. The formula for calculating each ratio is not well standardized.
2. No standard ratios are available for evaluating the significance of each ratio.
3. Ratio ignores non-monetary factors like general economic climate, government and management policies, which vitally affect the financial health of the enterprise.
4. If too many ratios are calculated, they are likely to confuse. Instead of revealing meaningful conclusions.

5. The ratios are generally calculated from the past financial statement and thus, are no indicators of future.

6. Ratios are not exact measure of financial situation as the balance sheet and profit and loss account are based on accounting conventions, personal judgments and recorded facts.

As ratios are simple to calculate, there is a tendency to over employ them, which lead to accumulation of mass data. However significant the ratio may they cannot replace business efficiency and decision-making. They do not provide mechanical solution to business problems.

**Classification of Ratio:**

Some writes have described that there are as many 42-business ratios. First of all it is necessary to ascertain the ratios for a particular study. The financial ratios may be classified in the various ways. If the nature and objective of calculating each ratio is given then the customary and convenient classification from the point of view of management and investors.

**[A] Profitability Ratio**

These ratios X-ray the profit making ability of the enterprise. They may calculate either on the basis of operating profit or net profit. These ratios are of two types first related to sales and second profitability. The main efficiency ratios are
1. Gross profit ratio
2. Operating ratio
3. Net profit ratio
4. Return on gross capital employed
5. Return on net capital employed
6. Return on net worth

(B) Financial Structure Ratio

These ratio highlight the management policies regarding trading on equity. The more important ratio concerning capital structure is given below.

Debt equity ratio
1. Long-term debt equity ratio
2. Total debt equity ratio
3. Interest coverage ratio
4. Fixed assets to capital employed.
5. Capital gearing ratio
6. Proprietary ratio
7. Net fixed assets to net-worth ratio

[C] Liquidity Ratio

These ratios throw the light upon the liquidity position of a concern the main ratios are:
1. Current ratio
2. Liquid ratio or quick ratio or acid ratio
3. Inventory to working capital ratio
4. Working capital turnover ratio
5. Debtor turnover ratio
6. Average debt collection period.

(D) Activity Ratio

Activity ratio expressed how efficiency the firm is managing its resources. These ratios express relationship between the level of sales and the investment in various assets. The import and commonly used activity ratios are as under:

1. Total assets turnover ratio
2. Fixed assets turnover ratio
3. Current assets turnover ratio
4. Capital turnover ratio
5. Raw Materials to net Sales Ratio
6. Wages and Salaries to net Sales Ratio
7. Power and Fuel (Energy) to net Sales Ratio
8. Selling & Distribution (Marketing) to Net Sales Ratio
9. Depreciation to Sales Ratio
10. Financial charges to Gross sales
1.11.2 Trend Analysis

Trend analysis technique is useful to analyze the firm financial position and to put the absolute figures of financial statement in more understandable form over a period of years. This indicates the trend of such variable as sales cost of production, profit assets and liabilities.

The different approaches of trend analysis are as follow:

(I) Common Size Vertical Analysis &

(II) Common Size Horizontal Analysis

Trend analysis helps the analyst and management to evaluate the performance, efficiency and financial condition of an enterprise.

(I) Common Size Vertical Analysis

All the statement may be subject to common size vertical analysis a figure from the same year’s statement is compared with the basic figure selected from the statement should be converted in to percentage to some common base. The common size vertical income statement and balance sheets of Alluminium group of companies covered by this study are given in the study.

(II) Common Size Horizontal Analysis

When asking horizontal analysis, a figure from the account is expressed in terms of same account figures from selected base year.
It is calculation of percentage relation that each statement then bears to the same item in the base year. Horizontal analysis can help the analysis to determine how an enterprise has arrived at its current position.

The technique of common size statement is very useful when we wish to compare the performance of one company with that of another for presentation of the data in percentage form since it eliminates problems relating to differences in organization size.

1.11.3 Comparative Statement Analysis:

Statement prepared in a form reflecting financial data for two or more periods are known as comparative statements.

The data must first be properly set before comparison in the preparation of comparative financial statement uniformity is essential otherwise comparison will be vitiated. Comparative financial statement is very useful to the analyst because they contain not only the data appearing in a single statement but also information necessary for the study of financial and operating trends over a period of a year. They indicate the direction of the movement in respect of financial position and operating results. Comparison of absolute figures has no significance if the scale of operations of one company is much different from that of others.
I) Comparative Balance-Sheet:

Increase and decrease in various assets and liabilities as well as in proprietor’s equity or capital brought about by the conduct of a business can be observed by a comparison of balance sheets at the beginning and end of the period. Such observation often yield considerable information, which is of value informing an opinion regarding the progress of the enterprise and in order to facilitate comparison a simple device known as the “comparative balance Sheet” may be used.

II) Comparative Income Statement:

As income statement shows the net profit or net loss resulting from the operations of a business for designated period of time. A comparative income statement shows the operating result for a number of accounting periods so that changes in absolute data from one period to another may be started in terms of money and percentage.

The comparative income statement contains the same columns as the comparative balance sheet and provides the same type of information.

As the income statement presents the review of the operating activities of the business and the comparative balance sheet shows the effect of operation of its assets and liabilities. The latter contains a connecting link between the balance sheet and income statement. Income statement and balance sheet are contemporary documents and they highlight certain important facts.
1.11.4 Fund Flow Analysis

The balance sheet is in the nature of a showing the position of a firm at a particular moment of time. The business process is very dynamic with transactions occurring regularly, each of which affects in some way, the immediately preceding financial position. A balance sheet therefore, merely provides the picture of a fleeting condition at a point of time and if balance sheets drawn at different time are compared any different pound between the closing and beginning figures would be the result of various transaction taking place during the interim period.

The business process involves a continuous inflow and outflow of funds. This funds flow analysis helps the analysis to appraise the impact of the management’s decision on the business during a given period of time.

1.11.5 Other Techniques of Analysis

Several other techniques like cash flow analysis and break-even analysis are also some time useful for analysis. The use of various statistical techniques is also used frequently for financial analysis, providing a more scientific analysis.

The tools generally applied are moving average, index number, range, Standard deviation, correlation, regression and analysis of time series.
Diagrammatic and graph orientations are often used in financial analysis. Graphs provide a simplified way of presenting the data and often give much more vivid understandable of trends and relationships. Pie graphs bar diagrams and other simple graphs are often used for financial analysis.

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CHAPTER 2
PROFILE OF ALUMINIUM INDUSTRY IN INDIA
CHAPTER – 2
PROFILE OF ALUMINIUM INDUSTRY IN INDIA

2.1 Introduction
2.2 Industry Structure
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CHAPTER– 2
PROFILE OF ALUMINIUM INDUSTRY IN INDIA

2.1 INTRODUCTION

The Indian aluminium industry is blessed with an abundant supply of quality bauxite, the key raw material, at a very low cost. The industry has a ready domestic and overseas market for the finished product. India has the fifth largest bauxite deposits, accounting for 7.5% of the global deposits. But its installed capacity is only 3% of the global capacity. The per capita consumption of Aluminium in India is relatively poor at 0.6 kg as against 16-35 in Developed countries like UK, Japan, USA, Germany and France. Hence, there is enough scope for India to become a favourite location for building alumina refineries and smelters. As the government continues to give a thrust to the electrification process, estimated to cost Rs 900 billion over the next decade, the aluminium industry stands to gain the maximum because 31% of the demand for aluminium comes from this sector.

The spreading usage of aluminium in areas like automobiles, due to its higher strength to weight ratio, ensures a wide use of aluminium across multiple industrial applications. The greatest scope for value addition and employment generation lies in the development of downstream products like extrusions, rolls, products, fabrications and finished.
2.2 INDUSTRY STRUCTURE

The aluminium industry can be classified as primary producers and secondary (down stream) producers. Primary producers make ingots and billets (the primary forms of aluminium) using bauxite. Secondary producers add value to the ingots and billets to manufacture down stream products like rolled products, extrusions, wire rods and foils and value additions in the above products are 25%, 26%, 28% and 60% respectively. Earlier, the industry was under government control and at least 50% of the production was reserved for the power sector. The retention pricing mechanism, which was based on the average prices of all producers and a minimum return on equity, was the rule. This has led to a skewed product mix with shortages for others. The problem was further compounded by the vulnerable financial position of state electricity boards. This Act was scrapped in 1989 and in 1991, the government lifted restrictions and freed the industry.

The industry consists of five primary aluminium producers. They are Nalco (a PSU), Balco (wherein Sterlite group acquired strategic stake), Hindalco, Indal and Malco. Besides them, there are other downstream producers. The total installed capacity of primary aluminium is 7.47 lakh tonnes, which may reach 10 lakh tonnes by the end of 2003 with Nalco's and Hindalco's Greenfield and brown field expansions. The consolidation in the industry is likely to bring down the number of major payers to two or three in the medium term.
2.3 DEVELOPMENT OF ALUMINIUM INDUSTRY IN INDIA

The Indian Aluminium industry continued to display a favourable trend both in financial and operational growth in the quarter ended Sep 04, largely due to impressive surge in global prices and strong demand growth in the domestic market. With major players Hindalco and Nalco having strategic advantage of low cost high metal content bauxite reserves and captive power plant, their cost of production is amongst the lowest in the World. This coupled with rising aluminium prices and initiatives to move up the value chain facilitates sustained rise in revenues and profits for the domestic players.

Globally, the quarter under review remained as deficit for the aluminium industry caused by tightening of the raw material – bauxite and alumina. This has fuelled up both alumina and aluminium prices across globe. In the mean while, the strategic positioning of domestic companies with abundant availability of quality raw material (Esp. Bauxite with high metal content), cheap labour and low cost power from captive power plants have flourished the domestic aluminium industry. In addition, steady growth in the aluminium demand from user industries like - Electrical sector, Automotive Sector, Construction sector, consumer durable sector and Packaging etc boosted the industry, further.

During the period aluminium prices witnessed a sharp volatility caused by active participation by the speculative traders and hedge funds in the global market.
However, the global prices continue to be robust and higher on y-o-y basis, in line with the tightening of basic raw materials and increasing demand worldwide. In fact, the monthly average LME aluminium prices displayed impressive surge of 20.0% to US$ 1714.56 per tonne in Apr-Nov 2004 from US$ 1429.22 per tonne in the corresponding previous year period. Followed by global price trend and improved domestic and global demand, the domestic aluminium prices also demonstrates a growth of 8.1% to Rs 99.61 per kg in the said period over the corresponding previous year period. On the other hand, as per industry sources, the domestic production of primary aluminium (by four major players including Nalco, Hindalco, Balco and Indal increased by 3.4% to 477096 tonne during Apr-Oct 2004. Thus, rise in realisation on the increased base of production facilitates improved performance for the domestic players.

The aggregated financials of 7 Indian Aluminium and Aluminium product companies reported impressive 30% growth in sales to Rs 3112 crore in the quarter ended Sep 04, on the back of high realisations and increasing demand in the domestic market. The surge in realisation can be evidenced from the fact that the aluminium prices have increased by around 17.2% in July-Sep’04 to US$ 1683.97 over the corresponding previous year period at LME, and by 11.3% to 101.91 in the domestic market. On the other hand, as per industry sources, the domestic demand is believed to be growing at CAGR of 6% in current period.

The margin of domestic aluminum industry has improved by 100 basis points to 30.6% in the quarter ended Sep 04 from 29.6% in the corresponding previous quarter.
The modest growth in industry margin was contributed by remarkable 1010 basis point spurt in the margin of national aluminum Co (Nalco) to 52.3% and significant 420 basis point fall in the margin of Hindalco industries to 32.3% during the quarter ended Sep 04. In fact, the shrinkage in Hindalco’s margin was due to the negative performance by the copper division of the company caused by steep duty reduction, higher coal rates and lower TC/RC. Nevertheless, with the inching up margins on an increasing sales base, the operating profit of the industry reported impressive 34% growth to Rs 953 crore.

The other income grew by impressive 23% to Rs 163 crore, leading to 33% rise in PBIDT to Rs 1116 crore. The interest costs have moved down by 11% to Rs 64 crore, boosting the PBDT growth to 37% at Rs 1052 crore. In fact, the fall in interest was due the debt restructuring and swapping of higher interest loan with new low cost loans by the industry peers like Nalco and Hindalco who has reported 20% and 6% fall in their financial cost.

In the quarter ended Sep 04, the provision for depreciation increased by 11% to Rs 207 crore, predominantly due capacity expansion by major players to cater to growing demand for aluminium. Thus, the resultant PBT reported a growth of appreciable 45% to Rs 845 crore, during the quarter. The provision for tax increased by 52% to Rs 329 crore. As a result, the tax incidence shifted upward to 38.9% in the quarter ended Sep 04 as against 37.2% in the corresponding previous quarter. On an increasing base of tax incidence, the net profit moved up by 41% to Rs 516 crore in the quarter ended Sep 04 from Rs 366 crore in the corresponding previous quarter.
2.4 GOVERNMENT POLICY FOR THE INDUSTRY

The Mines and Minerals Act, 1957, was amended in 1993 to delegate more powers to state governments for procedural simplifications and powers to give mineral concessions as given by major producing countries. After this, many multinational companies were interested in investing in the exploration of metals. Aluminium is now placed under OGL.

The budget 2003 had no major direct impact on the aluminium industry. Nevertheless, the greater thrust on infrastructure in general, and roadways in particular, will lead to derived demand. The budget 2002 reduced the import duty on Aluminium from 25% to 15% but retained excise duty at 16%. The reduction in the import duty will reduce the landed cost of aluminium imports and hence, the domestic prices are likely feel the pressure, leading to softening of margins of the primary aluminium producers. However, companies with higher share of secondary products like Indal are likely to be less affected that companies like Nalco, wherein the share of primary products are higher.

2.5 CURRENT SCENARIO

The aluminium production increased by 6.95% to 498625 tonne in the nine months ended Dec'02 over the corresponding previous year period. Part of the increase in production is attributed to lower base of the last year,
when production was disrupted in Balco, on account of labour strike post divestment of strategic stake by government in favour of Sterlite Group. Except for Hindalco, all other domestic aluminium producers - Nalco, Malco, Indal and Balco reported increase in production during the nine months ended Dec'02 over the corresponding previous half year period. However, Hindalco reported modest 0.14% fall in production to 190935 tonne during this period, due to interruption in power supply with disrupted production.

During FY 2001-02, Hindalco recorded 3.9% increase in aluminium production to 2.61 lakh tonnes. During this period, Nalco's aluminium production grew by a mere 0.7% to 2.32 lakh tonne, while its calcined alumina production zoomed by 17.15% to 1.1 million tonnes. The monthly average prices at LME was US$ 1375.42 per tonne in Dec'002 which increased to US$ 1422.48 in Feb'03 and was quoting around US$ 1459.00 on 28th Feb'03. But ever since, the prices have been on a downward march, impacted by the US was on Iraq, and has slipped to US$ 1314.50 by 8th April 2003.

2.6 DEMAND DRIVERS

The Indian industry is mainly influenced by the growth of the user segment industries such as power, automobiles, and construction, packing and consumer durables. The entry of automobile MNCs in the Indian market, the growth of the packaging industry, etc. may be reflected in higher usage of aluminium.
Due to its technical advantages, aluminium is reported to have replaced steel by 30%. The low per capita consumption may also lead to a growth in demand.

About 31% of the domestic aluminium consumption is from electrical sector, while consumer durables account for 23% whereas transportation sector accounts for 18% while machinery segment accounts for 10%. Together electrical, consumer durable, transportation and machinery segment account for 82% of the total domestic demand. Further, as the domestic aluminium majors - Hindalco and Nalco are one of the most cost effective producers across the globe; the export prospects continue to be bright.

The domestic aluminium die-casting/extrusion industry is bullish on exports this year. The rising number of quality casting out sourcings to India by European companies, the industry expects to see aluminium die-casting exports to rise by 32-35% this year. The industry had got a boost due to demand from Europe, which has reported closure of aluminium die-casting companies in the last three years, and also due to the rise in domestic consumption pepped up by the automobile sector and electrical industries. The country’s estimated output of aluminium die casting/extrusion products last year was around seven lakh tonne, out of which exports constituted about 1.5 lakh tonne. With more imports planned by the European end-users, the export volume would sharply rise this year and in addition, the demand in domestic market for die-cast will increase.
The Indian Aluminium industry continued to display a favourable trend both in financial and operational growth in the quarter ended Sep 04, largely due to impressive surge in global prices and strong demand growth in the domestic market. With major players Hindalco and Nalco having strategic advantage of low cost high metal content bauxite reserves and captive power plant, their cost of production is amongst the lowest in the World. This coupled with rising aluminium prices and initiatives to move up the value chain facilitates sustained rise in revenues and profits for the domestic players.

2.7 RISK FACTORS

The Indian industry is mainly influenced by the growth of the user segment industries such as power, automobiles, and construction, packing and consumer durables. As the Indian economy slowed down during the year, the revival in industries like automobiles, construction and consumer durables did not happen as expected.

The growth in automobile segment has been coming drown quite significantly from 52.4% in the quarter ended June'02 to 15.3% in the two months ended Feb'03 over the corresponding previous year period. Nevertheless, the sales of trucks rose by 30.7% in the eleven months ended Feb'03 over the corresponding previous year period, due to surge in demand for multi-axle vehicles. Analysts expect the demand growth for both motorcycles and trucks to come down in FY 2003-04. The poor monsoons have affected demand from rural segment, wherein almost 70% of the populations live.
The global demand growth has been sluggish, while the supply is likely to rise, leading to pressure on prices, which is already evident. Further, the wide fluctuations in the LME prices also affect, not the survival, but the profit margins of the domestic players.

**Critical Success Factors**

Indian players have the advantages of low cost of production of alumina and aluminium owing to the high quality of bauxite reserves, proximity of refineries to bauxite mines, captive power plants and cheap labour.

If the plants are becoming more global with respect to economies of scale, scope for international competitiveness is high. Amongst others, scaling up capacities to global levels, effective cost control, widening export markets to find markets for increased production are critical.

**2.8 GLOBAL PERSPECTIVE**

Aluminium production by members of International Aluminium Institute (excludes figures for China and other countries) increased by 2.6% to 211.91 lakh tonne in 2000, by slipped by 3.0% to 205.51 lakh tonne in 2001, but recovered by 3.2% to 211.99 lakh tonne in 2002. In the two months ended Feb'03, production increased by 4.2% to 35.07 lakh tonne over the corresponding previous year period.
While Europe and the US have huge capacities, these two major producers are cutting down their production due to huge power costs. With 33% share of the global installed capacity, Europe now produces only 22% of the global output. The story is similar with the US also as it is now producing less than 23% of the global output with 29% share in the installed capacity. The aluminium market is very sensitive to the changes in the US market. Every 1 per cent reduction in demand from the US means an addition of 65,000 tonnes to the inventory stock for that year.

Of late, China has become a key player in the aluminium industry, with production growing at rapid pace. The country became a net exporter in 2002 from hitherto being a net importer.

Its primary aluminium production surged by 26.7% in 2002 to 42.71 lakh tonne, over and above impressive 20.7% rise in aluminium production in 2001 to 33.71 lakh tonne. The surge continues, as reflected by 28.8% jump in China's aluminium production to 7.96 lakh tonne in the two months ended Feb'03. Hence, the growth in demand and production of aluminium in China is having a reflective impact on the global demand, supply and prices of aluminium.

In the global arena, Aluminium industry witnessed a volatile trend of growth on the back of uncertain movement in prices and due to production constraints caused by tightening of raw material in the quarter ended Sep 04. Nevertheless, the domestic industry demonstrated a steady growth on the back of continuing rise in price and its insulated position from the vulnerability of rise in input costs.
The trend seems sustainable for the domestic industry in foreseeable future as domestic consumption growth is surpassing the production rate that evidences rise in prices, demand and improved margins for the domestic players. In fact, the production of primary aluminium by five Indian majors have increased by 5% to 421 thousand tonne in the half year ended Sep 04 while the domestic consumption of aluminium has increased by 10.6% during the same period. Further, the strong evidences of increase in domestic demand particularly from power and auto sector will stimulate the steady trend of the domestic industry.

In addition, successful geographical mix and enriching product mix by the domestic peers would strengthen the operational and financial profile of the Indian aluminium industry.

Moreover, the shortage of raw materials like – bauxite and alumina continue to be a prime issue across globe. Thus, driven by production constraints and tightening of raw material has dramatically changed the world aluminium inventory position from a comfortable level to tight situation in a short span of 9 months in the current year. These fundamental developments would obviously support the robust growth in the price trend both global and domestic. With strategic advantages of high quality low cost bauxite reserves, captive power plant etc, the frontline domestic players like Hindalco and Nalco are amongst the low cost producers of aluminium in the world. The global aluminium prices continue to be high on y-o-y basis, adding further sheen.
Further, the robust rise in domestic automobile segment and expected increase in power sector has meant significant increase in domestic demand, wherein realisations are much higher. In the process, the domestic players will benefit from favourable geographical and product mix, which coupled with high International aluminium prices can lead to sustained rise in revenues and profitability. Hence, largely, with the favorable development in industry fundamentals and its strategic positioning, the outlook of Indian Aluminum industry remains bright.

**Excess Alumina Production In China Knocked The Bottom Off Alumina Prices Which In Turn Pulling Down The Aluminium Prices:**

The aluminium prices at LME have registered a range bound movement between US$ 2300 per tonne to US$ 2600 per tonne during September 2006. The prices are almost same as in August 2006 and the average prices at LME for September 2006 were US$ 2461.06 per tonne. However the prices are still higher by 34% on Y-o-Y basis. On the other side the domestic aluminium prices have marginally soften. In second half of September 2006 the prices have declined by Rs 5000 per tonne and reached to Rs 125 per kg. The average domestic aluminium prices for September 2006 are Rs 128.65 per tonne, up 26% on Y-o-Y basis.
China Drives The Growth In Global Aluminium Production:

As per the data given by International Aluminium Institute, world aluminium production for the period January 2006 to August 2006 was higher by 6% to 21.71 million tonne on Y-o-Y basis. Growth in Chinese aluminium output, which is a major contributor to the world primary aluminium production, has been 17% Y-o-Y to 5.88 million tonne. In August 2006 the world aluminium production increased by 4.5% to 2.82 million tonne while the production by China increased by 18% Y-o-Y to 0.81 million tonne. Aluminium production in Africa, Latin America, East and Central Europe and Asia has increased during the period January to August 2006 on Y-o-Y basis while production in West Europe has declined and in North America and Oceania the production remained almost same.

The Alumina Prices Continued To Be In Corrective Mode:

The alumina prices have corrected from the level of US$ 635 per tonne in April 2006 to US$ 300 per tonne in September 2006. The excess production and price cuts in China have knocked the bottom off alumina prices, which had hit historical in April 2006. Lowering of alumina prices, the intermediate of bauxite and aluminium, are pulling down aluminium prices also.

China's import prices for alumina are expected to slip further after Aluminium Corporation of China (Chalco) announced another round of reductions in its domestic alumina prices.
Chalco has lowered its alumina spot sales price to Yuan 2,950 (US$ 373) per tonne effective from September 26, 2006, representing a drop of 22.4% from the previous price of Yuan 3,800 (US$ 480) per tonne.

The bearish trends in alumina prices may adversely affect the Nalco's revenue streams since Nalco’s exports close to 50% of its total alumina production capacity and current lower realizations from exports can hit the bottom-line if the soft trend in alumina prices continues. Nalco's high exposure to the volatile spot prices makes its earnings vulnerable to any downward pressure on prices.

**Excess Production In China Knocked The Bottom Off Alumina Prices**

Import prices will fall with pressure from the lower alumina price level in China. Market experts estimate that prices reported for deals done earlier, which were around US$ 280-290 per tonne CIF China, will now be probably around US$ 250-260 per tonne CIF. Supply of alumina is growing too fast in China and prices may continue to fall. Chinese experts expect to see price below US$ 250 per tonne CIF in the short term.

In China, the primary aluminium production has increased rapidly in the recent years and China’s alumina capacity will rise by whopping 237% to 30 million tonne by the year 2010. Alumina output in China has increased dramatically from last year. The alumina output for the year 2006 is expected to reach 14 million tonne against 8.5 million tonne in 2005.

In January-August 2006, China's alumina production jumped 51% on Y-o-Y to 8.33 million tonne, as per the data given by National Bureau of Statistics, China.
**Strong demand from aluminium die-casting/extrusion industry**

The domestic aluminium die-casting/extrusion industry is bullish on exports this year. The rising number of quality casting outsourcings to India by European companies, the industry expects to see aluminium die-casting exports to rise by 32-35% this year. The industry had got a boost due to demand from Europe, which has reported closure of aluminium die-casting companies in the last three years, and also due to the rise in domestic consumption pepped up by the automobile sector and electrical industries. The country's estimated output of aluminium die casting/extrusion products last year was around seven lakh tonne, out of which exports constituted about 1.5 lakh tonne. With more imports planned by the European end-users, the export volume would sharply rise this year and in addition, the demand in domestic market for die-cast will also increase.

**Hindalco to set up a SEZ with proposed investment of Rs 20,000 crore.**

Hindalco has proposed to set up a sector-specific special economic zone in village Bargawan, District Sidhi of Madhya Pradesh. The proposed SEZ is expected to get an investment of more than Rs 20,000 crore, where Hindalco will invest Rs 18,000 crore to set up an aluminum smelter plant and a captive power plant of 750 MW in Sidhi in a phased manner and the rest of the investment will come from downstream projects.
The company expects that there is tremendous scope for setting up world-class units for manufacturing downstream products such as aluminum composite panels for architectural purposes; sophisticated cookware; heat exchange units for chemical plants; sports bicycles; forged components for aerospace, aircraft, and automobiles; defense items; and research and development units for aluminum processing and finishing. Company also expects that for aluminium produced worth Rs 100, value-added products of about Rs 175 will be created.

With fresh alumina supplies expected to come in over the next year or so from China, Brazil, Australia and India, the pressure on supply is likely to ease. China’s alumina capacity will rise by whopping 237% to 30 million tonne by 2010. The sharp fall in international alumina prices is considered as portents of depressed aluminium prices at the LME.

Expected increase in Chinese alumina and aluminium production in future may keep the global aluminium prices on softer side. In China, the primary aluminium production has increased rapidly in the recent years. Despite a positive view on the demand for aluminium

**2.9 RECENT M & A TRENDS**

In July'02, Hindalco announced that it will make an open offer at Rs 120 per share for Indal shareholders, to acquire the balance 25% stake, and make Indal a wholly owned subsidiary of Hindalco. Further, the company also announced that it will acquire entire business of Indo-Gulf, except its Urea business.
For this purpose, the shareholders of Indo-gulf will get one share of Hinalco for every 12 shares held in Indo Gulf Corporation. Simultaneously, the urea business of the company will be hived off into a separate company, that will be debt free, which will offer one share of the (fertilizer) company for every one share held in Indo Gulf Corporation.

Hindalco acquired 74.6% of Indal for Rs 1008 crore to become the largest player in India. The per tonne acquisition cost is Rs 1.23 lakh as against a brownfield expansion cost of Rs 1.80 lakh per tonne. Nalco acquired the remaining 74% of IAPL from Mukand and FATA Hunter of Italy. IAPL has a 50,000-tpa sheet metal capacity and is capable of producing cold rolled coils. Sterlite has acquired Madras Aluminium. The government had disinvested its 51% stake in Balco in favour of Sterlite Industries for Rs 800 crore.

The government plans to divest stake in Nalco in three phases. The government will offload 10% stake in the domestic market followed by 20% stake offer through American Depository Receipt (ADR). In the third phase of divestment of stake in Nalco, a strategic partner will be identified and offered 29.15% stake along with transfer of management control. The government also plans to offer up to 2% of Nalco's shares to its employees at the time of the strategic sale. Fifteen companies, including Hindalco, Sterlite Industries, Alcoa, Pechiney, Alcan, Russian Aluminium (Rusal) and Glencore of Switzerland have been shortlisted by the government for acquiring 29.15% stake and controlling interest in Nalco.
The prospective bidders are likely to commence plant visits for due diligence by Oct'02 end. Globally, Alcan Aluminium has acquired the 80% share of the Alusuisse Group. Besides, it is reportedly buying the remaining 50% stake of Norf Aluminium from VAW. Norf currently supplies hot rolled coils, cold rolled coils and foil stock to the company's other mills and outside customers. The company has also the largest and most modern rolling complex in Europe with the most advanced technical capabilities in its two hot mills and five cold mills. This should help Alcan to enhance its position in the downstream value added products market in Europe.

Indal gained management control of Annapurna Foils (AFL), after it bought 25% stake in AFL from its promoters for Rs 30 crore. With this, Indal's stake in AFL has increased to 50.59%. Earlier in 1995, Indal had inducted Rs 5.2 crore as equity and Rs 3 crore as interest free un-secured loan. AFL is the third largest manufacturer of aluminium foils with an installed capacity of 3000 tonnes foils and 1000 tonnes of light gauge strips.

The Utkal Alumina project, with a capacity of one million tonnes, was expected to start commercial production by 2005-06 and increase its capacity to three million tonnes by 2008-09. Aditya Birla group paid Rs 29 cr for acquiring 35% stake from Norsk Hydro. Earlier, the shareholding pattern was 45:35:20 held by Norsk Hydro, Alcan and Indal. After this acquisition, it is likely to change to 55:45 split between Aditya Birla group and Alcan.
**Outlook**

The margins of the domestic aluminium players are under pressure on account of fall in LME aluminium prices. With leading players like Hindalco and Nalco giving more emphasis on downstream production, their margins are likely to be partially protected, despite sharp fall in LME prices. According to Industry sources, the domestic aluminium demand is expected to grow by 8% p.a over the next 3-5 years. The growth will be propelled by growth in demand from user industries like the electrical, automobile, packaging, transportation and housing sectors. India can also stretch herself in the recycled use of aluminium as this is highly energy-efficient -- it needs only 5% of the energy compared to extraction from the ore. With major players on an expansion spree, the Industry is set to improve its exports in the years to come. With Nalco and Hindalco amongst low cost producers in the World, the prospect of domestic industry remains promising.

**Table No. 2.1**

**ALUMINIUM PRODUCTION IN INDIA**

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>% growth</th>
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</thead>
<tbody>
<tr>
<td>1997-98</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>1998-99</td>
<td>5.44</td>
<td>2.56%</td>
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<tr>
<td>1999-00</td>
<td>6.21</td>
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<td>2000-01</td>
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<tr>
<td>2001-02</td>
<td>6.37</td>
<td>-1.85%</td>
</tr>
<tr>
<td>Apr-June'02</td>
<td>1.64</td>
<td>14.37%</td>
</tr>
<tr>
<td>2002-03*</td>
<td>7.2</td>
<td>13.03%</td>
</tr>
</tbody>
</table>

*Target; figures in lakh tonne
### Table No. 2.2

**PRIMARY ALUMINIUM PRODUCERS IN INDIA**

<table>
<thead>
<tr>
<th>Company</th>
<th>Capacity *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindustan Aluminium Company</td>
<td>2.75</td>
</tr>
<tr>
<td>National Aluminium Company</td>
<td>2.30</td>
</tr>
<tr>
<td>Indian Aluminium Company</td>
<td>1.17</td>
</tr>
<tr>
<td>Bharat Aluminium Company</td>
<td>1.00</td>
</tr>
<tr>
<td>Madras Aluminium Company</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7.47</strong></td>
</tr>
</tbody>
</table>

Capacity in lakh tonne as of Mar'02

### Table No. 2.3

**ALUMINIUM PRODUCTION IN CHINA**

<table>
<thead>
<tr>
<th>Period</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1999</td>
<td>25.98</td>
</tr>
<tr>
<td>Year 2000</td>
<td>27.94</td>
</tr>
<tr>
<td>Year 2001</td>
<td>33.71</td>
</tr>
<tr>
<td>Year 2002</td>
<td>42.71</td>
</tr>
<tr>
<td>Jan - Feb 2002</td>
<td>6.18</td>
</tr>
<tr>
<td>Jan - Feb 2003</td>
<td>7.96</td>
</tr>
</tbody>
</table>

Figures in lakh tonne
### Table No. 2.4

**TRENDS IN GLOBAL PRIMARY ALUMINIUM PRODUCTION**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1,043</td>
<td>1,095</td>
<td>1,178</td>
<td>1,369</td>
<td>1,372</td>
<td>224</td>
<td>209</td>
</tr>
<tr>
<td>North America</td>
<td>6,086</td>
<td>6,169</td>
<td>6,041</td>
<td>5,222</td>
<td>5,413</td>
<td>840</td>
<td>908</td>
</tr>
<tr>
<td>Latin America</td>
<td>2,075</td>
<td>2,093</td>
<td>2,167</td>
<td>1,991</td>
<td>2,230</td>
<td>343</td>
<td>371</td>
</tr>
<tr>
<td>Asia</td>
<td>1,843</td>
<td>1,966</td>
<td>2,221</td>
<td>2,234</td>
<td>2,261</td>
<td>368</td>
<td>385</td>
</tr>
<tr>
<td>Europe</td>
<td>6,968</td>
<td>7,304</td>
<td>7,490</td>
<td>7,613</td>
<td>7,753</td>
<td>1245</td>
<td>1278</td>
</tr>
<tr>
<td>Oceana</td>
<td>1,934</td>
<td>2,028</td>
<td>2,094</td>
<td>2,122</td>
<td>2,170</td>
<td>342</td>
<td>356</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19,949</td>
<td>20,655</td>
<td>21,191</td>
<td>20,551</td>
<td>21,199</td>
<td>3,362</td>
<td>3,507</td>
</tr>
<tr>
<td><strong>% Change</strong></td>
<td>3.5</td>
<td>2.6</td>
<td>-3.0</td>
<td>3.2</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$ in production over the previous year

Figures in thousand tonne, but excludes production of a few countries including China, Iran, Iran, Korea, Azerbaijan, Poland, Bosnia-Herzegovina, Croatia, Romania etc. Source: International Aluminium Institute

### Table No. 2.5

**DOMESTIC ALUMINIUM PRODUCTION (IN TONNES)**

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balco</td>
<td>345,000</td>
<td>30,428</td>
<td>150,586</td>
</tr>
<tr>
<td>Hindalco</td>
<td>345,000</td>
<td>24,080</td>
<td>112,995</td>
</tr>
<tr>
<td>Malco</td>
<td>455,000</td>
<td>36,635</td>
<td>180,513</td>
</tr>
<tr>
<td>Total</td>
<td>36,000</td>
<td>3,242</td>
<td>16,071</td>
</tr>
<tr>
<td></td>
<td>1,181,000</td>
<td>94,385</td>
<td>460,165</td>
</tr>
</tbody>
</table>

* Var. (%) the change in production over the corresponding previous year period
** as a % of cumulative total production for the period

Source: Ministry of Mines
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CHAPTER 3

RESEARCH METHODOLOGY
CHAPTER – 3
RESEARCH METHODOLOGY

3.1 Problem Identification
3.2 Survey of Existing Literature
3.3 Title of The Problem
3.4 Objectives of The Study
3.5 Hypothesis
3.6 Scope of The Study
3.7 Period of The Study
3.8 Data Collection And Data Analysis
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   3.9.1 Financial Tools
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      3.9.2.1 Chi-Square Test
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      3.9.2.4 Arithmetic Mean
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CHAPTER – 3
RESEARCH METHODOLOGY

3.1 PROBLEM IDENTIFICATION:

The Indian aluminium industry is blessed with an abundant supply of quality bauxite, the key raw material, at a very low cost. The industry has a ready domestic and overseas market for the finished product. India has the fifth largest bauxite deposits, accounting for 7.5% of the global deposits. But its installed capacity is only 3% of the global capacity. The per capita consumption of Aluminium in India is relatively poor at 0.6 kg as against 16-35 in Developed countries like UK, Japan, USA, Germany and France. Hence, there is enough scope for India to become a favorite location for building alumina refineries and smelters. As the government continues to give a thrust to the electrification process, estimated to cost Rs 900 billion over the next decade, the aluminium industry stands to gain the maximum because 31% of the demand for aluminium comes from this sector.

The spreading usage of aluminium in areas like automobiles, due to its higher strength to weight ratio, ensures a wide use of aluminium across multiple industrial applications. The greatest scope for value addition and employment generation lies in the development of downstream products like extrusions, rolls, products, fabrications and finished. The aluminium industry can be classified as primary producers and secondary (downstream) producers. Primary producers make ingots and billets (the primary forms of aluminium) using bauxite.
Secondary producers add value to the ingots and billets to manufacture downstream products like rolled products, extrusions, wire rods and foils and value additions in the above products are 25%, 26%, 28% and 60% respectively. Earlier, the industry was under government control and at least 50% of the production was reserved for the power sector. The retention pricing mechanism, which was based on the average prices of all producers and a minimum return on equity, was the rule. This has led to a skewed product mix with shortages for others. The problem was further compounded by the vulnerable financial position of state electricity boards. This Act was scrapped in 1989 and in 1991, the government lifted restrictions and freed the industry.

The industry consists of five primary aluminium producers. They are Nalco (a PSU), Balco (wherein Sterlite group acquired strategic stake), Hindalco, Indal and Malco. Besides them, there are other downstream producers. The total installed capacity of primary aluminium is 7.47 lakh tonnes which may reach 10 lakh tonnes by the end of 2003 with Nalco's and Hindalco's greenfield and brownfield expansions. The consolidation in the industry is likely to bring down the number of major payers to two or three in the medium term. The aluminium production increased by 6.95% to 498625 tonne in the nine months ended Dec'02 over the corresponding previous year period. Part of the increase in production is attributed to lower base of the last year, when production was disrupted in Balco, on account of labour strike post divestment of strategic stake by government in favour of Sterlite Group.
Except for Hindalco, all other domestic aluminium producers - Nalco, Malco, Indal and Balco reported increase in production during the nine months ended Dec'02 over the corresponding previous half year period. However, Hindalco reported modest 0.14% fall in production to 190935 tonne during this period, due to interruption in power supply with disrupted production.

During FY 2001-02, Hindalco recorded 3.9% increase in aluminium production to 2.61 lakh tonnes. During this period, Nalco's aluminium production grew by a mere 0.7% to 2.32 lakh tonne, while its calcined alumina production zoomed by 17.15% to 1.1 million tonnes. The monthly average prices at LME was US$ 1375.42 per tonne in Dec'002 which increased to US$ 1422.48 in Feb'03 and was quoting around US$ 1459.00 on 28th Feb'03. But ever since, the prices have been on a downward march, impacted by the US was on Iraq, and has slipped to US$ 1314.50 by 8th April 2003.

Financial performance of business enterprise largely depends upon the profitability, proper mix of capital structure, resources used by different activity and efficient management of working capital of the business enterprise. The profitability can be achieved after control over the cost of production. In recent years, cost of almost all elements of production like cost of raw material consumed, wages cost, excise duty, power and fuel cost, interest burden, administrative expenses, selling and distribution expenses etc. have been increased heavily.
On the other hand, selling price of aluminium product is going down. In these circumstances, to keep the progress of business enterprise is very essential for management in present environment, to achieve the profit it tends to introduce various control techniques over expenditure and get maximum output. The liquidity can be achieved by managing the different parts of working capital such as receivable management, cash mgt.and proper debt collection policy. There are rapid changes in Liquidity position determining factors i.e. manufacturing process and business fluctuation.

Analysis of Financial Performance of aluminium Industry in India can be classified based on persons interested in the analysis. Generally external and internal parties are interested in such analysis of study. Objectives of both these analysis are different. An external analyst has to depend upon the published information of financial statement, which is not enlightening them. While internal analysis knows, every thing regarding the information provided in the financial statements.

Different analysts always make analysis or study of financial performance knowingly, generally, external analyst’s analysis the information as per their requirements. Financier is interested in the financial and liquidity position. A shareholder is interested in the profitability. Management is interested in the productivity and operational efficiency. Thus various stakeholder of business enterprise like management, investors, bankers, financial institutions, creditors, employees, government, economist, prospective investor’s etc., look at liquidity profitability and productivity of the business concern.
3.2 SURVEY OF THE EXISTING LITERATURE:

There is a wide range of literature available on financial performance analysis of different companies in conforming to its dynamic value and significance of intuitive nature. A good dealing in analytical part of literature exists at broad levels like size and technology, problems associated with productivity, financial performance, and capacity utilization. Relevant existing literature and studied have been clipped below. A researcher has studied of this literature for gaining insight into the problem,

In the year of 2002, Dr. Sugan C. Jain has written a book on “performance appraisal automobile industry” In his study he has analyses the performance of the automobile industry and presented comparative study of some national and international units. The operational efficiency and profitability had been analyzed using the composite index approach. He made several suggestions for the strengthening the financial soundness improving profitability, working capital the performance of fixed assets.

Ahindra Chakrabati published an articles “Performance of public sector enterprises a Case study on fertilizers” in “The Indian journal of public enterprise” in the year 1988-89. He made analysis of consumption and production of fertilizer by public sector; he also made analysis of profit and loss statement. He gave suggestion to improve the overall performance of public enterprise.
Miss Nandini Jaimini published an article “Evaluation of cash management performance of the selected Textiles Mills in Rajasthan” in “Indian Journal of Public enterprise” in 1988-89. She made analysis of selected textiles units by using various liquidity ratios and concluded that the inadequate cash balance to meet their currently maturing obligations. She suggested various measures to overcome this deficit of working capital.

Recently in the year December 2002 a study was made by pro. Manish M. Chudasama on “Analysis of cost structure of Indian Textiles Industry” He had made an attempt to analyze Cost structure, direct expenses and profit, Indirect expenses and profit, and how these factory affects the cost structure of textile industry by using various ratios analysis, common size analysis. He made several suggestions for the improvement of profitability of industry lower the cost used in cost structure.


In the year 1988 one book published on “working capital structure of private enterprises” by J.Panda and A.K. Satapathy. It covers a study of 10 private sectors Company engaged in production of cement. The study covers the various aspects of working capital period from 1965 to 1985. He had analyzed working capital position of selected units as a whole and as well as individual analysis. Finally He had made suggestions for the better utilization of various components of working capital.
Recently in the year 1998 a study was made by pro. S.J. Parmar on “profitability analysis of cement industry in Gujarat state” for the period from 1998-89 to 1994-95. He had made an attempt to analyze financial strength, liquidity, profitability, cost and sales trend and social welfare trend by using various ratios analysis, common size analysis and value added analysis. He made several suggestions for the improvement of profitability of industry. In his analysis, he indicates various reasons for higher cost, low profitability, and inefficient use of internal resources.

Dr. Pramod Kumar published a Book in 1991, “Analysis of Financial statements of Indian industries.” The study covered the 17 private, 5 state owned and 1 central public sector companies. He studied analysis of activities, assessment of profitability, return on capital investment, Analysis of financial structure, Analysis of fixed assets and working capital. In this research he revealed various problems of cement industries and suggested remedies for the problems. He also suggested for the improvement of profitability and techniques of cost control.

Dr Sanjay Bhayani published a book in 2003, “Practical financial statement analysis” The study covered 16 public limited cement companies in private sector. He made study of analysis of profitability, working capital, capital structure and activity of Indian cement industry. In his research he revealed various problems of cement industries and suggested remedies for the problems. He also suggested for the improvement of profitability and techniques of cost control.
Dr. Kumar Bar Das published a comprehensive book in 1987 which covered period from 1970 to 1980. He concluded various aspects like factor productivity, location degree of competition, capacity utilization, size efficiency, financial performance, distribution pattern and government policies with respect to pricing and distribution. He indicated that all profitability ratios decrease gradually and became negative for 1973-74 and 1974-75 but improved gradually thereafter.

Chakravarty and Reddy made study on ratio analysis as major tool for financial performance by studying 22 ratios of productivity, profitability, proprietary, liquidity and turnover groups of the industries for the period from 1961 to 1971.

Poddar presented two important books in 1962 and 1966 in which he elaborated all the facts regarding various aspects of the industry. Institutions as C.M.A., Association of trade and industry, commerce research bureau, Economic times, Tariff commission, National productivity council etc. have made efforts to study the general problems in historical perspective.

Some institute like DGCI&S, IEEMA, Commerce research bureau ELCINA. The economic times, CETMA etc have attempted to study the general problem related to industry.

Recently in the year December 2002, a study was made by pro. Manish M. Chudasama on “Analysis of cost structure of Indian Textiles Industry”
He had made an attempt to analyze Cost structure, direct expenses and profit, indirect expenses and profit, and how these factories affects the cost structure of textile industry by using various ratios analysis, common size analysis. He made several suggestions for the improvement of profitability of industry lower the cost used in cost structure.

Prof. Amit Mallick and Debasish sur presented an article on tea industry “Working capital and profitability a case study in interrelation which was published in the management accountant, November 1998. It explores the correlation between ROI and several ratios to working capital management. They made analysis of the impact of working capital on profitability by using simple correlation between ROI and each of some important ratios of working capital.

The study was made by Kar A.P who had written an article in December 1995 On “Need for cost and Management control in Indian tea industry” in Management accountant. It gives different cost control techniques to control the cost in tea industry.

Dutta S.K has written an article on “Indian tea industry an appraisal” which was published in Management accountant in the yea of March 1992. He analyzed the profitability, liquidity and financial efficiency by using various ratios.

Article expressing a study of Agro-industry, chemical, Drugs & Pharmaceuticals Industry “Risk and Return analysis” (Case study of selected industries) was published in” Journal of accountant &Finance”. 

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In April 1994, it revealed complete scenario of various aspects of Chemical, Drugs Pharmaceuticals and electronics Industry. It found out different ratios such as Return on investment, Debt/equity and Risk classification that how risk, return related, and how it influences on the selected industry.

Ahindra Chakrabati published an articles “Performance of public sector enterprises a Case study on fertilizers” in “The Indian journal of public enterprise” in the year 1988-89. He made analysis of consumption and production of fertilizer by public sector; he also made analysis of profit and loss statement. He gave suggestion to improve the overall performance of public enterprise.

Erich A. Helfert explained “The Importance of performance lies for owners/potential investors because they can know easily the financial position of the company by return on net worth, return on common equity, Earnings per share, Cash flow per share, Dividend yield, dividend coverage, Price earning ratio, market to book value, Pay out/retention.

Pandey (1995) showed how these financial statements and ratios were necessary in accounting for planning and control and decision-making system.

Gupta (1998) focused on how these ratios were the predictor of the failure and how these ratios are helpful in fulfilling the fact of financial statements with better interpretation through these.
Khan and Jain (2005) expressed uses of the financial statements, profit planning and cost control, corporate decision-making whether they were strategic, analytical or simple routine decision managers.

Kulshreshtha (1972) applied the concept accounting ratio to analysis the statement analysis of Indian paper industry

Most of the studies on receivable management in Indian context highlight inefficiency: Khandelwal (1985) investigated the working capital management process and practices among 40 small-scale industries in the state of Rajasthan, between 1975-76 and 1979-80. The study revealed that the management of receivables was highly ineffective and disorderly. It was found that bills of receivable constituted as much as 50% of total current assets. Highlighting the sickness in the Jodhpur industrial estate, the study attributed the main reason to the inefficient management of working capital. The study also revealed that entrepreneurs had to be educated on the concept of working capital management.

In the year 1988, one book published on “working capital structure of private enterprises” by J.Panda and A.K. Satapathy. It covers a study of 10 private sectors Company engaged in production of cement. The study covers the various aspects of working capital period from 1965 to 1985. He had analyzed working capital position of selected units as a whole and as well as individual analysis. Finally He had made suggestions for the better utilization of various components of working capital.
Dr. Bhayani (2004) has conducted a study on working capital and profitability of the cement industry and found that profitability is highly influenced by working capital. Linkage between asset management and profitability of Indian Industry.

In their survey among 57 small firms in Canada, 105 largest firms in the US and 39 largest firms in Australia, Khoury et al., (1999) attempted to compare the working capital practice among three nations. The major aspects of the study were working capital policy, cash and equivalents, account recoverable, inventory, accounts and note payable and managing working capital itself. The study revealed that 7% of the Canadian firms had formal working capital policies and 28.5% had a cautious working capital policy. Further, Canadian firms were learning more on the effect on sales whereas the Australian and the US companies were found to focus more on the impact on the firm’s profit while evaluating the credit worthiness of the customers.

While many studies have noted that receivable management was a neglected area, Oppedahl and Richard (1990) examined the causes for such neglect. They found that managements were pre-occupied with capital budgeting projects, which affected the quality of working capital decision. The essay revealed that receivable constituted the most important element of working capital and hence, recommended that the managers need to be very cautious in the management of the same, in order to minimize default risk. It is thus possible to note that management of receivable is found inefficient not only in the Indian context but also in other parts of the world.
Considering the fact that the refinery industry is poised for unprecedented growth, it is pertinent to examine the trends in various measures of receivable management in the light of various developments taking place in the place in the economy.

An article on study of cement industry (Where is it heading?) was published in “Chartered Financial analysis” in May-1996. It revealed complete scenario of various aspects cement industry. It found out strength and weakness of industry, as well as opportunities and threats.
3.3 TITLE OF THE PROBLEM:

The title of the problem is “Analysis of Financial Performance of Aluminium Industry in India.” Financial Performance of a business organization is largely depending upon the relationship among five major parts’ performance analysis. those are given as below

1. Relationship between cost of production and the selling price affect them. In the age of globalization, this is a very vital question to any industry.

2. Profit and profitability are also other considerable things. Due to high degree of competition, the profit margin is decreased.

3. There are certain uncontrollable and controllable factors affecting profits of the companies. It is hypothesized and by controlling the controllable factors, the companies can improve their profit and profitability.

4. There are rapid changes in Liquidity position (working capital) determining factors i.e. manufacturing process and business fluctuation.

5. Ability of the company to perform activity to utilize resources

6. The companies faced multifarious problems during the study period and still it is facing many problems are tackled properly; the performance of the company will improve.
This study is based on the secondary data drawn from published annual reports of aluminium of companies under study. Various studies have been conducted under the university faculty but no significant research work seems to have been undertaken on the interpretation and analysis of performance of industry. Present attempts will be an original contribution in this field as the problems of the study is unique in every aspect.

3.4 OBJECTIVES OF THE STUDY:

The objective of the study is to analysis and interprets the Financial Performance of aluminium Industry in India.” The objectives are as under:

1. To examine the position of aluminum industry
2. To assess the financial strength
3. To examine liquidity position
4. To measure the financial efficiency
5. To analyse the activity of the firm
6. To suggest ways and means to improve performance

3.5 HYPOTHESIS:

“A hypothesis is a special proposition, formulated to be tested in a certain given situation as a part of research which states what the researcher is looking for.”¹ In the research study, two hypotheses have been tested, these are as under:
One-way Analysis of Variance Test (ANOVA)

It is useful for inter-unit comparisons. The following null and alternative hypotheses have been tested on the basis of ANOVA one-way analysis of variance test.

Null Hypothesis (Ho):

There is no any significant difference among the Activity, profitability, capital structure and working capital ratios of the selected aluminum units come from identical populations.

The acceptance of the null hypothesis would suggest that there is no significant difference between the productivity of the selected units, which means that the productivity ratios of the units came from identical populations, in such aluminum units as the comparison of the Activity, profitability, capital structure and working capital will have little significance.

In contrast, the rejection of the Null hypothesis will reveal that there is significant difference between Activity, profitability, capital structure and working capital ratios of the units, suggesting the usefulness of comparisons the level of significance used in this case will also be at 5 percent, while degree of freedom will (7*5-1) 34 in the present study.
As per empirical study, the self-existent assumptions are as under:

1. The data of industry by the postulate. However it is possible to sketch conclusions of the individual company.

2. There are such areas where the performance can be improved by the effective management of resources. These areas include production, Productivity, financial efficiency and liquidity position.

3. There are certain controllable and uncontrollable factors which by the effective to the profit of the companies. It is hypothesized and by controlling the controllable factors, the company can justify their profit performance

4. The selected units faced problems during the study period and presently also. If the problems are tackled properly the performance of liquidity, productivity, and financial efficiency stand and will be improved as per determined.
Hypothesis for Profitability Analysis

(1) There is no any significance difference between the gross profit ratios of alluminuim companies.
(2) There is no any significance difference between the operating ratio of alluminuim companies.
(3) There is no any significance difference between net profit ratio of alluminuim companies.
(4) There is no any significance difference between the Return on gross capital employed ratio of alluminuim companies.
(5) There is no any significance difference between the Return on net capital employed ratios of alluminuim companies.
(6) There is no any significance difference between the earning per share ratios of alluminuim companies.
Hypothesis for Working Capital Analysis

(1) There is no any significance difference between the Current ratio of aluminium companies
(2) There is no any significance difference between the quick ratio ratios of aluminium companies
(3) There is no any difference between the inventory to working capital turnover ratio of aluminium companies.
(4) There is no any significance difference between the working capital turnover ratios of aluminium companies.
(5) There is no any significance difference between the debtor turnover ratio of aluminium companies
(6) There is no any significance difference between the average debt collection ratios of aluminium companies.

3.6 SCOPE OF THE STUDY:

The industry consists of five primary aluminium producers. They are Nalco (a PSU), Balco (wherein Sterlite group acquired strategic stake), Hindalco, Indal and Malco. Besides them, there are other downstream producers. The total installed capacity of primary aluminium is 7.47 lakh tonnes which may reach 10 lakh tonnes by the end of 2003 with Nalco's and Hindalco's greenfield and brownfield expansions. The consolidation in the industry is likely to bring down the number of major payers to two or three in the medium term. Researcher has selected 5 (five) companies as the sample for this study.
The sample has been selected considering following factors:-

1. The data which are available for the period of study i.e. from 2000-01 to 2006-07.
2. The companies, which are engaged in production of aluminium Industry
3. The company should be organized by private sector in India.
4. The company should be listed in Stock exchanges of India.

The following five companies have been chosen for the study:

1. Hindalco Ltd
2. Indian Aluminium Company Ltd
3. Madras Aluminium Co Ltd
4. National Aluminium Company Ltd
5. Bharat Aluminium Company Ltd

Financial Performance of aluminium Industry in India of the above companies covered in the present study fully examined. The conclusion drawn and suggestions attempted will provide practical guidance to the management of the companies to promote for improvement of Financial Performance of their companies, as well as consumers, investors, Financial manager and workers for taking decision related to their own regards of interest.
3.7 PERIOD OF THE STUDY:

The study of Analysis of Financial Performance of aluminium Industry in India. Is made for the period of seven years from accounting year 2000-01-2006-07. Researcher has been selected the base year 2000-01. This year is normal for the purpose of analysis and evaluation.

3.8 DATA COLLECTION AND DATA ANALYSIS:

“Research is a process of a systematic and in-depth study or search of any particular topic, subject or area of investigation, backed by the collection, compilation, presentation and interpretation of relevant details or data. It is a careful search or inquiry into any subject or subject matter, which is an endeavor to discover or find out valuable facts, which would be useful for further application or utilization”\(^2\) research and analysis of management problems would result in certain conclusions by means of logical analysis.

For the purpose of analysis of financial performance of Indian aluminum industry, the secondary data are used. As definition point of view “the term secondary data refers to the statistical material which is not originated by investigator him self but which he obtains from some one’s records”\(^3\) Secondary data, which were not gathered specially to meet the needs of the problem at hand. For the study, data have been collected for the period seven years from 2000-01-2006-07 of the accounting year.
Various publication have been of aluminum industry collected from their corporate offices of respective companies and other publications have also been used such as stock exchange official directory, Economics times, Financial express, R.B.I. Bulletin, Other periodicals. Journals.

Personal interviewing of the additional director, Chairmen, Directors, Joint president, Company secretary, chief accountant, General Manager Finance, Executives Joint technical advisory (planning), and assistant Director Technical) have conducted to collect some keynote information of the Companies and Alluminuim industry.

The figure contained in the annual reports and accounts have been rounded off to crores up to two decimal places. All the collected data have been presented and formulating in the form of condensed balance sheet and income statement. All the ratios and mentioned statement have been analyzed and interpreted.

As conclusion point of view inter firm comparison has been made for analysis of performance of selected companies. Various techniques of analysis e.g. Ratio analysis, Trend analysis, Regression, Graphs, Means, Diagrams. Percentage and simple average Methods have used for the presentation and interpretation of the data and at the end on basis of the conclusion, some suggestion have been made for development of performance.
3.9 TOOLS OF ANALYSIS

For the present study, following tools have been used for analysis of performance of aluminium Industry..

3.9.1 Financial Tools:

3.9.1.1 Ratio Analysis:

Ratio is well known and most widely tool of financial analysis can be defined as “the indicated quotient of two mathematical expression.” as operation definition or ratio is the relationship between one item to another in a simple mathematical form.” a ratio is simply one number expressed in terms of another. It is found by dividing one number the base into the other”

“Generally there are two methods of expressing relationship in ratios” (i) The percentage method like 100 percent etc. “Analysis use ratio to connecting different parts of the financial statements in a to find clues about the status of particular aspects of the business” (ii) The Phrase method such as one and half to one and two for one. Ratio is useful analysis for financial statement. It is conveniently and clearly capsulize the data in a form that is easily understood interpreted as “ratio are simply a means of highlighting in arithmetical terms, the relationship between figures drawn from financial statements” The technique of ratio analysis is the process of determining and interpreting numerical relationship based on the financial statements
According to Batty “accounting ratio describe the significant relationship which exist between figures shown in a Balance sheet, in a profit and loss account, in a budgetary control system or another part of accounting organization”

It concludes whether the financial condition of a business enterprise is good or bad it is universally used for appraising the performance of a business firm.

3.9.1.2 Trend Analysis :

The ratio analysis gives a reasonable good picture but it is incomplete in on important respect-It ignores the time dimension. The ratios are snapshots of the picture at one point in time but there may be trends in motion that are in the process of rapidly eroding a relatively good present position” Trend analysis is tool of analysis the financial statement in more simplified form over a period of years, “Trend analysis is horizontal analysis of financial statements often called as ‘pyramid method’ of ratio analysis-a guide to yearly changes.”

In the wards “one of the most useful forms of horizontal analysis is trend analysis. It is especially helpful in revealing proportionate change over time in selected financial data” Trend analysis makes it easy to understand the changes in an item over a period of time and to draw conclusions regarding the changes in data. For analyzing the trend of data depicts in the financial statements it is necessary to have statements for a number of years. This method involves the interpretation of the percentage relationship that each statement item, bears to the same item in the ‘base year.’
3.9.2 Statistical Tools

Statistical tools are utilized for data analysis and interpretation of the firm. A brief outline of the various statistical techniques being used for present study those are:

3.9.2.1 Chi-Square Test:

The Chi-square test ($x^2$) is one of the widely used non-parametric tests among the several tests of significant developed by statisticians. Chi-square pronounced as Ki-Square. According to Ullman Neil R”Chi-square as a non-parametric test it can be used to determine if categorical data shows dependency or the two classifications are independent. It can be also be used to make comparisons between theoretical populations and actual data when categories are used”¹² the formula used for calculation of chi-square is as following ¹³

\[
\text{CHI-SQUARE (X}^2\text{)} = \sum \frac{(O-E)^2}{E}
\]

Where ‘O’ denotes the observed values and ‘E’ refers to the expected values. The expected value will be calculated with the help of Regression analysis and time series analysis.
Chi-square distribution and critical values of Chi-square are obtained from the tables of Chi-Square distribution. The expected values will be determined with the help of assumption where the data come from the hypothesized distribution. The Chi-Square distribution is a continuous probability distribution which has the value zero at its lower limit and extraction.

### 3.9.2.2 Krushal Wallis One-Way Analysis of Variance Test:

Stevenson W.J. States, “It is a one way analysis of variance test that employs ranks rather than actual measurement, and its assumptions concerning the data are relative weak$^{14}$ the calculations are accomplished by converting each observation to rank. While ranking the observations, all the values are treated as if they belong to one sample the ranks are given from the lowest number to the highest number. As such the lowest number is ranked as 1, The next lowest as 2 and so on until all observations have been ranked if there happens to be case of tie, that is resolved by giving them the average values of ranks”$^{15}$ The sum of rank in each sample size, and the total number of observations are used to compute the statistic (H)$^{16}$

$$H = \frac{12}{N(N+1)} \sum_{j=1}^{k} \frac{2}{H_j} \left( \frac{(R_j)^2}{N_i} \right) - 3(N + 1)$$

Where

- $N =$ TOTAL NUMBER OF OBSERVATIONS
- $K =$ TOTAL NUMBER OF SAMPLES.
- $H_1 =$ THE NUMBER OF OBSERVATION IN THE Jth SAMPLE
- $R_j =$ THE SUM OF RANKS IN JTH SAMPLE
3.9.2.3. Index Numbers

“Index number as a number which is used to measure the level of a given phenomenon as compared to the level of the same phenomenon at same standard date”\cite{17} Index numbers nothing more than a relative number, or a relative which expresses the relationship between two figures, where one of the figures is used as a base present study indices of sales, production and capacity utilization of selected Alluminuimof companies have been found out by taking 1997-98 as the base year and indices of the rest years have been calculated.

3.9.2.4 Arithmetic Mean

It is called as the average of difference of the values of items from some average of the series. According to Gulerian “the most commonly used average is the arithmetic mean, briefly referred to as the mean”\cite{18} the mean has been found by adding all the variables and dividing it by the total number of years taken.

3.9.2.5 Standard Deviation

Standard deviation may be defined as positive square root of the variance. While the variance of a sample is the average square deviation of values from the mean \cite{19}
3.9.2.6 Co-Efficient of Variation:

Co-efficient of variation has been defined as the percentage of the standard deviation to the mean. It should be noted that higher the variability the greater would be the co-efficient of variation. Therefore, it may be pointed out that for the stability of results, Co-efficient of variation must be low. Co-efficient of variation (C.V.) may be calculated with the help of standard deviation and mean

\[
\text{CO-EFFICIENT OF VARIATION} = \frac{\text{STANDARD DEVIATION}}{\text{ARITHMETIC MEAN}} \times 100
\]

3.10 CHAPTER PLAN:

The present study is divided into eight chapters, which are as under:

CHAPTER – 1
CONCEPTUAL FRAMEWORK OF FINANCIAL PERFORMANCE

This chapter deals with introduction and concept of financial performance and financial analysis – Legal provisions of financial statements – Types of financial statements – Importance and Usefulness of financial statements – Need and Aims of financial performance
CHAPTER–2
PROFILE OF ALUMINIUM INDUSTRY IN INDIA


CHAPTER – 3
RESEARCH DESIGN

Details of this chapter is - Problem Identification – Survey of Existing Literature- Statement of Problem – Objectives of the study-Hypothesis – Universe of Study – Sampling Design — Period of Study- Data collection and data analysis - Tools and techniques for analysis of financial performance – Limitations of the study.

CHAPTER- 4
ANALYSIS OF PROFITABILITY

This chapter deals with analysis of profitability of selected aluminium companies. It has been done with the help of different analytical tools such as ratios, Anova -Kruskal Wallis one Way analysis of variance Test, and Time Series Analysis.
CHAPTER – 5
ANALYSIS OF FINANCIAL STRUCTURE

This chapter covers concept of financial structure – Analysis of Assets and Capital structure – Analysis of Long Term and Short Term Funds - Analysis of Various Capital Structure ratios.

CHAPTER – 6
ANALYSIS OF WORKING CAPITAL

This chapter deals with concept, sources, significance and requirement of working capital and analysis of working capital structure with the help of ratios and ANOVA test.

CHAPTER – 7
ANALYSIS OF ACTIVITY

This chapter deals with concept of activity, growth of activity, trend analysis – Activity in relation to total resources - Calculation and analysis of elements of operating ratio like, Raw Material expenses, Salaries and wages, Administrative, Selling and Other Expenses to total sales and ANOVA test.
CHAPTER 8
SUMMARY, FINDINGS AND SUGGESTIONS

This chapter gives its emerging conclusion based on the analysis carried out and points out the variations if any from the literature. Besides, it also gives concrete suggestions for enhancing profitability, for financial soundness, for cost reduction and control and liquidity position

3.11 LIMITATION OF THE STUDY:

1. This study is based on secondary data taken from published annual reports of selected aluminium companies.
2. There are different approaches to measure the profitability, liquidity, financial efficiency and operational efficiency in this regard expert views differ from one–other.
3. The different views have been applied in the calculation of different ratios.
4. The present study is largely based on ratio analysis. It has its own limitations.
REFERENCES:

3. Ibidem, P.No. 2
5. Sharma R.P. “Corporate financial structure”printwell publishers, Jaipur-302004, p.6


Chapter 4

Analysis of Profitability
CHAPTER – 4

ANALYSIS OF PROFITABILITY

4.1 Concept of Profitability

4.2 Profit and Profitability

4.3 Concept of Financial Efficiency

4.4 Measurement Tools of Profitability
   4.4.1 Profitability Ratio in Relation to Sales
      4.4.1.1 Gross Profit Ratio
      4.4.1.2 Operating profit ratio
      4.4.1.3 Net Profit Ratio:
   4.4.2 Profitability In Relation to Capital Employed:
      4.4.2.1 Earning Per Equity Share
      4.4.2.2 Return on Capital Employed
         4.4.2.2.1 Return on Gross Capital Employed
         4.4.2.2.2 Return on Net Capital Employed
      4.4.2.3 Return on Owners Equity
      4.4.2.4 Dividend pay-out ratio

• Conclusions

• References
CHAPTER-4
ANALYSIS OF PROFITABILITY

4.1 CONCEPT OF PROFITABILITY

Profitability is the ability to earn profit from all the activities of an enterprise. It indicates how well management of an enterprise generates earnings by using the resources at its disposal. In the other words the ability to earn profit e.g. profitability, it is composed of two words profit and ability. The word profit represents the absolute figure of profit but an absolute figure alone does not give an exact ideas of the adequacy or otherwise of increase or change in performance as shown in the financial statement of the enterprise.

The word ‘ability’ reflects the power of an enterprise to earn profits, it is called earning performance. Earnings are an essential requirement to continue the business. So we can say that a healthy enterprise is that which has good profitability. According to hermenson Edward and salmonson ‘profitability is the relationship of income to some balance sheet measure which indicates the relative ability to earn income on assets employed.¹
4.2 PROFIT AND PROFITABILITY

Profits are the cream of the business without it may not serve the purpose. It is true that “profits are the useful intermediate beam towards which capital should be directed” West and Brigham mentioned that “to the financial management profit is the test of efficiency and a measure of control to the owners a measure of the worth of their investment, to the creditors the margin of safety, to the government a measure of taxable capacity and a basis of legislative action and the country profit is an index of economic progress national income generated and the rise in the standard of living.”

While profitability is an outcome of profit. In the other words no profit derived towards profitability. “It may be remarked that the profit making ability might denote a constant or improved or deteriorated stare of affairs during a given period, thus, profit is an absolute connotation were as profitability is a relative concepts.” Profit and profitability are two different concepts, although they are closely related and mutually independent, playing distinct role in business.

R.S.Kulshrestha mentioned that “profit in two separate business concerns might be the same and yet more often they note their profitability could differ when measured in terms of the size of investment” as outcome of above statement it can be said that profitability is broader concept comparing to the concept of profit levels of profitability helps in establishing quantitative relationship between profit and level of investment or sales.
4.3 CONCEPT OF FINANCIAL EFFICIENCY

Financial efficiency is a measure of the organizations ability to translate to its financial resources into mission related activities. Financial efficacy is desirable in all organization of individual mission. It measures the intensity with which a business uses its assets to generate gross revenue and the effectiveness of producing, purchasing, pricing, financing, and marketing decisions. At the micro level financial efficiency refers to the efficiency with which resources are correctly allocated among competing uses at a point of time. Financial efficiency is a measure of how well an organization has managed certain trade of (risk and return, liquidity and profitability) in the use of its financial efficiency. Financial efficiency is regarded as a measure of total efficiency and a management guide to greater efficiency and the extent of the profitability, liquidity, productivity and capital strength can be taken as a final proof of a financial efficiency. Financial efficiency directed towards evaluating the liquidity, stability, and profitability of a concern which put together of a concern. The word efficiency as defined by the oxford dictionary states that; efficiency is the accomplishment of or the ability to accomplish a job with minimum expenditure of time and effort. As expressed by peter ducker “doing the things the right way is efficiency”. This denotes the fulfillment of the objective with minimum sacrifice of the available scarce resource. Fatless and speedy compliance of the process or system procedure is a measure of efficiency providing a specified volume and quality of services with the lowest level of resources capable meeting that specification, performance measures and or indicators are required. These are including measures, productivity, unit of volume of service etc.
4.4 MEASUREMENT TOOL OF PROFITABILITY:

For making policy decision under different situations, measurement of profitability is essential. According to Murthy V.S. “The most important measurement of profitability of a company is ratio. E.g. profitability of assets, variously referred to as earning power of the company, return on total investment or total resources committed to operations. Profitability ratios are calculated to measure the operating efficiency of the firm. According to Block and Hirt “The income statement is the major device for measuring the profitability of a firm over a period of time.” Measurement of profitability is as essential as the earning of itself for the business concern. Some managerial decision like rising of additional finance, further expansion, problems of bonus and dividend payments rest upon this measurement.

It can be measured for a short term and as well as for a long term. The relation to sales is the good short-term indication of successful growth while profitability in relation to investment is the healthier for long growth of the business. Profitability provides overall performance of a company and useful tool for forecast measurement of a company’s performance. “The overall objective of a business is to earn a satisfactory return/profit on the funds invested in it, while maintaining a sound financial position profitability measures financial success and efficiency of management.”

The importance of profitability performance can be seen from the reality that besides the management and owners of the company, financial institutions, creditors, bankers also look at its profitability.
Appraisal of performance as regards to profitability can be drawn from interpreting various ratios. However there are few factors affected to the firm’s profitability. Each factor in turn will affect the profitability ratio. Diagram No.-6.1, describes factors that affect different profit ratio and shows which ratio relates to explain other ratios.

Diagram No.-4.1

**FACTORS AFFECTING TO PROFITABILITY RATIO**
Above figure stated that every factor affected earning power, directly or indirectly. The reason is one ratio explains to another. In present study profitability ratios can be measured through two group i.e. (1) profitability ratios in relation to capital employed, the examples of sales based profitability ratio are net profit ratio, operation ratio and gross profit ratio and in relation to capital employed and return on owners equity of the company will be discussed below:

4.4.1 Profitability Ratios in Relation to Sales

4.4.1.1 Gross Profit Ratio:

“The excess of the net revenue from sales over the cost of Merchandise sold is called gross profit, gross profit on sales or gross margin” ⁹ this ratio calculated by dividing gross profit by net sales and is usually expressed as a percentage. The formula of gross profit ratio is given below:

\[
\text{GROSS PROFIT RATIO} = \frac{\text{SALES} – \text{COST OF GOODS SOLD}}{\text{SALES}} \times 100
\]

The gross profit ratio highlights the efficiency with which management produces each unit of products as well as it indicates the average spread between the cost of goods sold and the sales revenue. Any fluctuation in the gross profit ratio is the result of a change in cost of goods sold or sales or both. A high gross profit ratio is a mark of effectiveness of management. The gross profit ratio may increase due to any of the below factors.
1. Lower cost of goods sold where sales prices remaining constant.
2. Higher sales prices where cost of goods sold remaining constant.
3. An increase in the proportionate volume of higher margin items
4. A combination of variations in sales prices and costs. While in the case of low profit ratio it may be reflected higher cost of goods sold due to firm’s inability to purchase at favorable terms, over investment in plant and machinery etc. secondly this ratio will also be low due to a decrease in price in the market. Table No.5.1 Shows the gross profit ratio of some selected companies of fertilizer industry in India with the average value.

The gross profit ratio of selected companies of fertilizer industry in India is given in the Table No.4.1. The table shows the gross profit ratio of the selected companies of fertilizer industry.

Table No.:- 4.1
Gross Profit Ratio of selected companies of aluminum companies in India from 2000-01to 2006-07 (In percent)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>43.3</td>
<td>45.63</td>
<td>26.62</td>
<td>26.51</td>
<td>24.65</td>
<td>33.3</td>
<td>21.8</td>
<td>30.3</td>
<td>9.87</td>
<td>32.6</td>
<td>21.82</td>
<td>45.6</td>
</tr>
<tr>
<td>IIC</td>
<td>18.28</td>
<td>16.71</td>
<td>12.93</td>
<td>15.83</td>
<td>1.62</td>
<td>2.7</td>
<td>1.17</td>
<td>9.89</td>
<td>7.72</td>
<td>78.04</td>
<td>1.17</td>
<td>18.3</td>
</tr>
<tr>
<td>MAC</td>
<td>24.76</td>
<td>19.8</td>
<td>32.89</td>
<td>23.8</td>
<td>20.22</td>
<td>30.2</td>
<td>36.3</td>
<td>26.9</td>
<td>6.39</td>
<td>23.8</td>
<td>19.8</td>
<td>36.3</td>
</tr>
<tr>
<td>NAC</td>
<td>51.33</td>
<td>44.86</td>
<td>44.48</td>
<td>48.05</td>
<td>54.53</td>
<td>53.7</td>
<td>60.9</td>
<td>51.1</td>
<td>5.86</td>
<td>11.46</td>
<td>44.48</td>
<td>60.9</td>
</tr>
<tr>
<td>BAC</td>
<td>10.52</td>
<td>7.28</td>
<td>14.09</td>
<td>19.26</td>
<td>20.65</td>
<td>15.4</td>
<td>16.2</td>
<td>14.8</td>
<td>4.69</td>
<td>31.73</td>
<td>7.28</td>
<td>20.7</td>
</tr>
<tr>
<td>Average</td>
<td>29.64</td>
<td>26.86</td>
<td>26.2</td>
<td>26.69</td>
<td>24.33</td>
<td>25.1</td>
<td>27.3</td>
<td>26.6</td>
<td>6.9</td>
<td>35.53</td>
<td>24.33</td>
<td>29.64</td>
</tr>
<tr>
<td>C.V.</td>
<td>57.84</td>
<td>64.83</td>
<td>50.55</td>
<td>47.31</td>
<td>78.47</td>
<td>75.7</td>
<td>82.9</td>
<td>60.5</td>
<td>28.7</td>
<td>71.04</td>
<td>88.21</td>
<td>48.8</td>
</tr>
</tbody>
</table>

Sources: computed from annual reports of respective companies.
Table No.4.1 shows the gross profit ratio in relative terms as percent of net sales. As regards the, HDL the gross profit ratio varies from 21.82 percent to 45.6 percent. It shows the overall fluctuation in the ratio within the study period. The gross profit ratio of HDL was highest in the year 2001-02 the value of the ratio in this year was 45.63. The lowest value of the ratio was in the year 2006-07. From the year 2000-01 the trend of the ratio is declining. In the year 2005-06 the value of the above said ratio was 43.3. The average value of the gross profit ratio of HDL is 30.3. The standard deviation is 9.87 percent and co-efficient of variation 32.6 percent which showed high fluctuation in gross profit ratio during the study period. If so the ratio of the company is fluctuating during the research study.

Table No.4.1 expressed the gross profit ratio or the IIC from 2000-01 to 2006-07. The gross profit ratio of the above said company is very poor and sometimes it shows the near to one percent only which is the sign of poor management of the company. The highest ratio of the company was in the year 2000-01 and the value was 18.3. The lowest value of the ratio is 1.17 in the year 2006-07. So this year shows the very critical for the company. The trend of the ratio is downward from the year 2000-01 but not satisfactory. The average value of gross profit ratio of above said company during the study period is 9.89 which are once again poor. The standard deviation has been 7.72 percent and co-efficient of variation has been 78.04 percent which has shown high fluctuation in gross profit ratio the GFCL.
The given Table No.4.1 shows the gross profit ratio of the MAC from 2000-01 to 2006-07. The trend of the ratio is upward and fluctuated during the study period. The gross profit ratio of the MAC was 36.3 percent in the year 2000-01 which is highest in the year 2006-07. The average value of the ratio is 26.9 with standard deviation of 6.39 and coefficient of variation of 23.8 percent. In the year 2005-06 the value of the ratio was more than the average value of the ratio which is good indication for the better development of the company. The company has maintained its good gross profit ratio during the study period.
The above Table No.4.1 shows the gross profit ratio of NAC from the year 2000-01 to 2006-07. The trend of the above ratio is up-ward. The gross profit ratio of the company is ranged between 44.48 percent in 2001-02 and 60.9 percent in 2006-07 with an average of 51.1. The standard deviation is 5.86 and co-efficient of variation is 11.46 which shows high fluctuation in gross profit ratio of NAC. The gross profit ratio of the company is up to the mark. The company could generate sufficient sales to earn gross profit and by keeping a very low cost of goods sold.

The Table No.4.1 indicates that gross profit ratio of BAC. The trend of the gross profit ratio is fluctuating with an average of 14.8. The gross ratio is 10.52 percent in 2000-01 which then declined to 7.28 percent in 2001-02 and rose to 14.09 percent in 2002-03. The ratio is 19.26 percent in 2003-04 and again it went up to 20.65 percent and in 2004-05 in the last to years of the study period the ratio has been 16.2 percent. The standard deviation is 4.69 percent and co-efficient of variation is minus 31.73. The performance of the company is poor because company could not minimize the cost of goods sales.

On the basis of above analysis it can be said that the gross profit ratio of NAC was the highest followed by HDL, NAC, MAC, BAC and IIC. The IIC Company needs to increase sales turnover and try to control cost of goods sold. The gross profit ratio of IIC was not up to the mark.
Gross Profit Ratio (ANOVA Test)

- **Null Hypothesis:** There is no any significant difference in Gross Profit Ratio of aluminum units under study.

- **Alternative hypothesis:** There is significant difference in Gross Profit Ratio of aluminum units under study.

- **Level of Significance:** 5 percent

- **Critical value:** 2.44

- **Degree of freedom:** 34

**Table No.4.2**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
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<tbody>
<tr>
<td>Between Groups</td>
<td>87.06</td>
<td>6</td>
<td>14.51</td>
<td>0.047</td>
<td>1.000</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>8670.82</td>
<td>28</td>
<td>309.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8757.88</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Since F cal > F critical (at 5% significance level), the null hypothesis is accepted and alternative hypothesis is rejected and hence it is concluded that the Gross Profit ratio does not differ significantly.
4.4.1.2 Operating Profit Ratio:-

This ratio indicates the relationship between operating profit and net sales in the form of percentage. Operating profit arrived at by adjusting all non-operating expenses and incomes in net profit in the other words we can say profit before depreciation and taxes. A consistently high ratio tells us the effective and efficient operation of the business. This ratio helps find out the profit arising out of pure production process i.e. the main business of production and sales. Thereby reflecting the effect of other incomes and expenses included in net profit.

\[
\text{Operation Profit} \\
\text{Operating Profit Ratio} = \frac{\text{Operation Profit}}{\text{Net Sales}} \times 100 \\
\text{Operation profit} = \text{Sales} - (\text{Cost of goods sold} + \text{operational expenditure})
\]
Table No.:4.3

Operating profit Ratio of Selected Companies of the aluminum companies in India from 2000-01 to 2006-07 (In percent)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>HDL</td>
<td>43.49</td>
<td>43.46</td>
<td>18.86</td>
<td>20.93</td>
<td>20.39</td>
<td>18.94</td>
<td>19.37</td>
<td>26.49</td>
<td>11.63</td>
<td>43.89</td>
<td>18.86</td>
<td>43.49</td>
</tr>
<tr>
<td>IIC</td>
<td>12.30</td>
<td>11.41</td>
<td>10.34</td>
<td>11.59</td>
<td>-3.90</td>
<td>-2.77</td>
<td>-3.89</td>
<td>5.01</td>
<td>8.01</td>
<td>159.85</td>
<td>-3.90</td>
<td>12.30</td>
</tr>
<tr>
<td>MAC</td>
<td>11.19</td>
<td>5.82</td>
<td>15.13</td>
<td>14.93</td>
<td>16.20</td>
<td>26.74</td>
<td>37.93</td>
<td>18.28</td>
<td>10.71</td>
<td>58.62</td>
<td>5.82</td>
<td>37.93</td>
</tr>
<tr>
<td>NAC</td>
<td>37.26</td>
<td>23.40</td>
<td>28.93</td>
<td>33.61</td>
<td>45.42</td>
<td>50.05</td>
<td>60.79</td>
<td>39.92</td>
<td>12.97</td>
<td>32.49</td>
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<tr>
<td>BAC</td>
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<td>8.30</td>
<td>18.10</td>
<td>11.25</td>
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<td>8.56</td>
<td>6.99</td>
<td>81.64</td>
<td>-1.74</td>
<td>18.10</td>
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<tr>
<td>Average</td>
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<td>16.89</td>
<td>16.92</td>
<td>17.87</td>
<td>19.24</td>
<td>20.84</td>
<td>25.29</td>
<td>19.65</td>
<td>10.06</td>
<td>75.30</td>
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<td>34.52</td>
</tr>
<tr>
<td>C.V.</td>
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<td>101.41</td>
<td>44.34</td>
<td>55.74</td>
<td>91.24</td>
<td>94.17</td>
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<td>71.83</td>
<td>24.85</td>
<td>67.35</td>
<td>143.71</td>
<td>56.94</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07.
The above Table No.4.3 shows the operating profit ratio of selected companies of aluminum companies in India. The above table shows the operating profit ratio of **HDL** from the year 2000-01 to 2006-07. The trend of the operating profit ratio of the above said company is declining during the study. The highest value of the operating profit ratio of above company was 43.49 in the year 2000-01 and the lowest value of the ratio was 18.86 in the year 2005-06. The average value of the ratio is 26.49 percent with a decreased trend. The standard deviation was 11.63 and co-efficient of variation was 43.89 percent which showed slightly fluctuation in the gross profit ratio. The ratio of the company is satisfactory.

The above Table No.4.3 shows the operating profit ratio of **IIC** from the year 2000-01. The trend of the operating profit ratio of the above said company is slow fluctuating and negative during the study. The highest value of the operating profit ratio of above company was 12.30 percent in the year 2000-01 and the lowest value of the ratio was minus 3.90 percent in the year 2006-07. The standard deviation was 8.01 percent with the average value of the ratio is 5.01 percent. The ratio of the company is satisfactory.

The above Table No.4.3 shows the operating profit ratio of **MAC** from the year 2000-01. The trend of the operating profit ratio of the above said company is decreasing with has been average of 18.28 percent during the study. Operating profit ratio of MAC has been ranged between 37.93 percent in 2006-07 and 5.82 percent in 2001-02. The standard deviation of the ratio was 10.71 percent and Co-efficient of variation was 58.62 percent.
The operating was manifested in Table No.4.3 of NAC. The operating profit ratio was 37.26 percent which the decreased to 23.40 percent in 2000-01 and than it went up to 33.61 percentage in 2003-04. The operating profit ratio was 45.42 percent in 2004-05 and 50.05 percent in 2005-06. The operating profit ratio in the last year has been 60.79 percent. The operating profit ratio showed fluctuating trend with an average of 39.92 percent. The standard deviation was 12.97 percent and Co-efficient of variation was 32.49 percent. The operating profit ratio in all years was very high.

The above Table No.4.3 showed the operating profit ratio of BAC with highly fluctuated trend. The ratio ranged between minus 1.74 percent in 2000-01 and 18.10 percent in 2002004-05 with an average of 8.56 percent. The operating profit ratio in the 2005-06 and 1999-2000 was not so good.
However overall operating profit ratio was not satisfactory due to high cost of goods sold. The standard deviation was 6.99 percent and co-efficient of variation was 81.64 percent. The company should try to control production expenses.

The above Table No.4.3 shows the operating profit ratio of Madras Fertilizers Ltd. from the year 1999-00 to 2005-06. The trend of the operating profit ratio of the above said company is fluctuating during the study. The highest value of the operating profit ratio of above company was 100.99 in the year 2005-06 and the lowest value of the ratio was 75.77 in the year 2002-03. The average value of the ratio is 90.56. The standard deviation was 3.05 percent and 2.87 percent. The ratio of the company is not satisfactory.

On the basis of above analysis a researcher can conclude that the operating was very good in NAC followed by HDL, MAC, BAC and IIC. Companies like IIC and MAC have below average ratio than the group average. These companies need to curb the operating cost.

**Operating Profit Ratio (ANOVA Test)**

**Null Hypothesis:**

There is no any significant difference in Operating Profit Ratio aluminum units under study.

**Alternative hypothesis:**

There is significant difference in Operating Profit Ratio of aluminum units under study.
Level of Significance: 5 percent

- Critical value: 2.45
- Degree of freedom: 34

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
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<td>43.59</td>
<td>0.144</td>
<td>0.99</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>8504.23</td>
<td>28</td>
<td>303.72</td>
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<tr>
<td>Total</td>
<td>8765.77</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above Table no. 4.4, it is clear that difference in between groups and within groups was not significant because the calculated value of ‘F’ (0.144) was lower than the table value of ‘F’ (2.45). Analysis indicates that there were no similarities in operating profit ratio of aluminum units under study.

4.4.1.3 Net Profit Ratio:-

Net Profit Ratio is obtained when operating expenses, interest and taxes are deducted from the gross profit. It indicates that the proportions of sales are left to the proprietors after all costs; charges and expenses have been deducted.

Net profit Ratio is differing from the operating profit ratio to sales ratio in as much as it computed after adding non operating surplus/deficit. (Difference of non operating income and none operating expenses) The net profit ratio is measured by dividing profit after tax by net sales.
Net Profit Ratio = \frac{Profit \ after \ tax}{Net \ Sales} \times 100

Net Profit Margin Ratio establishing relationship between net profit and sales and it indicates management efficiency in administrating, manufacturing and selling the products. This ratio is the overall measure of the firm’s ability to turn each rupees sale into net profit. While the net profit is inadequate, the firm will fail to achieve satisfactory return on owner’s equity, due to various reasons. Such as (a) falling price (b) Rising costs and declining sales. Thus, this ratio is very useful to the proprietors and widely used as a measure of overall profitability.

A high net profit ratio would ensure adequate return to the owners as well as enable a firm to withstand adverse economic conditions when the selling price declining, the cost of production is rising and demand for the products is falling.
## Table No:-4.5

Net Profit Ratio of selected companies of aluminum companies in India from 2000-01 to 2006-07 (In percent)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC</td>
<td>10.71</td>
<td>5.23</td>
<td>11.99</td>
<td>12.25</td>
<td>11.43</td>
<td>18.41</td>
<td>33.52</td>
<td>14.79</td>
<td>9.10</td>
<td>61.55</td>
<td>5.23</td>
<td>33.52</td>
</tr>
<tr>
<td>NAC</td>
<td>28.97</td>
<td>18.22</td>
<td>20.05</td>
<td>23.54</td>
<td>29.99</td>
<td>32.18</td>
<td>39.99</td>
<td>27.56</td>
<td>7.56</td>
<td>27.44</td>
<td>18.22</td>
<td>39.99</td>
</tr>
<tr>
<td>BAC</td>
<td>-5.41</td>
<td>3.24</td>
<td>7.56</td>
<td>7.80</td>
<td>12.17</td>
<td>10.25</td>
<td>9.52</td>
<td>6.45</td>
<td>5.92</td>
<td>91.90</td>
<td>-5.41</td>
<td>12.17</td>
</tr>
<tr>
<td>Average</td>
<td>14.74</td>
<td>13.02</td>
<td>12.12</td>
<td>13.21</td>
<td>13.09</td>
<td>14.73</td>
<td>18.79</td>
<td>14.24</td>
<td>7.30</td>
<td>75.63</td>
<td>12.12</td>
<td>18.79</td>
</tr>
<tr>
<td>S.D.</td>
<td>14.91</td>
<td>10.94</td>
<td>4.86</td>
<td>6.35</td>
<td>11.50</td>
<td>12.46</td>
<td>17.74</td>
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<td>1.32</td>
<td>50.42</td>
<td>10.03</td>
<td>13.53</td>
</tr>
<tr>
<td>C.V.</td>
<td>101.14</td>
<td>84.00</td>
<td>40.12</td>
<td>48.12</td>
<td>87.83</td>
<td>84.61</td>
<td>94.42</td>
<td>66.85</td>
<td>18.04</td>
<td>185.70</td>
<td>54.08</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07.
The above Table No.4.5 shows the Net Profit Ratio of the HDL from the year 2000-01 to 2006-07. During the 7 years study period researcher found many things. The trend of the ratio of above said company was fluctuating in downward direction during the study period. The highest value of the ratio was 30.09 percent in the year 2000-01 and the lowest value of the ratio was 12.21 in the year 2002-03. The average value of the Net Profit ratio of above said company was 18.48 during the study period.

The net profit ratio of IIC was depicted in the Table No.4.5. The net profit ratio was showing negative trend with an average of 3.94 percent. The net profit ratio was 9.36 percent in 2000-01 which went down to 8.75 percent 200-02. The ratio was 8.82 percent in 2002-03 which again slightly rose to 8.34 percent in 2003-04. The ratio was minus 2.35 percent in 2004-05 and 2.09 percent in 2005-06.

The average ratio has been of 3.94 percent with a range of minus 3.25 percent to 9.36 percent the average ratio was below the industry average which was not considered to be good ratio. Company should try to minimize production cost. The standard deviation and coefficient was 6.10 percent and 154.86 Percent which showed high changes in net profit ratio.

The above Table No.4.5 shows the Net Profit Ratio of the MAC from the year 2000-01 to 2006-07. During the 7 years study period researcher founds many things. The trend of the ratio of above said company was fluctuating during the study period. Up to the year 2002-03 the trend was fluctuating and from this year the trend was up ward.
The highest value of the ratio was 33.52 in the year 2006-07 and the lowest value of the ratio was 5.23 in the year 2001-02. The standard deviation and co-efficient were 9.10 percent and 61.55 percent which showed slightly changes. The average value of the Net Profit Ratio of above said company was 14.79 during the study period. The company shows the good performance during the study period.

The above Table No.4.5 shows the Net Profit Ratio of the NAC from the year 2000-01. The ratio showed increasing trend during the study period. The ratio was 28.97 percent which went down to 18.22 percent in 200-05. The ratio was 20.05 percent in 2002-03 and 23.54 percent in 2003-04. The ratio was 29.99 percent in 2004-05 and than it rose to 31.18 percent in 2005-06. The ratio was 39.99 percent in 2006-07 which was the ever highest ratio of the company.

During the 7 years study period researcher found that standard deviation was 7.56 percent along with co-efficient of variation of 27.44 percent. The net profit ratio was satisfactory in the company due to minimum administrative expenses.

The Table No.4.5 showed the net profit ratio of BAC with the fluctuated trend during the research period. The highest net profit ratio found 12.17 percent in 2004-05 and the lowest net profit ratio found of minus 5.41 percent with average of 6.45 percent. The standard deviation and co-efficient were 5.92 percent and 91.90 percent. The company shows the average performance during the study period.
Above analysis explains that the NAC has the highest net profit ratio followed by HDL, MAC, BAC and IIC. IIC and BAC have witnessed very low net profit ratio therefore company needs to have control over the expense.

**Graph No. 4.3 Net-Profit Ratio**

![Graph showing net-profit ratio for different years and companies](image)

**Net Profit Ratio (ANOVA Test)**

**Null Hypothesis:** There is no any significant difference in Net Profit Ratio of aluminum units under study.

**Alternative hypothesis:** There is significant difference in Net Profit Ratio of aluminum units under study.
Level of Significance: 5 percent

Critical value: 2.44

Degree of freedom: 34

Table No.4.6  
Net Profit Ratio (ANOVA Test)

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<th>Source of Variation</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
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<td>24.61</td>
<td>0.17</td>
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<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
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<td>28</td>
<td>144.05</td>
<td></td>
<td></td>
<td></td>
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<td>Total</td>
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<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No.4.6 Indicates there is no significant difference in Net Profit ratio of aluminum units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis is accepted and alternative hypothesis rejected. It can be concluded that there is no high deviation in the Net Profit ratio of aluminum units under study.

4.4.2 Profitability In Relation To Capital Employed:

4.4.2.1 Earning Per Share (EPS) :-

Earning per share is widely used method of measuring profitability of the common shareholders investment it measures the profit available to the equity shareholders on per share basis. The earning per share is calculated by dividing the profit after taxes by total numbers of common shares outstanding.
The earning per share calculations made over years shows whether or not the firms earning power on per share basis have changed over that period. “The earning per share simply shows the profitability of the firm on a per share basis. It does not reflect how much is paid as dividend and how much is retained in business but as a profitability index. It is a valuable and widely used ratio. Thus, the profitability of common shareholders investment can be measured easily by per share. The given table shows the Earning per share of selected companies of the aluminum companies.

An investor can take a decision on the basis of the trend of Earning per share for number years. Earning per share has been calculated here in Rs. Per share basis as the denomination of the face value of shares varies in different companies. Following table shows the analysis of the Earning per Share.\(^{12}\)
Table No.: 4.7

Earning Per Share of selected companies of the aluminum companies in India from 2000-01 to 2006-07 (In rupees)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tr>
<td>HDL</td>
<td>89.83</td>
<td>92.13</td>
<td>61.23</td>
<td>88.60</td>
<td>140.43</td>
<td>16.49</td>
<td>24.34</td>
<td>73.29</td>
<td>43.09</td>
<td>140.43</td>
<td>16.49</td>
<td>140.43</td>
</tr>
<tr>
<td>IIC</td>
<td>15.90</td>
<td>16.46</td>
<td>16.65</td>
<td>18.54</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>9.65</td>
<td>9.06</td>
<td>93.92</td>
<td>0.00</td>
<td>18.54</td>
</tr>
<tr>
<td>MAC</td>
<td>11.62</td>
<td>6.17</td>
<td>13.37</td>
<td>15.84</td>
<td>17.98</td>
<td>35.83</td>
<td>78.53</td>
<td>25.62</td>
<td>25.11</td>
<td>98.00</td>
<td>6.17</td>
<td>78.53</td>
</tr>
<tr>
<td>NAC</td>
<td>9.77</td>
<td>6.35</td>
<td>7.32</td>
<td>10.93</td>
<td>18.61</td>
<td>23.54</td>
<td>35.83</td>
<td>16.05</td>
<td>10.72</td>
<td>66.81</td>
<td>6.35</td>
<td>35.83</td>
</tr>
<tr>
<td>BAC</td>
<td>0.00</td>
<td>0.85</td>
<td>2.92</td>
<td>2.99</td>
<td>5.78</td>
<td>4.63</td>
<td>6.25</td>
<td>3.35</td>
<td>2.37</td>
<td>70.88</td>
<td>0.00</td>
<td>6.25</td>
</tr>
<tr>
<td>S.D.</td>
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<td>23.49</td>
<td>34.73</td>
<td>58.61</td>
<td>14.45</td>
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<td>16.25</td>
<td>17.31</td>
<td>6.75</td>
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<td>C.V.</td>
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<td>156.96</td>
<td>115.73</td>
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<td>89.78</td>
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<td>109.05</td>
<td>89.95</td>
<td>22.28</td>
<td>116.26</td>
<td>97.63</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07.
The above Table No.:4.7 showed the Earning per Share of the selected companies of the aluminum companies in India from the year 2000-01 to 2006-07. Tables No.:5.7 showed EPS of HDL. The Earning per share of the HDL showed highly fluctuated trend during the study period. The EPS was Rs.89.83. in 2000-01 which then inclined to Rs. 93.13 in 2000-01. The EPS then went down to 61.23 due to decrease in net profit. The EPS was Rs. 88.60 in 2003-04 and Rs 140.43 In 2004-05. The EPS has gone down to Rs. 16.49 due to decrease in net profit. The EPS was increased and reached at the level of Rs. 24.34 in 2006-07. The average EPS was Rs 73.29 which was good enough compare to industry average of Rs 25.59. The standard deviation was 43.09 percent and Co-efficient was 58.79 percent.

The above Table No.:4.7 showed indicated EPS of 15.90 from 2000-01 to 2006-07 with an average of Rs. 9.65 the EPS Of this company ranged between zero Rs. in 2004-05 and Rs. 18.54 in 2006-07. The standard deviation was 9.06 percent. The EPS was not found in 2005-06 and 2002-03 because in these years the EPS was zero. So company is advised to increase net profit by controlling the expenses.
The above Table No.4.7 showed the Earning per share of the MAC from the year 2000-01 to 2006-07. The EPS trend of the above said company was fluctuating during the study period. From the year 2002-03 the trend of the EPS is upward. The highest value of EPS was 78.53 in the year 2006-07 and the lowest value of the EPS was 6.17 in the year 2001-02. The average value of the EPS was 25.62. The overall trend was considered satisfactory. The standard deviation was 25.11 percent and Co-efficient was 98.00 percent.

The above Table No.:4.7 showed the Earning per share of the NAC from the year 2000-01 to 2006-07. The EPS trend of the above said company was fluctuating during the study period. From the year 2003-04 the trend of the EPS is upward. The highest value of EPS was 35.83 in the year 2006-07.
and the lowest value of the EPS was 6.35 in the year 2001-02. The average value of the EPS was 16.05 with the standard deviation was 10.72 percent and Co-efficient was 66.81 percent. The overall trend was considered satisfactory.

The above Table No.:4.7 showed the Earning per share of the BAC from the year 2000-01 to 2006-07. The EPS trend of the above said company was fluctuating during the study period with an average of Rs. 3.35. The highest value of EPS was 6.25 in the year 1999-00 and the lowest value of the EPS was 0 in many years. The average value of the EPS was 2006-07. The EPS was 0.00 in 2000-01 and Rs. 0.85 in 2001-02. The EPS then rose to Rs. 2.92 in 2002-03. The EPS was again found increased to 2.99 in 2003-04 and 5.78 in 2004-05. The EPS was very good of Rs. 4.63 in 2005-06 and 6.25 which was ever highest EPS generated by the company in the year of 006-07. The trend was considered satisfactory in the last three years of study period.

On the basis of EPS analysis of industry, a researcher has concluded that the performance of EPS was the best of HDL (73.29) followed by MAC and NAC. But companies like IIC, NFL, and BAC need to increase ESP. These companies could not have better control over administrative expenses.
Earning per share (ANOVA Test)

Null Hypothesis:

There is no any significant difference in Earning per share of aluminum units under study.

Alternative hypothesis:

There is significant difference in Earning per share of aluminum units under study.

Level of Significance: 5 percent

Critical value: 2.45

Degree of freedom: 34

Table No.4.8

<table>
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<tr>
<th>Source of Variation</th>
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<th>df</th>
<th>MS</th>
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<th>P-value</th>
<th>F crit</th>
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<td>2.45</td>
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<tr>
<td>Within Groups</td>
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<td>1309.71</td>
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</tr>
<tr>
<td>Total</td>
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<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table No.4.8 Indicates there insignificant difference in earning per share of aluminum units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis is accepted and alternative hypothesis rejected. It can be concluded that there is no high deviation in the Earning per share of aluminum units under study.
4.4.2.2 Return on Capital Employed:

In day to day use the term “capital employed” is used to indicate the total investment in the firm whether owners or borrowed. But the capital employed in a firm may be defined in a number of ways and the two most widely accepted definitions are Gross Capital Employed and Net Capital Employed. Gross Capital Employed usually comprises the total assets used in the business while net capital employed consists of the total assets of the business less its current liabilities.

4.4.2.2.1 Return on gross capital employed:

On the ground that the current liabilities are also a form of capital and all funds must be effectively employed. The Gross Capital Employed concept may be favoured by the analyses. Thus;

\[ \text{Gross Capital Employed} = \text{Fixed Assets} + \text{Current Assets} \]

It may be noted that the total of fixed assets and current assets does not necessarily represents total assets or total liabilities of a company.

Net capital employed:

On the ground that further either only short term creditors or only short term debtors should be included in the capital employed. The net capital employed concept may be favored.
Net Capital Employed = Gross capital employed - Current liabilities

OR

Net Capital Employed = Fixed assets - Net working capital

**Return on gross capital employed:**

As defined earlier, gross capital employed is the total of fixed assets and current assets. Alternatively, it is the quantum of liabilities plus shareholders equity. The numerator, i.e., net profit before interest and taxes has been taken for computing this ratio.
Table No:-4.9

The return on gross capital employed ratio of selected companies of the aluminum companies in India from 2000-01 to 2006-07

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>IIC</td>
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<td>10.45</td>
<td>8.09</td>
<td>9.28</td>
<td>-2.49</td>
<td>-1.70</td>
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<td>4.59</td>
<td>6.55</td>
<td>6.55</td>
<td>142.63</td>
<td>11.30</td>
</tr>
<tr>
<td>MAC</td>
<td>12.05</td>
<td>7.34</td>
<td>10.74</td>
<td>11.11</td>
<td>11.87</td>
<td>20.87</td>
<td>20.55</td>
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<td>5.16</td>
<td>5.16</td>
<td>38.23</td>
<td>7.34</td>
</tr>
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<td>NAC</td>
<td>15.14</td>
<td>8.66</td>
<td>10.28</td>
<td>12.82</td>
<td>18.39</td>
<td>20.02</td>
<td>26.17</td>
<td>15.93</td>
<td>6.09</td>
<td>6.09</td>
<td>38.26</td>
<td>8.66</td>
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<tr>
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<td>0.84</td>
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<td>4.00</td>
<td>4.63</td>
<td>4.96</td>
<td>5.23</td>
<td>3.63</td>
<td>2.34</td>
<td>2.34</td>
<td>64.41</td>
<td>-0.16</td>
</tr>
<tr>
<td>Average</td>
<td>11.54</td>
<td>8.84</td>
<td>9.45</td>
<td>10.42</td>
<td>9.61</td>
<td>11.46</td>
<td>13.76</td>
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<td>4.60</td>
<td>4.60</td>
<td>60.28</td>
<td>8.84</td>
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<tr>
<td>S.D.</td>
<td>7.28</td>
<td>5.79</td>
<td>2.49</td>
<td>4.14</td>
<td>8.52</td>
<td>9.75</td>
<td>12.05</td>
<td>6.13</td>
<td>1.90</td>
<td>1.90</td>
<td>48.91</td>
<td>6.30</td>
</tr>
<tr>
<td>C.V.</td>
<td>63.04</td>
<td>65.50</td>
<td>26.32</td>
<td>39.74</td>
<td>88.61</td>
<td>85.08</td>
<td>87.54</td>
<td>57.16</td>
<td>41.40</td>
<td>41.40</td>
<td>124.24</td>
<td>48.21</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07
The Above Table No.4.9 showed Return on gross capital employed of **HDL**. The trend of this ratio was decreasing during the research period. The standard deviation was 2.86 percent with an average of 17.89 percent. The return on gross capital employed was 19.4 percent in 2000-01 and 16.92 percent in 16.92. The ratio rose to 14.87 percent in 2003-04 and reached at the level of 15.65 percent in 2004-05. The ratio then after declined to 13.14 percent in 2005-06 and 19.62 percent in 2006-07. In the last year the ratio was very the highest. Thus the ratio ranged between 12.26 percent in 2002-03 and 19.62 percent 2006-07.

The return on gross capital employed of **IIC** was shown in the above Table No.4.9. The ratio ranged between minus 2.77 percent in 2006-07 and 11.30 percent in 2000-01. The average ratio was 4.59 percent with a standard deviation of 6.55 percent. The ratio was 10.45 percent in 2001-02 and then it went down 8.09. The ratio was 9.28 percent in 2003-04 and minus 2.49 percent in 2004-05. The ratio has been minus 1.70 percent in 2005-06 which was then after decreased to minus 2.77 percent in 2006-07.

The above Table No.4.9 showed return on gross capital employed of **MAC**. The ratio showed very fluctuating trend with an average of 13.50 percent during the study period. The ratio was 12.05 percent in 2000-01 and slipped to 7.34 percent in 2001-02. The ratio was 10.74 percent in 2002-03 and 11.11 percent in 2003-04. The after it rose and reached to the highest level of 20.87 percent in 2005-06 and 20.55 percent 2006-07. The ratio was very good in the last three years of study period. The standard deviation was 5.16 percent and co-efficient of variation was 38.23 percent.
The above Table No.4.9 shows the gross capital employed ratio of NAC from 2000-01 to 2006-07. The trend of the above said ratio was mixed during the study period. The trend was downward in the beginning of the study and in the year 2003-04 it was upward further it increases in the year 2004-05. The highest value of the ratio was 26.17 percent in the year 2006-07 and the lowest value of the ratio was 8.66 percent the year 2001-02.

The average value of the ratio was 15.93 with a standard deviation of 6.09 percent co-efficient of variation of 38.26. The overall position was good.

The above Table No.4.9 shows the gross capital employed ratio of BAC from 2000-01 to 2006-07. The trend of the above said ratio was mixed during the study period. The trend was upward up to the year 2002-03 than it declines up to the year 2003-04 further it increases till the end of study period. The highest value of the ratio was 5.89 in the year 2002-03 and the lowest value of the ratio was -0.16 in the year 2000-01. The average value of the ratio was 3.63 which were higher than the industry average. The standard deviation was 2.34 percent and co-efficient of variation of 64.41 percent. The ratio was not as good as it should be for these types of industry

On the basis of above analysis it van be said that the HDL could earn highest return on gross capital employed followed by NAC, MAC, IIC and BAC. The performance of IIC and BAC was below average than industry average.
Return on Gross Capital Employed Ratio (ANOVA Test)

**Null Hypothesis:**

There is no any significant difference in Return on Gross Capital Employed Ratio of aluminum units under study.

**Alternative hypothesis:**

There is significant difference in Return on Gross Capital Employed Ratio of aluminum units under study.

**Level of Significance:** 5 percent

**Critical value:** 2.45

**Degree of freedom:** 34
### Table no.4.10
**Return on Gross Capital Employed Ratio (ANOVA Test)**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>84.61</td>
<td>6</td>
<td>14.10</td>
<td>0.234</td>
<td>0.96</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1689.78</td>
<td>28</td>
<td>60.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1774.39</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above Table no.4.10, it is clear that difference in between groups and within groups was not significant because the calculated value of ‘F’ (0.234) was lower than the table value of ‘F’ (2.45). Analysis indicates that there were similarities in Return on Gross Capital Employed Ratio of aluminum units under study.
4.4.2.2 Return on Net Capital Employed:-

Net Capital Employed is the total of fixed assets plus current assets minus current liabilities. Alternatively, it is the quantum of permanent capital e.g. Non current liabilities plus shareholder’s equity. The numerator, e.g. Net profit before interest and taxes but after depreciation has been taken for computing this ratio.

\[
\text{Return on Net Capital Employed} = \frac{\text{Net Profit before interest and taxes}}{\text{Net Capital Employed}} \times 100
\]

This ratio is the best of overall profitability and efficiency of the business firm. A company with high rate of return on capital employed will be in a position to capitalise; e.g. it can take advantage of all favourable market opportunities.
Table no.4.11
The Return on net capital employed ratio of selected companies of the aluminium companies in India from 2000-01 to 2006-07

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>22.04</td>
<td>19.76</td>
<td>16.18</td>
<td>15.80</td>
<td>19.87</td>
<td>17.96</td>
<td>21.86</td>
<td>19.07</td>
<td>2.52</td>
<td>19.07</td>
<td>15.80</td>
<td>22.04</td>
</tr>
<tr>
<td>IIC</td>
<td>15.66</td>
<td>15.16</td>
<td>9.58</td>
<td>14.26</td>
<td>-0.29</td>
<td>-7.65</td>
<td>0.00</td>
<td>6.67</td>
<td>9.28</td>
<td>139.08</td>
<td>-7.65</td>
<td>15.66</td>
</tr>
<tr>
<td>MAC</td>
<td>16.80</td>
<td>13.01</td>
<td>19.15</td>
<td>16.16</td>
<td>25.72</td>
<td>55.98</td>
<td>70.07</td>
<td>30.98</td>
<td>22.60</td>
<td>72.94</td>
<td>13.01</td>
<td>70.07</td>
</tr>
<tr>
<td>NAC</td>
<td>22.91</td>
<td>16.75</td>
<td>18.56</td>
<td>25.93</td>
<td>42.99</td>
<td>46.54</td>
<td>53.96</td>
<td>14.97</td>
<td>46.04</td>
<td>16.75</td>
<td>16.75</td>
<td>53.96</td>
</tr>
<tr>
<td>BAC</td>
<td>0.00</td>
<td>1.81</td>
<td>14.10</td>
<td>11.82</td>
<td>8.70</td>
<td>8.90</td>
<td>6.40</td>
<td>7.39</td>
<td>5.09</td>
<td>68.86</td>
<td>0.00</td>
<td>14.10</td>
</tr>
<tr>
<td>Average</td>
<td>15.48</td>
<td>13.30</td>
<td>15.51</td>
<td>16.79</td>
<td>19.40</td>
<td>24.35</td>
<td>30.46</td>
<td>19.33</td>
<td>10.89</td>
<td>68.02</td>
<td>13.30</td>
<td>30.46</td>
</tr>
<tr>
<td>S.D.</td>
<td>9.21</td>
<td>6.88</td>
<td>3.88</td>
<td>5.39</td>
<td>16.57</td>
<td>26.44</td>
<td>30.42</td>
<td>12.38</td>
<td>8.06</td>
<td>46.27</td>
<td>10.85</td>
<td>25.34</td>
</tr>
<tr>
<td>C.V.</td>
<td>59.52</td>
<td>51.72</td>
<td>25.00</td>
<td>32.07</td>
<td>85.44</td>
<td>108.60</td>
<td>99.88</td>
<td>64.03</td>
<td>74.04</td>
<td>68.02</td>
<td>143.05</td>
<td>72.05</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07

139
Table No. 4.11 showed return on net capital employed of HDL. The ratio showed fluctuating and downward trend during the study period. The ratio was 22.04 percent in 2000-01 and 19.76 percent in 2001-02. The ratio gain rose to 16.18 percent in 2002-03 and it was reached at the level of 15.80 percent in 2003-04. The ratio then after increased to 19.87 percent in 2004-05 and 17.96 percent in 2005-06. The ratio was then after rose to 21.86 percent with an average of 19.07 percent. The standard deviation was 2.52 percent and co-efficient of variation was 13.20 percent.

Table No. 4.11 depicted the return on net capital employed of IIC. The ratio showed decreasing trend from 2000-01 to 2006-07. The ratio was 15.66 percent in 2000-01 and then it went down to 15.16 percent in 2001-02.
The ratio again decreased to 9.58 percent in 2002-03 which very low and minus -0.29 percent in 2004-05. The ratio then after marginally declined and reached at bottom level to minus 7.65 percent in 2005-06. The ratio ranged between minus -7.65 percent in 2005-06 and 15.66 percent in 2000-01 with an average of 6.67 percent. The standard deviation was 9.28 percent and co-efficient of variation was 139.08 percent.

Table No. 4.11 showed return on net capital employed of MAC with an average of 30.98 percent. The ratio was 16.80 percent in 2000-01 and then it declined to 13.01 percent in 2000-01. The ratio was 19.15 percent in 2002-03 and it went down to 16.16 percent in 2003-04. The ratio was showing increasing trend from 2004-05 to 2006-07. The ratio was showing progressive trend during the study period. The ratio was very good and company’s earning capacity was good.

Return on net capital employed of NAC was manifested in Table No. 4.11. The average ratio was 32.52 percent with fluctuating trend during the study period. The ratio was 22.91 percent in 2000-01 which rose to 16.75 percent in 2001-02 and then it went up to 18.56 percent in 2002-03. The ratio has been slightly fluctuated and went up to 25.93 percent and 42.99 percent in 2003-04 and 2004-05 respectively. The ratio was 46.54 percent in 2005-06 and 53.96 percent in 2006-07 which was the ever highest during the study period. The standard deviation was 14.97 percent and co-efficient of variation was 46.04 percent. The ratio ranged between 16.75 percent in 2001-02 and 53.96 percent in 2006-07.

Table No. 4.11 expressed the return on net capital employed of BAC was 0.00 percent in 2000-01 which was 1.81 percent in 2001-02. The ratio rose
to 14.10 percent in 2002-03. The ratio was decreased to 11.82 percent in 2003-04. The ratio was 8.70 percent in 2004-05 and then due to control over expenses, the ratio increased to 8.90 percent in 2005-06. The ratio was very in the last year of study period. The return on net capital employed was very good in this company. The standard deviation was 5.09 percent and coefficient of variation was 68.86 percent.

On the basis of analysis, the return on net capital was found highest of 32.52 percent in NAC and the lowest return on net capital employed was found of 6.67 percent in IIC. The Return on net capital employed was below industry average of IIC, BAC and HDL.

**Return on Net Capital Employed Ratio (ANOVA Test)**

**Null Hypothesis:**

There is no any significant difference in Return on Net Capital Employed Ratio of aluminum units under study.

**Alternative hypothesis:**

There is significant difference in Return on Net Capital Employed Ratio of aluminum units under study.
Level of Significance: 5 percent

Critical value: 2.45

Degree of freedom: 34

Table no.4.12
Return on Net Capital Employed Ratio (ANOVA Test)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1105.91</td>
<td>6</td>
<td>184.32</td>
<td>0.62</td>
<td>0.71</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>8302.10</td>
<td>28</td>
<td>296.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9408.01</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No.4.12 showed the F calculated value > F critical (at 5% significance level), the null hypothesis is accepted and alternative hypothesis is rejected and hence it is concluded that the Return on Net Capital Employed ratio of aluminum companies does not differ significantly.

4.4.2.3 Return on Net Worth:-

Return on net worth is also known as return on shareholders equity. This ratio shows how the firm will have used the resources of owners. It may true that this ratio is one of the most relationship in financial analysis. This return on owner’s equity is calculated by following formula:

\[
\text{Return on Net Worth} = \frac{\text{Net Profit after Taxes and Interest}}{\text{Net Worth}} \times 100
\]

Where, owner’s equity = share capital + reserve & surplus.
This ratio indicated the extent to which this objective has been fulfilled. This ratio reflects great interest to present as well as prospective shareholders and also important for management, because management has responsibility of maximizing the owners wealth the market place.

This ratio would be compared with the ratios for other similar companies as well as the industry average. Thus, it shows the relative performance and strength of the company.

According to Weston and Brigham “The usual standard of the return on owners fund is 10-15 percent.”

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>16.58</td>
<td>15.31</td>
<td>12.08</td>
<td>12.86</td>
<td>18.31</td>
<td>19.17</td>
<td>23.29</td>
<td>16.80</td>
<td>3.87</td>
<td>23.06</td>
<td>12.08</td>
<td>23.29</td>
</tr>
<tr>
<td>IIC</td>
<td>14.24</td>
<td>14.13</td>
<td>9.82</td>
<td>13.93</td>
<td>-0.30</td>
<td>-8.20</td>
<td>0.00</td>
<td>6.23</td>
<td>9.02</td>
<td>144.79</td>
<td>-8.20</td>
<td>14.24</td>
</tr>
<tr>
<td>MAC</td>
<td>20.70</td>
<td>14.26</td>
<td>34.06</td>
<td>38.39</td>
<td>30.31</td>
<td>49.74</td>
<td>66.35</td>
<td>36.26</td>
<td>17.60</td>
<td>48.53</td>
<td>14.26</td>
<td>66.35</td>
</tr>
<tr>
<td>NAC</td>
<td>19.37</td>
<td>14.79</td>
<td>15.94</td>
<td>20.87</td>
<td>29.21</td>
<td>29.50</td>
<td>35.05</td>
<td>23.53</td>
<td>7.74</td>
<td>32.87</td>
<td>14.79</td>
<td>35.05</td>
</tr>
<tr>
<td>BAC</td>
<td>0.00</td>
<td>2.99</td>
<td>9.87</td>
<td>16.91</td>
<td>16.52</td>
<td>14.23</td>
<td>18.24</td>
<td>11.25</td>
<td>7.24</td>
<td>64.32</td>
<td>0.00</td>
<td>18.24</td>
</tr>
<tr>
<td>C.V.</td>
<td>58.62</td>
<td>42.48</td>
<td>62.41</td>
<td>50.62</td>
<td>65.71</td>
<td>101.56</td>
<td>86.05</td>
<td>62.10</td>
<td>56.30</td>
<td>77.31</td>
<td>76.77</td>
<td>65.91</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07.

The above Table No. 4.13 showed the ratio of rerun on net worth of HDL which also indicated fluctuated trend with an average of 16.80 percent. The highest ratio had been found of 23.29 percent in 2006-07 and the lowest ratio had also been found of 12.08 percent in 2002-03.
The standard deviation was 3.87 percent with co-efficient of 23.06 percent. The ratio was quite satisfactory.

The ratio of return on net worth of IIC was seen in above Table No. 4.13. The ratio explained the progressive trend with an average of 6.23. The ratio was 14.24 percent in 2000-01 and rose to 14.13 percent in 2001-02. The ratio slipped to 9.82 percent in 2002-03 and then it went high to 13.93 percent in 2003-04. The ratio was highly fluctuated and went down to minus to 0.30 percent in 2004-05 and minus 8.20 percent in 2005-06.

The ratio was ranged between -8.20 percent and 14.24 percent during the study period. The ratio showed standard deviation of 9.02 percent and co-efficient of variation of 144.79. The company had shown bad performance in the last three years.

The above Table No. 4.13 showed Return on net worth of MAC. The ratio showed fluctuated and progressive trend with an average of 36.26 percent. The return on net worth ratio ranged between 14.26 percent in 2001-02 and 66.35 percent in 2006-07. The standard deviation was 17.60 percent and co-efficient of variation was 48.53 percent. The average ratio was above average of industry.

The above Table No. 4.13 showed return on net worth of NAC with increased trend. The average ratio was 23.53 percent which was the best. The ratio was 19.37 percent in 2000-01 but it was lightly declined to 14.79 percent in 2001-02. The ratio again indicated growth and reached to 20.87 percent in 2003-04. The ratio was 29.21 percent in 2004-05 and 29.50 percent in 2005-06.
The ratio again increased to previous year to 35.05 percent in 2005-06. The standard deviation was 7.74 percent and co-efficient of variation was 32.87 percent. The average ratio was above average of industry.

The above Table No. 4.13 indicated the return on net worth of BAC with an average of 11.25 percent. The ratio showed positive trend during the study period. The ratio was 0.00 percent in 2000-01 and the after it showed high of 2.99 percent in 2001-02 and 9.87 percent in 2002-03 the ratio again found increased to 16.91 percent in 2003-04. The ratio was 14.23 percent in 2005-06. The was the highest of 18.24 percent in 2006-07.

The ratio had been on an average of 11.25 percent with standard deviation of 7.24 percent. The coefficient variation was 64.32 percent which showed business risk involved in the company.

An analysis indicates that the highest ratio of return on net worth was found in MAC followed by NAC, BAC, and IIC. The companies like IIC, BAC, and NAC need to increase net profit in order to increase return on net worth.
GRAPH NO. 4.7 RETURN ON NET-WORTH

The bar chart illustrates the return on net-worth for different years, with each year represented by a set of bars. The chart shows the ratio (%) for each year, with years ranging from 2000-01 to 2006-07. The ratio values are indicated on the y-axis, ranging from 0 to 80.0%. The x-axis lists the years from 2000-01 to 2006-07, with an additional bar labeled 'AVE.' at the end, presumably indicating an average or summary value for the period.
Return on Net worth Ratio (ANOVA Test)

**Null Hypothesis:** There is no any significant difference in Return on Net worth Ratio of aluminum units under study.

**Alternative hypothesis:** There is significant difference in Return on Net worth Ratio of aluminum units under study.

Level of Significance: 5 percent

Critical value: 2.45

Degree of freedom: 34

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>864.92</td>
<td>6</td>
<td>144.15</td>
<td>0.67</td>
<td>0.68</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6067.90</td>
<td>28</td>
<td>216.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6932.81</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table no.4.14 indicates there was significant difference in Return on Net worth Ratio of aluminum units under study because the calculated value of ‘F’ was lower than table value so, null hypothesis is accepted and alternative hypothesis rejected. It can be concluded that in Return on Net worth Ratio of aluminum units under study are not deviated.
4.4.2.4 Dividend Pay Out Ratio:-

It is also known as Pay out Ratio. It measures the relationship between the earnings belonging to the ordinary shareholders and the dividend paid to them. In other words, the Dividend Pay out Ratio shows what percentage share of the net profits after taxes and preference dividend is paid out as dividend to the equity holders. It can be calculated by dividing the total dividend paid to the owners by the total profits / earnings available to them. Alternatively, it can be found out by dividing Dividend per Share by the Earning per Share. Thus,

\[
\text{Dividend Pay Out Ratio} = \frac{\text{Total Dividend to Equity Holders (Cash Dividend)}}{\text{Total Net Profits belonging to Equity Holders}} \times 100
\]

OR

\[
\text{Dividend Pay Out Ratio} = \frac{\text{Dividend per Ordinary Share (D.P.S.)}}{\text{Earnings per Share (E.P.S.)}} \times 100
\]

If the Dividend Pay out Ratio is subtracted from 100, it will give what percentage share of the net profits are retained in the business. To illustrate, if the net earnings after taxes and preference dividends are Rs5 lakhs and the dividends paid to the ordinary shareholders amount to Rs.3 lakhs, the D/P = 60%. This implies that 40% of the profits of the firm are retained and 60% distributed as dividends.
Similarly, if the DPS is Rs.3 and EPS Rs.5, the D/P is 60%. While 60% profits are used to pay dividend, 40% ploughed back. The Dividend Pay out Ratio is an important and widely used ratio. Investors have a marked preference for higher Dividend Pay out Ratio. The pay out ratio can be compared with the trend or the years or an inter-firm and intra-industry comparison would throw light on its adequacy.
Table no.4.15
Dividend pay-out ratio of selected companies of the aluminum companies in India from 2000-01 to 2006-07

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>13.4</td>
<td>14.65</td>
<td>22.05</td>
<td>18.6</td>
<td>14.2</td>
<td>13.3</td>
<td>6.98</td>
<td>14.75</td>
<td>4.7</td>
<td>31.9</td>
<td>6.98</td>
<td>22.1</td>
</tr>
<tr>
<td>IIC</td>
<td>25.2</td>
<td>24.29</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7.063</td>
<td>12</td>
<td>171</td>
<td>0</td>
<td>25.2</td>
</tr>
<tr>
<td>MAC</td>
<td>60.3</td>
<td>64.79</td>
<td>37.4</td>
<td>34.7</td>
<td>30.6</td>
<td>22.3</td>
<td>15.3</td>
<td>37.91</td>
<td>18</td>
<td>48.6</td>
<td>15.3</td>
<td>64.8</td>
</tr>
<tr>
<td>NAC</td>
<td>40.9</td>
<td>62.96</td>
<td>82.01</td>
<td>36.6</td>
<td>21.5</td>
<td>21.2</td>
<td>20.9</td>
<td>40.88</td>
<td>24</td>
<td>57.9</td>
<td>20.9</td>
<td>82</td>
</tr>
<tr>
<td>BAC</td>
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<td>0</td>
<td>5</td>
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<td>1.9</td>
<td>265</td>
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<tr>
<td>Average</td>
<td>27.9</td>
<td>33.34</td>
<td>28.29</td>
<td>19</td>
<td>13.3</td>
<td>11.4</td>
<td>8.64</td>
<td>20.26</td>
<td>12</td>
<td>115</td>
<td>8.64</td>
<td>33.3</td>
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<tr>
<td>S.D.</td>
<td>23.5</td>
<td>29.19</td>
<td>33.94</td>
<td>16.7</td>
<td>13.4</td>
<td>11</td>
<td>9.32</td>
<td>18.19</td>
<td>9.1</td>
<td>100</td>
<td>8.33</td>
<td>28.9</td>
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<tr>
<td>C.V.</td>
<td>84.2</td>
<td>87.57</td>
<td>120</td>
<td>87.9</td>
<td>101</td>
<td>96.2</td>
<td>108</td>
<td>89.76</td>
<td>75</td>
<td>87.2</td>
<td>96.5</td>
<td>86.7</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07.
Table No. 4.14 showed Dividend pay-out ratio of HDL during the study period. The ratio was showing decreasing trend during the study period. The ratio ranged between 6.98 percent in 2006-07 and 22.05 percent in 2002-03. The average ratio was 14.75 percent with standard deviation of 4.705 percent and coefficient of variation of 31.902 percent.

Dividend pay-out ratio of IIC was manifested in the table No. 4.14. The ratio was showing highly fluctuated trend with an average of 7.063 percent. The ratio was the highest of 25.15 percent in 2000-01. But in the years of 2002-03, 2003-04, 2004-05, and 2006-07 the ratios were zero due to negative net profit. The company should try to lower the administrative cost.
The above table showed Dividend payout ratio of MAC from 2000-01 to 2006-07. The ratio showed declining trend with an average of 37.91 percent. The ratio ranged between 15.28 percent in 2006-07 and 64.79 percent in 2001-02. The ratio was the good in years of first three years of study period then after it has gone down.

The above table showed dividend pay out ratio of NAC with fluctuated and downward trend during the study period. The ratio was 40.94 percent 2000-01 and 62.96 percent in 2001-02. The ratio was highly rose to 82.01 percent in 2002-03 and then it has gone down to 36.59 percent in 2003-04. The ratio was 21.49 percent in 2004-05 and 21.24 percent in 2005-06. The ratio was 20.93 percent in the last year of study period. The ratio ranged between 20.93 percent and 82.01 percent with an average of 40.88 percent. The standard deviation was of 23.65 percent and coefficient of variation of 57.864 percent.

The dividend pay out ratio was zero in the years of study period. The company could generate enough revenue for the betterment of the stakeholders. To enhance the value of firm and shareholder company should increase profit.
CONCLUSION:

Chapter titled “analysis of profitability” describes the conceptual framework of financial efficiency and profitability. Financial efficiency is the ability of a given investment to earn a return from its use. It’s vital instrument to measure not only the business performance but also overall efficiency in its concerned.

In present study seven types of measurement tools of financial efficiency were discussed i.e. Gross profit ratio, operating profit ratio, net profit ratio, earning per share, return on gross capital employed, return on net capital employed, return and return on net worth. Generally, Earning per share ratio uses widely and famous. The present study showed concept. Importance and measurement tools for profitability performance for measure the efficiency of business organization.
REFERENCES


CHAPTER 5

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CHAPTER – 5
ANALYSIS OF FINANCIAL STRUCTURE

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5.2 Assets Structure and Capital Structure

5.3 Financial Structure Analysis
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   5.3.2 Long-term debt equity ratio
   5.3.3 Financial leverage Ratio
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   5.3.7 Interest coverage ratio

• Conclusion

• References
CHAPTER 5

ANALYSIS OF FINANCIAL STRUCTURE

This chapter covers concept of financial structure – Analysis of Assets and Capital structure – Analysis of Long Term and Short Term Funds - Analysis of Various Capital Structure ratios.

5.1 CONCEPT OF FINANCIAL STRUCTURE:

According to John and Mayor “financial structure” of a business as consisting three elements assets, liabilities and capital. The financial structure provides an insight into the various types of sources tapped to finance the total assets employed in a business enterprise that part of financial which represents long-term sources is known as “capital structure.” This term refers to make up of long–term funds as represented by the equity share capital, preference share capital and long-term debt. To circumscribe the real area of the term “Capital Structure.” it may be necessary to distinguish it from term “assets structure,” the assets structure refers to make-up of total assets as represented by fixed assets and current assets.

Since the balance sheet is a detailed form of fundamental or structure equation. It sets forth the financial structure of an enterprise. It states the nature and amount of each of the various assets of the liabilities and of the property interest of the owner. Stating the nature of the assets, liabilities and capital is not difficult as their amount.
The financial structure can be made initially from the point of view of the time for which funds are needed. An enterprise needs funds for financing shot-term and long–term requirements. However, view is not consistent regarding the duration of each type of finance. The financial structure line is often arbitrary, hazy, and vague. Financial structure includes, therefore, both the sources of finance, i.e., long-term and short-term.

From the angle of time there may be short-term capital. The short-term sources will be employed by an enterprise when the size of the funds is such as to generate sufficient cash flow to retire debt within short payment period of a year. They are invested in the current assets as a matter of policy as the current assets are automatically converted into cash during outline business operations.

Long–term sources represent permanent or long–term capital. It is normally contended that if the period of debts is long enough to allow for probable major changes in the nature of business and the repayment of debts is not within a period for which tentative business plan can be worked out, It should be included in the long term category. Financing of periods in excess of 7-10 years can be included in the long –term finance category. Though these periods will vary among various firms and industries, long –term finance may be for a period extending beyond five or seven years. However, if the enterprise is stables like the utility undertakings then the period should not be less than ten years if it is to be included in the category of long –term finance.
Probably, Gesternberg has used the term “capital structure” and “financial structure” interchangeably. According to him financial structure also refers to make up of permanent capital of the Firm.  

Capital structure means the financial plan of a company in which the various sources of capital are mixed up in such a proportion that they provide a distinct set-up most suitable to the requirements of that particular company. The task of framing capital structure involves determination of the right proportion in which different securities should be blended.

Each corporate security has its own merits and demerits. It may be remarked that too much induction on any type of security in the capital structure of a company may prove unprofitable or risky subsequently, for example if the promoters decide to carry on business mainly with the help of equity capital without adequate debt capita, the company may forgo the advantage of “trading on equity” and thus may not fulfill the objectives of the maximum return to owners, on the other hand if a company with fluctuating income has a high capital leverage and it will undertake a greater risk. Such a capital structure will no doubt maximize the return to owners, but in lean years it would make the position of the company very critical, because the net income might not be enough to meet even the fixed change obligations on preference shares or debentures.

Undoubtedly, there should be a uniform capital structure, which suits the requirements of all companies. In other words, the capital structure has to be tailored in such a way so as to suit the needs of a particular company. Thus a model capital structure is possible only for such a Group of Companies, which has similar characteristics.
5.2 ASSETS STRUCTURE AND CAPITAL STRUCTURE:

ASSETS STRUCTURE:

The term “assets structure” refers to the right hand side of the balance sheet. It is represented by total capital employed in the business. It covers various fixed and current assets with which the firm is carrying on its business activity. In other words, it refers to makeup the total assets represented by fixed and current assets. Assets structure has great importance in the manufacturing and basic industries like aluminum industry because these industries require large investment in fixed assets, land, buildings and machinery and relatively less receivable and inventories.

CAPITAL STRUCTURE:

The capital structure is used to represent the proportionate relationship between the various long-term forms of financing, such as debentures, long-term debt, Preference capital and equity capital reserve and surplus. The term capital structure is frequently used to indicate the long-term sources of funds employed in a business enterprise. In other words, it can be said that it represents permanent financing of the concern. This is usually measured by subtracting current liabilities from total assets. Thus, capital structure, general reserve, preference share and long-term debts.
5.3 FINANCIAL STRUCTURE ANALYSIS

Structural ratios are based on the allocation of debt and equity in the financing pattern of firm’s assets. Capital structure of the borrower has strong implications.

5.3.1 Total Debt Equity Ratio:-

Total Debt Equity ratio is to take all types of debts (long-term and short-term) in place of long term debts only. The argument in favour of this view is that like long-term debts, short terms debts are also received from outside creditors and they add to the financial risk. Similarly, interest is to be paid on short term debts as in case of long-term debts. Besides, the Pressure from short-term creditors is much more on the management.

If we are to include all types of debt, we will call it Total Debt-Equity Ratio which will be computed as follows:

\[
\frac{\text{Total Debts}}{\text{Owners Funds}} \times 100
\]

Total Debts

Total Debt – Equity Ratio = ---------------------- x 100
Owners Funds

Here, liabilities include both long term debts and short term debts. Suppose, the liabilities side of a business shows Debentures Rs.1,00,000; Bank Loan for five years Rs.40,000, then the long term debts are Rs. 1,40,000 and short term debts are of Rs.60,000. If the owned funds are Rs. 2,50,000. Then total debt-equity ratio will be as follows:
Total Debts 2, 00,000
Total Debt-Equity Ratio = --------------- x 100  = --------- x 100  = 80 %
Owned Funds 2, 50,000

The above calculated ratio suggests that for every Rs. 100 shareholders fund, there is total debt of Rs.80. In other words, Proprietors' Funds are more than long-term debts.

A higher ratio means that outside creditors have a larger claim than the owners of the business. The pressure from creditors would increase and their interference will also increase. The company with high-debt position will have to accept stricter conditions from the lenders, while borrowing money.

If this ratio is lower, it is not profitable from the viewpoint of equity shareholders, as benefit of trading on equity is not availed of and the rate of equity dividend will be comparatively lower.

(1) Debt is riskier from the company’s point of view, this is because the debt holders have to be paid irrespective of the profits or losses made.

(2) Employment of debt is advantageous to shareholders in two ways i.e. control is retained by them with a limited stake and their earning will be magnified, when the firm earns a rate higher than the interest rate on the invested funds. This process of magnifying the shareholders return through the employment of debt is called ‘trading’ on equity’.
(3) A firm with higher debt burden will be disadvantageous from a banker’s point of view in two ways i.e. there is greater financing risk because the tangible net worth which is the final buffer between disaster and the bankers investment, is smaller. Also the future borrowing prospects of a highly debt burdened firm are dim.

Thus leverage ratios are calculated to measure the financial risk as the firm’s ability of using debt for the benefit of its shareholders. There are few variations of leverage ratios but they all indicate the extent to which the firm has realized on debt in financing assets, Debt Equity ratio has two versions viz. Term Liabilities/TNW and Total outside Liabilities/TNW. Many arguments can be stated for and against the inclusion of current liabilities in the numerator.

The second version is all encompassing and therefore gives wider picture. Debt Assets Ratio (TOL/TNW) measures the position of the firm’s assets financed by creditors. A high ratio represents a greater risk to creditors. However a very low ratio can also indicate that the company is not using debt to its advantage
Table No.: - 5.1

**Total debt-equity ratio of selected aluminum companies in India from 2000-01 to 2006-007 (Times)**

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>HDL</td>
<td>0.16</td>
<td>0.19</td>
<td>0.31</td>
<td>0.38</td>
<td>0.44</td>
<td>0.50</td>
<td>0.56</td>
<td>0.36</td>
<td>0.15</td>
<td>41.76</td>
<td>0.16</td>
<td>0.56</td>
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<tr>
<td>IIC</td>
<td>0.50</td>
<td>0.50</td>
<td>0.54</td>
<td>0.51</td>
<td>0.49</td>
<td>0.23</td>
<td>0.29</td>
<td>0.44</td>
<td>0.12</td>
<td>28.19</td>
<td>0.23</td>
<td>0.54</td>
</tr>
<tr>
<td>MAC</td>
<td>1.49</td>
<td>1.97</td>
<td>3.59</td>
<td>2.50</td>
<td>0.84</td>
<td>0.34</td>
<td>0.08</td>
<td>1.54</td>
<td>1.25</td>
<td>80.93</td>
<td>0.08</td>
<td>3.59</td>
</tr>
<tr>
<td>NAC</td>
<td>0.22</td>
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<td>0.44</td>
<td>0.28</td>
<td>0.08</td>
<td>0.00</td>
<td>0.00</td>
<td>0.20</td>
<td>0.17</td>
<td>88.79</td>
<td>0.00</td>
<td>0.44</td>
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<tr>
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<td>0.16</td>
<td>0.88</td>
<td>1.99</td>
<td>1.66</td>
<td>1.63</td>
<td>0.96</td>
<td>0.79</td>
<td>82.10</td>
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<tr>
<td>Average</td>
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<td>0.64</td>
<td>1.01</td>
<td>0.91</td>
<td>0.77</td>
<td>0.55</td>
<td>0.51</td>
<td>0.70</td>
<td>0.50</td>
<td>64.35</td>
<td>0.51</td>
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<td>0.76</td>
<td>1.45</td>
<td>0.92</td>
<td>0.73</td>
<td>0.65</td>
<td>0.66</td>
<td>0.55</td>
<td>0.50</td>
<td>27.41</td>
<td>0.09</td>
<td>1.37</td>
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<td>C.V.</td>
<td>105.35</td>
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<td>143.89</td>
<td>100.82</td>
<td>95.61</td>
<td>118.82</td>
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<td>78.79</td>
<td>101.26</td>
<td>42.59</td>
<td>70.00</td>
<td>96.21</td>
</tr>
</tbody>
</table>

Sources: computed from annual report of respective ompanie
The above table No. 5.1 showed Total debt equity Ratio of HDL. The ratio shows fluctuating and progressive trend during the study period. The ratio ranged between 0.16 times in 2000-01 to 0.56 times in 2006-07 with an average of 0.36 times. The average ratio was below the combined average of aluminum industry. This ratio is considered to be good but the company could not take benefit of trading on equity due to less outsiders’ fund.

The total No.5.1 debt equity ratio of IIC reveals also the fluctuating and decreasing trend with an average of 0.44 times. The ratio of the company was increased from 0.50 times in 2000-01 to 0.54 times in 2002-03 and decreased to 0.51 times in 2003-04. For the next two year ratio increased to 0.49 times in 2004-05 and 0.23 times in 2006-07 with the standard deviation of 0.12 percent and co-efficient of variance of 28.19 percent. In the last years of study period, the owner’s equity decreased due to decrease in profit.

The total No.5.1 explains the total debt equity ratio of MAC was fluctuating and declining during the study period. The ratio varied from 0.08 times in 2006-07 to 3.59 times in 2002-03. The average ratio was 1.54 times which was the higher than the aluminum industry. The standard deviation was of 1.25 percent and co-efficient of variance of 80.93 percent. The ratio was good because the financial risk is high as decrease in owner’s capital.
Table no 5.1 indicated the total debt equity ratio of NAC. The ratio showed decreased trend during the study period. The ratio varied from 0.00 times in 2005-06 to 0.44 times in 2002-03. The average ratio was 0.44 times which was the lowest among the selected aluminum companies. In most of years the ratio had been less than 1 times which means that the company had not invested short term debt in fixed assets. Such type of capital budgeting decision was good. The company is advised to increase the net worth to invest in fixed assets.

The above table showed total debt equity ratio of BAC. The ratio indicated progressive trend during the span of research period with an average of 0.96 times. The ratio fluctuated from a lowest 0.16 times in 2002-03 to highest 1.99 times in 2004-05. The average ratio of this unit was above the combined average of aluminum group. The company has the highly fluctuant standard deviation. In the last three year company had invested net worth in fixed asset so company is advised not to increase this ratio to have good rate of return on net worth. The company has more financial charges burden.

From the above performance of HDL, IIC and NAC were better as compared to all other companies. The industry has the highly fluctuant ratio with an average of 0.70 times. The ratio 0.53 times in 2000-01 and 0.64 times in 2001-02. The ratio was more than 1 in the years of 2002-03. The ratio was 0.91 times in 2003-04 and 0.77 times in 2004-05. The ratio was 0.55 times in 2005-06 and 0.51 times in 2006-07.
5.3.2 Long Term Debt Equity Ratios:

This ratio is only another form of proprietary ratio and establishes relationship between the outside long-term liabilities and owners' funds. It shows the proportion of long-term External Equities and Internal Equities. i.e. proportion of funds provided by long-term creditors and that provided by shareholders or proprietors.

**Long term Liabilities**

**Long Term Debt-Equity Ratio** = \[ \frac{\text{Long Term Liabilities}}{\text{Shareholders' Funds}} \] \times 100

**Shareholders' Funds**

Here, liabilities include long term debts only. Suppose, the liabilities side of a business shows: Debentures Rs.1,00,000; Bank Loan for five years
Rs. 40,000, then the long term debts are Rs.1,40,000. If the owned funds are Rs. 2, 50,000. Then the debt-equity ratio will be as follows:

\[
\text{Debt-Equity Ratio} = \frac{\text{Long Term Liabilities}}{\text{Owned Funds}} \times 100 = \frac{1,40,000}{2,50,000} \times 100 = 56\% 
\]

The above calculated ratio suggests that for every Rs.100 shareholders fund, there is Ion--term debt of Rs.56. In other words, Proprietors' Funds are nearly double than long-term debts.

A higher ratio means that outside creditors have a larger claim than the owners of the business. The pressure from creditors would increase and their interference will also increase. The company with high-debt position will have to accept stricter conditions from the lenders, while borrowing money.

If this ratio is lower, it is not profitable from the viewpoint of equity shareholders, as benefit of trading on equity is not availed of and the rate of equity dividend will be comparatively lower.
Table No.: 5.2

Long term debt- equity ratio of selected aluminum companies in India from 2000-01 to 2006-07 (Times)

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>0.15</td>
<td>0.18</td>
<td>0.26</td>
<td>0.34</td>
<td>0.42</td>
<td>0.38</td>
<td>0.43</td>
<td>0.31</td>
<td>0.11</td>
<td>36.78</td>
<td>0.15</td>
<td>0.43</td>
</tr>
<tr>
<td>IIC</td>
<td>0.39</td>
<td>0.39</td>
<td>0.48</td>
<td>0.51</td>
<td>0.49</td>
<td>0.14</td>
<td>0.00</td>
<td>0.34</td>
<td>0.20</td>
<td>57.30</td>
<td>0.00</td>
<td>0.51</td>
</tr>
<tr>
<td>MAC</td>
<td>1.35</td>
<td>1.26</td>
<td>2.53</td>
<td>1.94</td>
<td>0.63</td>
<td>0.31</td>
<td>0.08</td>
<td>1.16</td>
<td>0.89</td>
<td>76.50</td>
<td>0.08</td>
<td>2.53</td>
</tr>
<tr>
<td>NAC</td>
<td>0.21</td>
<td>0.33</td>
<td>0.35</td>
<td>0.22</td>
<td>0.08</td>
<td>0.00</td>
<td>0.00</td>
<td>0.17</td>
<td>0.15</td>
<td>85.92</td>
<td>0.00</td>
<td>0.35</td>
</tr>
<tr>
<td>BAC</td>
<td>0.25</td>
<td>0.17</td>
<td>0.16</td>
<td>0.83</td>
<td>1.95</td>
<td>1.63</td>
<td>1.89</td>
<td>0.98</td>
<td>0.82</td>
<td>83.85</td>
<td>0.16</td>
<td>1.95</td>
</tr>
<tr>
<td>Average</td>
<td>0.47</td>
<td>0.47</td>
<td>0.76</td>
<td>0.77</td>
<td>0.71</td>
<td>0.49</td>
<td>0.48</td>
<td>0.59</td>
<td>0.43</td>
<td>68.07</td>
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<td>0.77</td>
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<td>S.D.</td>
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<td>0.45</td>
<td>1.00</td>
<td>0.69</td>
<td>0.72</td>
<td>0.65</td>
<td>0.81</td>
<td>0.45</td>
<td>0.39</td>
<td>20.82</td>
<td>0.08</td>
<td>1.01</td>
</tr>
<tr>
<td>C.V.</td>
<td>106.34</td>
<td>97.40</td>
<td>132.10</td>
<td>90.39</td>
<td>100.83</td>
<td>132.76</td>
<td>168.33</td>
<td>75.16</td>
<td>89.27</td>
<td>30.59</td>
<td>99.47</td>
<td>87.86</td>
</tr>
</tbody>
</table>

Sources: computed from annual report of respective companies
Table No. 5.2 depicts the overall position of Long Term Debt-Equity Ratio in aluminum companies under study. The table shows that average Long Term Debt-Equity Ratio of aluminum industry was fluctuating during the study period from 2000-01 to 2006-07.

The average Long Term Debt-Equity Ratio of HDL, IIC, and NAC, were 0.31, 0.34, and 0.17 per cent respectively which were lesser than the average ratio of 0.59 per cent of industry.

The No. 5.2 showed the Long Term Debt-Equity Ratio of HDL. The ratio was 0.15 times in 2000-01 and 0.18 times in 2001-02. The increased to 0.26 times in 2002-03 and 0.34 times in 2003-04. The ratio was 0.42 times in 2004-05 and then decreased to 0.38 times in 2005-06 and again rose to 0.43 times in 2006-07. The average ratio was 0.31 times with standard deviation of 0.11 percent and co-efficient of variation of 36.78 percent. The ratio ranged between 0.15 times in 2000-01 and 0.43 times in 2004-05.

The No. 5.2 showed the Long Term Debt-Equity Ratio of IIC. The ratio was 0.39 times in 2000-01 and 0.39 times in 2001-02. The increased to 0.48 times in 2002-03 and 0.51 times in 2003-04. The ratio was 0.49 times in 2004-05 and then decreased to 0.14 times in 2005-06 and again went down 0.00 times in 2006-07. The average ratio was 0.34 times with standard deviation of 0.20 percent and co-efficient of variation of 57.30 percent. The ratio ranged between 0.00 times in 2006-07 and 0.51 times in 2003-04.
The No. 5.2 showed the Long Term Debt-Equity Ratio of MAC. The ratio was 1.35 times in 2000-01 and 1.26 times in 2001-02. The increased to 2.53 times in 2002-03 and 1.94 times in 2003-04. The ratio was 0.63 times in 2004-05 and then decreased to 0.31 times in 2005-06 and again went down 0.08 times in 2006-07. The average ratio was 1.16 times with standard deviation of 0.89 percent and co-efficient of variation of 76.50 percent. The ratio ranged between 0.08 times in 2006-07 and 2.53 times in 2002-03.

The No. 5.2 depicted the Long Term Debt-Equity Ratio of NAC. The ratio was 0.21 times in 2000-01 and 0.33 times in 2001-02. The increased to 0.35 times in 2002-03 and 0.22 times in 2003-04. The ratio was 0.08 times in 2004-05 and then decreased to 0.00 times in 2005-06 and again went down 0.00 times in 2006-07. The average ratio was 1.16 times with standard deviation of 0.15 percent and co-efficient of variation of 85.92 percent. The ratio ranged between 0.00 times in 2006-07 and 0.35 times in 2002-03.

The No. 5.2 depicted the Long Term Debt-Equity Ratio of BAC. The ratio was 0.25 times in 2000-01 and 0.17 times in 2001-02. The decreased to 0.16 times in 2002-03 and increased 0.83 times in 2003-04. The ratio was 1.95 times in 2004-05 and then decreased to 1.63 times in 2005-06 and again went up to 1.89 times in 2006-07. The average ratio was 0.98 times with standard deviation of 0.82 percent and co-efficient of variation of 83.85 percent. The ratio ranged between 0.16 times in 2002-03 and 1.95 times in 2006-07. From the above performance of HDL, IIC NAC and BAC were better as compared to all other companies.
5.3.3 Financial Leverage

Financial leverage ratio is the ability of an organization to increase its owners’ profits by using debt capita. Professor S.C. Kuchhal has defined it as “…the firm’s ability to use fixed financial charges to magnify the effects of changes in EBIT (Earning before Interest and Tax) on the firm’s E.P.S. (Earning per Share).

Financial leverage and trading on equity are synonymous terms. The EBIT is calculated by adding back the interest (interest on loan capital + interest on long-term loans + interest on other loans) and taxes to the amount of net profit. Here in the case of air-corporations of India the taxation does not constitute a major portion.
Financial leverage ratio is calculated by dividing EBIT (Earning before Interest and Taxes) by the EBT (Earning before Tax). Neither a very high leverage nor a very low leverage represents a sound picture.

\[
\text{EBIT (Earning before Interest and Taxes)}
\]

Financial leverage ratio = \---------------------------------------------

\[
\text{EBT (Earning Before Tax)}.
\]
Table No.: 5.3

Financial Leverage ratio of selected aluminum companies in India from 2000-01 to 2006-07 (Times)

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</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>1.06</td>
<td>1.05</td>
<td>1.15</td>
<td>1.14</td>
<td>1.09</td>
<td>1.11</td>
<td>1.07</td>
<td>1.10</td>
<td>0.04</td>
<td>3.68</td>
<td>1.05</td>
<td>1.15</td>
</tr>
<tr>
<td>IIC</td>
<td>1.24</td>
<td>1.23</td>
<td>1.19</td>
<td>1.11</td>
<td>0.87</td>
<td>0.85</td>
<td>0.88</td>
<td>1.05</td>
<td>0.18</td>
<td>16.99</td>
<td>0.85</td>
<td>1.24</td>
</tr>
<tr>
<td>MAC</td>
<td>1.93</td>
<td>2.63</td>
<td>2.04</td>
<td>1.25</td>
<td>1.10</td>
<td>1.04</td>
<td>1.01</td>
<td>1.57</td>
<td>0.63</td>
<td>40.05</td>
<td>1.01</td>
<td>2.63</td>
</tr>
<tr>
<td>NAC</td>
<td>1.12</td>
<td>1.23</td>
<td>1.16</td>
<td>1.11</td>
<td>1.05</td>
<td>1.01</td>
<td>1.01</td>
<td>1.10</td>
<td>0.08</td>
<td>7.28</td>
<td>1.01</td>
<td>1.23</td>
</tr>
<tr>
<td>BAC</td>
<td>0.18</td>
<td>6.50</td>
<td>1.06</td>
<td>1.12</td>
<td>1.05</td>
<td>1.23</td>
<td>1.63</td>
<td>1.82</td>
<td>2.11</td>
<td>115.50</td>
<td>0.18</td>
<td>6.50</td>
</tr>
<tr>
<td>Average</td>
<td>1.11</td>
<td>2.53</td>
<td>1.32</td>
<td>1.15</td>
<td>1.03</td>
<td>1.05</td>
<td>1.12</td>
<td>1.33</td>
<td>0.61</td>
<td>36.70</td>
<td>1.03</td>
<td>2.53</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.62</td>
<td>2.31</td>
<td>0.41</td>
<td>0.06</td>
<td>0.09</td>
<td>0.14</td>
<td>0.29</td>
<td>0.35</td>
<td>0.87</td>
<td>46.27</td>
<td>0.36</td>
<td>2.29</td>
</tr>
<tr>
<td>C.V.</td>
<td>56.23</td>
<td>91.53</td>
<td>30.63</td>
<td>5.01</td>
<td>9.02</td>
<td>13.14</td>
<td>26.22</td>
<td>26.28</td>
<td>143.43</td>
<td>126.09</td>
<td>44.39</td>
<td>89.99</td>
</tr>
</tbody>
</table>

Sources: computed from annual report of respective companies
The table No. 5.3 explained the financial leverage ratio of HDL from the years of 2000-01 to 2006-07. The ratio showed fluctuated trend with an average of 1.10 times which was less than industry average. The ratio was 1.06 times in 2000-01 and slightly declined to 1.05 times in 20001-02. The ratio again increased to 1.15 times in 2002-03 and then declined to 1.14 times in 2003-04. The ratio was 1.09 times in 2004-05 and 1.11 times in 2005-06 and 1.07 times in 2006-07. The ratio showed standard deviation of 0.04 percent during the research period. The ratio was more than 1 in most of the years which showed good financial position of the company and minimum financial risk of company.

The table No. 5.3 explained the financial leverage ratio of IIC from the years of 2000-01 to 2006-07. The ratio showed fluctuated trend with an average of 1.05 times which was less than industry average. The ratio was 1.24 times in 2000-01 and slightly declined to 1.23 times in 20001-02. The ratio again decreased to 1.19 times in 2002-03 and then declined to 1.11 times in 2003-04. The ratio was 0.87 times in 2004-05 and 0.85 times in 2005-06 and 0.88 times in 2006-07. The ratio showed standard deviation of 0.18 percent during the research period. The ratio was more than 1 in the first four years of research period which showed good financial position of the company and minimum financial risk of company. But in the last years the ratio was less than 1 which increased financial risk.

The above table no. 5.3 depicted the financial leverage ratio of MAC during the study period. The ratio ranged between 1.01 times in 2006-07 and 2.63 times 2001-02 with an average of 1.57 times.
The ratio was very good in most of the years because it was more than one in most of the years which reduces the risk of share holder and other lenders of the money. The standard deviation was 0.63 percent and coefficient of variation was 40.05 percent.

The above table no. 5.3 depicted the financial leverage ratio of NAC during the study period. The ratio ranged between 1.01 times in 2006-07 and 1.23 times 2001-02 with an average of 1.10 times. The ratio was very good in most of the years because it was more than one in most of the years which reduces the risk of share holder and other lenders of the money.
The standard deviation was 0.08 percent and coefficient of variation was 7.28 percent. The ratio showed fluctuated trend with an average of 1.10 times which was less than industry average. The ratio was 1.12 times in 2000-01 and slightly went up to 1.23 times in 20001-02. The ratio again decreased to 1.16 times in 2002-03 and then declined to 1.11 times in 2003-04. The ratio was 1.05 times in 2004-05 and 1.01 times in 2005-06 and 1.01 times in 2006-07.

The table No. 5.3 explained the financial leverage ratio of BAC from the years of 2000-01 to 2006-07. The ratio showed fluctuated trend with an average of 1.82 times which was more than industry average. The ratio was 0.18 times in 2000-01 and highly went up to 6.50 times in 20001-02. The ratio again decreased to 1.06 times in 2002-03 and then declined to 1.12 times in 2003-04. The ratio was 1.05 times in 2004-05 and 1.23 times in 2005-06 and 1.63 times in 2006-07. The ratio showed standard deviation of 2.11 most percent during the research period. The ratio was more than 1 in the most of the years except fist year of research period which showed good financial position of the company and minimum financial risk of company. But in the last years the ratio was less than 1 which increased financial risk.

The ratio increased tremendously in all units. The reasons for the increased ratio in all other units were the increased rate of wages and salaries, cost of raw materials and decreased in sales price of aluminum. From the above performance of MAC, BAC, and HDL were better as compared to all other companies.
5.3.4 Net Fixed Assets to Net worth Ratio

This ratio explains the relationship between fixed assets and tangible net worth, viz., preference share capital, equity share capital and retained earnings. This ratio is an important tool for judging the margin of safety for long-term creditors. The lesser the ratio the greater the margin of safety for long term creditors. If the net worth is less than fixed assets, it implies that the loan funds are used to finance a part of the fixed assets, when the amount of ownership funds exceeds the value of fixed assets a part of the net working capital is provided by the shareholders. The yardstick for this measure is 65 % for industrial undertaking. It means that 65% of ownership funds are to be used for acquiring fixed assets and rest for financing current assets. The ratio is calculated as below:-

\[
\text{Net Fixed Assets to Net worth Ratio} = \frac{\text{Net Fixed Assets}}{\text{Net worth}} \times 100
\]
Table No.: - 5.4
Net Fixed Assets to Net worth Ratio of selected aluminum companies in India from 2000-01 to 2006-07.(Times)

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>0.56</td>
<td>0.557</td>
<td>0.656</td>
<td>0.691</td>
<td>0.73</td>
<td>0.71</td>
<td>0.56</td>
<td>0.638</td>
<td>0.076</td>
<td>11.94</td>
<td>0.557</td>
<td>0.73</td>
</tr>
<tr>
<td>IIC</td>
<td>0.84</td>
<td>0.884</td>
<td>0.958</td>
<td>0.911</td>
<td>0.89</td>
<td>0.8</td>
<td>0.72</td>
<td>0.86</td>
<td>0.077</td>
<td>8.999</td>
<td>0.724</td>
<td>0.96</td>
</tr>
<tr>
<td>MAC</td>
<td>1.93</td>
<td>3.03</td>
<td>2.61</td>
<td>2.18</td>
<td>1.71</td>
<td>1.17</td>
<td>0.79</td>
<td>1.916</td>
<td>0.782</td>
<td>40.82</td>
<td>0.788</td>
<td>3.03</td>
</tr>
<tr>
<td>NAC</td>
<td>0.6</td>
<td>0.896</td>
<td>1.122</td>
<td>1.039</td>
<td>0.88</td>
<td>0.67</td>
<td>0.48</td>
<td>0.813</td>
<td>0.236</td>
<td>29.01</td>
<td>0.482</td>
<td>1.12</td>
</tr>
<tr>
<td>BAC</td>
<td>0.47</td>
<td>0.47</td>
<td>0.65</td>
<td>0.74</td>
<td>3.64</td>
<td>3.92</td>
<td>2.65</td>
<td>1.792</td>
<td>1.56</td>
<td>87.03</td>
<td>0.466</td>
<td>3.92</td>
</tr>
<tr>
<td>Average</td>
<td>0.879</td>
<td>1.1678</td>
<td>1.2009</td>
<td>1.1113</td>
<td>1.5726</td>
<td>1.453</td>
<td>1.042</td>
<td>1.204</td>
<td>0.546</td>
<td>35.56</td>
<td>0.879</td>
<td>1.572</td>
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<tr>
<td>S.D.</td>
<td>0.602</td>
<td>1.0572</td>
<td>0.8154</td>
<td>0.612</td>
<td>1.221</td>
<td>1.393</td>
<td>0.907</td>
<td>0.601</td>
<td>0.636</td>
<td>31.56</td>
<td>0.145</td>
<td>1.43</td>
</tr>
<tr>
<td>C.V.</td>
<td>68.52</td>
<td>90.529</td>
<td>67.898</td>
<td>55.069</td>
<td>77.66</td>
<td>95.87</td>
<td>87.1</td>
<td>49.94</td>
<td>116.5</td>
<td>88.74</td>
<td>24.03</td>
<td>73.4</td>
</tr>
</tbody>
</table>

Sources: computed from annual report of respective companies
The above table no. 5.4 depicted the above table showed Net Fixed Asset to Net worth Ratio of HDL during the study period. The ratio ranged between 0.557 times in 2001-02 and 0.73 times 2004-05 with an average of 0.638 times. The ratio was very good in most of the years because it was more than 0.65 times in most of the years which reduces the risk of share holder and other lenders of the money because the fixed assets have been fiancé with owner’s fund and they would earn higher rate of return on this fund. The standard deviation was 0.076 percent and coefficient of variation was 11.94 percent. The ratio showed fluctuated and progressive trend with an average of 0.638 times which was less than industry average. The ratio was 0.56 times in 2000-01 and slightly went up to 0.557 times in 2001-02.
The ratio again increased to 0.656 times in 2002-03 and then again rose to 0.691 times in 2003-04. The ratio was 0.73 times in 2004-05 and 0.71 times in 2005-06 and 0.56 times in 2006-07.

The table No. 5.4 explained the Net Fixed Asset to Net worth ratio of IIC from the years of 2000-01 to 2006-07. The ratio showed fluctuated trend with an average of 0.86 times which was less than industry average. The ratio was 0.84 times in 2000-01 and slightly inclined to 0.884 times in 20001-02. The ratio again increased to 0.958 times in 2002-03 and then declined to 0.911 times in 2003-04. The ratio was 0.89 times in 2004-05 and 0.8 times in 2005-06 and 0.72 times in 2006-07. The ratio showed standard deviation of 0.077 percent during the research period. The ratio was more than 0.65 times in most of the years which showed good financial position of the company and indicated that the owner’s funds have been invested in only fixed assets.

The above table no. 5.4 depicted the Net Fixed Asset to Net Worth ratio of MAC during the study period. The ratio ranged between 0.788 times in 2006-07 and 3.03 times 2001-02 with an average of 1.916 times. The ratio was very good in most of the years because it was more than one in most of the years which reduces the risk of share holder and indicated that fixed assets have been financed with owner’s funds. The standard deviation was 0.782 percent and coefficient of variation was 40.82 percent. The ratio showed fluctuated trend with an average of 1.916 times which was more than industry average. The ratio was 1.93 times in 2000-01 and slightly went up to 3.03times in 20001-02.
The ratio again decreased to 2.61 times in 2002-03 and then declined to 2.18 times in 2003-04. The ratio was 1.71 times in 2004-05 and 1.17 times in 2005-06 and 0.79 times in 2006-07.

The above table no. 5.4 depicted Net Fixed Asset to Net worth Ratio of NAC during the study period. The ratio ranged between 0.482 times in 2006-07 and 1.12 times 2002-03 with an average of 0.813 times. The ratio was very good in most of the years because it was more than 0.65 times in most of the years which indicated that fund invested in fixed assets could generate higher rate of return. The standard deviation was 0.236 percent and coefficient of variation was 29.01 percent.

The table No. 5.4 explained the Net Fixed Asset to Net worth ratio of BAC from the years of 2000-01 to 2006-07. The ratio showed fluctuated trend with an average of 1.792 times which was more than industry average. The ratio was 0.47 times in 2000-01 and slightly inclined to 0.65 times in 2000-02. The ratio again increased to 0.74 times in 2002-03 and then rose to 3.64 times in 2004-05.

The ratio was 3.92 times in 2005-06 and 2.65 times in 2006-07. The ratio showed standard deviation of 1.56 percent during the research period. The ratio was more than 0.65 times in most of the years which showed good financial position of the company and indicated that the owner’s funds have been invested in only fixed assets.

On the basis of above analysis it can be concluded that the highest ratio was of 1.916 times of MAC followed by BAC, IIC and HDL,
5.3.5 Owners Equity to Total Assets Ratio (Proprietary Ratio)

Owner’s equity to total assets ratio shows the percentage of total assets financed by shareholders. In the words of Chuddar, “this ratio brings out the extent of shareholders funds in relation to total funds (i.e. shareholders fund + liabilities) employed. This ratio is also known as proprietary ratio or proprietor’s funds to total assets ratio. The high ratio shows that a concern is less dependent on outside funds for capital. A high ratio suggests sound financial strength of a company due to

(i) A greater margin of owner’s funds against outside sources of finance, and (ii) A greater margin of safety for the creditors.

A low ratio indicates a small amount of owners fund to finance total assets and more dependence on outside funds for working capital.

In the form of formula this ratio can be expressed thus:

\[
\text{Proprietary Ratio} = \frac{\text{Owner’s Fund (Net Worth)}}{\text{Total Assets}} \times 100
\]
Table No.: 5.5

Owners Equity to Total Assets Ratio (Proprietary Ratio) of selected aluminum companies in India from 2000-01 to 2006-07 (Times)

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>1.05</td>
<td>0.90</td>
<td>0.60</td>
<td>0.60</td>
<td>0.51</td>
<td>0.51</td>
<td>0.50</td>
<td>0.67</td>
<td>0.22</td>
<td>33.14</td>
<td>0.50</td>
<td>1.05</td>
</tr>
<tr>
<td>IIC</td>
<td>0.60</td>
<td>0.50</td>
<td>0.51</td>
<td>0.53</td>
<td>0.40</td>
<td>0.41</td>
<td>0.33</td>
<td>0.47</td>
<td>0.09</td>
<td>19.61</td>
<td>0.33</td>
<td>0.60</td>
</tr>
<tr>
<td>MAC</td>
<td>0.35</td>
<td>0.17</td>
<td>0.16</td>
<td>0.32</td>
<td>0.36</td>
<td>0.46</td>
<td>0.56</td>
<td>0.34</td>
<td>0.15</td>
<td>43.12</td>
<td>0.16</td>
<td>0.56</td>
</tr>
<tr>
<td>NAC</td>
<td>0.69</td>
<td>0.54</td>
<td>0.53</td>
<td>0.63</td>
<td>0.76</td>
<td>0.78</td>
<td>0.81</td>
<td>0.68</td>
<td>0.11</td>
<td>16.97</td>
<td>0.53</td>
<td>0.81</td>
</tr>
<tr>
<td>BAC</td>
<td>0.56</td>
<td>0.51</td>
<td>0.63</td>
<td>0.31</td>
<td>0.24</td>
<td>0.26</td>
<td>0.34</td>
<td>0.41</td>
<td>0.15</td>
<td>38.07</td>
<td>0.24</td>
<td>0.63</td>
</tr>
<tr>
<td>Average</td>
<td>0.65</td>
<td>0.52</td>
<td>0.49</td>
<td>0.48</td>
<td>0.45</td>
<td>0.49</td>
<td>0.51</td>
<td>0.51</td>
<td>0.15</td>
<td>30.19</td>
<td>0.45</td>
<td>0.65</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.26</td>
<td>0.26</td>
<td>0.19</td>
<td>0.15</td>
<td>0.19</td>
<td>0.19</td>
<td>0.20</td>
<td>0.15</td>
<td>0.05</td>
<td>11.45</td>
<td>0.16</td>
<td>0.20</td>
</tr>
<tr>
<td>C.V.</td>
<td>39.67</td>
<td>49.57</td>
<td>39.08</td>
<td>32.33</td>
<td>42.85</td>
<td>39.37</td>
<td>38.52</td>
<td>29.88</td>
<td>33.56</td>
<td>37.94</td>
<td>45.56</td>
<td>27.91</td>
</tr>
</tbody>
</table>

Sources: computed from annual report of respective companies
The above table No. 5.5 showed Proprietary Ratio of HDL during the study period from 2000-01 to 2006-07. The ratio was 1.05 times in 2000-01 and then it went down to 0.90 times due to decrease in owner’s fund in fixed assets. The ratio was again remained 0.60 times during the years of 2002-03 and 2003-04. The ratio was 0.51 times in 2004-05 and again it was 0.51 times in 2005-06. The average ratio was 0.67 times which was above the industry. The standard deviation was 0.22 percent and coefficient was 33.14 which showed low financial risk.
The Proprietary Ratio of IIC was depicted in the above table No. 5.5. The ratio was 0.60 times in the years of 200-01 and 0.50 times in the year of 201-02. The ratio was again inclined to 0.51 times and 0.53 times in year of 2002-03 and 2003-04. The ratio was 0.40 times in year of 2004-05 and 0.41 times in 2005-06. The ratio in the last year of the study period indicated decreasing trend. The average ratio was 0.47 times which less than industry average was. The ratio showed fluctuated trend during the study period. The ratio showed fifty percent stake in the fixed assets by owner which has been the best for stake holder.

The above table No. 5.5 indicated Proprietary Ratio of MAC during the study period from 2000-01 to 2006-07. The ratio was 0.35 times in 2000-01 and then it went down to 0.17 times due to decrease in owner’s fund in fixed assets. The ratio again remained 0.16 times during the years of 2002-03 and then it stepped up to 0.32 times in 2003-04. The ratio was 0.36 times in 2004-05 and again it was 0.46 times in 2005-06. Thus ratio ranged between 0.16 times to 0.56 times during the years of 2002-03 and 2006-07. The average ratio was 0.34 times which was above the industry. The standard deviation was 0.15 percent and coefficient was 43.12 which showed high financial risk.

The Proprietary Ratio of NAC was manifested in the above table No. 5.5. The ratio was 0.69 times in the years of 200-01 and 0.54 times in the year of 2001-02. The ratio was again inclined to 0.53 times and 0.63 times in year of 2002-03 and 2003-04. The ratio was 0.76 times in year of 2004-05 and 0.78 times in 2005-06. The ratio was the highest of 0.81 times in the last year of study period.
The ratio in the last year of the study period indicated decreasing trend. The average ratio was 0.47 times which less than industry average was. The ratio showed fluctuated trend during the study period. The ratio showed that more than fifty percent stake invested in the fixed assets by owner which has been the best for stake holder.

The Proprietary Ratio of BAC was expressed in the table No. 5.5. The ratio was 0.56 times in 2000-01 and 0.51 times in 2001-02. The ratio was again increased to 0.63 times in 2002-03. The ratio declined to 0.31 times in 2003-04. And 0.24 times in 2004-05.

The ratio was 0.26 times in 2005-06. The ratio was 0.34 times in 2006-07 with an average of 0.41 times. The ratio standard deviation was of 38.07 percent with fluctuated and down ward trend during the research period. Such trend was not good for the health of business organization.

On the basis of above analysis it can be said that the highest proprietary ratio was in 0.68 percent in NAC followed by HDL, IIC BAC and MAC

5.3.6 Net Fixed Assets to Long Term Debt Ratio

The ratio can be calculated by dividing net fixed assets (i.e. gross block minus depreciation) by the amount of long-term debt. It can be expressed as:
It indicates how far the outside liabilities are secured with the fixed assets. If the fixed assets are more than debt, it is a favorable sign from the point of view of long-term creditors but if the fixed assets are too little in comparison to debt it is a danger signal for the long-term creditors. Thus, it is a device of finding out the percentage of fixed assets by their very nature; require capital which is more or less permanently sunk in them.

\[
\text{Fixed Assets (Net)} \\
\text{Fixed Assets to Long Term Debt Ratio} = \frac{\text{Fixed Assets (Net)}}{\text{Long Term Debt}}
\]
### Table No.: 5.6

Fixed Assets to Long Term Debt Ratio of selected aluminum companies in India from 2000-01 to 2006-07 (Times)

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<tbody>
<tr>
<td>HDL</td>
<td>4.42</td>
<td>3.33</td>
<td>1.70</td>
<td>1.85</td>
<td>1.47</td>
<td>1.38</td>
<td>0.95</td>
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<td>1.25</td>
<td>57.79</td>
<td>0.95</td>
<td>4.42</td>
</tr>
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<td>0.50</td>
<td>0.51</td>
<td>0.53</td>
<td>0.40</td>
<td>0.41</td>
<td>0.33</td>
<td>0.47</td>
<td>0.09</td>
<td>19.61</td>
<td>0.33</td>
<td>0.60</td>
</tr>
<tr>
<td>MAC</td>
<td>1.34</td>
<td>1.17</td>
<td>0.64</td>
<td>2.14</td>
<td>2.62</td>
<td>11.16</td>
<td>12.02</td>
<td>4.44</td>
<td>4.93</td>
<td>111.05</td>
<td>0.64</td>
<td>12.02</td>
</tr>
<tr>
<td>NAC</td>
<td>2.67</td>
<td>1.85</td>
<td>2.80</td>
<td>5.97</td>
<td>0.00</td>
<td>0.00</td>
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<td>2.19</td>
<td>115.36</td>
<td>0.00</td>
<td>5.97</td>
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<tr>
<td>BAC</td>
<td>3.29</td>
<td>2.32</td>
<td>5.56</td>
<td>0.47</td>
<td>1.56</td>
<td>1.45</td>
<td>1.36</td>
<td>2.29</td>
<td>1.69</td>
<td>73.86</td>
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<td>Average</td>
<td>2.46</td>
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<td>75.53</td>
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<td>S.D.</td>
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<td>1.08</td>
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<td>4.67</td>
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<td>1.80</td>
<td>39.66</td>
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<td>4.11</td>
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<td>C.V.</td>
<td>61.91</td>
<td>59.05</td>
<td>92.36</td>
<td>102.32</td>
<td>85.70</td>
<td>162.07</td>
<td>174.18</td>
<td>63.26</td>
<td>88.59</td>
<td>52.51</td>
<td>73.99</td>
<td>71.99</td>
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</table>

Sources: computed from annual report of respective companies
The above table No. 5.6 showed Net Fixed Asset to Long Term Debt Ratio of alluminuin Companies. The ratio shows decreasing trend during the study period. The ratio varied from 0.95 times in 2006-07 to 4.42 times in 2000-01 with an average of 2.16 times. The ratio was 4.42 times in 2000-01 and 3.33 times in 2001-02. The ratio went down to 1.70 times in 2002-03 and 1.85 times in 2003-04. The ratio again went down to 1.47 times in 2004-05. The ratio was 1.38 times in 2005-06 and sharply went down to 0.90 times in last year of study period. The average ratio was less than the industry average.

The above table No. 5.6 indicated the ratio of Net Fixed Asset to Long Term Debt Ratio of IIC with an average of 0.47 times. The ratio showed fluctuated trend during the research period. The ratio was 0.60 times in 2000-01 and then went down to 0.50 times in 2001-02. The ratio was 0.53 times in 2003-04 and 0.40 times in 2004-05.

The ratio 0.41 times in 2005-06 and then it stepped down to 0.33 times in 2006-07. The standard deviation was 0.09 percent with C.V. of 19.61 percent. The in most of the year were near to 50 % before 2003-04 and then it was less than 50 % which was not at all good for the organization.
The Table No. 5.6 showed ratio of MAC with highly increased and progressive trend during the span of the research. The ratio was 1.34 times in 2000-01 and then it went down to 1.17 times in 2001-02. The ratio again was very low in the year of 2002-03. But it was 2.14 times in 2003-04 and 2.62 times in 2004-05. The ratio marginally increased to 11.16 times in 2005-06 and 12.02 times in 2006-07.

The ratio showed average of 4.44 times with standard deviation of 4.93 times and C.V of 111.05. The ratio showed very good composition of financial structure of the company.

The above table No. 5.6 indicated the ratio of Net Fixed Asset to Long Term Debt Ratio of NAC with an average of 1.90 times. The ratio showed
fluctuated trend during the research period. The ratio was 2.67 times in 2000-01 and then went down to 1.85 times in 2001-02. The ratio was 2.80 times in 2003-04 and 5.97 times in 2004-05. The ratio 0.00 times in 2005-06 and then it stepped down to 0.00 times in 2006-07. The standard deviation was 2.19 percent with C.V. of 115.36 percent.

Net Fixed Asset to Long Term Debt Ratio of BAC was manifested in the Table No. 5.6. The ratio was 3.29 times the nit had been gone down to 2.32 times in 2001-02. The ratio hiked to 5.56 times in 2002-03 and then sharply declined to 2003-04 and 1.56 times in 2004-05. The ratio, in the last two years of study, was 1.45 times in 2005-06 and 1.36 times 2006-07. The ratio showed a range of 0.47 times to 5.56 times during the study period. The ratio showed standard devastation of 1.69 times with C.V. of 73.86 percent.

On the basis of above analysis it can be concluded that the highest ratio was of 4.44 times of MAC followed by BAC NAC HDL and IIC.

5.3.7 Interest Coverage Ratio:

In the words of Brigham, “The times interest earned ratio is determined by dividing earning before interest and taxes (EBIT) by the interest charges.” It is one of the most conventional coverage ratio used to test the enterprise’s debt serving capacity. Greater the cover better is the position of the debenture holders or loan creditors regarding possibility of timely payment of interest.

The ratio indicates the extent to which the earning may fall without causing any embarrassment to the enterprise regarding the payment of the interest
charges. If the times covered falls then the risk of enterprise’s failure increase. According to Wright, “its basis as a measurement tool is that, as the times covered declines, the risk of failures increases.” A higher ratios is desirable, but too high ratio indicates that the enterprise is very conservative in using debt, and it is not using credit to the best advantage of shareholders. However, too low ratio is a Danger signal that the firm is using excessive debt and does not have the ability to offer assured payment of interest to the creditors.
Table No.: 5.7
Interest Coverage Ratio of selected aluminum companies in India from 2000-01 to 2006-07. (Times)

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<td>HDL</td>
<td>16.5</td>
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<td>8.03</td>
<td>12.2</td>
<td>10.4</td>
<td>15.5</td>
<td>13.41</td>
<td>5.351</td>
<td>39.91</td>
<td>8.03</td>
<td>23</td>
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<td>IIC</td>
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<td>5.34</td>
<td>4.65</td>
<td>10.3</td>
<td>-6.8</td>
<td>-5.77</td>
<td>-7.19</td>
<td>0.817</td>
<td>7.182</td>
<td>878.9</td>
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<td>1.71</td>
<td>1.96</td>
<td>5.77</td>
<td>10.6</td>
<td>25.8</td>
<td>98.6</td>
<td>20.93</td>
<td>35.29</td>
<td>168.6</td>
<td>1.71</td>
<td>98.6</td>
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<td>NAC</td>
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<td>7.12</td>
<td>9.78</td>
<td>22.4</td>
<td>70.8</td>
<td>80</td>
<td>29.41</td>
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<td>80</td>
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<td>BAC</td>
<td>5.09</td>
<td>1.11</td>
<td>16.59</td>
<td>17.25</td>
<td>23</td>
<td>4.99</td>
<td>12.9</td>
<td>11.56</td>
<td>8.01</td>
<td>69.3</td>
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<td>Average</td>
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<td>7.73</td>
<td>10.226</td>
<td>12.28</td>
<td>21.23</td>
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<td>C.V.</td>
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<td>83.97</td>
<td>139.5</td>
<td>294.3</td>
<td>84.1</td>
</tr>
</tbody>
</table>

Sources: computed from annual report of respective companies
The interest coverage ratio of HDL was seen in the above Table No. 5.7. The ratio was 16.50 times in 2000-01 and then it rose to 23.04 times in 2001-02. The ratio was 8.33 times in 2002-03 and 8.03 times in 2003-04. The ratio rose to 12.20 times in 2004-05 and 10.04 times in 2005-06. The ratio sharply increased to 15.50 times in 2006-07. The average ratio was 13.41 times with standard deviation of 5.351 percent and C.V was 39.91 percent. The ratio was showing highly fluctuated trend during study period that showed the ability of the company to the financial charges of on debt.

The table No. 5.7 indicated interest coverage ratio IIC with an average of 0.817 times. The ratio ranged between – 7.19 times to 10.30 times during the study period.
The ratio during the last three years of study period showed minus which was very bad for the company and it has increased the financial risk for investor. The company should increase its profitability to be able to meet the financial charges. Moreover company should reduce debt by giving stock option. The ratio was 5.18 times in 2001-02. The ratio went down to 4.65 times in 2002-03 and 10.30 times in 2003-04.

The interest coverage ratio of MAC was seen in the above table No. 5.7. The ratio ranged between 1.71 times in 2001-02 to 98.6 times in 2006-07 with an average of 20.93 times. The ratio was 2.08 times in 2000-01 and 1.71 times in 2001-02. The ratio hiked to 1.96 times in 2002-03 and 5.77 times 2003-04. The ratio was very good of 10.60 times in 2004-05. The ratio was the best in the last year of the study period.

The interest coverage ratio was depicted in the Table no. 5.7. The ratio was 9.43 times in 2000-01 and 6.44 times in 2001-02. The ratio went up to 22.4 times in 2004-05. The ratio was increased to its highest level and reached to 70.80 times in 2005-06 and 2006-07. The ratio was ranged between 6.44 times during the year of 2000-01 to 80 times during the year of 2006-07. The standard deviation was 31.95 times with C.V of 108.6. The ratio showed very sound financial poison of the company.

The interest coverage ratio of BAC was seen in the above Table No. 5.7. The ratio was 5.09 times in 2000-01 and then it went down to 1.11 times in 2001-02. The ratio was 16.59 times in 2002-03 and 17.25 times in 2003-04. The ratio rose to 23 times in 2004-05.
The ratio sharply decreased 4.99 times in 2005-06 but in the last year of the research period the ratio was 12.90 times. The average ratio was 11.56 times with standard deviation of 8.01 percent and C.V was 69.3 percent. The ratio was showing highly fluctuated trend during study period that showed the ability of the company to the financial charges of on debt.
REFERENCES:

1. John N. Mayer, Financial statement analysis, prentice Hall of India, New Delhi, 1947, P.178
2. Kulshreshtha N.K., Analysis of Financial statements Indian paper industry, Navman prakashan, aligarh, 1961, p.103
4. Ibid, P.103
5. Walker And Baughn, p.87
6. Kulshreshtra p.83
CHAPTER 6

ANALYSIS OF WORKING CAPITAL
CHAPTER – 6

ANALYSIS OF WORKING CAPITAL

6.1 Concept of Liquidity
6.2 Concept of Working Capital
6.3 Significance of Working capital
6.4 Analysis of Working Capital Position Through Ratio:
  6.4.1. Current Ratio
  6.4.2 Quick Ratio
  6.4.3 Inventory to Working Capital Ratio
  6.4.4 Inventory turnover ratio
  6.4.5 Debtors Turnover
  6.4.6 Average Collection Period
  6.4.7 Working capital turnover ratio
  6.4.8 Stock turnover ratio

• Conclusion
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CHAPTER– 6
ANALYSIS OF WORKING CAPITAL

6.1 CONCEPT OF LIQUIDITY:

The concept of liquidity within a business is important to understand the financial management, as it is the basic criteria to test the short-term liquidity position of the enterprise. Liquidity may be defined as the ability to realize value in money the real liquid asset. It has two dimensions (a) The time required to convert the assets money and (b) The certainty of the realizable price.

Generally, liquidity means conversion of assets in to cash during normal courses of business and to have regular uninterrupted flow of cash to meet outside current liability (Generally maturing within a year) as and when due and payable and also the ensure money for day to day business operations. Hence the flow of current should circulate with such a rapid speed that they are converted in to cash within a year so that timely payment may be made to outsiders for interest dividend etc. if a major part of current assets are blocked in inventories and credit sales, not only ready cash will be available to pay current dept but there is a risk shrinkage in the total current assets available because of possible fall in the value of inventories or possible losses an account of bad depts.
The quality of current assets is therefore very important for analyzing liquidity. To know the liquidity position working capital analysis must be done.

### 6.2. CONCEPT OF WORKING CAPITAL:

“The working capital of a business enterprise can be said to be that portion of its total financial resources which is put to a variable operative purpose.”

There are two concepts or classifications. Viz. “Gross” and “net” where “the gross working capital is the total of all the current assets or that amount of funds invested in current assets that are employed in the business process.”

“It is also known as quantitative concepts.” Gross working capital refers to business point of view. While “net working capital is the difference between current assets and current liabilities.”

“It is also known as qualitative concepts.” Net working capital refers to accounting point of view. Both of Concepts of working capital have their own importance. “The gross working capital is the sum of all such assets as are required to be converted into cash during a short operating cycle of one year while net working capital is the excess of current assets over current liabilities.”

Professor Husband and rockery explained the usefulness of quantitative concepts of working capital as “despite the uncertainty of quantitative concepts of working capital it provides a more objective basis of determining the type and amount of finance”
“The gross working capital concept embassies the use and the net concept the sources.” 8 “The integration of both these concepts is necessary in order to understand working capital management from the point of view of risk, Return and uncertainty.”9 “Thus above both of concepts of working capital have their own uses and merits”

The choice of the particular concept will depend upon the purpose in view of the two concepts the net is more useful, if the purpose is to find out the financial position of an enterprise.”10

6.3 SIGNIFICANCE OF WORKING CAPITAL:

Analysis of working capital performance has importance, both of way internal and external because it has close relationship with the current or day-to-day operation of business organization “Management to pay particular attention to the planning & control of working capital.” 11 R.D.Kennedy and S.Y.Mcmuller stated, “In –adequacy as mismanagement of working capital is the leading cause of business failures.” 12 Working capital is the alternative measure of the changes in the financial position. Which is concerned with “the safeguarding and controlling of the firms current assets and the planning for sufficient funds to current bills?” 13

According to Guthaman “just as circulation of blood is very necessary in the human body to maintain life, working capital is very necessary to maintain the business.
Therefore, working capital is the life blood and controlling nerve center of the business.” 14 “An enterprise can not be run without appropriate working capital. Not only working capital is enough, but also there should be a proper management of working capital because it is very important for the success of an enterprise and for maximizing the value.”

15 Working capital is essential element for business organization but the quantum of its requirement is different from enterprise to enterprise. “The goal of working capital is to manage each of the firm’s current assets and current liabilities in such a way that an acceptable level of net working capital is maintained.”16 It is concerned with the choice of the financing mix for raising the current resources In the business there is operating cycle, which converts cash into raw materials, raw material in to goods in process, further goods. Finished goods, debtors, credit sales and debtors in to cash the cycle of above operations shown in diagram No.-4.1.

**Diagram No.-6.1.**
Conversion of operating cycle

- **Cash**
- **Debtors**
- **Sales**
- **Raw Materials**
- **Work-in-Progress**
- **Finished Goods**

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Above diagram shows a business organization requires working capital due to its production, sales, cash payments, according Walker and Banghan “The smoother and more rapid the flow of funds, the more efficient is each dollar of working capital.

In other words when the flow of working capital is smooth and rapid the amount of working capital required to produce a given output is less than when interruptions occur which cause the flow to slow down” 17 In a dynamic economy the perfect synchronization with zero working capital is impossible and there for management should attempts to maintain an adequate level of working capital at all times. Brown and Howard described that “Though the current liabilities are paid from cash generated by the current assets as a whole the working capital should be sufficient in relation to the current

Assets provide against danger from shrinkage in the value of current assets particularly inventories.” 18 proper management of working capital must ensure the adequate amount of working capital as per needs of business organization. It should be in good health and circulated efficiency.

Thus, policies regarding working capital have a great influence on an enterprise’s profitability, liquidity and structural construction because of management of working capital is to ensure its optimum utilization for overall profitability of an enterprise.

According to Professor N.M knandewal “working capital has also a technical role to play in the maximization of the rate of return.
The units must keep pace with the scientific and technological taking place in the field to which it pertains.” Therefore a financial manager should aware about appropriate management of working capital policies by the each of the components of working capital so as to ensure about adequate profitability and proper liquidity structure.

6.4 ANALYSIS OF WORKING CAPITAL POSITION THROUGH RATIOS:

With a view to appraising the performance in utilization of working capital by the Alluminuim industry and the individual companies under study, the analysis of working capital has been made from the point of view of:

1. Short term creditors:
2. Efficiency in the use of working capital:
3. Investment in working capital:
4. The collection policy of debts

Short term creditors are primarily concerned with the analysis of short term financial position or test of liquidity, Which is valuable to management in checking the efficiency with which working capital is being employed in the business. The problems posed in connection

With the ratio analysis of the short-term financial position are (1) will the company be also to its current depts. promptly? (2) Is management utilizing the capital position effectively? (3) Is the current financial position improving? The following ratios have been calculated to evaluate the performance of working capital:
Current Ratio:
Quick Ratio
Inventory To Working Capital Ratio
Inventory Turnover Ratio
Debtors Turnover
Average Collection Period
Working Capital Turnover
Finished Goods Turnover Ratio

6.4.1 Current Ratio:-

Current ratio is used to measure the liquidity position of the concerned and thus it reflects the short-term solvency of the concerned. It explains the relationship between the current assets and current liabilities. It gives a general picture of the adequacy of the working capital of the concern and the concern’s ability to meet its day-to-day payment obligations. The current ratio is calculated by dividing current liabilities:

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

This ratio indicates the availability of current assets in rupees for every one rupee of current liabilities. A ratio of greater than one means that concern has more current assets than current liabilities. A conventional rule, current ratio of 2:1 or more considered to be satisfactory. Tondon committee has recommended that idea current ratio for bank financing is 1.33:1
A relatively high value of the current ratio is considered as an indication that the firm is not lacking in liquidity of its assets and has the ability to pay its current liabilities on the other hand, a relatively low value of current ratio is considered as an indication that the firm faces difficulty in paying its current obligations.

In a nutshell, higher the current ratio, the greater the margin of safety, i.e., a cushion of protection for creditors and large the amount of current assets in relation to current liabilities, more the firm’s ability to meet its current obligations. However, too high ratio may be favorable to creditors, but is not beneficial for the firms, because it shows poor utilization of its current assets.
Table No.-6.1  

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<td>0.47</td>
<td>20.65</td>
<td>0.31</td>
<td>1.44</td>
</tr>
<tr>
<td>C.V.</td>
<td>70.00</td>
<td>51.45</td>
<td>33.46</td>
<td>32.06</td>
<td>35.22</td>
<td>49.93</td>
<td>41.01</td>
<td>31.49</td>
<td>78.25</td>
<td>52.34</td>
<td>36.89</td>
<td>56.56</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07
Table No.6.1 indicated current ratio of HDL for the year of 2000-01 to 2006-07. The ratio was fluctuated and shown downward trend with an average of 1.97 times. The ratio was 4.84 times in 2000-01 and then it went down to 2.53 times in 2000-02. The ratio was 1.47 times in 2002-03 which very lower than norm. The ratio was 1.33 times and 1.24 times during the years of 2003-04 and 2004-05 respectively.

The ratio then went down to 1.16 times in 2005-06 and 1.21 times in 2006-07. Thus ratio ranged between 1.16 to 4.87 times with the standard deviation of 1.36 percent and C.V of 69.10. The ratio was not according to the norms during the study period
Table No.6.1 showed current ratio of IIC with fluctuated trend during the study period. The ratio was 1.93 times which then slipped to 1.42 times in the year of 2001-02. The ratio was again went down to 1.36 times in the year of 2002-03 and then raise to 1.45 times year of 2003-04. The ratio was 1.36 times in the year of 2004-05.

The ratio was showing decreased trend during the last years of study period. The ratio ranged between 1.12 times in 2006-07 and 1.93 times in 2000-01. The average ratio was 1.41 times with standard deviation of 0.26 and 18.49 percent. The ratio in all year of study period found less than the norms of 2:1. Therefore company is advised to manage its liquidity properly.

Table No.6.1 indicated that the current ratio of MAC with an average of 0.78 times. The ratio showed highly fluctuated trend with the range of 0.47 times in 2004-05 and 0.98 times in 20003-04. The ratio was 0.94 times in 2000-01 and then sharply declined to 0.59 times in 2001-02 and then rose to 0.93 times in 2002-03. The ratio was very lower of 0.47 times in 2004-05. The ratio was 0.61 times in 2005-06 and it reached at 0.91 times in 2006-07. The ratio manifested standard deviation of 0.21 and co-efficient of 27.14. The ratio is not found according to the norms of 2:1. The liquidity position was not at all good for the health of the company.

Table No.6.1 indicated current ratio of NAC for the year of 2000-01 to 2006-07. The ratio was fluctuated and shown down ward trend with an average of 1.25 times. The ratio was 1.53 times in 2000-01 and then it went down to 0.99 times in 20001-02.
The ratio was 0.64 times in 2002-03 which very lower than norm. The ratio was 0.58 times and 0.96 times during the years of 2003-04 and 2004-05 respectively. The ratio then went up to 1.66 times in 2005-06 and 2.40 times in 2006-07. Thus ratio ranged between 0.58 to 2.40 times with the standard deviation of 0.65 percent and C.V of 52.01. The ratio was not according to the norms during the study period.

Table No.6.1 showed current ratio of BAC with fluctuated trend during the study period. The ratio was 1.72 times which then slipped to 1.55 times in the year of 2001-02. The ratio again went down to 1.60 times in the year of 2002-03 and to 1.41 times year of 2003-04.

The ratio was 0.89 times in the year of 2004-05. The ratio was showing decreased trend during the last years of study period. The ratio ranged between 0.89 times in 2006-07 and 2.52 times in 2000-01. The average ratio was 1.59 times with standard deviation of 0.49 and 30.57 percent. The ratio in most of years of study period found less than the norms of 2:1. Therefore company is advised to manage its liquidity properly.

On the whole the HDL, IIC, MAC, NAC and BAC have not maintained the standard norms of 2:1. All selected units need to pay attention on the working
6.4.2 Acid Test Ratio or Quick Ratio:

Though, the current ratio is the measurement of short-term financial solvency. But it does not measure the quality of current assets. Thus an additional analysis of the quality of current assets may be investigated by Acid Test or quick ratio.

The quick ratio also named as liquid ratio for the acid test ratio and is found out by dividing quick assets i.e. Current assets minus the inventories by quick liabilities. It is in a way a refined form of the current ratio and a favorable acid test ratio will mean very sound cash position of the business to which it relates.

Comparison between current ratio and quick ratio indicates current ratio is the measurement of short-term financial solvency last it does not measure the quality of current assets while quick ratio does it. The formula for that is following.

\[
\text{Quick ratio} = \frac{\text{Current assets - inventories}}{\text{Current liabilities}}
\]

In inventories and prepaid expenses are excluded forms this computation because they might not readily convertible in to cash. The creditors are interested particularly in this ratio since it relates to the ‘pool’ of cash and immediately cash inflow to immediate cash outflows. Generally an acid test ratio 1:1 is considered satisfactory as a firm can easily meet all current claims.
Table No.-6.2
THE ACID-TEST RATIO OF SELECTED COMPANIES OF ALUMINUM COMPANIES IN INDIA FROM 2000-01 TO 2006-07. (IN TIMES)

<table>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>3.38</td>
<td>1.59</td>
<td>1.04</td>
<td>0.83</td>
<td>0.58</td>
<td>0.73</td>
<td>0.68</td>
<td>1.26</td>
<td>78.78</td>
<td>0.58</td>
<td>3.38</td>
</tr>
<tr>
<td>IIC</td>
<td>0.76</td>
<td>0.73</td>
<td>4.06</td>
<td>0.44</td>
<td>0.61</td>
<td>0.74</td>
<td>1.87</td>
<td>1.31</td>
<td>98.67</td>
<td>0.44</td>
<td>4.06</td>
</tr>
<tr>
<td>MAC</td>
<td>0.76</td>
<td>0.64</td>
<td>2.15</td>
<td>0.24</td>
<td>0.32</td>
<td>0.40</td>
<td>1.00</td>
<td>0.99</td>
<td>83.90</td>
<td>0.24</td>
<td>2.15</td>
</tr>
<tr>
<td>NAC</td>
<td>0.74</td>
<td>0.55</td>
<td>0.34</td>
<td>0.37</td>
<td>0.88</td>
<td>1.69</td>
<td>2.37</td>
<td>0.99</td>
<td>76.45</td>
<td>0.34</td>
<td>2.37</td>
</tr>
<tr>
<td>BAC</td>
<td>1.24</td>
<td>1.34</td>
<td>1.65</td>
<td>1.38</td>
<td>0.46</td>
<td>0.72</td>
<td>0.61</td>
<td>1.06</td>
<td>42.99</td>
<td>0.46</td>
<td>1.65</td>
</tr>
<tr>
<td>Average</td>
<td>1.38</td>
<td>0.97</td>
<td>1.85</td>
<td>0.65</td>
<td>0.57</td>
<td>0.86</td>
<td>1.31</td>
<td>1.08</td>
<td>76.16</td>
<td>0.57</td>
<td>1.85</td>
</tr>
<tr>
<td>S.D.</td>
<td>1.14</td>
<td>0.47</td>
<td>1.41</td>
<td>0.46</td>
<td>0.21</td>
<td>0.49</td>
<td>0.78</td>
<td>0.21</td>
<td>20.46</td>
<td>0.13</td>
<td>0.98</td>
</tr>
<tr>
<td>C.V.</td>
<td>82.77</td>
<td>47.96</td>
<td>76.21</td>
<td>71.04</td>
<td>36.74</td>
<td>57.07</td>
<td>59.64</td>
<td>19.73</td>
<td>38.95</td>
<td>26.86</td>
<td>31.24</td>
</tr>
</tbody>
</table>

Sources: Annual Reports and Accounts from 2000-01 to 2006-07.
The quick ratio of HDL manifested in the above table No.6.2. The ratio showed downward trend during the research period. The ratio was 3.38 times in 2000-01 and then it declined to 1.59 times in 2001-02. The ratio was 1.04 times in 2002-03 and it slipped down to 0.83 times in 2003-04. The ratio was 0.58 times in 2004-05 and 0.73 times in 2005-06.

The ratio was 0.68 times in 2006-07. The ratio ranged between 0.58 times in 2004-05 and 3.38 times in 2000-01 with an average of 1.26 times. The standard deviation of this ratio is 0.99 times and C.V. 78.78 percent. The ratio showed that during the last four years of study period company could not maintain the quick ratio according the norms.
Table No. 6.2 indicated quick ratio of IIC for the year of 2000-01 to 2006-07. The ratio was fluctuated and shown downward trend with an average of 1.31 times. The ratio was 0.76 times in 2000-01 and then it went down to 0.73 times in 2000-02. The ratio was 4.06 times in 2002-03 which very higher than norm.

The ratio was 0.44 times and 0.61 times during the years of 2003-04 and 2004-05 respectively. The ratio then went up to 0.74 times in 2005-06 and 1.87 times in 2006-07. Thus ratio ranged between 0.44 to 4.06 times with the standard deviation of 1.30 percent and C.V of 98.67. The ratio was not according to the norms during the study period.

The quick ratio of MAC was manifested in the above table No. 6.2. The ratio showed down ward trend during the research period. The ratio was 0.76 times in 2000-01 and then it declined to 0.64 times in 2001-02. The ratio was 2.15 times in 2002-03 and it slipped down to 0.24 times in 2003-04. The ratio was 0.32 times in 2004-05 and 0.40 times in 2005-06. The ratio was 1.00 times in 2006-07. The ratio ranged between 0.24 times in 2003-04 and 2.15 times in 2002-03 with an average of 0.79 times. The standard deviation of this ratio is 0.66 times and C.V. 83.90 percent. The ratio showed that during the last four years of study period company could not maintain the quick ratio according the norms except during the years of 2002-03 and 2006-07.

The Table No. 6.1 showed quick ratio of NAC with fluctuated trend during the study period. The ratio was 0.74 times which then slipped to 0.55 times in the year of 2001-02. The ratio again went down to 0.34 times in the year of 2002-03 and then rise to 0.88 times year of 2003-04.
The ratio was 1.69 times in the year of 2004-05. The ratio was showing decreased trend during the last years of study period. The ratio ranged between 0.34 times in 2002-03 and 2.37 times in 2006-07.

The average ratio was 0.99 times with standard deviation of 0.76 and the C.V was 76.45 percent. The ratio in all year of study period except during the 2005-06 and 2006-07 found less than the norms of 1:1. Therefore company is advised to tighten its credit policy.

The quick ratio of BAC was manifested in the above table No. 6.2. The ratio showed downward trend and highly fluctuated trend during the research period. The ratio was 1.24 times in 2000-01 and then it inclined to 1.34 times in 2001-02. The ratio was 1.65 times in 2002-03 and it slipped down to 1.38 times in 2003-04. The ratio was 0.46 times in 2004-05 and 0.72 times in 2005-06. The ratio was 0.61 times in 2006-07. The ratio ranged between 0.46 times in 2004-05 and 1.65 times in 2002-03 with an average of 1.06 times. The standard deviation of this ratio is 0.45 times and C.V. 42.99 percent. The ratio showed that during the last three years of study period company could not maintain the quick ratio according the norms of 1:1.

The above analysis showed that the quick ratio was on an average found good in HDL, IIC, and BAC. But this ratio was very lower in MAC, and NAC
6.4.3 Inventory to Working Capital Ratio:-

Inventory to working capital ratio was showed the amount of working capital invested in inventory, where the term inventory includes raw materials. Semi finished goods and finished goods. This ratio is dividing inventory by working capital or net current assets.

\[
\text{Inventory to working capital ratio} = \frac{\text{Inventory}}{\text{Working capital}}
\]

The general accepted rules of this ratio are that inventory should not over the working capital. Around three quarters (i.e.0.75 times) of working capital generally preferred. Table No.-4.3 outlined the inventory to working capital ratio of selected companies of alluminum industry under study.
Table No.-6.3
INVENTORY TO WORKING CAPITAL RATIO SELECTED COMPANIES OF ALUMINUM COMPANIES IN INDIA
FROM 2000-01 TO 2006-07. (IN TIMES)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>0.34</td>
<td>0.44</td>
<td>0.93</td>
<td>1.42</td>
<td>2.87</td>
<td>1.40</td>
<td>1.64</td>
<td>1.29</td>
<td>0.86</td>
<td>66.21</td>
<td>0.34</td>
</tr>
<tr>
<td>IIC</td>
<td>0.75</td>
<td>1.30</td>
<td>1.31</td>
<td>1.66</td>
<td>1.15</td>
<td>1.39</td>
<td>1.16</td>
<td>1.24</td>
<td>0.28</td>
<td>22.36</td>
<td>0.75</td>
</tr>
<tr>
<td>MAC</td>
<td>1.71</td>
<td>-0.78</td>
<td>0.17</td>
<td>-0.44</td>
<td>-0.80</td>
<td>-0.67</td>
<td>1.00</td>
<td>0.03</td>
<td>0.98</td>
<td>3610.43</td>
<td>-0.80</td>
</tr>
<tr>
<td>NAC</td>
<td>2.05</td>
<td>-6.65</td>
<td>-0.85</td>
<td>-0.99</td>
<td>1.50</td>
<td>0.34</td>
<td>0.20</td>
<td>-0.63</td>
<td>2.88</td>
<td>-458.95</td>
<td>-6.65</td>
</tr>
<tr>
<td>BAC</td>
<td>0.57</td>
<td>0.63</td>
<td>0.45</td>
<td>0.53</td>
<td>-0.41</td>
<td>0.65</td>
<td>0.45</td>
<td>0.41</td>
<td>0.37</td>
<td>89.80</td>
<td>-0.41</td>
</tr>
<tr>
<td>Average</td>
<td>1.08</td>
<td>-1.01</td>
<td>0.40</td>
<td>0.44</td>
<td>0.86</td>
<td>0.62</td>
<td>0.89</td>
<td>0.47</td>
<td>1.07</td>
<td>665.97</td>
<td>-1.01</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.75</td>
<td>3.24</td>
<td>0.82</td>
<td>1.15</td>
<td>1.49</td>
<td>0.86</td>
<td>0.57</td>
<td>0.82</td>
<td>1.05</td>
<td>1661.41</td>
<td>3.02</td>
</tr>
<tr>
<td>C.V.</td>
<td>69.27</td>
<td>320.06</td>
<td>204.41</td>
<td>262.55</td>
<td>172.80</td>
<td>137.33</td>
<td>64.44</td>
<td>174.28</td>
<td>98.18</td>
<td>249.47</td>
<td>223.35</td>
</tr>
</tbody>
</table>

Sources: from annual reports and accounts from 2000-01 TO 2006-07
The Table No. 6.3 showed Inventory to Working Capital Ratio HDL with fluctuated trend during the study period. The ratio was 0.34 times which then slipped to 0.44 times in the year of 2001-02. The ratio again went up to 0.93 times in the year of 2002-03 and then rise to 1.42 times year of 2003-04. The ratio was 2.87 times in the year of 2004-05. The ratio was showing decreased trend during the last years of study period.

The ratio ranged between 0.34 times in 2000-01 and 2.87 times in 2006-07. The average ratio was 1.29 times with standard deviation of 0.86 and the C.V was 66.21 percent.

The ratio inventory to working capital in all company is not so good because more than 50 percent working capital tied up in inventory. So company needs to increase inventory turnover during the year.

The Inventory to Working Capital Ratio of IIC was manifested in the above table No. 6.3 the ratio showed down ward trend during the research period. The ratio was 0.75 times in 2000-01 and then it rose to 1.30 times in 2001-02. The ratio was 1.31 times in 2002-03 and it went up to 1.66 times in 2003-04. The ratio was 1.15 times in 2004-05 and 1.39 times in 2005-06. The ratio was 1.16 times in 2006-07. The ratio ranged between 0.75 times in 2000-01 and 1.66 times in 2002-03 with an average of 1.24 times. The standard deviation of this ratio is 0.28 times and C.V. 22.36 percent. The ratio is not good because working capital tied up in inventory.
The Inventory to Working Capital Ratio of MAC was manifested in the above table No. 6.3. The ratio showed downward trend during the research period. The ratio was 1.71 times in 2000-01 and then it declined and reached to minus to -0.78 times in 2001-02. The ratio was 0.17 times in 2002-03 and it slipped down to -0.44 times in 2003-04. The ratio was -0.80 times in 2004-05 and -0.67 times in 2005-06. The ratio was 1.00 times in 2006-07.

The ratio ranged between -0.80 times in 2004-05 and 1.71 times in 2000-01 with an average of 0.03 times. The standard deviation of this ratio is 0.98 times and C.V. 3610.43 percent. The company is facing liquidity problem because liabilities are more than current assets.
The table No. 6.3 indicated inventory to working capital turnover ratio of NAC with an average of minus 0.63. The ratio showed highly fluctuated trend during the study period. The highest ratio of 2.05 times in 2000-01 and the lowest ratio of minus 6.65 times were found. The ratio was 2.05 times in 2000-01 and then it sharply decreased to minus 6.65 times in 2001-02. The ratio was minus 0.85 times in 2002-03 and minus 0.90 times in 2003-04. The ratio was 1.50 times in 2004-05 and 0.34 times in 2005-06. The ratio was 0.20 times in 2006-07. The ratio was not good because of too much investment in inventory.

The Table No. 6.1 showed inventory to working capital turnover of BAC with fluctuated trend during the study period. The ratio was 0.57 times which then went up to 0.63 times in the year of 2001-02. The ratio again went down to 0.45 times in the year of 2002-03 and then rise to 0.53 times year of 2003-04. The ratio was -0.41 times in the year of 2004-05. The ratio was showing decreased trend during the last years of study period. The ratio ranged between -0.41 times in 2004-05 and 0.65 times in 2005-06. The average ratio was 0.41 times with standard deviation of 0.37 and the C.V was 89.80 percent.

Table No. 6.3 indicated that during the whole study period the inventory to working capital ratio HDL. Showed an average of 1.29 times which among the all selected companies followed IIC showing average ratio of 1.24 times, MAC. Sowed 0.03 times, NAC had -0.63 times in these companies the ratio was less than 2 times which showed that more than the working capital funds tied up in inventories.
6.4.4 Inventory Turnover Ratio

Inventory turnover Ratio Indicates the Efficiency of firm’s Inventory management. It shows rapidity of turning inventories into sales. Generally, a high turnover is indicative of good inventory management. Simultaneously, a low inventory turnover implies excessive inventory level that warranted by production and sales activities, or a slow moving or obsolete inventory. A high level of sluggish inventory amounts to unnecessary tie-up of funds, impairment of profit and increased cost. On the other hand, a very high inventory turnover may be the result of a very low level of inventory turnover may be the result of a very low level of inventory which results in frequent stockiest. The inventory will also be high if the firm replenishes its inventory in too many small lot sizes. The situation of frequent stick outs and too many small inventory replacements are costly for the firm. Thus, too high and too low inventory turnover rates are not preferred.

The inventory turnover ratio has been calculated by dividing the figure of sales by the figure of the inventory. The ratio (which is shown in days) is to be worked out by dividing the inventory and receivables with the Net Sales. A low ratio indicates that the inventory/receivables are being turned over a large number of times during the year or in other words, goods are being sold promptly and sales proceeds realized quickly, that inventory management and control is good.
This also indicates lesser accumulation of stocks and therefore lesser change of the stocks containing obsolete or unsaleable items. A high ratio on the other hand indicates lock up of larger sums in inventory and or slow moving stocks. If the ratio shows an increasing trend, this would indicate that sales are falling or that there are inventory hold-ups.
Table No.-6.4
Inventory turnover ratio Selected Companies of Aluminum Companies in India from 2000-01 to 2006-07. (In Times)

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</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>13.10</td>
<td>11.03</td>
<td>12.68</td>
<td>11.70</td>
<td>15.27</td>
<td>11.99</td>
<td>14.31</td>
<td>12.87</td>
<td>1.50</td>
<td>11.64</td>
<td>11.03</td>
</tr>
<tr>
<td>IIC</td>
<td>6.60</td>
<td>6.34</td>
<td>5.81</td>
<td>6.79</td>
<td>0.58</td>
<td>9.84</td>
<td>9.71</td>
<td>6.52</td>
<td>3.08</td>
<td>47.28</td>
<td>0.58</td>
</tr>
<tr>
<td>NAC</td>
<td>5.69</td>
<td>5.40</td>
<td>5.70</td>
<td>6.92</td>
<td>8.79</td>
<td>9.46</td>
<td>10.65</td>
<td>7.52</td>
<td>2.11</td>
<td>28.06</td>
<td>5.40</td>
</tr>
<tr>
<td>BAC</td>
<td>40.44</td>
<td>26.09</td>
<td>42.79</td>
<td>41.64</td>
<td>31.93</td>
<td>32.02</td>
<td>33.25</td>
<td>35.45</td>
<td>6.24</td>
<td>17.60</td>
<td>26.09</td>
</tr>
<tr>
<td>S.D.</td>
<td>14.54</td>
<td>8.46</td>
<td>15.70</td>
<td>14.82</td>
<td>11.70</td>
<td>9.83</td>
<td>9.75</td>
<td>12.01</td>
<td>2.00</td>
<td>14.53</td>
<td>9.64</td>
</tr>
<tr>
<td>C.V.</td>
<td>97.32</td>
<td>73.74</td>
<td>103.46</td>
<td>96.24</td>
<td>88.63</td>
<td>67.62</td>
<td>60.51</td>
<td>83.41</td>
<td>69.98</td>
<td>61.08</td>
<td>93.44</td>
</tr>
</tbody>
</table>

Sources: from annual reports and accounts from 2000-01 TO 2006-07
Inventory turnover ratio of HDL was manifested in the above table No. 6.4. The ratio showed downward trend during the research period. The ratio was 13.10 times in 2000-01 and then it declined and reached to 11.03 times in 2001-02. The ratio was 11.03 times in 2002-03 and it stepped up to 12.68 times in 2003-04. The ratio was 11.70 times in 2004-05 and 15.27 times in 2005-06. The ratio was 11.03 times in 2004-05 and it stepped up to 12.68 times in 2003-04. The ratio was 11.70 times in 2004-05 and 15.27 times in 2000-01 with an average of 12.87 times. The standard deviation of this ratio is 1.50 times and C.V. 11.64 percent. Inventory turnover ratio was very good.

Table No. 6.4 expressed Inventory turnover ratio IIC with fluctuated trend during the study period. The ratio was 6.60 times which then slipped to 5.81 times in the year of 2001-02. The ratio again went down to 0.58 times in the year of 2002-03 and then rise to 6.79 times year of 2003-04. The ratio was 0.58 times in the year of 2004-05. The ratio was showing increased trend during the last years of study period. The ratio ranged between 0.58 times in 2000-01 and 9.84 times in 2006-07. The average ratio was 6.52 times with standard deviation of 3.08 and the C.V was 47.28 percent. The ratio Inventory turnover ratio was also good in all years of study period.

The table No. 6.3 indicated Inventory turnover ratio MAC with an average of 9.66. The ratio showed highly fluctuated trend and progressive trend during the study period. The highest ratio of 12.62 times in 2006-07 and the lowest ratio of 8.48 times were found. The ratio was 8.87 times in 2000-01 and then it moderately decreased to 8.48 times in 2001-02.
The ratio was 8.89 times in 2002-03 and 9.93 times in 2003-04. The ratio was 9.45 times in 2004-05 and 9.38 times in 2005-06. The ratio was 9.66 times in 2006-07. The ratio manifested very good Inventory turnover of MAC

Inventory turnover ratio of NAC was manifested in the above table No. 6.3 the ratio showed up ward trend during the research period. The ratio was 5.69 times in 2000-01 and then it declined to 5.40 times in 2001-02. The ratio was 5.70 times in 2002-03 and it rose to 6.92 times in 2003-04. The ratio was 8.79 times in in 2004-05 and 9.46 times in 2005-06. The ratio was 10.65 times in 2006-07.
The ratio ranged between 5.40 times in 2001-02 and 10.65 times in 2006-07 with an average of 7.52 times. The standard deviation of this ratio is 2.11 times and C.V. 28.06 percent. The Inventory turnover ratio is good.

Inventory turnover ratio showed in Table No.6.3 fluctuated trend of BAC during the study period. The ratio ranged between 26.09 times in 2001-02 and 42.9 times in 2002-03. The ratio has been on an average of 35.45 times with standard deviation of 6.24 times. The ratio was 40.44 times in 2000-01 and declined to 26.09 times in 2001-02. The ratio was 42.79 times in 2002-03 and 41.64 times in 2003-04. The ratio was 31.93 times in 2004-05. The ratio had been 33.05 times in 2006-07. The ratio showed good position of Inventory turnover management in company.

An interim comparison of this ratio showed that BAC had highest Inventory turnover ratio followed by HDL. MAC NAC and IIC they are advised to follow the policy of overtrading for highest turnover company while remains companies should require following the policy of under trading. Thus, Working capital turnover ratio facilitates to assess the degree of efficiency in the use of short-term funds for generating sales.

6.4.5 Debtors Turnover: -

The amount of trade debtors depends upon the sales volume, credit expansion practice and the effectiveness of the collection policy. Since debtors constitute a major element of current assets, the credit and collection policies of the business must be under continuous watch.
The amount of trade debtors at the end of the accounting period should not exceed reasonable devices to find out as to how many owed days average sales are tied up in the value of amount owed by debtors accounting to the balance sheet.

The debtors turnover or receivables turnover ratio measure how rapidly debtors are collected. Though it is not immediately apparent from the debtors’ turnover ratio and therefore, it has to be supplemented by the average collection period, which will be discussed later.

The debtor turnover ratio has been calculated by dividing the amount of sales by the amount of debtors including acceptances. Here the sales figure has been assumed to be of credit sales.

\[
\text{Debtors turn over} = \frac{\text{Credit Sales}}{\text{Debtors + Bill receivable}}
\]

A high ratio is indicative of shorter timing between sales and cash collection, a low ratio shows that debts are not collected rapidly.

Debtor turnover ratio of the Alluminuim industry of companies in India taking all seventeen Companies of the study as a whole and of the individual Alluminuim industry Company has been shown in table No. - 6.5
Table No.-6.5
Debtor Turnover Ratio Selected Companies of Aluminum Companies in India from 2000-01 to 2006-07. (In Times)

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</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>13.10</td>
<td>11.03</td>
<td>12.68</td>
<td>11.70</td>
<td>15.27</td>
<td>11.99</td>
<td>14.31</td>
<td>12.87</td>
<td>11.64</td>
<td>11.03</td>
<td>15.27</td>
</tr>
<tr>
<td>IIC</td>
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<td>10.94</td>
<td>10.82</td>
<td>13.12</td>
<td>1.00</td>
<td>8.22</td>
<td>7.80</td>
<td>8.86</td>
<td>3.90</td>
<td>44.00</td>
<td>1.00</td>
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<td>MAC</td>
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<td>14.70</td>
<td>13.94</td>
<td>20.49</td>
<td>7.52</td>
<td>36.69</td>
<td>13.94</td>
</tr>
<tr>
<td>NAC</td>
<td><strong>8.36</strong></td>
<td>9.24</td>
<td>15.42</td>
<td>32.88</td>
<td>45.48</td>
<td>86.65</td>
<td>205.41</td>
<td>57.63</td>
<td>70.70</td>
<td>122.67</td>
<td>8.36</td>
</tr>
<tr>
<td>BAC</td>
<td>40.44</td>
<td>26.09</td>
<td>42.79</td>
<td>41.64</td>
<td>31.93</td>
<td>32.60</td>
<td>36.40</td>
<td>35.98</td>
<td>6.11</td>
<td>16.98</td>
<td>26.09</td>
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<tr>
<td>Average</td>
<td>17.46</td>
<td>14.95</td>
<td>21.09</td>
<td>26.84</td>
<td>23.44</td>
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<td>17.95</td>
<td>46.40</td>
<td>14.95</td>
</tr>
<tr>
<td>S.D.</td>
<td>13.12</td>
<td>6.97</td>
<td>13.10</td>
<td>13.57</td>
<td>16.79</td>
<td>32.58</td>
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<td>29.58</td>
<td>44.70</td>
<td>9.18</td>
</tr>
<tr>
<td>C.V.</td>
<td>75.14</td>
<td>46.63</td>
<td>62.11</td>
<td>50.58</td>
<td>71.64</td>
<td>105.66</td>
<td>151.99</td>
<td>73.39</td>
<td>164.83</td>
<td>96.34</td>
<td>76.01</td>
</tr>
</tbody>
</table>

Sources: from annual reports and accounts from 2000-01 TO 2006-07
The HDL registered an increasing trend during the seven years of the study period. The ratio was 13.10 times in 2000-01, which declined to 11.03 times in 2001-02. The ratio again inclined to 12.68 times in 2002-03 and 11.70 times in 2003-04. The ratio was 15.27 percent in 2004-05 and then it went down to 11.99 times in 2005-06 but it declined to 11.99 times in 2005-06 and the ratio again increased and reached at 14.31 times. The average ratio was 12.87 times with standard deviation of 1.50.

The above Table No.6.5 showed Debtor turnover ratio of IIC with an average of 8.86 times, which was very lower than the industry average. The ratio was 10.15 times in 2000-01 and 10.94 times in 2001-02. The ratio was 10.82 times in 2002-03 and 13.12 times in 2003-04. The ratio decreased to 1.00 times in 2004-05 and again rose to 8.22 times in 2005-06 and 7.80 times in 2006-07. The standard deviation of 3.90 1 percent co-efficient of variation of 44.00, which showed high fluctuations.

The MAC Company showed it debtor turnover ratio in the above Table No.6.5 The ratio 15.24 times in 2000-01 and then after it went up to 17.43 times in 2001-02. The ratio was again gone up to 34.84 times in 2003-04 and 23.53 times in 2004-05. The ratio went down to 14.70 times in 2005-06 and 13.94 times in 2006-07. It was very high of 34.84 times in 2003-04 the ratio was on an average of 20.49 times with standard deviation of 7.52 times.
The Debtor turnover ratio of NAC was found in the above Table No.6.5. The ratio was 8.36 times in 2000-01 and inclined to 9.24 times in 2001-02 and 15.42 times in 2002-03. The ratio increased to 32.88 times in 2003-04 and 45.48 times in 2004-05. The ratio was again gone up to 86.65 times in 2005-06 and 205.41 times in the last year of the study period.

The above Table No.6.5 showed debtor turnover ratio of BAC with a fluctuating trend during the research period. The ratio was 40.44 times in 2000-01, which then after increased to 26.09 times in 2001-02 and declined to 41.64 times in 2003-04 but it went down to 31.93 times in 2004-05. The average ratio has been 35.98 times with standard deviation of 6.11 times and co-efficient of variation of 16.98 percent.
On the basis of above analysis, it can be said that the NAC Company has the highest debtor turnover ratio of 57.63 times followed by BAC, MAC, HDL, and IIC.

6.4.6 Average Collection Period:

The average collection period measures the quality of debtors since it indicates the rapidity or slowness of their collect ability. According to Recites P. Lewis., “The average collection period is a significant measure of collection activity and the quality of accounts receivables.”\(^{20}\) The shorter the average collection period, the better the quality of customers and the lower the collection expenses. Delays or prolonged hold ups are collection can cause major financial embarrassments.

As an alternative sources of funds will have to be arranged for sustaining operations. “Slow paying customers have to be handled tactfully to make prompt payments.”\(^{21}\) The formula for calculating this period can be expressed as follow:

\[
\text{Average Collection Period} = \frac{\text{Trade debtors}}{\text{Net credit sales}} \times \text{No. of Days (365)}
\]
Table No.-6.6
Average Collection Period of Selected Companies of Aluminum Companies in India from 2000-01 to 2006-07. (In Times)

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<td>26</td>
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<tr>
<td>IIC</td>
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<td>5</td>
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<td>35</td>
</tr>
<tr>
<td>NAC</td>
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<td>8</td>
<td>4</td>
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<td>4</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>51</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>BAC</td>
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<td>9</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>11</td>
<td>1</td>
<td>12</td>
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<tr>
<td>Average</td>
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<td>81</td>
<td>69</td>
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<td>22</td>
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<td>60</td>
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<td>81</td>
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<td>15</td>
<td>18</td>
<td>101</td>
<td>59</td>
<td>20</td>
<td>16</td>
<td>145</td>
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<tr>
<td>C.V.</td>
<td>181</td>
<td>176</td>
<td>184</td>
<td>181</td>
<td>183</td>
<td>71</td>
<td>72</td>
<td>167</td>
<td>199</td>
<td>65</td>
<td>87</td>
<td>169</td>
</tr>
</tbody>
</table>

Sources: from annual reports and accounts from 2000-01 TO 2006-07
In HDL the ratio of average debt collection period was ranged from 16 days to 26 days. The average ratio of the company was 19 days during the research period. The ratio of average debt collection period increased from 16 days in 2000-01 to 19 days in 2003-04, it was further increased to 21 days in 2005-06 and 26 days in 2006-07. It can infer that the AFT Ind. Ltd. could achieve quick collection from the debtors.

IIC. depicted the average debt collection period in the table No. 6.6. The average ratio of the company was 239 days during the research period. It was declined from 341 days in 2000-01 to 283 days in 2001-02 but it was raised to 345 days in 2004-05. It was again decreased to 290 days in the year of 2003-04 and remained the same in the year of 2003-04. It was marked further increasing to 326 days in the year of 2004-05. It can be inferred from the above ratio that the company has not adopted good strategy throughout the study period to improve it.

![Graph No. 6.6 Average Collection Period](image)
The ratio of average debt collection period in MAC had an increasing trend. It went down continuously from 25 days in 2000-01 to 23 days in 2002-03. It was 21 days which is lowest in the year of 2003-04 but it were very high during the last two years of the study.

The average ratio of the company was highest ratio among the selected aluminuim companies under the study. It has showed that the company has relaxed its credit policy. The company is advised to minimize the credit policy because it would increase debt collection expense and bad debts.

In NAC the ratio of average debt collection period was showed decreasing and mix trend during the study period. The ratio was varied from 2 days to 10 days with an average ratio of 6 days. It was decreased to 10 days in 2000-01 to 8 days in 2001-02 and further went down to 4 days 2003-04. It was further again came down to 2 days in 2006-07 It can be inferred that the NAC could achieve quick collection from the debtors.

The ratio of average Debt collection period of BAC recorded a fluctuating trend with the average of 11 days. The ratio ranged between 9 days in 2003-04 to 13 days in 2006-07. The average ratio of the company was below than the average of the aluminum industry. It can be inferred that the BAC should tightened it credit policy.

The average collection period thus, indicates in firm’s efficiency in the collection of receivables. The debtor ratio of aluminum industry was presented in the below table. A comparative study of the average collection period in all the companies reveals that the recovery and collection policy of
NAC, BAC, and HDL was better than other companies. On the whole, it can be suggested that IIC and MAC should tighten its credit and collection policy.

### 6.4.7 Working Capital Turnover Ratio:

In order to test the efficiency with which working capital is used, the working capital turnover ratio is calculated. The ratio is computed by dividing the amount of sales by net working capital.

\[
\text{Working capital turnover ratio} = \frac{\text{Net Sales}}{\text{Net working capital}}
\]

A close relationship exists between sales and net working capital. With any increase in sales volume, there is a corresponding increase in the working capital. Therefore, a good amount of net working capital may be needed to support the increase in sales. The turnover of net working capital is computed to test the efficiency with which net working capital is utilised. In other words, the ratio helps to assess the degree of efficiency in the use of short-term funds for generating sales.

Working capital turnover ratio reveals whether a business is being operated with a small or large amount of net working capital in relation to sales. A very high working capital ratio may be the result of favorable or may reflect an inadequacy of working capital and over trading. On the other hand, a very low ratio may be the outcome of an excess of working capital. Slow turnover
of inventories and receivables, large cash balance or investment of working capital in the form of temporary investments. The very low ratio is also an indicator of under trading which means more working capital funds have been invested in the business than needed.
### Table No.-6.7

**Working capital turnover ratio Selected Companies of Aluminum Companies in India from 2000-01 to 2006-07. (In Times)**

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</thead>
<tbody>
<tr>
<td>HDL</td>
<td>2.20</td>
<td>2.69</td>
<td>4.44</td>
<td>7.11</td>
<td>4.44</td>
<td>2.69</td>
<td>2.20</td>
<td>3.68</td>
<td>1.79</td>
<td>48.63</td>
<td>2.20</td>
<td>7.11</td>
</tr>
<tr>
<td>IIC</td>
<td>4.23</td>
<td>6.89</td>
<td>6.67</td>
<td>10.34</td>
<td>11.26</td>
<td>11.04</td>
<td>8.88</td>
<td>8.47</td>
<td>2.64</td>
<td>31.14</td>
<td>4.23</td>
<td>11.26</td>
</tr>
<tr>
<td>MAC</td>
<td>11.45</td>
<td>-6.09</td>
<td>1.32</td>
<td>-3.68</td>
<td>-5.40</td>
<td>-5.22</td>
<td>9.72</td>
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<td>7.46</td>
<td>2484.61</td>
<td>-6.09</td>
<td>11.45</td>
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<td>NAC</td>
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<td>-30.82</td>
<td>-4.49</td>
<td>-6.47</td>
<td>11.69</td>
<td>2.83</td>
<td>1.90</td>
<td>-2.00</td>
<td>14.50</td>
<td>-725.04</td>
<td>-30.82</td>
<td>11.69</td>
</tr>
<tr>
<td>BAC</td>
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<td>4.28</td>
<td>-3.77</td>
<td>3.30</td>
<td>4.56</td>
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<td>2.89</td>
<td>112.44</td>
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<td>3.64</td>
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<td>5.86</td>
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<td>5.32</td>
<td>1219.95</td>
<td>14.05</td>
<td>3.22</td>
</tr>
<tr>
<td>C.V.</td>
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<td>182.71</td>
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<td>90.77</td>
<td>312.52</td>
<td>205.09</td>
<td>34.93</td>
</tr>
</tbody>
</table>

Sources: from annual reports and accounts from 2000-01 TO 2006-07
Table No. 6.7 expressed working capital turnover ratio of HDL with fluctuated trend. The ratio was 2.20 times which then stepped up to 2.69 times in the year of 2001-02. The ratio again went up to 4.44 times in the year of 2002-03 and then rise to 7.11 times year of 2003-04. The ratio was 4.44 times in the year of 2004-05. The ratio was showing decreased trend during the last years of study period. The ratio ranged between 2.20 times in 2006-07 and 7.11 times in 2003-04. The average ratio was 3.68 times with standard deviation of 1.79 and the C.V was 48.63 percent. The ratio Working capital turnover ratio was also good in all years of study period.

Table No. 6.7 explained Working capital turnover ratio of IIC with fluctuated trend during the study period. The ratio was 4.23 times which then went up to 6.89 times in the year of 2001-02.

The ratio again went down to 6.67 times in the year of 2002-03 and then rise to 10.34 times year of 2003-04. The ratio was 11.26 times in the year of 2004-05.

The ratio was showing increased trend during the years of 2004-05 and 2005-06. The ratio ranged between 4.23 times in 2000-01 and 11.26 times in 2004-05. The average ratio was 6.52 times with standard deviation of 2.64 and the C.V was 31.14 percent. The ratio Working capital turnover ratio was also good in all years of study period.
The table No. 6.7 indicated working capital turnover ratio MAC with an average of 0.30. The ratio showed highly fluctuated trend and negative trend during the study period. The highest ratio of 11.45 times in 2000-01 and the lowest ratio of minus 6.09 times were found in 2001-02.

The ratio was 11.45 times in 2000-01 and then it moderately decreased to -6.09 times in 2001-02. The ratio was -3.68 times in 2003-04 and -5.40 times in 2004-05. The ratio was -5.22 times in 2005-06 and 9.72 times in 2006-07. The ratio manifested very good working capital turnover of MAC.
Working capital turnover ratio of NAC was manifested in the above table No. 6.7 the ratio showed downward trend during the research period. The ratio was 11.37 times in 2000-01 and then it declined to -30.82 times in 2001-02. The ratio was -4.49 times in 2002-03 and it went down to -6.47 times in 2003-04. The ratio was 11.69 times in 2004-05 and 2.83 times in 2005-06. The ratio was 1.90 times in 2006-07. The ratio ranged between -30.82 times in 2001-02 and 11.69 times in 2004-05 with an average of -2.00 times. The standard deviation of this ratio is 14.50 times and C.V. -725.04 percent. The Working capital turnover ratio is not good.

Working capital turnover ratio showed fluctuated trend of BAC during the study period. The ratio ranged between -3.77 times in 2004-05 and 4.56 times in 2006-07. The ratio has been on an average of 2.57 times with standard deviation of 2.89 times. The ratio was 3.58 times in 2000-01 and declined to 2.30 times in 2001-02. The ratio was 3.74 times in 2002-03 and 4.28 times in 2003-04. The ratio was -3.77 times in 2004-05.

The ratio had been 3.30 times in 2005-06. The ratio was 4.56 times during the last year of study period. The ratio showed efficient working capital management in company.

Working capital has been efficiently utilized in IIC followed by HDL, BAC. But the same was not properly utilized in MAC and NAC. In NAC the company has excess liabilities over current assets which pressures on liquidity.
6.4.8 Finished goods turnover: (stock Turnover)

The number of times the average stock is turned over during the year is known as stock turnover. It is computed by dividing the cost of goods sold by the average stock in the business. Average stock is the average of opening and closing stock of the year. If however, the monthly figures of the stocks are available, the average monthly stock will give a better turnover ratio.

\[
\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}
\]

This ratio signifies that the average stock is turned over four times during the year. If figures for cost of goods sold are not available, then the ratio may be calculated on the basis of sales.

The ratio is very important in judging the ability of management with which it can move the stock. The higher the turnover ratio, the more profitable the business would be. The firm in such a case will be able to trade on a smaller margin of gross profit. A low turnover indicates accumulation of slow-moving, obsolete and low-quality goods, which is a danger signal to the management.

Inventory Turnover indicates the Efficiency of firm’s Inventory management. It shows rapidity of turning inventories into sales. Generally, a high turnover is indicative of good inventory management. Simultaneously.
A low inventory turnover implies excessive inventory level that warren Tea Ltd. by production and sales activities, or a slow moving or obsolete inventory. A high level of sluggish inventory amounts to unnecessary tie-up of funds, impairment of profit and increased cost. On the other hand a very high inventory turnover may be the result of a very low level of inventory turnover may be the result of a very low level of inventory which results in frequent stockiest. The inventory will also be high if the firm replenishes its inventory in too many small lot sizes. The situation of frequent stick outs and too many small inventory replacements are costly for the firm. Thus, too high and too low inventory turnover rates are not preferred. The inventory turnover ratio has been calculated by dividing the figure of sales by the figure of the inventory.
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<td>5.75</td>
<td>6.55</td>
<td>5.38</td>
<td>5.40</td>
<td>6.04</td>
<td>5.82</td>
<td>8.75</td>
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<tr>
<td>NAC</td>
<td>3.23</td>
<td>3.25</td>
<td>3.56</td>
<td>4.17</td>
<td>4.17</td>
<td>4.18</td>
<td>3.86</td>
<td>3.77</td>
<td>11.37</td>
<td>3.23</td>
<td>4.18</td>
</tr>
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<td>3.78</td>
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<td>7.42</td>
<td>7.26</td>
<td>7.57</td>
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<td>6.66</td>
<td>3.78</td>
<td>7.66</td>
<td>3.78</td>
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<td>Average</td>
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<td>4.28</td>
<td>5.01</td>
<td>5.32</td>
<td>3.97</td>
<td>3.86</td>
<td>4.17</td>
<td>4.45</td>
<td>30.62</td>
<td>3.86</td>
<td>5.32</td>
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<tr>
<td>S.D.</td>
<td>1.11</td>
<td>1.23</td>
<td>1.53</td>
<td>1.56</td>
<td>2.72</td>
<td>2.92</td>
<td>2.91</td>
<td>1.70</td>
<td>35.76</td>
<td>1.96</td>
<td>1.57</td>
</tr>
<tr>
<td>C.V.</td>
<td>24.44</td>
<td>28.74</td>
<td>30.44</td>
<td>29.24</td>
<td>68.38</td>
<td>75.62</td>
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<td>81.91</td>
<td>116.76</td>
<td>68.08</td>
<td>28.60</td>
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</tbody>
</table>

Sources: from annual reports and accounts from 2000-01 TO 2006-07
In HDL Finished goods turnover ratio marked a varying trend for the study period, 2000-01 to 2006-07 with an average ratio of 3.31 times. The ratio was increased from 3.55 times in 2000-01 to 3.61 times in 2001-02 and further decreased to 3.51 times in 2002-03 and it was the highest ratio 4.00 times in 2003-04. But during year of 2005-06 it was declined to 2.15 times. Again it rose to 3.31 times in 2006-07. The Finished goods turnover ratio was satisfactory.

IIC Finished goods turnover ratio registered a fluctuating trend during the study period. The ratio of the company was varied from 0.00 times in 2004-05 to 5.14 times in 2002-03. The average ratio of the company was 2.70 times which was less the average ratio of the aluminum industry. The stock turnover ratio of the company is giving very good gross profit in first three year of study period but in last three year it was zero generating negative gross profit.
MAC showed finished goods turnover ratio in the above table marking a decreasing trend. The ratio was increased from 5.25 times in 2000-01 to 6.35 times in 2001-02 and sharply dropped it to 5.75 times in 2002-03. It was further increased to 6.55 times in 2003-04 and also decreased to 5.38 times in 2004-05. The ratio marked to 5.40 times during 2005-06. But in the last year of the study it was 6.04 times with an average ratio of the company was 5.82 times which was indicating the good sign of profitability. The management is always interested to increase this ratio.
Finished goods turnover ratio in NAC showed a fluctuating trend. It was ranged between 3.23 times in 2000-01 to 4.18 times in 2005-06. The ratio of the company was gone up from 3.23 times in 2000-01 to 3.25 times in 2001-02 and further gone up to 3.56 times in 2002-03. The ratio again rose to 4.17 times in 2003-04 and 4.18 times in 2005-06. But in last year of the study period the ratio was 3.86 times. However the average ratio of the company was satisfactory.

The above table manifested the finished goods turnover ratio of BAC. The ratio of the company varied in upward direction during the study period. The ratio was decreased from 5.80 times in 2000-01 to 3.78 times in 2001-02 but it was increased to 7.10 times in 2002-03. After this year the ratio showed increasing trend during the last years of study period and marked 7.66 times. The ratio of the company was satisfactory.

On the basis of the above analysis it can be said that the average ratio of the aluminum industry had a fluctuating trend with an average ratio of 4.45 times. The finished goods turnover ratio of BAC followed MAC, HDL and HDL.
Chapter titled “ANALYSIS OF WORKING CAPITAL” describe that its one of the important measurement of the financial position of the business organization. The concept and nature of working capital or current assets denotes that “Investment in current assets is turned over many times in a year. Investment in current assets such as inventories and book debts (accounts receivable) is realized during the firms operating cycle which is usually less than year.” Therefore measurement liquidity has its own important. Importance of liquidity describes that it’s lifeblood and controlling nerve center of the business. Without circulation of blood no one can live, just like without circulation of liquidity business can’t maintain.

The performance of liquidity can be judged by investment in working capital, short-term creditors, and efficiency in working capital. In the present study there where six types of ratios was calculated i.e. current ratio, quick ratio, and inventory turn over ratio working capital turnover ratio, debtor turnover ratio, and average collection period. Thus above analysis describe that the need for liquidity to rub day-to-day business activities can’t be over emphasized.
REFERENCES:


8. K.Rajeshwar Rao “Working capital planning and control in public enterprises in India.” Ajanta Publications (India), Jawaharlal Nagar, Delhi-110007, 1985, P.4


21. Ibid, P.22
CHAPTER 7
ANALYSIS OF ACTIVITY
CHAPTER – 7
ANALYSIS OF ACTIVITY

7.1 Concept of activity analysis

7.2 Activity Ratio :
   7.2.1 Total assets turnover ratio
   7.2.2 Fixed Assets Turnover Ratio
   7.2.3 Current Assets Turnover Ratio
   7.2.4 Capital Turnover Ratio
   7.2.5 Raw Materials to net Sales Ratio
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• Conclusion
• References
7.1 CONCEPT OF ACTIVITY ANALYSIS

A sale of product is the primary object of any business enterprise. It is pivotal around which all activities of business are clusters. The increase or decrease of Business profit depends on the magnitude of sale because it is the key figure in the business enterprise. Income from net sales is the lifeblood of every commercial and industrial business. Sales support life of business, more sales, more profit and less sales less profit or even there may be loss. Thus resale, are to a business enterprise what oxygen is to the human being, a very material increase in the volume of the quantity of inhaled oxygen has upon the human organism. The quantity, quality and regularity of flow of sales revenue govern the physical appearance and the internal conditions of the business organism. In fact with the higher volume of sales the business operates with greater profits and effectiveness and operations are speeded up.

It is apparent, therefore, that the significance of any business activity can be measured in terms of its contribution towards sales. Activity radios are turnover ratios where the significance of financial figures is measured in terms of sales of business enterprise the overall profitability of any business largely depends on two factories (1) The rate of return on capital employed and (2) The turnover.
The turnover means the number of times an asset flows through a business firm’s operation and into sales. The relation between sales and profits is known as profit margin and the relation between the sales and assets is known as Assets turnover. Any change in assets turnover would affect the profitability of a business. Hence, a detailed analysis of assets turnover has been made for better study and tracing the factories responsibly for changes in the profitability.

7.2 ACTIVITY RATIO:

Activity ratios are concerned with how efficiency the assets of the firm are managed or utilized. These ratios indicate the rate at which different assets are turned over in the process of doing business. The greater rate of turnover or conversion, the more efficient the utilization or management, other things being equal, resulting in higher profitability. Some times these ratios are called efficiency ratios, or investment turnover ratios.

Thus, Turnover ratios reflect the relationship between the level of the sales and the various assets and a proper balance between assets and sales shows better management of assets. Different activity ratios have been computed for judging the effectiveness of assets utilization. These ratios are as discussed below:
(1) Total Assets Turnover Ratio
(2) Fixed Assets Turnover Ratio
(3) Current Assets Turnover ratio
(4) Capital Turnover Ratio
(5) Raw Materials to net Sales Ratio
(6) Wages and Salaries to net Sales Ratio
(7) Power and Fuel (Energy) to net Sales Ratio
(8) Selling & Distribution (Marketing) to Net Sales Ratio
(9) Depreciation to Sales Ratio
(10) Financial charges to Gross sales

7.2.1 Total Assets Turnover Ratio:-

The Total Assets Turnover Ratio is an indication of financial soundness of the business in terms of the sales revenue generated against total funds employed in the business. This ratio also indicates the efficiency with which the assets of the company here been utilized. A high ratio suggests better utilization of the total assets of vice-versa. However, care should be taken in drawing conclusions. Some times the purchase of assets may not result in higher the sales but may, however, cause reduction in cost and thereby result in an increasing the profit. In such cases even if the ratio declines, the situation is considered favorable. Thus, this ratio is a measure of performance of the business. This is also termed as capital turnover ratio and this ratio can be calculated as:
Net Sales

\[
\text{Total Assets Turnover} = \frac{\text{Net Sales}}{\text{Total Assets}}
\]

A high ratio depicts that total assets utilized efficiently, but a low ratio may be caused due to large outlays on fixed assets. A company must manage its total assets efficiently and generates maximum sales through proper utilization of assets. Table no.1 represents the total turn over ratio in alluminuim companies under study during the years 2000-01 to 2006-07.
Table No.7.1

Total assets turnover ratio in aluminum companies under study during the years 2000-01 to 2006-07.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>HDL</td>
<td>1.25</td>
<td>1.22</td>
<td>1.18</td>
<td>1.05</td>
<td>1.02</td>
<td>0.92</td>
<td>0.84</td>
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<td>0.09</td>
<td>0.09</td>
<td>0.08</td>
<td>1.86</td>
<td>1.98</td>
<td>0.616</td>
<td>0.892</td>
<td>144.8</td>
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<td>8.651</td>
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<td>0.76</td>
<td>0.7</td>
<td>0.776</td>
<td>0.049</td>
<td>6.353</td>
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<tr>
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<td>0.47</td>
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<td>0.39</td>
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<td>0.047</td>
<td>11.22</td>
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<td>Average</td>
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<td>0.642</td>
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<td>0.606</td>
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<td>62.958</td>
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<td>58.321</td>
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<td>151.4</td>
<td>162.4</td>
<td>58.321</td>
<td>66.59</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies
Table no.7.1 makes it evident that the total assets turnover ratio in HDC decreasing continuously from 2000-01 to 2006-07. It was 1.25 times in 2000-01 and it was 1.22 times in 2001-02. The ratio then after slightly declined to 1.18 times in 2002-03 and 1.05 times 2003-04. The ratio was 0.92 times in 2005-06 which was not good but it was above one in 2006-07. The average ratio was 1.069 times with the standard deviation of 0.156 percent and co-efficient of variation of 14.56 percent.

The ration ranged between 0.84 times in 2006-07 and 1.25 times in 2000-01. The total assets turn over ratio except in 2005-06 and 2006-07 indicates good operational efficiency use of the total assets.

The above Table no.7.1 showed total assets turn over ratio of the IIC. The average ratio has been 0.616 with fluctuating trend during the study period. The ratio was 0.11 times in 2000-01, which decreased to 0.1 times in 20001-02. The further stepped down to 0.09 times in 2002-03 and to 0.09 times in 2003-04 then it slightly went down to 0.08 2004-05 times. The ratio rose and reached to 1.86 2005-06 and 1.98 times in 2006-07. The turnover ratio from 2002-03 to 2004-05 was below one, which does not show good operation efficiency of the company. However, the turnover ratio increased to 1.86 times in 2005-06 and 1.98 times in 2006-07. The ratio was 1.98 times 2006-07, which was the highest ratio during the study period. The operational efficiency of the total assets in the last two years was very good. The standard deviation was 0.892 times and co efficient of variation was 144.8 percent.
In Table, no.7.1 MIC witnessed a fluctuating and decreasing trend in total assets turnover ratio. It was 0.82 times in 2000-01, which stepped down to 0.8 times in 2001-02 but thereafter it continuously stepped down. It slightly went up to 0.8 times in 2004-05 and further went down to 0.78 times in 2005-06. The ratio went down to 0.75 times in 2006-07.. The average ratio was 0.757 times with standard deviation of 0.066 percent and co-efficient of variation of 8.651 percent. The operation efficiency was the worst of this company. Total assets cannot generate sales up the mark.
The above Table no. 7.1 witnessed total assets turnover of the NAC. The total assets turnover ratio showed very decreasing trend during the study period. The ratio was 0.86 times in 2000-0 and it was 0.81 times in 20001-02. The ratio was not good in these years. However, it was slightly gone down to 0.77 times 2002-03 and 0.76 times in 2003-04. The ratio was less than one in all years of study period. The standard deviation was 0.049 times and co-efficient of variation was 6.353 percent. The ratio has been the highest of 0.86 times in the years of 2000-01 and the lowest of 0.7 times in 2006-07. The ratio was not showing good operational efficiency

The above Table no. 7.1 showed total assets turnover ratio of BAC. The ratio indicated the fluctuated and decreasing trend during the study period. The ratio was 0.43 times in 2000-01, which was less than the one. The ratio was highly increased to 0.46 times in 20001-02 and after this year, the ratio declined to 0.45 times in 2002-03. The ratio was 0.47 times in 2003-04 and 0.36 times in 2004-05 indicating lower efficiency use of assets. The ratio was the lowest in the last year of the study period. The average ratio was 0.417 times with a standard deviation of 0.047 times and co-efficient variation of 11.22 percent. The over all operational efficiency has been very good.

Above analysis, shows that the total assets turnover ratio of HDL was found very highest of 1.069 times followed by NAC, MAC, IIC, and BAC. The average ratio of HDL was above the total average of industry. This company has utilized its total assets efficiently and others is advised to utilize the total assets efficiently to generate the enough sales
Total Assets Turnover Ratio (ANOVA Test)

**Null Hypothesis:** There is no any significant difference in Total Assets Turnover Ratio of alluminuim units under study.

**Alternative hypothesis:** There is significant difference in Total Assets Turnover Ratio of alluminuim units under study.

**Level of Significance:** 5 percent

**Critical value:** 2.44

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
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</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.636554</td>
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<td>0.106092</td>
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<td>0.211843</td>
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<tr>
<td>Total</td>
<td>6.568154</td>
<td>34</td>
<td></td>
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</tr>
</tbody>
</table>

Since $F_{cal} < F_{critical}$ (at 5% significance level), the null hypothesis is accepted and alternative hypothesis is rejected and hence it is concluded that Total Assets Turnover Ratio does not differ significantly.

**7.2.2 Fixed Assets Turnover Ratio:**

The fixed assets turnover ratio means the efficiency with which the firm is utilizing in fixed assets. It also indicates the adequacy of sales in relation to
the investment in fixed assets turnover ratio is sales divided by fixed assets less depreciation and can be expressed as:

\[
\text{Net Sales} \quad \frac{\text{Fixed Assets Turnover Ratio}}{\frac{\text{Net Fixed Assets less Depreciation}}{\text{Net Fixed Assets less Depreciation}}}
\]

Generally, a high fixed assets turnover indicates efficient utilization of fixed assets in generating sales while a low ratio indicates inefficient management and utilization of fixed assets. It also indicates that the company has an excessive investment in fixed assets in comparison of the volume sales. To obtain fixed turnover ratio sales divided by the depreciated value of fixed assets, not the market value. Thus, a firm whose plant and machinery has considerably depreciated may show a higher fixed assets turnover ratio than firm, which has purchased plant and machinery recently. The fixed assets turnover ratio of the selected alluminumim companies in India has been cataloged in table
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>2.46</td>
<td>2.42</td>
<td>2.35</td>
<td>2.19</td>
<td>2.07</td>
<td>1.85</td>
<td>1.71</td>
<td>2.15</td>
<td>0.2888</td>
<td>13.435</td>
<td>1.71</td>
<td>2.46</td>
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<td>0.12</td>
<td>0.12</td>
<td>0.1</td>
<td>0.09</td>
<td>1.22</td>
<td>1.21</td>
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<td>0.5384</td>
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<td>MAC</td>
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<td>0.94</td>
<td>0.91</td>
<td>0.89</td>
<td>0.88</td>
<td>0.87</td>
<td>0.914</td>
<td>0.036</td>
<td>3.9363</td>
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<td>0.96</td>
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<td>NAC</td>
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<td>0.84</td>
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<td>0.72</td>
<td>0.7</td>
<td>0.67</td>
<td>0.66</td>
<td>0.746</td>
<td>0.0783</td>
<td>10.498</td>
<td>0.66</td>
<td>0.85</td>
</tr>
<tr>
<td>BAC</td>
<td>0.44</td>
<td>0.43</td>
<td>0.43</td>
<td>0.41</td>
<td>0.4</td>
<td>0.42</td>
<td>0.41</td>
<td>0.42</td>
<td>0.0141</td>
<td>3.3672</td>
<td>0.4</td>
<td>0.44</td>
</tr>
<tr>
<td>Average</td>
<td>0.968</td>
<td>0.952</td>
<td>0.924</td>
<td>0.866</td>
<td>0.83</td>
<td>1.008</td>
<td>0.972</td>
<td>0.931</td>
<td>0.1911</td>
<td>31.456</td>
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<tr>
<td>S.D.</td>
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<td>53.05</td>
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<tr>
<td>C.V.</td>
<td>92.7</td>
<td>92.953</td>
<td>92.8613</td>
<td>92.5756</td>
<td>91.1731</td>
<td>55.0188</td>
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<td>76.59</td>
<td>116.48</td>
<td>168.65</td>
<td>52.0763</td>
<td>92.953</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies.
Table No.7.3 indicates that fixed assets turnover ratio in HDL witnessed continuously decreasing trend during the study period. It was 2.46 times in 2000-01, which decreased to 2.42 times in 2001-02. The ratio was 2.35 times in 2002-03 and 2.19 times in 2003-04. The ratio again decreased to 2.07 times in 2004-05 and 1.85 times in 2005-06. The ratio decreased due to continuously decreasing sales in during the study period. The average ratio was 2.15 times. The ratio declined due to new addition of fixed assets in 2005-06 and 2006-07. The standard deviation of the entire group was 0.289 and coefficient of variation was 13.43, which showed high fluctuation during the study period.

The above Table No.7.3 showed fixed assets turnover ratio of IIC, which showed fluctuating trend during the study period. The ratio was 0.13 times in 2000-01 and went down to 0.12 times in 2001-02 and 0.12 times in 2002-03. The ratio was again gone up to 0.1 times in 2003-04. The fixed assets turnover ratio after this year stepped down to 0.09 times in 2004-05 and then it rose 1.22 times in 2005-06. The fixed assets turnover ratio was 1.21 times in 2006-07, which was more than one times. The standard deviation was 0.538 and coefficient of variation was 12.60 percent. The average ratio was 0.427 times, which was more than one times indicating good operational efficiency of fixed assets. The company could generate good volume of sales by utilizing fixed assets efficiently.
The above Table No.7.3 showed fixed assets turnover ratio of MAC with an average of 0.914 times. The ratio ranged between minimum of 0.87 times in 2006-07 and maximum 0.96 times in 2000-01. The ratio was not good in all the years. The fixed assets turnover ratio of MAC showed a declining trend during the study period. The standard deviation was 0.036 and coefficient of variation was 3.936 percent, which showed low fluctuation in the ratios. The Company has made addition to existing assets in all years of study period. That is why the ratio was slightly gone down.

Fixed assets turnover ratio of NAC depicted in above Table No.7.3. The ratio showed decreased trend during the study period. The average ratio was 0.746 times with standard deviation of 0.0783 times and co-efficient of
variation of 10.49 percent. The fixed assets turnover ratio was 0.85 times in 2000-01, which found, decreased to 0.84 times in 2001-02. The fixed assets turnover ratio was 0.78 times in 2002-03 and rose to 0.72 times in 2003-04. The ratio was then after slightly gone up to 0.7 times. The ratio was 0.67 times in 2005-06 and 0.66 times in 2006-07. The standard deviation was 0.0783 and co-efficient of variation was 10.498 percent, which showed low fluctuation in the ratios In most of the years the ratio has been less than one which indicating inefficiently utilization of the fixed assets.

Table No.7.3 indicates the fixed assets turnover ratio of BAC showed increasing trend during the study period. The average ratio has been 0.42 times with the standard deviation of 0.0141 times and co-efficient of variation was 3.3672 percent. The ratio was 0.44 times in 2000-01 and then it rose to 0.43 times in 2001-02 and 0.43 times in 2002-03. The ratio was 0.41 times in 2003-04 and 0.4 times in 2004-05. The fixed assets turnover ratio was 0.42 times in 2005-06 and then it increased to 0.41 times in 2006-07. The ratio was not good during the study period. The standard deviation was 0.0783 with co-efficient of variation of 3.37. The ratio was less than one times which indicates inefficiency and ineffective utilization of the fixed assets.

The above analysis showed that the operational efficiency of fixed assets was the best of HDL followed by MAC, NAC and BAC. All selected companies need to utilize the fixed assets effectively and efficiency, so that the company could generate enough sales.
Fixed Assets Turnover Ratio (ANOVA Test)

**Null Hypothesis:** There is no any significant difference in Fixed Assets Turnover Ratio of alluminuim units under study units under study.

**Alternative hypothesis:** There is significant difference in Fixed Assets Turnover Ratio of alluminuim units under study units under study.

**Level of Significance:** 5 percent

**Critical value:** 2.45

**Degree of freedom:** 34

<table>
<thead>
<tr>
<th><strong>Source of Variation</strong></th>
<th><strong>SS</strong></th>
<th><strong>df</strong></th>
<th><strong>MS</strong></th>
<th><strong>F</strong></th>
<th><strong>P-value</strong></th>
<th><strong>F crit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.119469</td>
<td>6</td>
<td>0.019911</td>
<td>0.033964</td>
<td>0.999803</td>
<td>2.445259</td>
</tr>
<tr>
<td>Within Groups</td>
<td>16.41496</td>
<td>28</td>
<td>0.586249</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16.53443</td>
<td>34</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

It is evident from Table no.7.4 that the difference between Fixed Assets Turnover Ratio in between groups and within groups was not significant because the calculated value of ‘F’ (0.034) was lower than the critical value of ‘F’ (2.45) so, null hypothesis is accepted and alternative hypothesis is rejected. Therefore, it indicates a low deviation in Fixed Assets Turnover Ratio of alluminuim units under study.
7.2.3 **Current Assets Turnover Ratio:**

The ratio is indicative of the over-all marking efficiency of the organization. The ratio also shows the unnecessary locking up of capital in inventories and funds tied up in unrealized sundry debts. Further, this ratio also suggests whether the sales are adequate in comparison to current assets or whether the current assets are too high in comparison to the sales. Thus, the ratio is an index of ‘efficiency’ or ‘profitability’ of a business firm. The current asset of a business firm includes inventories, sundry debtors, bills receivable, cash and bank lance, short-term loans and advances and other current asset.

\[
\text{Current assets turnover ratio} = \frac{\text{Sales}}{\text{Current assets}}
\]

The higher ratio of current assets reveals the better and efficiency management and utilization of current assets and vice-versa.
Table No.7.5

Current assets turnover ratio of alluminuim companies under study during the years 2000-01 to 2006-07. (In times)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>1.72</td>
<td>1.39</td>
<td>1.72</td>
<td>2.08</td>
<td>2.14</td>
<td>1.66</td>
<td>2.36</td>
<td>1.87</td>
<td>0.34</td>
<td>18.00</td>
<td>1.39</td>
<td>2.36</td>
</tr>
<tr>
<td>IIC</td>
<td>2.62</td>
<td>2.42</td>
<td>2.40</td>
<td>2.73</td>
<td>2.31</td>
<td>2.52</td>
<td>2.56</td>
<td>2.51</td>
<td>0.14</td>
<td>5.74</td>
<td>2.31</td>
<td>2.73</td>
</tr>
<tr>
<td>MAC</td>
<td>2.99</td>
<td>1.54</td>
<td>0.78</td>
<td>4.15</td>
<td>3.34</td>
<td>2.96</td>
<td>1.42</td>
<td>2.46</td>
<td>1.22</td>
<td>49.66</td>
<td>0.78</td>
<td>4.15</td>
</tr>
<tr>
<td>NAC</td>
<td>0.16</td>
<td>0.11</td>
<td>0.20</td>
<td>0.20</td>
<td>0.13</td>
<td>0.08</td>
<td>0.08</td>
<td>0.14</td>
<td>0.05</td>
<td>37.91</td>
<td>0.08</td>
<td>0.20</td>
</tr>
<tr>
<td>BAC</td>
<td>1.23</td>
<td>0.85</td>
<td>1.40</td>
<td>1.25</td>
<td>2.68</td>
<td>2.36</td>
<td>2.04</td>
<td>1.69</td>
<td>0.68</td>
<td>40.10</td>
<td>0.85</td>
<td>2.68</td>
</tr>
<tr>
<td>Average</td>
<td>1.74</td>
<td>1.26</td>
<td>1.30</td>
<td>2.08</td>
<td>2.12</td>
<td>1.91</td>
<td>1.69</td>
<td>1.73</td>
<td>0.49</td>
<td>30.28</td>
<td>1.26</td>
<td>2.12</td>
</tr>
<tr>
<td>S.D.</td>
<td>1.13</td>
<td>0.86</td>
<td>0.85</td>
<td>1.50</td>
<td>1.20</td>
<td>1.13</td>
<td>1.00</td>
<td>0.96</td>
<td>0.47</td>
<td>17.91</td>
<td>0.85</td>
<td>1.50</td>
</tr>
<tr>
<td>C.V.</td>
<td>64.93</td>
<td>67.77</td>
<td>65.16</td>
<td>71.74</td>
<td>56.82</td>
<td>58.90</td>
<td>58.96</td>
<td>55.48</td>
<td>97.80</td>
<td>59.15</td>
<td>56.82</td>
<td>71.74</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companie
Above Table No.7.5 showed current assets turnover ratio of HDL under study. The ratio of this company showed slightly fluctuating trend during the study period. The ratio was 1.72 times in 2000-01, which then decreased and reached at 1.39 times in 20001-02. The ratio was slightly gone down to 2.08 times in 2003-04 but it again rose to 2.14 times in 2004-05. The ratio showed decreased 1.66 times in 2005-06. The ratio was gone up to 2.36 times in 2006-07. The average ratio was 1.87 times with standard deviation of 0.34 times and co-efficient of 18.00 percent. The ratio was more than one all years of study period showing good and efficiency utilization of current assets.
The above Table No.7.5 showed current assets turnover ratio of 2.62. The ratio registered a progressive trend up to 2003-04 and then showed a declining trend. The average ratio was 2.51 times with a standard deviation of 0.14 times, which was below the average ratio the company. The ratio ranged between a maximum of 2.31 times in 2004-05 and a minimum of 2.73 times in 2003-04. The ratio was very good and showed efficiency utilization of the current assets.

The current assets turnover ratio of MAC was manifested in the above Table No.7.5. The ratio was showing highly fluctuated trend the research period. The ratio was 2.99 times in 2000-01, which then went down to 1.54 times in 2001-02. The ratio was 0.78 times in 2002-03 and then after it rose to 4.15 times in 2003-04.
The ratio again rises to 4.15 times in 2003-04 and reaches at 3.34 times in 2004-05. The ratio again stepped down to 2.96 times in 2005-06. The average ratio was 2.46 times, which was more than two times, indicated good utilization of current assets to generate sales.

The current assets turnover ratio of NAC showed in the above Table No.7.5. The ratio found the highest of the times in 2003-04 and found the lowest 0.08 times in 2005-06. The ratio has been on an average of 0.14, which was marginally less than the industry average showing bad position of the company. The standard deviation was 0.05 times and co-efficient of variation was 37.91 percent that showed fluctuation in the ratio the company.

The BAC Company showed it current assets turnover ratio in the above Table No.7.5, which indicated progressive trend during the study period. The ratio sawed ranged between 0.85 times in 2001-02 and 2.68 times in 2004-05 with average of 1.69 times. The standard deviation was 0.68 times with co-efficient of variation was 40.10 percent. The current assets turnover ratio was good except on 20001-02 during the study period.

On the basis of above analysis, it can be said that the utilization of current assets Based on average ratio was better in MAC followed by IIC, HDL, and BAC. While NAC should utilize current assets efficiently.
Current Assets Turnover Ratio (ANOVA Test)

**Null Hypothesis:** There is no any significant difference in Current Assets Turnover Ratio of alluminuim units under study.

**Alternative hypothesis:** There is significant difference in Current Assets Turnover Ratio of alluminuim units under study.

**Level of Significance:** 5 percent

**Critical value:** 2.445259

**Degree of freedom:** 34

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3.575649</td>
<td>6</td>
<td>0.595941</td>
<td>0.480311</td>
<td>0.81721</td>
<td>2.445259</td>
</tr>
<tr>
<td>Within Groups</td>
<td>34.74074</td>
<td>28</td>
<td>1.240741</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>38.31638</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is evident from Table No.7.6 that the difference between Current Assets Turnover Ratio in between groups and within groups was not significant because the calculated value of ‘F’ (0.480) was less than the critical value of ‘F’ (2.44) so, null hypothesis is accepted and alternative hypothesis rejected. Therefore, it indicates a low deviation in Current Assets Turnover Ratio of alluminuim r units under study.
7.2.4 Capital Turnover Ratio:

This ratio explains the relationship between net sales to capital employed. This ratio refers over all profitability of a firm and refers efficiency of management. This ratio can be worked out as below:

\[
\text{NET SALES} \\
\text{CAPITAL TURNOVER RATIO} = \frac{\text{NET SALES}}{\text{CAPITAL EMPLOYED}}
\]

Thus capital turnover ratio, however defined, measures the efficiency of a firm in managing and utilizing its capital, the higher turnover ratio. The more efficient the management and utilization of available capital while low turnover ratios indicative of under utilization of available capital. The capital turnover ratio of Alluminuim industry of company is given below.
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>59.71</td>
<td>36.7</td>
<td>30.8</td>
<td>19.6</td>
<td>15.74</td>
<td>7.63</td>
<td>7.44</td>
<td>25</td>
<td>18.7</td>
<td>73.7</td>
<td>7.44</td>
<td>59.7</td>
</tr>
<tr>
<td>IIC</td>
<td>0.25</td>
<td>0.21</td>
<td>0.22</td>
<td>5.23</td>
<td>4.441</td>
<td>4.41</td>
<td>4.09</td>
<td>2.7</td>
<td>2.33</td>
<td>86.6</td>
<td>0.21</td>
<td>5.23</td>
</tr>
<tr>
<td>MAC</td>
<td>1.333</td>
<td>1.49</td>
<td>1.22</td>
<td>1</td>
<td>0.868</td>
<td>0.88</td>
<td>0.86</td>
<td>1</td>
<td>0.26</td>
<td>23.5</td>
<td>0.86</td>
<td>1.49</td>
</tr>
<tr>
<td>NAC</td>
<td>25.4</td>
<td>19.4</td>
<td>15.5</td>
<td>14.6</td>
<td>15.3</td>
<td>15.8</td>
<td>14.4</td>
<td>17</td>
<td>3.99</td>
<td>23.2</td>
<td>14.4</td>
<td>25.4</td>
</tr>
<tr>
<td>BAC</td>
<td>3.456</td>
<td>2.86</td>
<td>2.82</td>
<td>1.91</td>
<td>2.626</td>
<td>2.82</td>
<td>2.86</td>
<td>2.76</td>
<td>0.46</td>
<td>16.5</td>
<td>1.91</td>
<td>3.46</td>
</tr>
<tr>
<td>Average</td>
<td>18.03</td>
<td>12.1</td>
<td>10.1</td>
<td>8.47</td>
<td>7.794</td>
<td>6.31</td>
<td>5.94</td>
<td>9.8</td>
<td>5.15</td>
<td>44.7</td>
<td>5.94</td>
<td>18</td>
</tr>
<tr>
<td>S.D.</td>
<td>25.49</td>
<td>15.79</td>
<td>13.11</td>
<td>8.23</td>
<td>7.17</td>
<td>5.85</td>
<td>5.30</td>
<td>10.7</td>
<td>7.73</td>
<td>32.8</td>
<td>5.99</td>
<td>24.7</td>
</tr>
<tr>
<td>C.V.</td>
<td>141.37</td>
<td>130.5</td>
<td>129.8</td>
<td>97.14</td>
<td>91.94</td>
<td>92.77</td>
<td>89.3</td>
<td>109</td>
<td>150</td>
<td>73.4</td>
<td>101</td>
<td>137</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies
The above Table No.7.7 showed capital turnover ratio of HDL, which was indicating decreasing trend during the study period. The average ratio had been 25 times during the study period. The ratio was 59.71 times in 2000-01 and it went down to 36.7 times in 2001-02. The ratio slightly declined to 30.8 times in 2002-03 and then after it again went down to 19.6 times in 2003-04. The ratio was 15.74 times in 2004-05 and 7.63 times in 2005-06. The ratio was sharply gone up to 7.44 times in 2006-07. The ratio was showing efficiency utilization of capital employed during the study period.

The capital turnover ratio of IIC was seen in the Table No7.7. The ratio was indicating declining trend during the study period. The ratio was 0.25 times in 2000-01 and 0.21 times in 2001-02. The ratio again increased and went down to 0.22 times but it was 5.23 times 2003-04 and 4.441 times in 2004-05. The ratio was 4.41times in 2005-06 and then it stepped down to 4.09 times in 2006-07. The capital turnover ratio was has been on average 2.7 times with standard deviation of 2.33 times and co-efficient of variation of 86.6 times.

The capital turnover ratio of MAC has been depicted in the above Table No.7.7. The capital turnover ratio was 1.333 times in 2000-01, which fluctuated and went up to 1.49 times in 2001-02. The ratio was 1.22 times in 2002-03 and then after it went down to 1 times in 2003-04. The ratio ranged between 0.86 times in 2006-07 and 1.49 times in 2001-02 with an average of 1.1 times. The ratio has been less than one from 2005-06 to 2006-07, Then after the ratio has been increased from 2000-01 to 2001-02 which showed the good efficiency of the capital employed.
The capital turnover ratio of NAC found in the above Table No.7.7. The ratio was 25.4 times in 2000-01 and 19.4 times in 2001-02. The ratio then after went down to 15.5 times in 2002-03 and 14.6 times in 2003-04. The ratio has been 15.3 times in 2004-05 and 15.8 times in 2005-06 and 14.4 times in 2006-07. The ratio on an average has been 17 times, which was more than the one time that showed efficiency in utilization in capital employed.

The capital turnover ratio of BAC was seen in the above Table No.7.7. The ratio ranged between 1.91 times in 2003-04 and 3.46 times in 2000-01 with an average of 2.76 times. The average ratio was less than industry average. The standard deviation was 0.46 times and co-efficient of variation was 16.5 percent.

Based on above analysis, said that the HDL showed the highest turnover ratio followed NAC, BAC, IIC, and MAC. This ratio in most of the company has been more than one, which shows efficiently uses of capital employed

**Capital Turnover Ratio (ANOVA Test)**

**Null Hypothesis:** There is no any significant difference in Capital Turnover Ratio of alluminuim units under study.

**Alternative hypothesis:** There is significant difference in Capital Turnover Ratio of alluminuim units under study.
Level of Significance: 5 percent

Critical value: 2.45

Degree of freedom: 34.00

Table No.7.8
Capital Turnover Ratio (ANOVA Test)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>531.15</td>
<td>6.00</td>
<td>88.52</td>
<td>0.49</td>
<td>0.81</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5012.66</td>
<td>28.00</td>
<td>179.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5543.81</td>
<td>34.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No.7.8 indicates there is not significant difference in capital turnover ratio of alluminuim units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis is accepted and alternative hypothesis is rejected. It concludes that there is a low deviation in the capital turnover ratio of fertilizers units under study.
7.2.5 **Raw Materials to net Sales Ratio:-**

“The modifier ‘raw’ is used in broader sense, as this category includes all the materials used in broader sense, i.e. all the materials used in production, whether in a natural state or changed by previous processing.” In the present study raw materials means the material used in the manufacturing process. The figure of raw materials consumed has been arrived by adding the purchases of raw material and the totals reduced by the closing stock of raw material given at the end of the financial year. Raw material consumed to net sales ratio indicates the relationship between the raw materials consumed and the net sales in the fertilizer processing units in India. It can be calculated based on the following formula:

\[
\text{Raw materials Consumed to Net Sales} = \frac{\text{Raw materials Consumed}}{\text{Net sales}} \times 100
\]
### Table No. – 7.9
Raw materials Consumed to Net Sales ratio of aluminum companies under study during the years 2000-01 to 2006-07. (In percent)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>17</td>
<td>18</td>
<td>44</td>
<td>47.2</td>
<td>45.07</td>
<td>54.1</td>
<td>56.2</td>
<td>40</td>
<td>16.2</td>
<td>40.4</td>
<td>16.8</td>
<td>56.2</td>
</tr>
<tr>
<td>IIC</td>
<td>25</td>
<td>32.1</td>
<td>29</td>
<td>25.2</td>
<td>63.32</td>
<td>65.3</td>
<td>71.2</td>
<td>44</td>
<td>21.1</td>
<td>47.5</td>
<td>24.6</td>
<td>71.2</td>
</tr>
<tr>
<td>MAC</td>
<td>48</td>
<td>48.5</td>
<td>44.2</td>
<td>45.9</td>
<td>52.37</td>
<td>41.7</td>
<td>52.4</td>
<td>48</td>
<td>3.99</td>
<td>8.4</td>
<td>41.7</td>
<td>52.4</td>
</tr>
<tr>
<td>NAC</td>
<td>10</td>
<td>13.1</td>
<td>12.3</td>
<td>12.2</td>
<td>10.02</td>
<td>9.84</td>
<td>8.54</td>
<td>11</td>
<td>1.67</td>
<td>15.3</td>
<td>8.54</td>
<td>13.1</td>
</tr>
<tr>
<td>BAC</td>
<td>1.6</td>
<td>3.1</td>
<td>1.42</td>
<td>1.47</td>
<td>1.058</td>
<td>1.09</td>
<td>1.82</td>
<td>1.7</td>
<td>0.69</td>
<td>42</td>
<td>1.06</td>
<td>3.1</td>
</tr>
<tr>
<td>Average</td>
<td>20</td>
<td>23</td>
<td>26.2</td>
<td>26.4</td>
<td>34.37</td>
<td>34.4</td>
<td>38</td>
<td>38</td>
<td>8.73</td>
<td>30.7</td>
<td>20.2</td>
<td>38</td>
</tr>
<tr>
<td>S.D.</td>
<td>18</td>
<td>17.7</td>
<td>19.1</td>
<td>20.2</td>
<td>27.29</td>
<td>27.9</td>
<td>30.9</td>
<td>21</td>
<td>9.29</td>
<td>17.6</td>
<td>17.7</td>
<td>30.9</td>
</tr>
<tr>
<td>C.V.</td>
<td>87</td>
<td>77</td>
<td>72.8</td>
<td>76.7</td>
<td>79.42</td>
<td>81</td>
<td>81.2</td>
<td>73</td>
<td>106</td>
<td>57.2</td>
<td>72.8</td>
<td>87.4</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies
Table No.7.9 indicated the raw material to net sales ratio of HDL. The ratio showed increasing trend during the study period. The ratio was 17 percent in 2000-01 and 18 percent in 2001-02. The ratio has increased and reached to 44 percent in 2002-03 and then went down to 47.2 percent in 2003-04. The ratio was 45.07 percent in 2004-05 and 54.1 percent in 2005-06. The ratio was highly increased to 56.2 percent in 2006-07. The ratio ranged between 16.8 percent in 2000-01 and 56.2 percent in 2006-07. The ratio found good in the year of 2000-01. The standard deviation was 16.2 percent with coefficient of variation was 40.4 percent which showed high fluctuation in the company.

The raw material to net sales ratio of IIC seen in the above Table No.7.9. The ratio was showing increasing trend with an average of 44 percent. The ratio was found the highest of 71.2 percent in 2006-07 and found the lowest of 24.6 percent in 2000-01.

The standard deviation was of 21.1 percent and coefficient of variation was 47.5 percent. The ratio was 25 percent in 2000-01 and rose to 32.10 percent in 2001-02. The ratio again went down to 29 percent in 2002-03 and 25.20 percent in 2003-04. The ratio has raised and reached to 63.32 percent in 2004-05 and 65.30 percent in 2005-06. The ratio was the highest of 71.20 percent in 2006-07. The consumption increased in the last three years of study period due to increased to the capacity in the production.
The Table No.7.9 showed raw material to net sales ratio of MAC. The ratio was 48 percent in 2000-01 and then it rose to 48.5 percent in 2001-02. The ratio again stepped up to 45.9 percent in 2003-04 and 52.37 percent in 2004-05. The ratio as then after decreased and reached to 41.7 percent in 2005-06 and 52.4 percent in 2006-07. The ratio on an average has been of 3.99 percent with standard deviation of 8.4 percent. The ratio showed fluctuated trend of consumed raw material. The ratio was near about 50 percent, which needs control over material consumption.

The raw material to net sales ratio of NAC manifested in the Table No.7.9. The ratio was 10 percent in 2000-01 and 13.1 percent in 2001-02. The ratio after this year declined to 12.3 percent in 2002-03 and than it went down to 12.2 percent in 2003-04. The ratio declined to 10.02 percent in 2004-05. The ratio went down to 9.84 percent in 2005-06. The ratio was found the lowest in the last years if the study period. The average ratio was 11 percent with standard deviation of 1.67 percent. The ratio showed fluctuating trend during the research period.

The raw material to net sales of BAC showed in the above Table No.7.9. The ratio was 1.6 percent in 2000-01 and than increased to 3.10 percent in 2001-02. The ratio declined to 1.42 percent in 2002-03 and 1.47 percent 2003-04. The ratio again went down to 1.058 percent in 2004-05 and 1.09 percent in 2005-06. the ratio showed declining trend with an average of 1.7 percent. The ratio ranged between 1.06 percent in 2000-01 and 3.1 percent 2001-02. The ratio showed standard deviation of 6.50 percent and co-efficient of variation of 42 percent during the study period. The ratio showed low consumption of the raw material during the study period.
On the basis of above analysis, it may be concluded that the ratio of raw material to net sales was the lowest in BAC followed by MAC, IIC, and HDL. The two companies like BAC and MAC’s ratios were below the industry average.

**Raw material to net sales ratio (ANOVA test)**

**Null Hypothesis:** There is no any significant difference in Raw material to net sales ratio of alluminum units under study.

**Alternative hypothesis:** There is significant difference in Raw material to net sales ratio of alluminum units under study.
Level of Significance: 5 percent

Critical value: 2.44

Degree of freedom: 34

Table 7.10
Raw material to net sales ratio (ANOVA test)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1339.522</td>
<td>6</td>
<td>223.2536</td>
<td>0.403304</td>
<td>0.870492</td>
<td>2.445259</td>
</tr>
<tr>
<td>Within Groups</td>
<td>15499.74</td>
<td>28</td>
<td>553.5622</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>16839.26</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7.10 indicates there is no significant difference in Raw material to net sales ratio of alluminuim units under study because the calculated value of ‘F’ is less than table value so, null hypothesis accepted and alternative hypothesis rejected. It can be concluded that there is a low deviation in the Raw material to net sales ratio fertilizers units under study.
7.2.6 Wages and Salaries to net Sales Ratio:

In the present study analysis, wages and salaries comprise of included bonus, gratuity, provident fund, and other allowance and welfare expenses etc. In the alluminuim companies, a large number of labour force are required, as manufacture of tea is an extremely complex industry undertaking, in the alluminuim industry labor cost have been examined by the ratio of wages and salaries to net sales ratio is calculated on the basis of the following formula:

\[
\text{Wages and Salaries to Net Sales Ratio} = \frac{\text{Wages and Salaries}}{\text{Net Sales}} \times 100
\]
Table No.7.11
Wages & Salaries to net Sales Ratio of aluminium companies under study during the years 2000-01 to 2006-07. (Percentage.)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>5.9</td>
<td>6.33</td>
<td>4.22</td>
<td>3.59</td>
<td>3.973</td>
<td>3.76</td>
<td>2.61</td>
<td>4.3</td>
<td>1.32</td>
<td>30.5</td>
<td>2.61</td>
<td>6.33</td>
</tr>
<tr>
<td>IIC</td>
<td>9</td>
<td>8.51</td>
<td>10.8</td>
<td>10</td>
<td>7.341</td>
<td>7.91</td>
<td>7.19</td>
<td>8.7</td>
<td>1.37</td>
<td>15.8</td>
<td>7.19</td>
<td>10.8</td>
</tr>
<tr>
<td>MAC</td>
<td>6.2</td>
<td>6.14</td>
<td>6.45</td>
<td>5.6</td>
<td>4.604</td>
<td>4.52</td>
<td>6.36</td>
<td>5.7</td>
<td>0.82</td>
<td>14.4</td>
<td>4.52</td>
<td>6.45</td>
</tr>
<tr>
<td>NAC</td>
<td>8</td>
<td>14.3</td>
<td>9.56</td>
<td>7.69</td>
<td>6.525</td>
<td>6.38</td>
<td>6.01</td>
<td>8.4</td>
<td>2.89</td>
<td>34.6</td>
<td>6.01</td>
<td>14.3</td>
</tr>
<tr>
<td>BAC</td>
<td>2.2</td>
<td>3.02</td>
<td>1.67</td>
<td>2.15</td>
<td>0.888</td>
<td>0.96</td>
<td>0.94</td>
<td>1.69</td>
<td>0.82</td>
<td>48.2</td>
<td>0.89</td>
<td>3.02</td>
</tr>
<tr>
<td>Average</td>
<td>6.3</td>
<td>7.66</td>
<td>6.55</td>
<td>5.81</td>
<td>4.666</td>
<td>4.71</td>
<td>4.62</td>
<td>5.8</td>
<td>1.44</td>
<td>28.7</td>
<td>4.62</td>
<td>7.66</td>
</tr>
<tr>
<td>S.D.</td>
<td>2.6</td>
<td>4.19</td>
<td>3.77</td>
<td>3.16</td>
<td>2.518</td>
<td>2.65</td>
<td>2.7</td>
<td>2.9</td>
<td>0.85</td>
<td>14</td>
<td>2.52</td>
<td>4.19</td>
</tr>
<tr>
<td>C.V.</td>
<td>41</td>
<td>54.8</td>
<td>57.5</td>
<td>54.3</td>
<td>53.97</td>
<td>56.2</td>
<td>58.4</td>
<td>51</td>
<td>58.9</td>
<td>49</td>
<td>41.2</td>
<td>58.4</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies
The Table No.7.11 shows the ratio of wages & salaries to net sales of HDL witnessing the fluctuating trend as it ranged between 2.61 percent in 2006-07 and 6.33 percent in 2001-02. It was the highest in the year of 2000-01 because of increase in the rate of wages in HDL. The average ratio of this company was also less than the industry average. The ratio of salaries and wages to net sales in HDL indicated a fluctuating trend. Average ratio was 8.7 percent was lower than the industry average. The ratio ranged between 7.19 percent in 2005-06 and 10.8 percent in 2002-03.

The IIC shows its Wages & salaries to net sales ratio in Table No.7.11 from 2000-01 to 2006-07. The ratio was 9.00 percent in 2000-01 and 8.51 percent in 2001-02. The ratio rose to 10.8 percent in 2002-03 and 10.00 percent in 2003-04. The ratio was declining to 7.341 percent in 2004-05 and 7.91 percent in 2005-06. The again went down to 7.19 percent in 2006-07. The ratio on an average has been 8.7 percent.

The ratio of salaries and wages to net sales in IIC indicated a fluctuating trend. The standard deviation was 1.37 percent and co-efficient of variation was of 15.8 percent. The maximum ratio was 10.8 percent in 2002-03 and minimum ratio was 7.19 percent in 2006-07 with an average of 8.7 percent, which was above the industry average.

The wages & salaries to net sales ratio of the MAC showed in the above Table No.7.11. The ratio was 6.2 percent in 2000-01 and 6.14 percent in 2001-02. The ratio increased to 5.6 percent in 2003-04 and than after it went down to 4.52 percent in 2005-06. The ratio again went up to 6.36 percent in 2006-07.
The standard deviation was 0.82 percent and co-efficiency of variation was of 14.4 percent. The maximum ratio was 4.52 percent in 2005-06 and minimum ratio was 6.45 percent in 2002-03 with an average of 5.70 percent, which was below the industry average.

Wages and salaries to net sales ratio of NAC, depicted in the above Table No.7.11. The ratio was 8 percent in 2000-01 and 14.3 percent in 2001-02. The ratio again decreased to 9.56 percent in 2002-03 and 7.69 percent in 2003-04. The ratio was 6.525 percent in 2004-05 and then slightly declined to 6.38 percent in 2005-06 and 6.01 percent in 2006-07. The ratio on an average has been 8.4 percent. The maximum ratio was 14.3 percent in 2001-02 and minimum ratio was 6.01 percent in 2006-07 with an average of 8.4 percent, which was above the industry average.

Table No.7.11 showed the ratio of wages & salaries to net sales of BAC. The ratio of this company ranged 0.89 percent in 2004-05 and 3.02 percent in 2001-02.

The average ratio has been 1.69 percent with standard deviation of 0.82 percent. The ratio showed highly fluctuated trend. The ratio changed from 2.20 percent in 2000-01 to 3.02 percent in 2001-02. The ratio went down to 1.67 percent in 2002-03 and then rose to 2.15 percent in 2003-04. The ratio again went down sharply to 0.88 percent on 2004-05. In the last two years, the ratios were 0.96 percent and 0.94 percent.
Wages to net sales ratio (ANOVA test)

**Null Hypothesis:** There is no any significant difference in Wages to net sales ratio of alluminuim units under study.

**Alternative hypothesis:** There is significant difference in Wages to net sales ratio of alluminuim units under study

**Level of Significance:** 5 percent

**Critical value:** 2.445

**Degree of freedom:** 34

<table>
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<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>40.33469</td>
<td>6</td>
<td>6.722448</td>
<td>0.681355</td>
<td>0.665947</td>
<td>2.445259</td>
</tr>
<tr>
<td>Within Groups</td>
<td>276.2563</td>
<td>28</td>
<td>9.866297</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>316.591</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No.7.12
Wages to net sales ratio (ANOVA test)
Table No. 7.12 indicates there is significant difference in Wages to net sales ratio of alluminuin units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis is accepted and alternative hypothesis rejected. It can be concluded that there is a high deviation in the Wages to net sales ratio of alluminum units under study.

### 7.2.7 Power and Fuel (Energy) to net Sales Ratio:

In alluminum Industry Power and fuel is an essential requirement, not only in its continuous availability but also in adequate supply. It is calculated based on the following formula

\[
\text{Power and Fuel to Net Sales Ratio} = \frac{\text{Power and Fuel}}{\text{Net Sales}} \times 100
\]
**Table No.7.13**
Power and Fuel (Energy) to net Sales Ratio of aluminium companies under study during the years 2000-01 to 2006-07. (In percent)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>15</td>
<td>16.2</td>
<td>12.6</td>
<td>14.3</td>
<td>14.91</td>
<td>14.7</td>
<td>9.38</td>
<td>14</td>
<td>2.23</td>
<td>16.1</td>
<td>2.23</td>
<td>16.2</td>
</tr>
<tr>
<td>IIC</td>
<td>20</td>
<td>18.4</td>
<td>23.1</td>
<td>21.5</td>
<td>4.341</td>
<td>4.1</td>
<td>3.23</td>
<td>14</td>
<td>9.13</td>
<td>67.5</td>
<td>3.23</td>
<td>67.5</td>
</tr>
<tr>
<td>MAC</td>
<td>3.7</td>
<td>4.21</td>
<td>3.27</td>
<td>4.96</td>
<td>4.807</td>
<td>4.67</td>
<td>4.74</td>
<td>4.3</td>
<td>0.64</td>
<td>14.7</td>
<td>0.64</td>
<td>14.7</td>
</tr>
<tr>
<td>NAC</td>
<td>17</td>
<td>18.7</td>
<td>20.4</td>
<td>19.5</td>
<td>17.2</td>
<td>17.8</td>
<td>13.1</td>
<td>18</td>
<td>2.36</td>
<td>13.4</td>
<td>2.36</td>
<td>14.7</td>
</tr>
<tr>
<td>BAC</td>
<td>3.1</td>
<td>4.13</td>
<td>2.57</td>
<td>2.37</td>
<td>2.07</td>
<td>2.03</td>
<td>2.98</td>
<td>2.74</td>
<td>0.73</td>
<td>26.7</td>
<td>0.73</td>
<td>26.7</td>
</tr>
<tr>
<td>Average</td>
<td>12</td>
<td>12.3</td>
<td>12.4</td>
<td>12.5</td>
<td>8.666</td>
<td>8.66</td>
<td>6.69</td>
<td>10</td>
<td>3.02</td>
<td>27.7</td>
<td>1.84</td>
<td>29.1</td>
</tr>
<tr>
<td>S.D.</td>
<td>7.8</td>
<td>7.51</td>
<td>9.47</td>
<td>8.54</td>
<td>6.873</td>
<td>7.08</td>
<td>4.41</td>
<td>6.5</td>
<td>3.51</td>
<td>22.9</td>
<td>1.12</td>
<td>22</td>
</tr>
<tr>
<td>C.V.</td>
<td>67</td>
<td>60.9</td>
<td>76.5</td>
<td>68.3</td>
<td>79.31</td>
<td>81.8</td>
<td>66</td>
<td>62</td>
<td>116</td>
<td>82.7</td>
<td>61.1</td>
<td>75.6</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies
The above Table No.7.13 registered Power and Fuel (Energy) to gross Sales ratio of HDL by showing fluctuating trend during the research period. The ratio was 7.609 percent in 1999-2000 and 7.61 percent in 2000-01. The ratio was slightly declined to 7.358 percent and 7.15 percent. The ratio was sharply declined to 6.44 percent in 2004-05 and then it stepped up to 11.42 percent in the last year of the study period.

The Power and Fuel (Energy) to net Sales Ratio of IIC seen in the above Table No.7.13 the ratio was 20 percent in 2000-01, which was only 18.4 percent in 2001-02. The ratio slightly rose to 23.1 percent in 2002-03 and then after it declined to 21.5 percent in 2003-04 and 4.341 percent in 2004-05. The ratio showed declined of 4.1 percent in 2005-06 and 3.23 percent in last year of the study period.
The average ratio was 14 percent, which was higher than the industry average. The ratio showed standard deviation of 9.13 percent and co-efficient of variation of 67.5 percent.

The MAC showed it Power and Fuel (Energy) to net Sales Ratio from 2000-01 to 2006-07 with fluctuating trend. The average ratio was 4.3 percent with Standard deviation of 0.64 percent. The ratio was 3.7 percent in 2000-01 and 4.21 percent in 2001-02. The ratio was 3.27 percent in 2002-03 after this year the Ratio increased to 4.96 percent in 2003-04. The ratio again declined to 4.807 percent in 2004-05 and 4.67 percent in 2005-06.

The Table No.7.13 showed Power and Fuel (Energy) to net Sales Ratio of NAC. The ratio was 17 percent in the beginning of the study period after this year this year the ratio increased to 18.7 percent. The ratio was 20.4 percent in 2002-03 and declined to 17.2 percent in 2004-05. The ratio again rose to 17.8 percent in 2005-06. The ratio was 13.1 percent in 2006-07. The average ratio was 18 percent with standard deviation of 2.36 percent and co-efficient of variation of 13.4 percent.

Power and Fuel (Energy) to net Sales Ratio of BAC was seen in the above Table No.7.13. The ratio was 3.1 percent in 2000-01 and then it went up to 4.13 percent in 2001-02. The ratio was 2.57 percent in 2002-03 and then after it declined to 2.37 percent in 2003-04. The ratio was 2.07 percent in 2004-05 and 2.03 percent in 2005-06. In the last year of the study period the ratio was 2.98 percent with an average of 2.74 percent. The standard
deviation was of 0.73 percent and co-efficient of variation was of 26.7 percent.

Based on the above analysis it may inferred that the Power and Fuel (Energy) consumption was found the highest in HDL and IIC followed by other selected units.

**ENERGY (POWER-FUEL)/NET SALES RATIO (ANOVA test)**

**Null Hypothesis:** There is no any significant difference in energy (power-fuel)/net sales ratio of alluminuim units under study.

**Alternative hypothesis:** There is significant difference in energy (power-fuel)/net sales ratio of alluminuim units under study.
Level of Significance: 5 percent

Critical value: 2.45

Degree of freedom: 34.00

Table No.7.14
ENERGY (POWER-FUEL)/NET SALES RATIO (ANOVA test)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>167.11</td>
<td>6.00</td>
<td>27.85</td>
<td>0.49</td>
<td>0.81</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1584.76</td>
<td>28.00</td>
<td>56.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1751.87</td>
<td>34.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No.7.14 indicates there is significant no difference in energy (power-fuel)/net sales of alluminum units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis accepted and alternative hypothesis rejected. It concludes that there is a high deviation in the energy (power-fuel)/net sales ratio of alluminum units under study.

7.2.8 Selling & Distribution (Marketing) to Net Sales Ratio:-

Commission and discount on sale, traveling expenses, expenses on advertisement, transportation and forwarding expenses, freight outward commission to sole selling agent, salaries of sales & publicity staff, expenses of branches and agencies, cost of preparing tenders and estimates, stock shortage etc., are included in selling and distribution expenses. These expenses are essential for creating new customers and for selling goods in the market.
For new enterprise, these expenses increase considerably because they have to establish themselves in the market Selling & Distribution

**Selling & Distribution Expenses**

Expenses to Net Sales Ratio = \[\frac{\text{Expenses}}{\text{Net Sales}}\] x 100

Net Sales
Table No.7.15
Selling & Distribution (Marketing) to Net Sales Ratio of aluminium companies under study during the years 2000-01 to 2006-07. (In percent)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>2.7</td>
<td>2.52</td>
<td>2.67</td>
<td>2.13</td>
<td>2.22</td>
<td>1.98</td>
<td>1.43</td>
<td>2.2</td>
<td>0.45</td>
<td>20.2</td>
<td>1.43</td>
<td>2.72</td>
</tr>
<tr>
<td>IIC</td>
<td>0.9</td>
<td>0.57</td>
<td>0.7</td>
<td>0.51</td>
<td>0.558</td>
<td>0.43</td>
<td>0.22</td>
<td>0.6</td>
<td>0.21</td>
<td>38</td>
<td>0.22</td>
<td>0.89</td>
</tr>
<tr>
<td>MAC</td>
<td>0.9</td>
<td>0.62</td>
<td>0.53</td>
<td>0.89</td>
<td>0.745</td>
<td>0.78</td>
<td>0.68</td>
<td>0.7</td>
<td>0.13</td>
<td>18.2</td>
<td>0.53</td>
<td>0.89</td>
</tr>
<tr>
<td>NAC</td>
<td>1.8</td>
<td>1.88</td>
<td>1.99</td>
<td>1.99</td>
<td>1.881</td>
<td>1.58</td>
<td>1.25</td>
<td>1.8</td>
<td>0.27</td>
<td>15.2</td>
<td>1.25</td>
<td>1.99</td>
</tr>
<tr>
<td>BAC</td>
<td>0.6</td>
<td>0.47</td>
<td>0.52</td>
<td>0.77</td>
<td>0.878</td>
<td>0.85</td>
<td>0.79</td>
<td>0.7</td>
<td>0.16</td>
<td>22.8</td>
<td>0.47</td>
<td>0.88</td>
</tr>
<tr>
<td>Average</td>
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<td>1.21</td>
<td>1.28</td>
<td>1.26</td>
<td>1.256</td>
<td>1.12</td>
<td>0.87</td>
<td>1.2</td>
<td>0.25</td>
<td>22.9</td>
<td>0.87</td>
<td>1.4</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.87</td>
<td>0.93</td>
<td>0.99</td>
<td>0.75</td>
<td>0.74</td>
<td>0.71</td>
<td>0.55</td>
<td>0.76</td>
<td>0.13</td>
<td>8.97</td>
<td>0.13</td>
<td>8.97</td>
</tr>
<tr>
<td>C.V.</td>
<td>62.36</td>
<td>76.84</td>
<td>77.04</td>
<td>59.37</td>
<td>59.18</td>
<td>59.85</td>
<td>61.84</td>
<td>64.20</td>
<td>50.88</td>
<td>38.24</td>
<td>50.88</td>
<td>38.24</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies.
The above Table No.7.15 showed Selling & Distribution (Marketing) to Net Sales Ratio of HDL. The ratio showed fluctuating trend during the study period. The ratio was on an average of 2.2 percent with standard deviation of 0.45 percent. The ratio of this company ranged between 1.43 percent in 2006-07 to 2.72 percent in 2000-01.

The Table No.7.15 explained the Selling & Distribution (Marketing) to Net Sales ratio of IIC. The ratio was 0.9 percent in 2000-01 and then declined to 0.57 percent in 2001-02. The ratio rose to 0.7 percent in 2002-03 and 0.51 percent in 2003-04. The ratio of this company sharply declined to 0.43 percent in 2005-06 and 0.22 percent in 2006-07. Thus ratio ranged between 0.22 percent in 2006-07 to 0.89 percent in 2000-01 with standard deviation of 0.21.

The above Table No.7.15 indicated the Selling & Distribution (Marketing) to Net Sales ratio of MAC. The ratio was 0.9 percent in 1999-2000 and 0.62 percent in 2001-02. The ratio increased to 0.53 percent in 2002-03 and 0.89 percent in 2003-04. The ratio was 0.745 percent in 2004-05 and stabilized at 0.78 percent in 2005-06. The ratio was 0.68 percent in 2006-07. The ratio on an average has been of 0.7 percent with standard deviation of 0.13 percent and co-efficient of variation of 18.2 percent. The range was 0.53 percent to 0.89 percent from 2000-01 to 2006-07.

The above Table No.7.15 showed Selling & Distribution (Marketing) to Net Sales ratio of NAC. The ratio was 1.8 percent in 2000-01 and 1.88 percent in 2001-02. The ratio was 1.99 percent in 2003-04 but it declined to 1.881 percent in 2004-05. It was 1.58 percent in 2005-06 and 1.25 percent in 2006-07.
The average ratio was 1.8 percent with standard deviation of 0.27 percent. The ratio ranged 1.25 percent in 2006-07 and 1.99 percent in 2003-04.

The Selling & Distribution (Marketing) to Net Sales ratio of BAC was seen in the above Table No. 7.15. The ratio was 0.6 percent in 2000-01 and 0.47 percent in 2001-02. The ratio increased to 0.52 percent in 2002-03 and 0.77 percent in 2003-04. The ratio was 0.878 percent in 2004-05 and declined to 0.85 percent in 2005-06. The ratio was 0.79 percent in 2006-07. The average ratio was 0.7 percent with o-efficiency of variation of 22.8 percent.

On the basis of above analysis, it can be conclude that the percentage of selling and distribution and other expenses to net sales in 2003-04 was highest in (2.2) percent of HDL. The percentage of selling and distribution expenses to net sales in 2005-06 was lowest in IIC

SELLING & MARKETING TO NET SALES RATIO (ANOVA test)

- **Null Hypothesis:** There is no any significant difference in selling & marketing to net sales ratio of all aluminum units under study.

- **Alternative hypothesis:** There is significant difference in selling & marketing to net sales ratio of all aluminum units under study.

- Level of Significance: 5 percent

- Critical value: 2.45

- Degree of freedom: **34.00**
Table No.7.16
SELLING & MARKETING TO NET SALES RATIO (ANOVA test)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.83</td>
<td>6.00</td>
<td>0.14</td>
<td>0.22</td>
<td>0.97</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>17.40</td>
<td>28.00</td>
<td>0.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18.23</td>
<td>34.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No.7.16 indicates there is no significant difference in selling & marketing to net sales ratio of aluminium units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis accepted and alternative hypothesis rejected. It can be concluded that there is a high deviation in the selling & marketing to net sales ratio.
7.2.9 Depreciation to Sales Ratio:

The fixed assets help to generate income over a long period. To determine a period’s net income correctly, important part of costs in each periods’, expired portion of original outlay for an asset and the cost related to the use of fixed assets must properly match against revenues. Depending on the type of assets involved cost of expired portion of original fixed assets is called depreciation, depletion or amortization. However, all these terms have the same meaning in accounting i.e., “Periodic charging of expenses.”

According to Nikolia and Buzely, “The depreciation expenses is the part of the cost of long term physical assets allocated as an expenses to each accounting period in the assets useful life.”

The amount of depreciation can be judged either in relation to Sales and/or in relation to gross block. Depreciation to Sales is calculated on the basis of the following formula:

\[
\text{Depreciation to Sales Ratio} = \frac{\text{Depreciation}}{\text{Net Sales}} \times 100
\]
Table No.7.17
Depreciation Charges to Sales Ratio in aluminum companies in India (From 2000-01 to 2006-07) (In percentage)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>5.6</td>
<td>5.84</td>
<td>5</td>
<td>4.84</td>
<td>4.5</td>
<td>4.23</td>
<td>2.81</td>
<td>4.7</td>
<td>1</td>
<td>21.4</td>
<td>2.81</td>
<td>5.84</td>
</tr>
<tr>
<td>IIC</td>
<td>4.6</td>
<td>4.16</td>
<td>4.69</td>
<td>4.26</td>
<td>4.593</td>
<td>4.78</td>
<td>4.16</td>
<td>4.5</td>
<td>0.26</td>
<td>5.81</td>
<td>4.16</td>
<td>4.78</td>
</tr>
<tr>
<td>MAC</td>
<td>6.2</td>
<td>5.93</td>
<td>6.38</td>
<td>5.54</td>
<td>4.788</td>
<td>3.92</td>
<td>4.46</td>
<td>5.3</td>
<td>0.94</td>
<td>17.6</td>
<td>3.92</td>
<td>6.38</td>
</tr>
<tr>
<td>NAC</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>13.1</td>
<td>10.4</td>
<td>7.12</td>
<td>4.69</td>
<td>10</td>
<td>3.34</td>
<td>31.8</td>
<td>4.69</td>
<td>13.1</td>
</tr>
<tr>
<td>BAC</td>
<td>0.5</td>
<td>0.79</td>
<td>0.37</td>
<td>0.47</td>
<td>0.359</td>
<td>0.35</td>
<td>0.39</td>
<td>0.45</td>
<td>0.15</td>
<td>33.8</td>
<td>0.35</td>
<td>0.79</td>
</tr>
<tr>
<td>Average</td>
<td>5.8</td>
<td>5.94</td>
<td>5.88</td>
<td>5.64</td>
<td>4.927</td>
<td>4.08</td>
<td>3.3</td>
<td>5.1</td>
<td>1.14</td>
<td>22.1</td>
<td>3.3</td>
<td>5.94</td>
</tr>
<tr>
<td>S.D.</td>
<td>4.22</td>
<td>4.45</td>
<td>4.56</td>
<td>4.61</td>
<td>3.57</td>
<td>1.45</td>
<td>0.84</td>
<td>3.57</td>
<td>1.29</td>
<td>11.86</td>
<td>1.29</td>
<td>11.86</td>
</tr>
<tr>
<td>C.V.</td>
<td>72.76</td>
<td>74.96</td>
<td>77.49</td>
<td>81.67</td>
<td>72.52</td>
<td>28.94</td>
<td>20.95</td>
<td>70.17</td>
<td>112.59</td>
<td>52.84</td>
<td>112.59</td>
<td>52.84</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies.
The ratio registered a decreasing trend during the study period. It increased from 5.6 percent in 2000-01 to 5.84 percent in 2001-02 but it decreased slightly in the last years and reached to 2.81 percent. The average ratio of the company was 4.7 percent, which was lower than the average ratio of the tea industry. The C.V was the 21.4 percent which high fluctuation among the ratio in comparison to other units.

Depreciation to net sales ratio of IIC remarked an increasing trend during the study period except the last year of the study. The ratio increased from 4.6 percent in 2000-01 to 4.16 percent in 2001-02 and then it increased throughout the study period and reached highest level of 4.78 percent in 2005-06. The average ratio of the company was 4.5, which were lower than the average ratio of the tea industry.

Depreciation to net sales ratio of MAC depicts in the Table No.7.17. The ratio was showing fluctuating trend and downward during the research period. The ratio fluctuated from lowest 3.92 percent in 2005-06 to the highest 6.38 percent in 2002-03. The average ratio of the company was 5.3 that were highest among the selected companies under the study. The ratio was high which is not satisfactory. The company needs to improve the depreciation policy.

Table No.7.17 showed Depreciation to net sales ratio of NAC The ratio fluctuated during the research period. It fluctuated from lowest 4.69 percent in 2006-07 to the highest of 13.1 percent in 2003-04.
The average ratio of the company was 10 percent, which was higher than the average ratio of the aluminum industry. It showed C.V. of 31.8 percent. The ratio was satisfactory.

The Depreciation to net sales ratio of BAC depicts in Table No.7.17. The ratio was showing fluctuating trend during the study period. The ratio decreased from 0.5 percent in 2000-01 to 0.79 percent in 2001-02 but the ratio continuously decreased next four year of the study. The ratio decreased to 0.39 percent in the last year of the study. The average ratio of the company was 0.45 percent, which was higher than the average ratio of the aluminum industry. The C.V was 33.8 percent.
The average ratio of the aluminum industry was fluctuated during the study period except the second year. The average ratio of the aluminum industry during the study period was 5.1 percent. The following companies average ratio had the above the combined average ratio of the aluminum industry like NAC and MAC. Companies like HDL IIC and BAC had the average ratio lower than the average ratio of the aluminum industry.

**Depreciation Charges to Sales Ratio (ANOVA test)**

- **Null Hypothesis:** There is no any significant difference in Depreciation Charges to Sales Ratio of aluminum units under study.
- **Alternative hypothesis:** There is significant difference in Depreciation Charges to Sales Ratio of aluminum units under study.
- Level of Significance: 5 percent
- Critical value: 2.45
- Degree of freedom: **34.00**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>$F$</th>
<th>$P$-value</th>
<th>$F$ crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>31.95</td>
<td>6.00</td>
<td>5.32</td>
<td>0.37</td>
<td>0.89</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>405.75</td>
<td>28.00</td>
<td>14.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>437.69</td>
<td>34.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table No.7.18**

Depreciation Charges to net Sales Ratio)
Table No.19 indicates there is no significant difference in Depreciation Charges to Sales Ratio of aluminium units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis accepted and alternative hypothesis rejected. It concludes that there is a high deviation in the Depreciation Charges to Sales Ratio

7.2.10 Financial Charges to net Sales Ratio:-

In the present study analysis, financial charges comprise of included interest, lease rent and other financial charges. Financial charges to net sales Ratio calculated based on the following formula:

\[
\frac{\text{Financial Charges}}{\text{To Net Sales Ratio}} = \frac{\text{Interest} + \text{Lease Rent} + \text{Other Financial Charges}}{\text{Net Sales}} \times 100
\]
### Table No.7.19
Financial Charges to net Sales Ratio of alluminui companies under study during the years 2000-01 to 2006-07. (In percent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL</td>
<td>2.48</td>
<td>1.73</td>
<td>2.60</td>
<td>2.70</td>
<td>1.65</td>
<td>1.85</td>
<td>1.23</td>
<td>2.03</td>
<td>0.56</td>
<td>27.52</td>
<td>1.23</td>
<td>2.70</td>
</tr>
<tr>
<td>IIC</td>
<td>2.65</td>
<td>2.35</td>
<td>1.77</td>
<td>1.12</td>
<td>0.44</td>
<td>0.36</td>
<td>0.41</td>
<td>1.30</td>
<td>0.96</td>
<td>74.18</td>
<td>0.36</td>
<td>2.65</td>
</tr>
<tr>
<td>MAC</td>
<td>8.95</td>
<td>8.13</td>
<td>13.53</td>
<td>3.17</td>
<td>1.46</td>
<td>1.02</td>
<td>0.45</td>
<td>5.24</td>
<td>5.01</td>
<td>95.46</td>
<td>0.45</td>
<td>13.53</td>
</tr>
<tr>
<td>NAC</td>
<td>4.15</td>
<td>4.95</td>
<td>4.43</td>
<td>3.57</td>
<td>1.97</td>
<td>0.66</td>
<td>0.70</td>
<td>2.92</td>
<td>1.79</td>
<td>61.38</td>
<td>0.66</td>
<td>4.95</td>
</tr>
<tr>
<td>BAC</td>
<td>0.13</td>
<td>0.26</td>
<td>0.06</td>
<td>0.08</td>
<td>0.06</td>
<td>0.46</td>
<td>0.49</td>
<td>0.22</td>
<td>0.19</td>
<td>84.28</td>
<td>0.06</td>
<td>0.49</td>
</tr>
<tr>
<td>Average</td>
<td>3.67</td>
<td>3.48</td>
<td>4.48</td>
<td>2.13</td>
<td>1.12</td>
<td>0.87</td>
<td>0.66</td>
<td>2.34</td>
<td>1.70</td>
<td>68.56</td>
<td>0.66</td>
<td>4.48</td>
</tr>
<tr>
<td>S.D.</td>
<td>3.28</td>
<td>3.10</td>
<td>5.30</td>
<td>1.47</td>
<td>0.82</td>
<td>0.60</td>
<td>0.34</td>
<td>1.90</td>
<td>1.94</td>
<td>26.16</td>
<td>0.34</td>
<td>5.30</td>
</tr>
<tr>
<td>C.V.</td>
<td>89.43</td>
<td>89.10</td>
<td>118.29</td>
<td>69.21</td>
<td>73.88</td>
<td>69.31</td>
<td>51.77</td>
<td>81.05</td>
<td>114.06</td>
<td>38.16</td>
<td>51.77</td>
<td>118.29</td>
</tr>
</tbody>
</table>

Sources: computed from the annual reports & accounts of the perspective companies.
Table No. 7.19 indicated ratio of Financial Charges to net Sales of HDL. The ratio was 2.48 percent in 2000-01 and 1.73 percent in 2001-02, which declined to previous year. The ratio was 2.60 percent in 2002-03 and 2.70 percent in 2003-04. The average ratio was 2.03 percent with declining trend in the last three years of the study period. In the last year of the study period company has reduced the interest burden.

The above Table No. 7.19 showed Financial Charges to net Sales ratio of IIC. The ratio of this company showed decline trend during the study period. The ratio was 2.65 percent in 2002-03, which increased to 2.35 percent in 2001-02. The ratio was 1.77 percent in 2001-02 and then after it declined to 1.12 percent in 2003-04. The ratio was 0.44 percent in 2004-05 and it was 0.36 percent in 2005-06 and 0.41 percent in 2006-07. The average ratio was 1.30 percent with standard deviation of 0.96 percent.

The Financial Charges to net Sales ratio of MAC was depicted in the Table No. 7.19. The ratio was 8.95 percent in 2000-01 and 8.13 percent in 2001-02 that again decreased to 13.53 percent in 2002-03 and it went down 3.17 percent in 2003-04. The ratio was 1.46 percent in 2004-05 and 1.20 percent in 2006-07. The average ratio was 5.24 percent with co-efficiency of variation of 95.46 percent.

The NAC Company showed Financial Charges to net Sales ratio 2000-01 to 2006-07. The ratio ranged between 0.66 percent in 2005-06 and 4.95 percent in 2001-02 with an average of 2.92 percent. Interest burden was found high in this company.
The Table No 7.19 indicated the Financial Charges to net Sales ratio of BAC. The ratio was 0.13 percent in 2000-01 and it went up very high to 0.26 percent in 2001-02. The ratio again slightly went down to 0.06 percent in 2002-03 and 0.08 percent in 2003-04. The ratio was again gone down to 0.06 percent in 2004-05 and 0.46 percent in 2005-06. The ratio was 0.49 percent which the lowest ratio during the study period. The average ratio was 0.22 percent with co-efficient of variation of 84.28 percent.

Based on above analysis it may be conclude that the interest burden found the highest of 5.24 percent in MAC and 2.92 percent in NAC followed by other selected unites
FINANCIAL CHARGES TO NET SALES RATIO (ANOVA test)

- **Null Hypothesis**: There is no any significant difference in financial charges to net sales ratio of alluminuim units under study.

- **Alternative hypothesis**: There is significant difference in financial charges to net sales ratio of alluminuim units under study.

- Level of Significance: 5 percent

- Critical value: 2.207

- Degree of freedom: 55

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<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>71.00</td>
<td>6.00</td>
<td>11.83</td>
<td>1.60</td>
<td>0.18</td>
<td>2.45</td>
</tr>
<tr>
<td>Within Groups</td>
<td>207.23</td>
<td>28.00</td>
<td>7.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>278.23</td>
<td>34.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No. 7.20 indicates there is no significant difference in financial charges to net sales ratio of alluminuim units under study because the calculated value of ‘F’ is lower than table value so, null hypothesis is accepted and alternative hypothesis rejected. It can be concluded that there is no deviation in the financial charges to net sales ratio of alluminuim units under study.
CONCLUSION:

Activity and operational efficiency analysis is concerned with measuring the efficiency in assets management. Some times, these analyses are also called analysis of assets utilization. The efficiency with which the assets are used would be reflected in the speed and rapidity with which assets are converted into sales. The greater rate of turnover, the more efficient the utilization, other things being equal. For this reason, such ratios are called turnover ratio. Turnover is the primary mode for measuring the extent of efficient employment of assets by relating the assets to sales.

Depending upon the various types of assets, there are various types of activity ratios, which are total assets turnover ratio, net fixed assets turnover ratio, current assets turnover ratio and capital turnover ratio. All these ratios are used for measuring the performance of activity and operational efficiency of fertilizer companies under study during the years 1999-2000 to 2005-06.
REFERENCES

1 Chowdhary S.B. “Analysis of company financial statement” Asia publishing house, 1964, p.71

CHAPTER 8

SUMMARY, CONCLUSION & SUGGESTIONS
CHAPTER – 8

SUMMARY, CONCLUSION AND SUGGESTIONS

CHAPTER – 1

CONCEPTUAL FRAMEWORK OF FINANCIAL PERFORMANCE

Present research dealt with the study of “Analysis of financial performance of aluminum industry in India”, which are mainly engaged in the production of different types of aluminum products.

The study is made to analyze Financial Performance, Financial Efficiency Operational Efficiency, financial structure and liquidity of operation of an organization. In the interest of getting good working results, every enterprise should have a periodical analysis of its performance of efficiency. The areas of the analysis are financial efficiency, operational efficiency, and activity in relation to the total resources utilization. For that the conceptual framework of Performance, Efficiency, Financial Efficiency, Performance Efficiency, Performance Appraisal, and activity is given. The objective of this study is detailed cause and effect study of the efficiency and effectiveness in the use of resources available in the business enterprise. The importance and usefulness of financial efficiency analysis operational efficiency and activity of business are different for various users of the information such as for financial managers, investor, and shareholders, creditors, employees, Big business Houses, Government, and Society etc.
For Financial managers this study is devised to measure the overall effectiveness of their own plans and policies. Investors and Shareholders are interested in the current and long term profitability of their investment. The employees, Shareholders, and Government are interested in the profits of a company. The society also expects to know about the social performance such as environmental obligations, employment, avenues, Social welfare etc.

The techniques, which are commonly used for the study, are such as ratio analysis, trend analysis, comparative statement analysis etc. Statistical techniques are also used for the purpose and they generally include the average, index, Kruskal Wallis one-way analysis of variance, Standard deviation, variance etc. Diagrams, Graphs and Charts are also prepared and made use of.

**CHAPTER-2:**

**PROFILE OF ALUMINUM INDUSTRY**

The aluminum group of companies in India plays an important role in development of the Indian economy, which is mainly engaged in manufacturing the aluminum products. Therefore, the brief profile of aluminum industry is given in this chapter.
A brief profile aluminum industry, which includes the introduction, aluminum industry that is classified as primary producers and secondary (down stream) producers, development of aluminium industry in India, government policy for the industry, current scenario, demand drivers including power, automobiles, and construction, packing and consumer durables, risk factors associated with alluminuim industry, critical success factors, global perspective, recent m & a trends and outlook which includes facts and figure about exports, import and production capital of Indian alluminuim industry. In the last the brief introduction of selected units has been given, which included the ownership of the industry, main product, and incorporation of years.

**CHAPTER-3:**

**RESEARCH METHODOLOGY:**

The subject of the present study is “Analysis of financial performance of alluminum industry in India”, which covers the period of the last seven years from 2000-01 to 2006-07. The study covers the large plants of alluminum group of companies. The study is based on secondary data published by the alluminum group of companies in their annual reports and accounts. The main objective of the study is to know the position of aluminum industry, financial strength, liquidity position, financial efficiency and activity in relation to total resources of the firm of the fifth selected units of alluminum group of companies.
The chapter covers problems related to aluminum industry, Relevance of the study, Review of the literature, Statement of problem, Objectives of study, Hypothesis of the study, Universe of the study, Period of the study, Sampling design, Data collection method, Tools and Techniques which included Various statistical measures like mean, standard deviation, regression, index number, have been used and least-square trend, qui-square of productivity have been fitted, Kruskal Wallis and one way-analysis of variance test have been applied to test the validity of two hypotheses namely (1) Null hypothesis (2) Alternative hypothesis., Outline of Study, Finally the limitations of present study have been shown.

CHAPTER-4: ANALYSIS PROFITABILITY

Profit planning is an integrated part of overall process of financial planning. The term profitability refers to the ability of a given investment to earn returns from its use. Profitability can be ascertained and analyzed the computation of profits ratio either based on operating profit profits or net profits or both.

In this chapter the concepts of the profit, profitability and rate of return, bases of profitability measuring the profitability in relation to sales and capital employed, shareholders investment and dividend policy of the sample units have been analysis.

Profitability is a measure of the organizations ability to translate to its financial resources into mission related activities. Financial efficacy is desirable in all organization of individual mission.
Profitability measures the intensity with which a business uses its assets to generate gross revenue and the effectiveness of producing, purchasing, pricing, financing, and marketing decisions. At the micro level, profitability refers to the efficiency with which resources are correctly allocated among competing uses at a point of time. Profitability is a measure of how well an organization has managed certain trade-offs (risk and return, liquidity and profitability) in the use of its financial efficiency.

The present study has been made in order to analyze profitability through ratio of the aluminum companies in India. The profitability ratios which have been discussed in this chapter are: (1) Gross profit ratio: (2) Operating profit ratio: (3) Net profit ratio: (4) Return on gross capital employed: (5) Return on net capital employed: (6) Return on net worth: (7) A study of earning per equity share of the company under study has been also made.

1. The gross profit in terms relative terms as percent of net sales. As regard the aluminum group, the gross profit ratio ranged from 24.33 percent in 2004-05 to 29.64 percent in 2000-01. After first year of study period the ratio showed a highly fluctuated trend from 2000-01 to 2006-07 with an average of 26.6 percent. In this ratio, the management was very interested. As regards this ratio the NAC, HDL, and MAC aluminum showed good profitability followed by IIC and BAC. It is suggested that the IIC and BAC should reduce the cost of goods sold.

2. The one way ANOVA test reveals that the calculated value is less the table value, hence it is concluded that the Gross Profit ratio aluminum companies does not differ significantly.
3. The operating ratio of aluminum Companies of India, which showed fluctuated trend during the study period. The average ratio 19.65 percent which was satisfactory. The ratio varied from 16.89 percent in 2001-02 to 25.29 percent in 2006-07. The ratio was good in all year of research period with fluctuated during the study period. However it was more than the standard. In general manufacturing concerns, the operating profit ratio was expected to touch a percentage of 15 to 20 percent.

4. The operating profit ratio was the highest in NAC. Among all the companies and the lowest ratio seen in the IIC. A higher operating profit ratio is favorable for the company. Further it can be said that NAC has achieved good remarks in the case of operating ratio.

5. ANOVA test for operating profit ratio showed the insignificant between the groups and within the group.

6. The Net profit ratio in aluminum Companies in was satisfactory. The average ratio of NAC was highest among all the aluminum Companies. The average ratio of NAC (27.56 percent) followed by HDL (18.48) MAC (14.79)) and BAC (6.45). The average ratio of IIC and BAC indicated a very low profitability.
7. ANOVA (F) test indicates that there is no any significant difference in Net Profit ratio of aluminum units under study. Hence It can be concluded that there is no high deviation in the Net Profit ratio of aluminum units under study.

8. The earning per share registered a fluctuated trend during the period under study. The highest earning per share was in HDL, NAC and MAC. The combined average earning per share of BAC and IIC indicated worst profitability position of unit.

9. Table No.4.8 Indicates ANOVA Test that there is insignificant difference in earning per share of aluminum units under study because the calculated value of ‘F’ is lower than table value.

10. The study shows that return on the capital employed in the aluminum units India has marked fluctuating trend during the whole year of the study period. The average was 10.73 percent. In the group this ratio was satisfactory.

11. The analysis of the return on gross capital employed in individual aluminum of the study period reveals that it was the highest return on gross capital employed in HDL. Followed by NAC, MAC, IIC and BAC. In IIC and BAC Return on Gross Capital Employed Ratio of the company was not satisfactory during the study period.

12. ANOVA Test analysis indicates that there were similarities in Return on Gross Capital Employed Ratio of aluminum units under study.
13. Return on Net Capital Employed is the best test of overall profitability and efficiency of the business firm. A company with high rate of return on capital employed would be in a position to capitalize; e.g. it can take advantage of all favorable market opportunities.

14. The study shows that returns on capital employed in the aluminum units in India had marked a fluctuated trend. The average was 19.33 percent in aluminum units in India. This ratio was satisfactory. On the whole NAC had the highest return net on capital employed of 32.52 percent on an average in a span of seven years followed by MAC, HDL, BAC and IIC. As compared to the aluminum units in India the performance of NAC MAC, and HDL were better. While the performance of BAC, and IIC, was lower. In the light of the above discussion it is suggested that BAC and IIC should undertake cost control measure so that increase net profit before interest and taxes of the company might enhance the return on net capital employed.

15. One way ANOVA test of Return on Net Capital Employed ratio showed that there was not any significant different among the Return on Net Capital Employed ratio.

16. Return on net worth indicates how well the company has used the resources of the owners. On making an analysis of the performance of the aluminum units the return on net worth had been on average 18.81.
It showed highly fluctuated trend during the whole years of study period. The return on net worth in the covered period ranged between 12.30 in 2001-02 and 28.59 in 2006-07 the aluminum group of companies under study. IIC and BAC had to make a struggle for achieving the standard. Other companies under study had however, come up to the standard. On the whole MAC had the highest return on net worth of 32.52 percent on an average in span of seven years followed by NAC, and HDL.

17. One way ANOVA test also explains that Return on Net worth Ratio of aluminum units under study is not deviated.

18. Dividend pay out ratio measures the relationship between the earnings belonging to the ordinary shareholders and the dividend paid to them It can be generalized that the dividend payout ratio of NAC was the highest followed by MAC, HDL and IIC. The following companies showed the dividend payout ratio was lower than the average ratio of aluminum units like HDL, IIC and BAC.

19. One way ANOVA explains that the difference among selected aluminum units does not differ.
CHAPTER-5:
ANALYSIS OF FINANCIAL STRUCTURE

Understandably a Financial analyst should not be interested in the performance of a business enterprise during a short-period of times because a company which is financially sound today may eventually lose its strength in the long period if it suffers prolonged losses.

1. The total debt equity ratio of Aluminum industry showed increased trend during the study period. The average ratio was 0.70 times which means that for every 0.70 rupees of outside liabilities, the firm has one rupees of owner’s capital. Therefore huge margin of safety available for creditors.

2. Analysis expressed that the total debt equity was highest in MAC, and BAC because of shortage of long term funds, so these units relies on short- term funds but it indicated poor long term strength of companies. The ratio in NAC was the lowest among all units indicated sound financial management. The other units had the total debt equity ratio lower the Aluminum industry.

3. On the basis of above analysis it can be concluded that the highest long term debt equity ratio was of 1.16 times of MAC. Followed by BAC, IIC and HDL. The average of combined long term debt-equity ratio of Aluminum industry was 0.59 times. The ratio in NAC was 0.17 times and the same was also zero in last two years of study period in NAC to negative net worth. Most of the companies under the study did not maintain the standard norm of 1:1. In NAC.
The ratio was 0.17 times which was lowest among all the companies under the study and the company was more relied on owner’s funds.

4. The financial leverage Ratio, which measures the interest paying capacity of the company. It was found that HDL IIC MAC NAC and BAC were in a position to pay-off its interest obligations. The ratio of BAC was highest indicated a sufficient fund available to pay-off interest. The average ratio of aluminum industry was bettered as compared to other units. All these units could increase earning for shareholders due to leverage benefit.

5. Fixed assets to Net-worth ratio have been calculated for ascertaining the percentage of fixed assets financing by owners of the company. The ratio showed fluctuated and increasing trend throughout the study period. The ratio was ranged between 0.879 times in 2000-01 and 1.572 times in 2004-05 with an average of 1.204 times. The ratio was above the standard norm of 65 percent, which means that the fixed assets were more than the net worth. The ratio in most aluminum units were very good because most of owner’s fund has been utilized in fixed assets which generated good amount of return and increased earning potentiality.

6. The analysis of proprietary ratio indicated that as a whole the performance of aluminum units was satisfactory because of all the companies’ ratio was more than 50 percent except IIC. MAC and BAC. The ratio
indicated that in all the company’s owner’s funds was sufficient to acquire total assets.

7. The net fixed assets to long-term debt ratio have been calculated for adjusting the long-term financial strength. Looking the tea industry, as the whole the ratio was always more than one except IIC. Indicating a sufficient security available for long-term creditors. On the basis of the analysis it can be concluded that the highest ratio of the company was of 4.44 times in MAC followed by BAC HDL and NAC. In most of units fixed assets have been finance by long – term debt which was very good for aluminum industry

8. Interest coverage ratio indicated the ability of the company to pay interest charges. The interest coverage ratio very good in HDL, NAC, MAC and BAC. But this ratio was very bad in IIC which increased financial risk for investor. Interest coverage ratio found very due to negative net profit during the last years of study period.

CHAPTER-6: ANALYSIS OF WORKING CAPITAL

Investment in short term funds generally assume the form of working capital. The skills of the working capital management are rather unique; through their goals are the same as in managing the current assets individually. Working capital has been defined in two ways: The different between current assets and currents liabilities (The net working capital approach) and the total of current assets employed (gross working capital approach). For the purpose of the present analysis the net working capital approach has been taken in to consideration.
The management of working is one of the most important facets of financial management. The objective of working capital management is to manage current assets and current liabilities in such a way that an acceptable level of networking is maintained so as to protect and preserve liquidity and profitability of the firm.

1. The current ratio of HDL, IIC MAC NAC and BAC was less than the norm of 2:1. It means the solvency position of these companies was poor and precarious. Combined current ratio of aluminum industry was 1.40 times. The solvency position was bad and sort term creditors’ position regarding their claims was not safe because companies had not sufficient funds in the form of current assets to meet their claims.

2. In general the quick ratio has been higher than the norm of 1:1 in HDL, IIC, and BAC. The financial position regarding the quick ratio of these companies very sound. Remaining companies ratio was less than one indicated poor liquidity position. Aluminum industry as a whole ratio was more than one indicated good liquidity position of companies.

3. The inventory to working capital ratio was not satisfactory as a whole due to high value inventory; there was insufficient coverage of working capital in companies like HDL, and however the ratio of BAC had been near 50 percent which reflects that the liquidity position of this company was sound. It is suggested remaining (NAC, HDL and IIC) companies should try to reduce the volume of inventory.
4. Inventory turnover ratio express the frequency with which average level of inventory it turned through operations. The ratio in selected aluminum companies taken as a whole fluctuating during the study period. It varied from 11.47 times in 2001-02 and 16.11 times in 2006-07. The inventory turnover ratio was the highest in BAC and HDL among all selected companies under study respectively. The companies should plan a policy to maintain a defined proportion of inventory to avoid heavy short term investment in it.

5. Debtor turnover ratio shows the firms efficiency in realizing the debtors. The debtor turnover ratio in selected aluminum companies taken as whole revealed in increasing trend during the study period. It varied from 14.95 times in 2001-02 to 55.57 times in 2006-07 times. Generally, this ratio was highest in BAC, NAC, MAC and HDL. In most of unit average ratio was more than 8 times indicated efficient management of current assets.

6. Average collection period IIC was more than 50 days it means that these companies’ efficiency of collection of debt from debtor’s was not good. However, Collection period in NAC, BAC HDL and was less than 30 days indicates that these companies collected their debt from the debtors efficiently which also shows a good liquidity position of the companies, as the quality of debtor’s was good.

7. Analysis of working capital turnover reveals that there was better utilization of working capital in IIC and HDL, the turnover was moderate
in BAC. There was negative ratio in NAC. Utilization of working capital in MAC was very poor.

8. On the basis of stock turnover ratio analysis it can be said that the ratio of tea industry had a fluctuating trend during the study period with an average ratio of 4.45 times. The stock turnover ratio of BAC and MAC had the average ratio been higher and followed by NAC and HDL. All selected units should accelerate the stock turnover

CHAPTER – 7
ANALYSIS OF ACTIVITY

This chapter deals with the activity analysis in terms of size of investment. Activity ratios are concerned with how efficiency the assets of the firm are managed or utilized. These ratios indicate the rate at which different assets are turned over in the process of doing business. The greater the rate of turnover or conversion, is the more efficient the utilization or management, other things being equal, resulting in higher profitability. For the activity analysis following ratio are calculated (1) Total assets turnover ratio (2) Fixed assets turnover ratio (3) Current assets turnover ratio and (4) capital turnover ratio. (5) Raw Materials to net Sales Ratio(6) Wages and Salaries to net Sales Ratio (7) Power and Fuel (Energy) to net Sales Ratio (8) Selling & Distribution (Marketing) to Net Sales Ratio (9) Depreciation to Sales Ratio (10) Financial charges to Gross sales.

It also highlights the efficiency with which the activities are concluded. The main conclusions drawn are as under:
This chapter deals with operational efficiency and activity analysis in term of size of investment. The main conclusions drawn are as under:

1. The total assets turnover ratio, which indicates the effectiveness of the utilization of assets, registered a fluctuating trend in almost all the companies under study. The ratio of BAC was the lowest 0.43 times in 2000-01 while it was the highest 1.25 times in HDL in 2000-01. The ratio was in most of years less one in MAC and NAC whereas it was always more than one in HDL during the study period. The reason responsible for the lower ratio was the increase in the amount of assets because of huge expansion and development programmes. Thus, the addition to investment in various assets could not be resulted in proportionate in sale.

2. The result showed by ANOVA test (F) reveals the difference in total assets turnover ratio were insignificant in all selected companies at the 5 percent level of significant.

3. The fixed assets turnover ratio of HDL ranged from 1.71 times 2006-07 and 2.46 times in 2001-02. The ratio showed fluctuating and mixed trend in almost all the selected aluminum companies under study during the period under review. The ratio was less than one times in IIC, MAC, NAC and BAC. Thus, the ratio suggests that the HDL, were able to utilize its fixed assets properly in generating sales whereas IIC, MAC, NAC and BAC failed to maintain the rate on increase in sales as compared to that in fixed assets. HDL succeeded to a large extent on this front.
4. It is evident from Table no. 7.4 that the difference between Fixed Assets Turnover Ratio in between groups and within groups was significant because the calculated value of ‘F’ (41.39) was less than the critical value of ‘F’ (2.45) so, null hypothesis is accepted and alternative hypothesis is rejected. So, it indicates no deviation in Fixed Assets turnover Ratio of aluminum units under study.

5. The current assets turnover ratio of MAC ranged between 0.78 times in 2002-03 and 4.15 times in 2003-04 indicating a mixed trend in almost all the selected aluminum units under study during the period under review. The combined average ratio 1.73 times. All the companies made excessive investment in current assets particularly in the form of inventory and sundry debtor. The ratio was always more than two times in IIC and, MAC indicated efficient utilization of current assets.

6. It is evident from Table No.7.6. that the difference between Current Assets Turnover Ratio in between groups and within groups was significant because the calculated value of ‘F’ (0.033) was lesser than the critical value of ‘F’ (2.45) so, null hypothesis is accepted and alternative hypothesis is rejected. Therefore, it indicates no deviation in Current Assets Turnover Ratio of alluminum units under study.

7. Analysis of capital turnover ratio reveals that the HDL showed the highest turnover ratio followed NAC, IIC, BAC and MAC. All
selected units showed ratio more than one, which was showing efficiency in the utilization of the capital employed.

8. ANOVA test of capital turnover explains that there is no any significant difference in capital turnover ratio of alluminuim units under study.

9. The material consumed to net sales ratio of alluminuim group of industries was 29 percent. The highest ratio of 56.2 percent in the years of 2006-07 was found in HDL whereas in MAC the average ratio was 48 percent. The lowest average ratio was found in BAC thus this company has good command over the consummation of material.

10. Table No.7.9 indicates ANOVA test which explained that the different was insignificance

11. Wages and salaries to net sales ratio was the highest in IIC followed by NAC, and MAC. The ratio was the lowest in BAC. It can be concluded that amount of wages and salaries was increasing year on account of regular increment in the wages and salaries and increased in dearness allowance which is linked with the cost of living index number. It is suggested that wages should be linked with labour productivity.

12. The result showed by ANOVA test (F) reveals the difference in Wages and salaries to net sales ratio were not significant in all selected companies at the 5 percent level of significant.
13. Power- fuel to net sales ratio of alluminuim group was showing fluctuating and downward trend throughout the study period. The ratio was 12 percent in 2000-01 to 12.3 percent in 2001-02. It further went up to 12.4 percent in 2002-03 and rose to 12.5 percent in 2003-04. The ratio was 8.67 percent in 2004-05 and stabled at the lowest level of 8.66 percent in 2004-05. The average ratio was 10 percent. In comparison to group average, the ratio of HDL, IIC, and NAC had the above average ratio.

14. Table No.7.12 indicates there is no significant difference in energy (power-fuel)/net sales of fertilizers units under study because the calculated value of ‘F’ is higher than table value so, null hypothesis is rejected and alternative hypothesis accepted.

15. The percentage of selling & marketing to net sales were observed the highest in HDL during the most of the years of the study compared to other alluminuim companies. The share of these expenses was less than 1.20 percent in IIC, MAC and BAC.

16. The result showed by ANOVA test (F) reveals the difference in Wages and salaries to net sales ratio were insignificant in all selected companies at the 5 percent level of significant.

17. Depreciation to net sales ratio was the highest in NAC followed by HDL, IIC and MAC. The depreciation was highest in because of old plant in NAC. However higher depreciation has given operating
leverage benefits to the units. The depreciation amount was very low in BAC compared to other selected units.

18. ANOVA test explained that there was not any significant difference among depreciation to net sales ratio

19. The financial charges to net sales ratio indicated a declining trend during the study period. It varied from 0.66 percent in 2006-07 to 4.48 percent in 2002-03 the ratios in the companies like MAC and NAC had the ratio higher than the alluminium group. While the companies like HDL, IIC and BAC had the ratio lower than alluminium group of companies.

20. Table No.7.21 indicates there is insignificant difference in financial charges to net sales ratio of fertilizers units under study because the calculated value of ‘F’ is lower than table value
SUGGESTIONS:

As a researcher based on analysis has found the following suggestions for the betterment of the selected alluminuim group of companies.

1. The company should try to increase the production so as to get economies of large-scale production. It will assist in raising the rate of return on capital employed.

2. In order to increase the profitability of the companies, it is suggested to control the cost of goods sold and operating expenses.

3. The management should try to adopt cost reduction techniques in their companies to get over this critical situation.

4. The quantum of sales generated should be improved impressively in order better to enjoy better per of the assets and capital employed.

5. The selected alluminuim Group of Companies is the capital intensive in nature but the policy of purchase of fixed assets should be carefully planned and reviewed so that the funds may be properly utilized.

6. To reduce power and fuel Cost Company should find out other alternative for this.
7. The selected alumium units should try to match the amount of working with the sales trends. Where there is a deficit of working capital, they should try to build on adequate amount of working capital. Where, there is an excessive working capital, it should be invested either in trade securities or should be used to replay borrowings.

8. The management should try to utilize their production capacity fully in order to reduce factory overheads and to utilize their fixed assets properly.

9. The burden of interest has produced a deteriorating effect and reduced the percentage of net profit. It is suggested that the companies should try to reduce the interest burden gradually by increasing the owner’s fund.

10. The few companies, which did not follow a definite policy of financing fixed assets, should follow such policy.

11. To strengthen the financial efficiency, long-term funds have to be used to finance core current assets and a part of temporary current assets. It is better if the companies can reduce the over sized short-term loans and advances eliminates the risk arranging finance regularly.
12. The policy of borrowed financing in selected aluminium group of companies under study was not proper. So the companies should use widely the borrowed funds and should try to reduce the fixed charges burden gradually by decreasing borrowed funds and by enhancing the owner’s fund. For this purpose companies should enlarge their equity share capital by issuing new equity shares.

13. For regular supply of raw materials and the final product infrastructure facilities are required further improvement.

14. Cost accounting and cost audit should be made mandatory for this units and cost sheet along with annual financing statement should be prepared.

15. The public sector enterprises set up in backward areas were not guided by commercial considerations. They were set up to fulfill the aim of balanced regional development.

16. There has been too much of government interference in policy and day-to-day working and decisions. This leads to delays in decision-making. This should be abolished.

17. There is no incentive to the employees to perform better. Also there is no accountability because no one is held responsible for a failure in achieving targets. For this kind of problem responsibility centre should be created
18. Improper planning and delays in implementation of projects lead to rise in their cost. So properly planning should be made.

19. Public sector enterprises have long enjoyed a monopolistic position. Private sector was not allowed entry. This, in the absence of any competition, means that any performance was good performance. Due to absence of competitor there was no incentive to cut down costs or improve the quality of the product.

20. There is overstaffing in public enterprises. The number of persons employed is more than what is required to run the public enterprises efficiently. This increases the cost and reduces profitability of these enterprises.

21. The alluminuim companies should reduce power and fuel consumption by using low as content coal (imported coal), lignite, agro waste product especially ground nut husk, and beggass should be used as coal substitute.

22. To regularize and optimize the use of cash balance proper techniques may be adopted for planning and control of cash. The investments in inventories should be reduced and need to introduce a system of prompt collection of debts.

23. Selected alluminuim companies should try to use properly their operating assets and should try to minimize their non-operating expenses.
24. The government should minimize the subsidy and encourage the capital market for the aluminium companies.

25. The margins of the domestic aluminium players are under pressure because of fall in LME aluminium prices. With leading players like Hindalco and Nalco giving more emphasis on downstream production, their margins are likely to be partially protected, despite sharp fall in LME prices. With Nalco and Hindalco among low cost producers in the World; the government should help in such situation.

26. The greatest scope for value addition and employment generation lies in the development of downstream products like extrusions, rolls, products, fabrications and finished.
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