

Chapter - One

Introduction

1.1 Focus of the study :-

Nepal is a poor and developing country. About 83% of the people of Nepal depend on agriculture. Therefore, the economic condition of the nation also depends on agriculture. On the other hand, economic development of the nation depends on its industrial establishment Business companies are essential also for the economic development of the developing countries. Rapid economic development is important for all countries of the world. Particularly, economic development is an important aspect for the development of the country like Nepal.

Industrialization is essential part of economic development of the country in the world these days. Developing countries are continuously trying to create necessary infrastructure and emphasizing on industrialization because it helps to up lift the economic standard of the people, generate employment opportunities, save foreign exchange through export promotion and reduce the dependency on import. Industrialization is the back bone of the developing country like Nepal. A country becomes fully developed if it uses appropriate patterns of industrialization because economic development of a country can make its strong and powerful in the world.

Nepal is mixed economy as well as least developed countries in the world, where per capital income is only \$ 210 (WB 1988)¹ and industrial sector is the second leading sector after agriculture. It is usually considered that a country which is advance on path of economic development, the role of agriculture sector goes on decreasing where the role of industrialization increases. It reduces automatically, the pressure on agricultural land.

¹ His Majesty's Government Planning Commission "The eight Plan"

History of industrialization process in Nepal begins with the formulation of first company Act 1936 and with the establishment of jute mill in Biratnagar while cottage & small scale industries were developed since ancient period and that was a glorious time for the development of handicraft and cottage industries in Nepal.

However, history of modern industrial development as Nepal can be classified in to the following three periods.

Rana Ruling period (1936 to 1950 AD) :-

It was a period of rapid industrial development mainly due to world's situation. Availability of foreign capital & technology were other reasons for such rapid industrial development. Under this period Juddha match factory, Biratnagar Jute Mill & Morang Sugar Mill were established.

Middle period (1950 to 1956 AD) :- In this period industrial development was badly affected.

Industrialization of planning period (1956 to current fiscal year) :- After the inception of planning in Nepal in 1956, the government started to develop the basic infrastructure network first & establishment of different types of enterprises coming up to the present stage. Since 1956, many industrial sectors have been established in Nepal such as consumer products industries (Sugar, Match, Cigarette, dairy product etc) textile industries, carpet industries, cement industries, metal industries etc. Among the various PEs, cement industry is one of the basic agro-based PEs industries. Cement is a fundamental construction material for strong and durable construction works. The consumption rate of cement has been increasing every year. The demand of cement is fulfilled by internal and external supplier at present. The external main source is India. Among the internal Himtal cement company, Udaypur cement company, Annapurna cement company, Maruti cement industry, Tribeni Cement industry and Hetauda Cement industry are major manufactures and supplier of cement. A cement industries has greater proposed and scope now a days. The study focuses on Hetauda Cement Industry.

The large- scale natural resource user Hetauda Cement industries limited was incorporated under company act 2021 B.S. with the share investment of Nepal government and loan assistance of Asian development Bank. Later, credit from national and international commercial bank was also received for financing the project. It's initial source of finance are Nepal Government 13%, Nepal Bank Limited 66% and Asian development Bank 21%.

It has its factory in lamsure at the bank of sasauni brook, in front of the industrial district of the Hetauda at Hetauda of Makawanpur district of Narayani zone in middle development region of Nepal. HCIL is a manufacturing enterprise which is located at Hetauda Municipality. It was established in 2033 B.S. to fulfill the fifth national periodic plans. The main objective of this industry was to substitute the import and fulfill 50% of the national demand but the industry meets about 30.88 % supplying 123557.200 MT. national demands at 45.40 % capacity utilization in fiscal year 2050/051. It was established under fully government ownership investing Rs.206 millions. It produces only the ordinary Portland cement whose brand name is 'SHAKTI' cement and is marketed by the company itself. The targeted market of the industry is nation wide.

Proper financial management is of great importance in every business enterprises, from the view point of achieving success. In this respect working capital play a significant role in every aspect. Working capital is needed for day to day operations of the business, so it can be considered as the life blood for any business.

For any business industries, working capital management is essential mainly for four reasons.

- 1) Business firm determine the adequacy of investment in current assets, otherwise it would seriously erode their liquidity base.
- 2) They must select the types of current assets suitable for investments so as to raise their operational efficiency.

- 3) That is easy to ascertain the turn over the current assets that greatly determine the profitability of the private enterprise.
- 4) That must find out the appropriate sources of funds to finance current assets.

A manufacturing company must have an adequate supply of raw material to process, labors, power, fuel etc. Then raw materials are converted into WIP into finished goods and the final product to sell in market and also must have capability of waiting for the market and also have an ability to sell in credit in this era of cut-throat competitions. Either excess working capital or less working capital both may be dangerous for the company.

The main functions of working capital management are

- To adjust to change in the firm & level of sales activities caused by seasonal, cyclical and random factors.
- To contribute to maximize the value of firms current assets holding.

Thus study also focuses on how Hetauda Cement Industry limited utilizes the available fund very well. Besides, this study also focuses on the relationship between current assets, current liabilities and other variables which affects the working capital management of Hetauda Cement Industry. This study only focuses on the working capital management and its significance during past five years from 058/59 to 062/63.

1.2 Statement of problems :-

Hetauda Cement Industry Limited has not been able to meet the countries demand. Hetauda cement industry limited is also not free from problems. Some of the problems which come to know in the field of working capital management of the company are as follows.

- 1) It is not clearly shown that Hetauda Cement Industry limited is able to utilize current assets properly?

- 2) What is the variability in the size of investment in current assets?
- 3) What is the significance of current assets management?
- 4) Is there any need to control over investment in current assets?
- 5) Has there been change in the variability in investment in the current assets over a period of study?
- 6) Is there any difficulty in current assets of Hetauda Cement Industry Limited to manage?
- 7) Which of the current assets create more problems?
- 8) What are the motives for holding cash?

1.3 Needs and importance of the study :-

For the smooth operation of organization in the short run as well as in long run, Sound financial performance is a prerequisite problem. Analysis describes the various components of assets like cash, inventories, debtor, receivable, out standing income and liabilities like creditors, short term debt, bank overdraft etc. It is very important for the evaluation for financial performance of any business enterprise. Working capital is the life blood of business enterprise. There are so many tools & technique to evaluate financial strength & weakness of a company. Analysis & interpretation is also very important to evaluate financial strength & weakness. Without investment in working capital production cycle is not possible. In absence of production, there is no question of distribution, marketing and profit. So investment in working capital is essential for any manufacturing and non manufacturing organization.

Working capital is the size of the investment in each type of current assets. Each of these current assets should be managed efficiently and effectively. It is because of decision regarding working capital not only affects profitability of the firm in the short run but also affects the survival in the long run.

1.4 Objectives of the study :-

The basis objective of this study is to find out and measure the working capital structure of Hetauda Cement Industry Limited. The objective of the study is to know a true information about the working capital position of Hetauda Cement Industry Limited and to make certain solid recommendation for necessary improvements. It tries to study the changes that have taken place there over a given period of time.

Some important objectives of the study can be pointed out as follows.

- 1) To identify the various aspects of working capital of Hetauda Cement Industry Limited.
- 2) To know the situation of the working capital management of Hetauda Cement Industry Limited with respect to cash credits & inventory management.
- 3) To present the relationship between sales & different variable of working capital.
- 4) To see the effect of working capital on profitability.
- 5) To find out & identify the basic reasons for losses.
- 6) To analyze and find out whether the available fund are fully utilized or not.
- 7) To measure the liquidity position of different components of working capital.
- 8) To highlight working capital, on the application of financial tools and standard norms used by Hetauda Cement Industry Limited.
- 9) To recommend measures, as a guide lines to Hetauda Cement Industry Limited and take decision related to their own shareholders and creditors.

1.5 Hypothesis of the study :-

Following null hypothesis, which are set on the basis of the research problem discussed in the above section, would be tested during the course of the study.

- 1) There is no significance difference between current assets and total assets in the regard of average proportion increase.
- 2) There is no significance difference in average proportion increase of inventory and current assets.
- 3) The relationship between cash balance & current assets does not differ in the regard of average proportion increase
- 4) There is significant difference in average proportion increase between receivable & current asses amount i.e. the volume of current assets depends on the share of receivable on it.
- 5) There is significant difference between current assets & current liabilities in the sense of average proportion increases i.e. current assets are affected by liabilities.

1.6 Research Methodology :-

Research methodology is known as the research method or technique and the process of arriving at the solution of the problem through planned & systematic dealing with the collection, analysis and interpretation of the facts and figure through the entire study. The objective of the research is to analyze the financial strength & weakness of Hetauda Cement Industry Limited. In order to achieve the objectives of the study the following research methodology has been followed. It includes research design, data collection and procedure, period covered, nature & sources of data, used tools for analysis of data and research variables.

1.6.1 Research Design:- Research design is a plan, structure and strategy of investigation conceived so as to obtain answer to research questions and to control the variance. It gives the frame work of the study. This study aims to find out the working capital position of the Hetauda Cement Industry Limited published annual reports (from 2058/59 to 2062/63) comprising balance sheet, profit & loss account and other accounting statement. Thus the study follows the descriptive as well as analytical approach.

1.6.2 Population and sample:- At present the cement industry in Nepal consists of nearly 50 units which are the population for the study. The selection of any of these units can not fairly represent the characteristics of the entire population. However, the question of population and sample does not arise; the study is a case of the Hetauda Cement Industry Limited.

1.6.3 Nature and sources of data:- The study is based mainly on secondary data. The sources of secondary data are internal and external. The internal secondary data includes data available in financial statement and unpublished official records of Hetauda Cement Industry Limited. The external secondary data includes the data available in books, periodicals, and unpublished officials records of the government organization and published & unpublished reports.

1.6.4 Data collection techniques:-First of all exhaustive list of required data and information for the study are prepared. Then a letter of recommendation for proper help asked for and obtained from the campus. After that the data needed for the evaluation of financial condition of the Hetauda Cement Industry Limited is obtained directly from the registered head office of the industry at Hetauda of Makawanpur district. The supplementary data and information are obtained from the unpublished official records of the register of companies the reports of the controller and Auditor General of Nepal and previous studies related to this aspect.

1.6.5 Data analysis tools:- The financial techniques like ratio analysis and trend are the main tools for the purpose of analyzing financial facts in the study. In addition, the statistical tools like percentage, average also are applied in order to make the analysis more systematic, scientific and useful.

1.7 Research questions :-

In order to fulfill the objective of the study and to make easier analysis of data, research questions are essential some research questions are raised as follows:

- 1) Whether the working capital of Hetauda Cement Industry Limited is well managed?
- 2) Whether the working capital position of Hetauda Cement Industry Limited is well define?
- 3) Why and how Hetauda Cement Industry Limited has fallen in losses or gain?
- 4) Is there positive balance between current assets & current liabilities?
- 5) Is there any sequence between debt collection & credit payment policy?

1.8 Assumptions and limitations of the study :-

The main assumptions of this study any as follows:-

- 1) The study has covered only a period of 5 years from fiscal year 2058/059 to 2062/063 and attempts to make trend analysis.
- 2) The study is limited to working capital management of Hetauda Cement Industry Limited.
- 3) The area of study is only working capital management.
- 4) The time at hand is also short.
- 5) It is based on historical data. So it is not the forecast for the current financial position of the future period.

- 6) The effects of monetary inflation are not considered in this study.
- 7) Working days of the industry is assumed 365 days per year.
- 8) Government rules and regulation, technological aspect of the industries also affect the financial position of the industries so they are ignored.

1.9 Organization of the study :-

This research work about working capital position of Hetauda Cement Industry Limited has been classified into five chapters i.e. introduction, review of literature, research methodology, representation & analysis of data & summary, conclusion and recommendation. The small introduction about these five chapters is as follows:

- 1) ***Introduction:*** - The first chapter high lights the basic objective, a brief introduction of the company and structure of the study. In this chapter, problems are identified and the argument for the study is also justified. Thus, the introduction portion includes statement of the problem, need of the study, objective of the study, assumptions & limitations of the study, research methodology, research questions and hypothesis of the study.
- 2) ***Review of literature:*** - A brief presentation of the related studies and findings as well as review of various pertinent literatures has been dealt in this chapter.
- 3) ***Research methodology:*** - In this chapter, methodology used for the purpose of this study is dealt with research design, sources of data and data collection procedure and tools & techniques of finance & statistics.
- 4) ***Presentation & analysis of data:-***The financial data are presented, analyzed & interpreted to know the working capital position in this chapter. The data have been presented, analyzed and interpreted with the tools & techniques of finance and statistics i.e. ratio analysis, correlation coefficient & trend analysis. So this chapter shows financial conclusion.

At least this chapter gives answers to our research questions for Hetauda Cement Industry Limited.

- 5) ***Summary, conclusion & recommendation:*** - The last chapter includes summary of the study, conclusion of the study & the concrete remedial measures for the improvement of the working capital management decision as well as other financial decisions are presented as recommendations.

Chapter - Two

Review of Literature

2.1 Meaning & concept of working capital: -

Every business needs capital for two purposes. The first requires for long term purpose which is called fixed capital. Such funds are required to create production facilities. Investment in plants, Machinery, land & building etc. comes under production activity. Investment in these assets represents that part of firm's capital which is block on a permanent or fixed basis. Such assets are not purchased with the objective of resale.

To operate business, a firm also needs another type of capital which is known as short term capital or working capital. The capital required for running day to day operation of a business is called working capital.

"The funds required for purchase of raw material, payment of wages and other day to day expenses etc is called as working capital. The investment for working capital may be transformed into cash with in a short period. So it is also called circulating capital or revolving capital or floating capital. It is the life blood and nerve centre of a business."²

Working capital concerned with current assets & current liabilities. The assets which are expected to be converted into cash with a short period are known as current assets. Some important current assets are cash in hand, Cash at bank, Account receivable, bills receivable sundry debtors, inventories, marketable securities, advance expenses, outstanding income etc. The liabilities which are expected to have been paid with in a short period are known as current liabilities. Some important current liabilities are bank overdraft, sundry creditors, bills payable, notes payable, outstanding expenses, advance income, cash credit etc.

² R.M. Dangol "Accounts of financial analysis and planning"

Mainly, there are two concepts of working capital. They are i) Gross Concept ii) Net Concept.

Gross concept of working capital :- According to this concept, working capital refers to that part of capital which is required for financing short term or current assets. So according to this concept, working capital is the total of current assets.

Net concept of working capital :- According to this concept, working capital is the difference between current assets of current liabilities. The gross concept is a financial or going concern concept, where as net working capital concept is accounting concept of working capital. Net working capital can be positive or negative. A positive net working capital will arise when current assets exceed current liabilities. A negative net working capital occurs when current liabilities are excess of current assets.

How ever it is concluded that both gross & net working capital are important aspect of working capital management. There is no precise way to determine the extra amount of gross or net working capital for every firm. From the statement of management & accountancy, it is proper to assume difference between current assets & current liabilities as a working capital of company in right way. The company easily handles financial problems of current assets exceed current liabilities.

2.2 Classification of working capital: -

The classification of working capital can be made in two ways: -

2.2.1. On the basis of concept :- On the basis of concept working capital can be divided into two parts i.e. i) Gross working capital and ii) Net working capital.

Gross working capital is the total of current assets & net working capital is the difference between current assets & current liabilities.

2.2.2. On the basis of time: - On the basis of time working capital can be divided into following two parts:

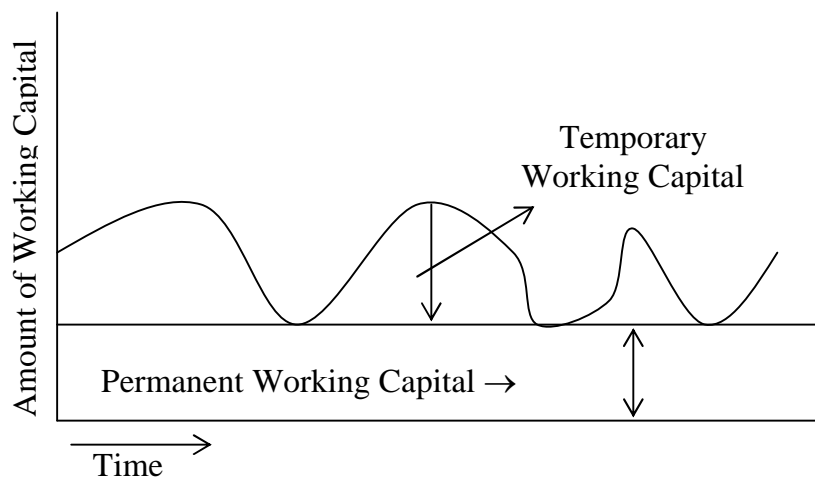
i) Permanent or fixed working capital: -

There is always a minimum level of working capital which is continuously required by a firm in order to maintain its activities. This minimum level of current assets is called fixed working capital.

ii) Temporary or variable working capital: -

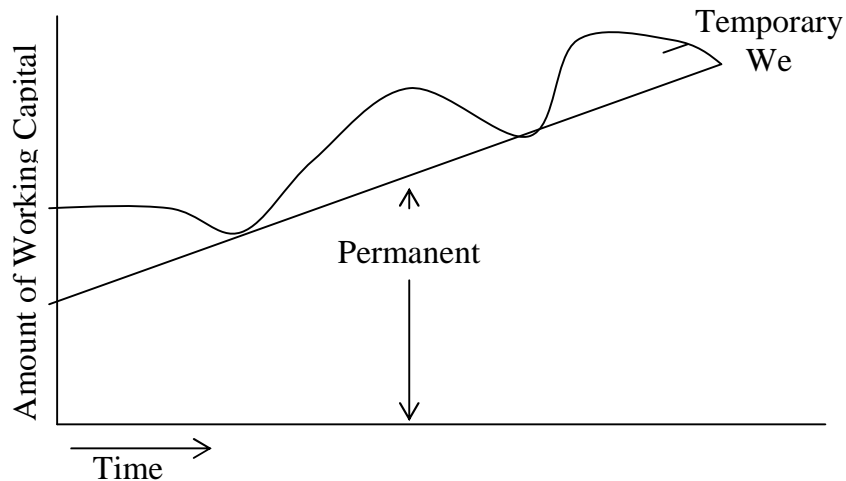
Any amount of working capital over the permanent level of working capital is known as temporary working capital. The amount of such capital will be move. It can not be used properly in the business beyond the time of emergency.

It is needed to meet fluctuation in demand consequent up on changes in production & sales as a result of seasonal change. The basic distribution between permanent & temporary working capital is illustrated in figure as given below:



Above figure shows that the permanent level is fairly constant and whole temporary working capital is fluctuating i.e. Some times increasing & some times decreasing.

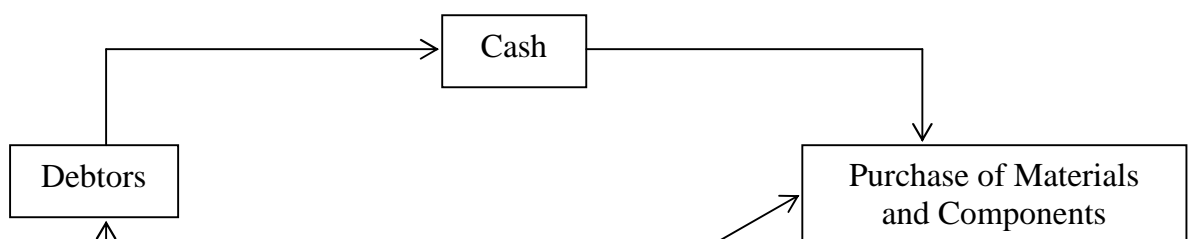
The permanent working capital line may not be horizontal. This is because the demand for permanent assets might be increasing or decreasing to support a raising level of activity.



2.3 Nature of working capital: -

Nature and inter - relationship of working capital can be best understood by operating cycle of the firm. A firm begins with cash that is used for purchase of raw material & bought in components. Materials and other operating supplies can also be purchased on credit that in turn generates accounts payable. Further cash is expected to pay the labour & other either manufacturing costs & further trade credit obtained to enable production of finished goods, which are eventually sold on credit giving rise to account receivables. The collection of receivables brings cash into the firm & creditors are paid. The average time, which elapse between the acquisition of materials or services entering into cash realization constitutes on operating cycle. The operating cycle can be depicted as given below:

Graph - 3



In order to reduce the requirement of working capital, the management should reduce the period of the operating cycle. This underlines affecting working capital so as to get the optional result. This leads us to discuss about the structure of working capital.

2.4 Need & importance of working capital: -

Working capital is the life blood & nerve centre of a business. The circular of blood is essential in the human body for maintaining life. Similarly, working capital is also very essential to maintain the smooth operation of a business. No business can run successfully with out an adequate amount of working capital. The following are the main advantages of maintaining adequate amount of working capital in the business.

- (a) **Solvency:** - There will be uninterrupted flow of production by arrangement of adequate working capital. A business can run smoothly in the presence of adequate working capital. In this situation, the short term liability can be paid with in a short period. Thus it helps to strength the solvency position of a business.

- (b) **Goodwill:** - A firm with sufficient working capital can provide the payment with in time to employees & creditors. In such a case there is no complaint against the firm. As a result, it helps a firm in creating & maintaining goodwill.

- (c) **Easy loans:** - A reputed company having adequate working capital need not face any problem to get loan. It can arrange the loan easily from the banks & financial institution for the funds which are necessary to operate a business.
- (d) **Cash discount:** - A business firm having adequate capital can easily manage the cash for purchase of the goods. Immediate payment of cash enables a concern to receive huge discount on purchase and hence it reduces the cost.
- (e) **Regular supply of raw materials :-** In the case of sufficient working capital it can easily supply raw materials necessary for production and there is not chance of disturbance in production. The uninterrupted flow of production enables the concern to supply its production in the market regularly.
- (f) **Morale of management :-** Due tot the adequate working capital, the over all efficiency of the business increases. It creates an environment of security, confidence and high morale of management.
- (g) **Smooth operation of business :-** A firm with sufficient working capital can smoothly operate the business. Due to available of adequate working capital it can make regular payment of salaries, wages & other day to day commitments. By paying these expenses regularly at time the morale of employees on one hand and on the other their efficiency also increases.
- (h) **Ability to face crisis :-** A business concern has naturally to face various problems such as economic depression, strike, natural disaster etc. The concern with adequate working capital can face such crisis.
- (i) **Regular return :-** The management of ample working capital helps a firm to pay quick and regular dividend to its investors. Because of adequate working capital, the firm does not have to plough back of profit & hence it provides confidence to its invertors and creates a favorable market to raise additional funds in the future.

2.5 Determinant of working capital :-

The needs working capital of a firm depends upon various factors. These factors may vary from one type business to another type of business and also changes from time to time. The working capital needed at a point of time may not be good enough for some other situations. Following are some important factors which affects the working capital requirement of a firm.

- (a) **Nature of business :-** The amount of working capital depends mainly upon the nature of business. In accordance with the nature of business, some firms need more working capital & some need less. In comparison the public utility concern with the manufacturing concern. Manufacturing concern have to invest substantially in working capital and a nominal amount in the fixed capital so they need a large amount of working capital.
- (b) **Size of business :-** The size of business plays an important role on determining working capital. Generally, a firm with larger scale of operation needs more working capital than a small firm. But in some cases, the small or medium scale firm also may need a large amount of working capital.
- (c) **Manufacturing process & length of production cycle :-** The manufacturing process & length of production cycle also affects heavily on the working capital determination. Long manufacturing process needs more working capital and long length of production cycle also needs more working capital.
- (d) **Growth & expansion of business :-** The excessive working capital is needed for the growth & expansion of business. Theoretically, the fixed capital is needed more for the developing enterprises. But for the

operation & maintenance of fixed capital, the working capital is also needed.

- (e) **Rapidity of turn over :-** Turn over represents the speed with which the working capital is recovered by the sale of goods. If the turnover rate is high, lower amount of working capital will be sufficient. But if the turn over rate is low, then naturally large amount of working capital is needed.
- (f) **Terms & conditions of purchases & sales :-** The determination of working capital depends highly up on the terms and conditions of sales & purchases. A concern purchases its requirement on credit & sales its product on cash requires less amount of working capital. At the same time a concern buying its requirement for cash & allowing credit to its customers need the working capital at a maximum level.
- (g) **Seasonal nature :-** If the raw materials are not available through out the year, the enterprise have to buy raw material in full during the season to ensure an uninterrupted flow & process them during the entire year. For this purpose, the firm has to invest a huge amount of working capital.
- (h) **Dividend policy :-** The dividend policy reflects the working capital even though there is no direct relation of dividend with working capital. The firm having more earning capacity may generate cash profit from operation & can contribute to working capital. The need for working capital can be meet with the retained earning. A firm which declares and distributed higher amount of cash dividend irrespective of its profit, need larger amount of working capital. But a firm that retains larger part of its profit & distributes lower amount of cash dividend, needs a less amount of working capital.
- (i) **Operating efficiency of the firm :-** The operating efficiency of the concern also plays the key role for determining the working capital. Operating efficiency of the firm results in optimum utilization of resources at minimum cost. Proper utilization of resources improves

the profitability of the firm which will in turn release greater funds for working capital purposes.

- (j) **Working capital cycle :-** The working capital cycle begins with the purchase of raw materials & ends with the realization of cash from the sale of finished product. If working capital cycle takes long time, the large amount of working capital is required and vice - versa.
- (k) **Price level changes :-** The price level changes also affect the working capital. Generally a firm must arrange a large amount of working capital when the price level increases & vice versa.
- (l) **Business cycle :-** The alternative expansion & contraction in general business activity is referred by business cycle. During the boom period, the manufactures would like to produce more of finished goods as a result larger amount of working capital demands. During depression also a heavy amount of working capital is needed due to the inventories being locked, unsold & book debts uncollected.
- (m) **Access to money market :-** The firm, which has good relation with financial institutions or banks can easily take the loan from them. Through the help of loan the need of working capital can be minimized.
- (n) **Technology Development :-** The technological development also effects the working capital. To bring improvement simplicity, easiness and more speed production a business firm must use modern technology. The changes in technology also demands changes on requirement of working capital.
- (o) **Transport & communication facilities :-** The transport & communication facilities help publicize the finished goods quickly and speed up the sales as well as the collection of necessary raw material easily. In that case less amount of working capital is needed. In the contrary, in the absence of transport & communication facilities, a large amount of working capital is needed due to the possibility of a huge amount of capital blocked.

2.6 Working capital financing policy :-

A firm working capital assets policy is never set in a vacuum it is always established in conjunction with the firm working capital financing policy. With the firm's working capital financing policy, a firm can adopt different financing policies in relation to current assets.

Mainly there are three approaches to financing policy. They are as follows:

2.6.1. Conservative approach :- Under this approach, a firm finances its permanent current assets a part of temporary current assets with long term financing. So under this policy, there is less risk as well as less return.

2.6.2. Aggressive approach :- Under this approach, a firm finances its permanent current assets & call temporary current assets with short term financing. So there is more risk as well as more return under this policy.

2.6.3. Moderate approach :- Under this policy the firm finances from both short term and long term financing. So there is moderate level of risk as well as profit.

2.7 Working capital investment policy :-

Investing policy refers to the investment of amount in current assets. Working capital investment policy is the measure function of management. Profitability of the firm mainly based up on the working capital investing policy. A firm with best working capital investing policy can achieved his goal easily.

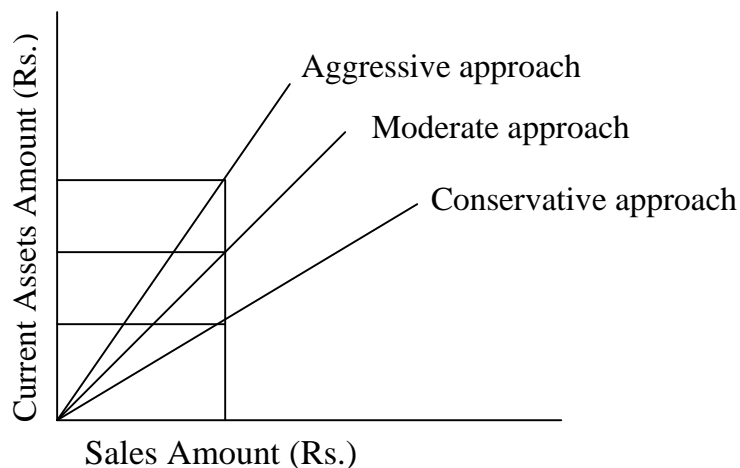
Mainly there are three types of working capital investing policy. They are as follows:

2.7.1. Aggressive policy :- Under this policy, a firm holds relatively large amount of such type of current assets. In this policy there will be less liquidity risk as well as profitability.

2.7.2. Conservative approach :- Under this policy, a firm holds relatively low level each type of current assets. In this policy there will be greater liquidity risk as well as profitability.

2.7.3. Moderate approach :- Under this policy, a firm hold & moderate level of current assets & there will be moderate chance of profitability & liquidity risk.

Working capital investment policy can be shown in graph as follows:



Working Capital investment Policy

2.8 Determination of working capital :-

The working capital plays an important role in a business. In its absence business can not operate smoothly. In order to maintain a particular level of operation, the working capital must be arranged sufficiently. But it is not an

easy task to estimate the required amount of working capital. It should not be more or less than requirement. An amount in excess of the requisite working capital which is not utilized properly and remains idle, can increase the cost. Similarly, an inadequate working capital creates a lot of problem. Hence, both over and under working capital are harmful for the business concern and it should be determined carefully.

To determine the amount of working capital, the following items are usually included.

- (i) The number of manufacturing goods within a period.
- (ii) Total cost incurred on material, wages & indirect expenditure.
- (iii) The period for which raw materials are to remain in stores.
- (iv) Time to revolve production cycle on and time gap between the processing of raw materials & conversion into finished goods.
- (v) The length of sales cycle during which finished goods are to be kept waiting for sales.
- (vi) The day to day expenses to be charged for business operation.
- (vii) The average period of credit allowed to customers.
- (viii) The amount required for advance payment.
- (ix) The average period allowed by supplier.
- (x) The time lag in the payment of wages as other expenses.

The required amount of working capital can be determined by deducting the amount calculated by last two points from the sum of first eight points.

2.9 Working capital cash flow cycle :-

Working capital requirement is basically depends up on the working capital cash flow cycle. The working capital cash flow cycle begins with the purchase of raw materials & ends with the realization of cash from the sale of finished product. If working capital cycle takes long time, the large amount of working capital is required and vice versa.

Working capital cycle consists the following terms:

1. **Inventory conversion period** :- Average length of time required to convert. Materials into finished goods & then to sale these goods is known as inventory conversion period. It can be calculated as follows:

$$\text{Inventory conversion period} = \frac{\text{Inventory}}{\text{Cost of goods sold}} \times \text{days in a year}$$

2. **Receivable conversion period** :- Average length of time required to convert the firm's receivable into cash is known as receivable collection period. It can be calculated as follows:

$$\text{Receivable collection period} = \frac{\text{Receivables}}{\text{CreditSales}} \times \text{days in a year}$$

3. **Payable deferral period** :- Average length of time between the purchase of raw materials & labour & the payment of cash for them is known as payable deferral period. It can be calculated as follows:

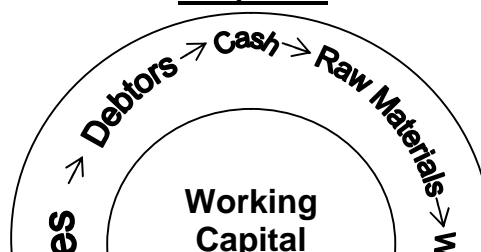
$$\text{Payable deferral period} = \frac{\text{A/C Payable} \times \text{days in a year}}{\text{CreditSales}}$$

4. **Cash conversion period / cash conversion cycle** :- The length of time between the firms actual cash expenditure pay for productive resources & its own cash receipts from the sale of its products is known as cash conversion cycle. It can be calculated as follows:

$$\text{Cash conversion cycle} = \text{Inventory conversion period} + \text{Receivable collection period} - \text{Payable deferral period}$$

A complete working capital cash flow cycle is given below

Graph - 5



2.10 Methods of determining working capital :-

Mainly there are two methods of determining working capital. There are as follows:

2.10.1 Projected balance sheet method : It is the traditional approach towards projection of working capital requirement. Under this method, the amount of working capital is determined on the basis of current assets & current liabilities contained in the balance sheet.

2.10.2. Operating cycle method : Balance sheet approach does not indicate the exact position of working capital. Hence a new method named operating cycle method has been developed.

In this method the working capital is determined by considering the number of items of amount required for raw materials, receivables, payable, operating expenses and operating period for all these items.

A statement to calculate working capital can be applied as follows:

Table - 1

Calculation of Working Capital

For Manufacturing Concern

<i>Particulars</i>	<i>Amount (Rs.)</i>	<i>Amount (Rs.)</i>
<u>Current assets :</u>		
Raw material	××	
work in process :		
Raw material	××	
Direct labour	××	
Overhead	<u>××</u>	××
Finished goods :		
Raw material	××	
Direct labour	××	
Overhead	<u>××</u>	××
Sundry debtors :		
Raw material	××	
Direct labour	××	
Overhead	<u>××</u>	××
Payment in advance if any	××	
Total current assets (&)		××

<u>Current Liabilities :</u>		
Creditors	××	
Outstanding Expenses	××	
Other if any	××	
Total Current Liabilities (B)		××
Working Capital (A-B)		××
Add : Provision for contingencies		××
Net Working Capital		××

2.11 Concept of Working Capital Management :-

Working capital management is the management of current assets & current liabilities of the firm. Current assets means, the assets which normally get converted into cash with in a year. The major current assets are cash, marketable securities, sundry debtors, bills receivable, inventory & advance expenses etc. Current liability means liabilities that are normally payable with in a year. The major current liabilities are bank overdraft, sundry creditors, bills payable and outstanding expenses etc. Working capital management involves managing the firms liquidity which if turn in involves managing

- (i) The firms investment in current assets and
- (ii) Its use of current liabilities.

It is very important aspect of corporate financial management, due to the following reasons i.e. the importance of working capital management can be point out as follows:

- ☞ Good management of short - term assets and liabilities
- ☞ Creation of good will
- ☞ Utilization of opportunities
- ☞ Regular supply of materials
- ☞ Easy availability of cash discount
- ☞ Creates feeling of security & confidence
- ☞ Easy for bank loan
- ☞ Facility of off-season purchasing
- ☞ Smooth operation of business
- ☞ Creates good morale of employees

In this way it is the very important aspect which directly affects the profitability, liquidity of the firms.

2.12 Review of Research Work :-

Under this section, an efforts is being made to scrutinize some of research out comes performed under the heading of working capital management.

"Dr. Khagendra Acharya" has studied the working capital management of manufacturing public enterprises. Some major outcomes of this study are:

- (i) Inventory constitutes the most important and largest element of working capital in NTDC. The overall adequacy of inventory in NTDC discloses that the growth of working capital and inventory in the corporation are negatively correlated.
- (ii) Receivables are growing rapidly than the corresponding growth on sales volume.

- (iii) The break even analysis of NTDC reveals that due to insufficient working capital the corporation has been selling its product at a for below rate then its break even.
- (iv) Monitoring the proper functioning of working capital management has never been included in the managerial job.
- (v) NTDC is expected to improve its prevalent system of inventory management regarding the planning of purchases of spare parts, manures insecticides, fuels etc.
- (vi) There should be a close relation between the production units of different estates and the central material management department.
- (vii) The credit policy, which is not clear in itself has not been followed by the corporation while collecting the over due accounts.

"Dr. Puspa Ray Sharma," reader of T.U. conducted a research named by working capital management in Biratnagar Jute Mills and Raghupati Jute Mills Pvt. Ltd. He had undertaken altogether 10 years starting from fiscal year 2026/27 to 2035/36. Some of this important conclusions and recommendations are as follows:-

- (i) The nature of management of current assets in the both mill are almost some. However, Management of stocks & debtor in BJM Seems better & cash management seems better in RJM.
- (ii) The nature of management of inventory in both the mills are same. The turn over ratio are relatively lower in the later year of the study.
- (iii) The management of cash in RJM with compared to BJM is efficient in utilizing its cash and bank balances, but not effective in maintaining its liquidity.
- (iv) The indices of total current liabilities of BJM and RJM indicated that they had rather in increasing trend.

- (v) Both the jute mills should make their seeing effective so that heavy stocks of finished goods would be minimum. For this, both the mills should make their selling units efficient.
- (vi) Both the jute mills have faced an acute shortage of liquidity in the later years.
- (vii) Inventory management should be given highest priority by the top management of both mills.
- (viii) The debt collection efficiency of both the mills are improved. Greater attention should be given to collect the debt from institution.

Chapter - Three

Research Methodology

3.1 Introduction :-

Research methodology is known as the research method or technique and the process of arriving at the solution of the problem though planned & systematic dealing with collection, analysis & interpretation of the facts and figure to use through the entire study.

A systematic methodology is considered as inevitable for achieving true, better and superior consequences. Every research develops the theory. Theory is the relationship between two facts. Research is connected with investigation, inquiry and development of theory.

Thus, Research methodology refers to the various sequential steps to be adopted by a researcher in studying a problem with certain object in view.

Research methodology basically describes the methods, processes, tools & techniques used in the analysis of data, arriving at generalization and preparation of the report.

Purpose of this chapter is to highlight the different methods & conditions that are applied during the present research. It describes research design, nature & sources of data, population & sample, data collection procedure, processing procedure and use of analytical tools.

3.2 Research design :-

Research design is a systematic planning, structure & strategy for conducting a particular research work. "A research is the arrangement of the conditions for collection and analysis of data in a manner that aims to combine the relevance to the research purpose with economy in procedure."

Research design is a plan, structure and strategy of investigation conceived so as to obtain answer to research Question & to control variance. A man is the overall scheme or program of research. The structure of the research is more specific. It is the outline, the scheme, paradigm of the operation of variables. When we draw diagrams that outline, the variable & their relation and junta position, we build structural schemes for accomplishing operational research purposes, strategy as used here is also more specific than plan. The study is concerned with past phenomena. So the past information are collected, evaluated, verified & analyzed systematically.

3.3 Nature & Sources of data:-

Generally, we can classify the data into primary & secondary. The data which are taken from the interview of the concerned person from the incidental place can be term as primary data. These data are very essential for the research. But the company during the fiscal year 2057/058 to 2061/062 primarily bases this study upon secondary data, which are publishing. Main source of data is factory office of the Hetauda cement Industry Limited, For the purpose of study mainly secondary dates are used. The data, which are connected from the fiscal year 2057/58 to 2061/062, are gathered from the account department of the company in printed form.

3.4 Data collection procedure:-

For the study purpose, 5 years audited balance sheets, profit & loss accounts & other related document, which secondary in nature are collected from the company. Other necessary information & document related to this study has also been collected for the help of friends & phone from the company.

3.5 Data processing procedure:-

The main source of data is the factory building of Hetauda cement Industry Limited. The required 5-year's financial statements are collected

directly from the factory & some other relevant information is collected from the office of the management.

The audited financial statements are presented as viewpoint of company management. All required data were available in crude. All crude data are collected & later they are reclassified, re arranged & prepared as per the requirement of the study.

3.6 Tools & techniques of working capital analysis:-

To make rational decisions in keeping with the objective of firm, the analysis must have certain tools and technique. The type of tool and technique varies according to the specific objective of the study. So, Analysis is the part of large information processing system on which informed decision can be based selection of appropriate tools and techniques is essential. Thus, every tools and techniques selected must be appropriate tools & techniques for analysis.

The main objective of this study is to analyze the working capital position. There are many tools & techniques to evaluate working capital of a firm. Some of them are as follow:-

3.6.1 Ratio analysis:-

Simply, ratio is the relationship between two variable measured in terms of numeric value. But in business ratio analysis is the tool that determines the different relationship between financial statements in term of minimum mathematical language. A single figure by itself has no meaning but when expressed in terms of related figure, it yields significant inferences and makes related information comparable.

Thus the term ratio refers to the numerical of quantities relation between two items and variable. This relationship can be expressed in following three ways.

- 1) In percentage
- 2) In fraction or proportion

3) In times

It is widely used tool of financial analysis. Financial ratios are classified into four groups on the basis of utility.

- 1) Liquidity ratio
- 2) Leverage ratio
- 3) Profitability ratio
- 4) Activity turnover ratio

This entire ratio consists of various ratios, which are applicable and suitable in financial analysis.

3.6.2 Correlation analysis:-

Correlation is a statistical tool, which studies the relationship between two variables. "Correlation coefficient summarizes in one figure, the degree and direction of movement. It only helps in determining the extent to which the two variable are correlated but it doesn't tell about cause of the effect"⁶

Using Karl Pearson's method of Correlation between two variables X and Y can be computed as follows:-

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{N\Sigma x^2 - (\Sigma X)^2} \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

Where:-

r = Co-efficient of correlation

N = No. Of pairs of Observation

X & Y = series

The rules of interpreting the correlation coefficient are

- 1) Where, $r = +1$, it means there is perfect positive relationship between the variables
- 2) Where, $r = -1$, it means there is perfect negative relationship between the variables
- 3) Where, $r = 0$, it means there is no relationship between the variable i.e. the variables are uncontrolled.

In where r is closer to $+1$ or -1 , the closer the relationship between the Variables & the closer ' r ' is to '0' and the less close the relationship.

3.6.3 Trend analysis:-

The financial analysis the direction of changes over a period of years is of crucial importance. The trend analysis indicated the direction of changes and helps to predict for future decision.

Time series analysis or trend analysis is drawn when a financial analyst measures a firm's performance over a time. Comparison of current to past performance utilizing ratio analysis allows the firm to determine whether it is progressing as planned. Using multi year comparison, we can see developing trends. Knowledge of these trends should assist the firm in planning future operations. The theory behind trend analysis is that the firm must evaluate in relation to past performance and appropriate action must be taken to direct the firm towards immediately and long term goals.

Chapter - Four

Presentation & Analysis of Data

4.1 Introduction :-

This chapter has been organized to present, Analyze & interpret the result accordingly. The main objective of the study is to have a true in sight into the working capital position of Hetauda cement Industry Limited to pursue the objective. The data collected for the study are presented in tabular form and analyzed with the help of some techniques of financial analysis.

The data are presented and analyzed to evaluate the working capital position using five years financial statement commencing from 2058/059 to 2062/63. This includes analysis of current assets, current liabilities, net working capital, liquidity sources etc. Thus, this chapter is systematically sub divided into the following different chapters.

- Analysis of current assets
- Analysis of current liabilities
- Analysis of net working capital
- Size of working capital
- Efficiency of working capital
- Liquidity analysis
- Profitability of working capital
- Trend Analysis

4.2 Analysis of Current Assets :-

The assets which are expected to convert in cash with in a year are known as current assets. Current assets include cash, bank, Advance expenses, debtor, marketable securities, outstanding income bills receivable etc. Current asset shows the liquidity position of the firm. A firm having more investment in currant assets has grater liquidity position and vice versa.

The current assets position of Hetauda Cement Industry Limited of 5 years are presented below.

Table4.2 (A)

Current assets o f Hetauda Cement Industry Limited (Amount in Rs)

<i>Fiscal Year</i> <i>Particular</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>	<i>2062/63</i>
Inventory	366593428	396295522	361829425	396519340	461633273
Cash & bank balance	17407078	155910	16312202	45853821	22039693
Debtor & receivable	141841135	163844967	1795583784	193692086	220910035
Total current assets	525841641	575195399	557725411	636065247	704583001

(Sources: Appendix 3)

Table4.2 (A)

Current assets of Hetauda Cement Industry Limited (Amount in %)

<i>Fiscal Year</i> <i>Particular</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Inventory	69.72%	68.90%	64.88%	62.34%	65.52%
Cash & bank balance	3.31%	2.62%	7.21%	7.21%	3.13%
Debtor & receivable	26.97%	28.48%	27.91%	30.45%	31.35%
Total current assets	100%	109.39%	106.06%	120.96%	133..99%

Above table exhibits investment made by Hetauda Cement Industry Limited in current assets and it's, constitutes. The Hetauda Cement Industry Limited current assets consist mainly of inventories, debtors, receivable and cash & bank balance. It is easily clears that inventory occupies major share. Sundry debtor & receivable in the second rank & rest in cash & bank balance.

The percentage share of stock or inventory in the total current assets indicates that there is no consistency. Rather, there exists a bit fluctuation. It adopts sometimes increasing and sometimes decreasing trend. The % of inventory seems maximum in fiscal year 2058/059 i.e. 69.72%. The large % signified a less favorable sign in the sense that more funds are tied up in the forms of stock. The higher % of stock results slow stock turnover. So it is not favorable condition.

As compared to the previous components debtor & receivable occupy another major share in current assets. The percentage shares of debtor & receivable have no consistency. It has also increasing & decreasing trend % of debtors receivable seem maximum in fiscal year 2062/063 i.e. 31.35%. Debtor & receivable have almost increasing trend than farmer.

The increasing trend of debtor and receivable mainly indicates two things : First either the volume of sales has been increasing as a result amount of debtor & receivable are increasing or if sales decreases, the lower debtor turnover may result in higher % of debtors also reveal in efficiency in un capability to collecting debts and the increasing risk of business enterprises.

The most liquid form of assets is cash and bank balance in third rank in the table. More over, it also discloses the fluctuating nature. Cash & bank balance in fiscal years 2058/059, 2059/060 & 2062/063 are 3.31%, 2.62% & 3.13% respectively.

To sum up the current assets indicated of Hetauda Cement Industry Limited depicts their increasing trend when total current assets of 2058/059 are considered as 100%.

4.3 Analysis of Current Liabilities :-

The liabilities which are expected to pay with in an accounting period are known as current liabilities. Current liabilities includes creditors, Bills payable, notes payable, out standing expenses, Advance income, provisions etc. The current liabilities of Hetauda Cement Industry Limited of 5 years are presented below.

Table 4.3(A)

Current Liabilities of Hetauda Cement Industry Limited (Amount in Rs.)

<i>Fiscal Year</i> <i>Particular</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Outstanding expenses	388929154	402235267	436006595	538532205	576595792
Provisions	28897416	35861270	45909546	51682089	57317002
<i>Total Current Liabilities</i>	<i>417826570</i>	<i>438096537</i>	<i>481916141</i>	<i>590274294</i>	<i>633910794</i>

(Sources: Appendix 3)

Table 4.3(B)

Current Liabilities of Hetauda Cement Industry Limited (Amount in %)

<i>Fiscal Year</i> <i>Particular</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Out standing expenses	93%	91.81%	90.47%	91.24%	90.96%
Provisions	7%	8.19%	9.53%	8.76%	9.04%
<i>Indices of current liabilities</i> <i>(2058/059 = 100%)</i>	<i>100%</i>	<i>104.85%</i>	<i>115.34%</i>	<i>141.27%</i>	<i>151.72%</i>

Above table shows Hetauda Cement Industry Limited current liabilities for 5 year from 2058/059 to 2062/063 respectively. It is easily clear that outstanding income occupies major share and remaining provisions.

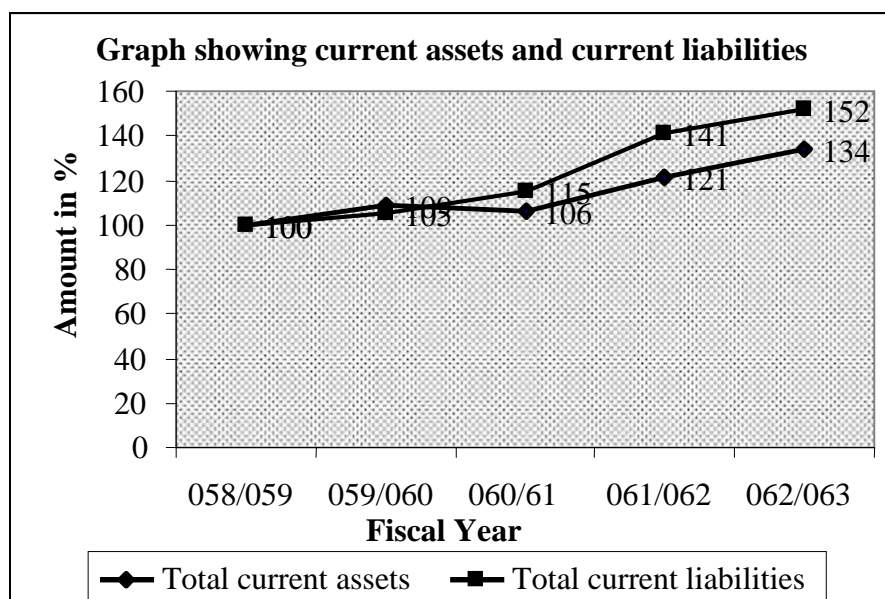
The percentage shares of outstanding expenses are sometimes increasing & sometimes in decreasing trend. The % out standing in comes are 93%, 91.81%, 90.47%, 91.24%, 90.96% in 2058/059, 2059/060, 2060/061, 2061/062 & 2062/063 respectively.

The percentage share of provisions are also increasing & in decreasing trend. In the starting period it is increasing & in 2062/063 it is decreased to 8.76%.

On the whole, a current liability of Hetauda Cement Industry Limited seems increasing & decreasing trend. When the current liability of the year 2058/059 is assumed as 100%, total current liabilities are in increasing trend. A form of increasing is not favorable condition but it indicates that sales turnover is increasing.

The trend of current and current liabilities of HCIL can also be shown from following graph diagram.

Graph no.43.1



Graph no. 4.3.1 shows the trend line of total current assets & total current liabilities in terms of percentage. The trend line of total current assets is in increasing way. The total current assets in the fiscal year 2058/059 is 100% then increased to 109%, 106%, 121% & 134% in the fiscal year 2059/060, 2060/061, 2061/062 & 2062/063 respectively.

In the same way the total current liabilities in the fiscal year 2058/059 is 100% then increased to 105%, 115%, 141%, and 152% in the fiscal year 2059/060, 2060/061, 2061/062 & 2062/063 respectively.

Therefore, both trends to some extent adopt same features and the difference is only in volume not in nature.

4.4 Analysis of Net Working Capital :-

The assets which are expected to convert into cash within a year are known as current assets. Current assets include cash, bank, marketable securities, debtor, receivable, stock, advance expenses etc. The liabilities which are expected to pay within a year are known as current liabilities. It includes creditors, payable, outstanding expenses, advance income etc.

Net working capital is the excess of current assets over current liabilities. Net working capital reflects the liquidity position of the firm as well as its working capacity.

The Net working capacity of Hetauda Cement Industry Limited has been presented below.

Table 4.4(A)

Hetauda Cement Industry Limited

Net Working Capital

(Amount in

Rs.)

<i>Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
<i>Particular</i>					

Total Current Assets	525841641	575195399	557725411	636065247	704583001
Total Current Liabilities	417826570	438096537	481916141	590274294	63390794
Net working capital	108015071	137098862	75809270	45790953	70672207

Table 4.4(B)

(Sources: Appendix 2)

Hetauda Cement Industry Limited

Net Working Capital

(Amount in

Rs.)

<i>Particular</i> \ <i>Fiscal Year</i>	2058/059	2059/060	2060/061	2061/062	2062/63
Total Current Assets	100%	108.10%	106.21%	120.65%	134.25%
Total Current Liabilities	79.46%	76.16%	86.40%	92.80%	89.97%
Net Working Capital	20.54%	23.84%	13.60%	7.20%	10.03%
Indices of Net Working Capital (2058/059 = 100%)	100%	126.93%	70.18%	42.39%	65.43%

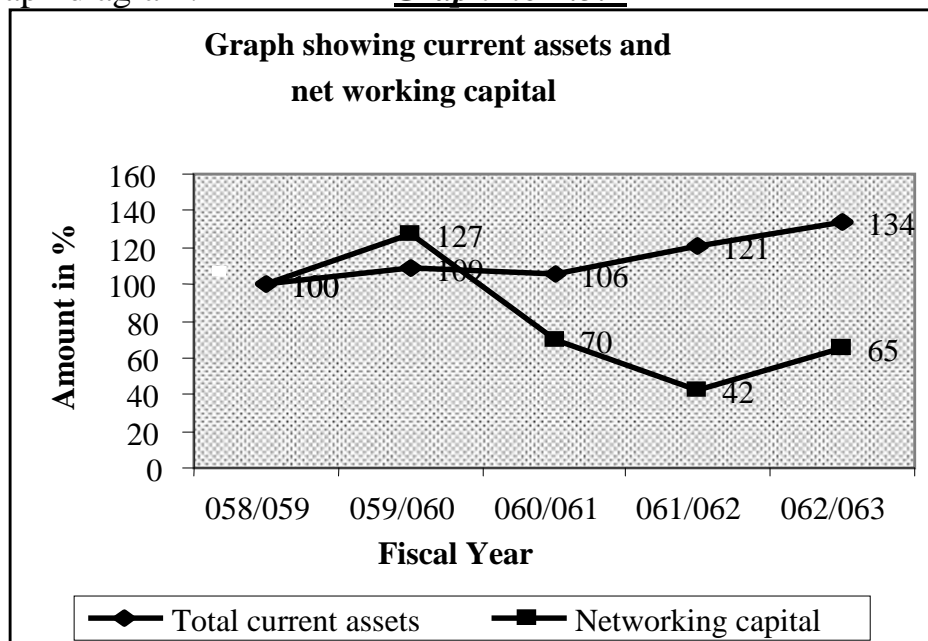
The above table represents the size of net working capital of Hetauda Cement Industry Limited and its proportion in current assets. Net working capital has occupied minor share in working capital in study period. Net

working capital trend has increased from fiscal year 2058/059 to 2059/060 but decreased in 2061/062 & 2062/063. After that it has also increased.

Net working capital in total current assets indicates there is no consistency because percentage net working capital are increased & decreased. Net working capital has decreased in year 2060/061, 2061/062 & 2062/063, which shows less improvement in liquidity position. Net working capital has increased in year 2058/059, 2059/060, which shows improvement in liquidity position. Further, it also signifies that the management has sufficient funds available to manage day by day affairs of the company.

Total current liabilities has also some times increased and sometimes decreased. In the year 2059/060 current liabilities decreased from 79.46% to 76.16%. Then increased in 2061/062 & 2062/063 to 86.40% & 92.80% respectively. After that it has also decreased to 89.97%. Increasing total current liabilities is not encouraging position from liquidity point of view. The trend of current assets and net working capital of HCIL can also be shown from following graph diagram.

Graph no 4.5.4



Graph no. 4.5.4 shows the trend line of total current assets and net working capital in terms of percentage. In the fiscal year 2058/059 both the current assets & net working capital is 100%. In the fiscal year 2059/060 net working capital is increased to 127% and then decreased to 70%, 42% & 65% in 2060/061, 2061/062 and 2062/063 respectively. It shows that net working capital in last three years is poor than first two years.

4.5 Analysis of size of working capital :-

Size of working capital depends upon the size of current assets & current liabilities. So in this section I have analyzed the size of current assets to total assets, current assets to sales and net working capital to current assets.

4.5.1. Size of current assets to total assets :-

Ratio of current assets to total assets is known as the size of current assets to total assets. Higher percentage of current assets in total assets denotes greater liquidity position of the firm as well as lowers the risk of being in solvent and vice versa. The size of current assets to total assets of Hetauda Cement Industry Limited is presented in table no. 4.5.1. **Table 4.5.1.**

Current assets as percentage of total assets of

Hetauda Cement Industries Limited

Amount in (1,00,000)

<i>Year</i>	<i>Current Assets</i>	<i>Total Assets</i>	<i>Ratio</i>	<i>Ratio in Percentage</i>
2058/059	5258.42	50295.84	0.1045	10.45%
2059/060	5751.95	49182.92	0.1170	11.70%
2060/061	5577.25	47263.23	0.1180	11.80%
2061/062	6360.65	45711.77	0.1391	13.91%
2062/63	7045.83	44516.94	0.1583	15.83%
<i>Total</i>	<i>29994.10</i>	<i>239670.70</i>	<i>-</i>	<i>-</i>
<i>Average</i>	<i>5998.82</i>	<i>47394.70</i>	<i>1266</i>	<i>12.66%</i>

(Source: Appendix 2)

The above table (4.5.1.) represents the proportion of the current investment in Hetauda Cement Industry limited for the five years study period.

The over all proportion of the current assets on total assets is some times increasing & sometimes decreasing trend. In the fiscal year 2058/059 the volume of current assets is 5258.42 lakhs & is 10.45% of the total assets. It has increased by 1.25% in the fiscal year 2060/061, 2061/062 & 2062/63 respectively. The percentage of current assets is highest in the fiscal year 2062/63 is 15.83% of its total assets & increased by 5.38% than fiscal year 2058/059. This increase is mainly due to the holding of highest inventory & sundry debtors as well as advance receivables. In an average there is 12.66% participation of current assets in total assets & its increasing trend is 1.076% on an average during the study period.

In order to test the significance of the relationship between current assets & total assets during the study period Karl Pearson's correlation coefficient (r) is calculated in Appendix 5 as under.

Correlation coefficient (r) = -0.909

Probable error (P.E.) = - 0.0524

The value shows that relation between current assets & total assets during the period of study is negative. Coefficient of correlation is less than 6 times of P.E., the value of r is also not significant.

4.5.2 Size of current assets to fixed assets :-

The ratio of current assets to fixed assets is known as the size of current assets to fixed assets. Decline in this ratio donates slackness in trading activities & higher mechanization. On the other hand, increment in this ratio signifies argumentation in assets like inventories, debtors etc and intensive use of fixed assets. Therefore increment in this ratio means increment in profit and expansion of activities.

The size of current assets to fixed assets of Hetauda Cement Industries Limited are presented in table no. 4.5.2.

Table 4.5.2

Size of current assets to fixed assets

Hetauda Cement Industries Limited (Amount in Rs. 1,00,000)

<i>Year</i>	<i>Current assets</i>	<i>Fixed assets</i>	<i>Ratio</i>	<i>Ratio in Percentage</i>
2058/059	5258.42	25318.21	0.2077	20.77%
2059/060	5751.95	25355.74	0.2269	22.69%
2060/061	5577.25	25389.15	0.2197	21.97%
2061/062	6360.65	25408.08	0.2503	25.03%
2062/063	7045.83	25420.37	0.2772	27.72%
Total	29994.10	126891.55	-	-
Average	5998.82	25378.31	0.2364	23.64%

(Sources: Appendix 2)

The above ratio represents the proportion of current assets investment to fixed assets investment of Hetauda Cement Industries Limited for the five fiscal years from 2058/059 to 2062/063. There is not consistency in ratio of current assets to fixed assets. It is some time increasing & sometimes decreasing. In the fiscal year 2058/059 it is 20.77% & increased by 1.92% in 2059/060, 1.20% in 2060/061, 4.26% in 2061/062 & 6.95% in 2062/063. The average increased ratio in the study period is 23.64%. The increasing trend of current assets to fixed assets ratio indicates that the firm moves towards aggressive policy, which implies less liquidity & higher risk. The overall ratio shows that the investment in current assets in comparison with fixed assets is not favorable in Hetauda Cement Industries Limited.

In order to test the significance of the relationship between current assets & fixed assets during the study period Karl Pearson's coefficient of correlation (r) calculated in appendix no. 6 as under.

Coefficient of correlation (r) = -0.912

Probable error (P.E.) = 0.0507

The value shows that there is negative relationship between current assets and fixed assets; coefficient of correlation is also not greater than 6 P.E., so value of r is also not significant.

4.5.3. Size of current assets to sales :- Ratio of current assets to sales is known as size of current assets to sales. Higher percentage of current assets to sales denotes greater liquidity position of the firm as well as lower the risk of insolvency and vice versa.

The size of current assets to sales of Hetauda Cement Industries Limited are presented below in table 4.5.3.

Table 4.5.3.

Hetauda Cement Industries Limited

Size of current assets to sales (Amount in ,100,000)

<i>Year</i>	<i>Current assets</i>	<i>Sales</i>	<i>Ratio</i>	<i>Ratio in Percentage</i>
2058/059	5258.42	5184.93	1.0142	101.42%

2059/060	5751.95	7192.92	0.7997	79.97%
2060/061	5577.25	5153.10	1.0823	108.23%
2061/062	6360.65	4733.88	1.3436	134.36%
2062/063	7045.83	5464.65	1.2893	128.936%
Total	29994.10	27729.48	-	-
Average	5998.82	5545.89	1.0817.	108.17%

(Sources: Appendix 1&3)

The above ratio represents the proportion of current assets investment to sales of Hetauda Cement Industries Limited for the five fiscal year from 2058/059 to 2062/63. There is no consistency in ratio of current assets to sales. It is sometime increasing & some time decreasing.

In the fiscal year 2059/060 it is 101.42% & decreased in 2060/061 to 79.97% & gradually increased to 108.23% & 134.36% in 2061/062 & 2062/063 respectively. After that in 2062/63 it is decreased to 128.93%. The average increase ratio in the study period is 108.17%. The percentage current assets to sales is highest i.e. 134.36% in fiscal year 2062/063 & minimum in 2060/061 i.e. 79.97%. The overall ratio shows that the investment in current assets in comparison with its sales is not favorable in Hetauda Cement Industries Limited.

In order to test the relationship between current assets & sales of Hetauda Cement Industries Limited during 5 year period, Karl Pearson's correlation coefficient 'r' is calculated in appendix 7 and result are as follows :

Coefficient of correlation 'r' = - 0.129

Probable error (P.E.) = 0.297

The correlation coefficient between current assets & sales during the study period is negative i.e. there is negative relationship between current assets & sales. Since, value of r is not greater than 6 PE, so the relationship is not considered to be significant.

4.5.4 Size of Net Working Capital to Current Assets :- Net working capital represents that position of current assets which the firm has to finance either from long term funds or a bank borrowings.

A firm's net working capital position is not only important as index liquidity but it is also used as a measure of the firm risk. Risk in this regard means chances of the firm being unable to meet its obligations on due date.

Size of networking capital to current assets means the ratio of networking capital to current assets represents greater liquidity position of the firm and vice versa. The size of net working capital to current assets of Hetauda Cement Industries Limited has been presented below in table 4.5.4.

Table 4.5.4

Hetauda Cement Industries Limited

Net working capital to current assets (Amount in
1,00,000)

<i>Year</i>	<i>Net working capital</i>	<i>current assets</i>	<i>Ratio</i>	<i>Ratio in Percentage</i>
2058/059	10801.50	5258.41	0.2054	20.54%

2059/060	1370.98	5751.95	0.2384	23.84%
2060/061	758.09	5577.25	0.1359	13.59%
2061/062	457.91	6360.65	0.0719	7.19%
2062/063	706.72	7045.83	0.1003	10.03%
Total	4373.85	29994.10	-	-
Average	874.77	5998.82	0.1458	14.58%

(Sources: Appendix 2)

The above table shows the relationship between networking capital and current assets during 5 fiscal years from 2058/059 to 2059/060. In fiscal year 2058/059 the ratio of networking capital is 20.54% and increased to 23.84% in 2059/060. After that it is gradually decreased to 13.59% & 7.19% in 2061/062 & 2062/063 respectively. In 2062/63 this ratio is 10.03%. The over all ratio of study period is 14.58%.

There ratio shows that company's working capital position to very bad. Liquidity position of the firm is also very bad. In order to test the significance of the relationship between net working capital & current assets of Hetauda Cement Industries Limited during 5 fiscal year period, Karl Pearson's coefficient of correlation 'r' is calculated in appendix 8 and result are as follows :

Coefficient of correlation (r) = -0.548

Probable error (PE) = 0.21

The correlation coefficient of networking capital and current assets during the study period is negative. Since 'r' is not more than 6 PE, the value of r is not considered to be significant.

4.5.5. Size of Inventories to Current Assets :- Inventory is the stock of the raw material as well as the finished goods. The inventory balance also measures the adequacy of working capital. Higher the inventory in stock, higher will be the working capital, but excess inventory causes unnecessary blocking of capital. It increases cost on the other hand lower level of inventory caused shortage of required material for production & sales too. So the optimum level of inventory should be maintained in the company. The ratio of inventories to current assets states the percentage investment in inventories out of current assets.

Size of inventories to current assets of Hetauda Cement Industries Limited during 5 fiscal years from 2058/059 to 2062/63 are presented below in table 4.5.5.

Table 4.5.5

Hetauda Cement Industries Limited

Size of inventories to current assets (Amount
1,00,000)

<i>Year</i>	<i>Inventories</i>	<i>Current</i>	<i>Ratio</i>	<i>Ratio in</i>
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		<i>Assets</i>		<i>Percentage</i>
2058/059	3665.93	5258.41	0.6972	69.72%
2059/060	3962.96	5751.95	0.6890	68.90%
2060/061	3618.29	5577.25	0.6488	64.88%
2061/062	3965.19	6360.65	0.6234	62.34%
2062/063	4616.33	7045.83	0.6552	65.52%
Total	19828.7	29994.101	-	-
Average	3965.74	5998.82	0.6611	66.11%

(Sources: Appendix 3)

The above table shows the size of inventories to current assets of Hetauda Cement Industries Limited for 5 fiscal years from 2058/059 to 2062/63.

In the fiscal year 2058/059 percentage of inventory to current assets is 69.72% & decreased to 68.90% in 2059/060, 64.88% in 2061/062 and 62.34% in 2062/063. After that it is increased to 65.52% in 2062/63. Average percentage of inventory to current assets in study period is 66.11%.

The fiscal year 2058/059 lead highest position i.e. 69.72% which shows that there is unnecessary blocking of capital. Decreased ratio shows that the firm has invested its most funds in liquid form of assets.

In order to test the relationship between inventory & current assets of Hetauda Cement Industries Limited during 5 fiscal years, Karl Pearson's coefficient of

correlation 'r' is calculated in appendix 9 and the result are as follows.

Coefficient of correlation 'r' = 0.929

Probable error = 0.0413

The correlation is positive which indicate that there is positive relationship between inventory and current assets. Since coefficient of correlation is also greater than 6 P.E., the value of correlation is considered to be significant.

4.5.6. Size of cash and Bank balance to current assets :- Cash and bank balance is the major resources of working capital. It is the most liquid assets. So, it must not be under estimated rather it should be manage properly.

The main reason for holding cash is for transactional motives, precautionary motives and speculative motives. To meet the daily business requirement such as bill payment, purchase of raw material, payment of debt the cash balance has to be maintained.

Higher the cash, higher will be the working capital and strong will be the liquidity position. On the other hand lowers level of cash caused shortage of required material for production. So the optimum level of cash should be managed.

Size of cash & bank balance to current assets of Hetauda Cement Industries Limited during 5 fiscal years from 2058/059 to 2062/63 are presented below in table 4.5.6.

Table 4.5.6.

Hetauda Cement Industries Limited

Size of cash & bank balance to current assets (Amount in 100000)

<i>Year</i>	<i>Cash & bank balance</i>	<i>Current Assets</i>	<i>Ratio</i>	<i>Ratio in Percentage</i>
2058/059	174.07	5258.41	0.0331	3.31%
2059/060	150.54	5751.95	0.0262	2.62%
2060/061	163.12	5577.25	0.0292	2.92%
2061/062	458.53	6360.65	0.0721	7.21%
2062/063	220.39	7045.83	0.0313	3.13%
<i>Total</i>	<i>1166.65</i>	<i>29994.09</i>	<i>-</i>	<i>-</i>
<i>Average</i>	<i>233.33</i>	<i>5998.82</i>	<i>0.0389</i>	<i>3.89%</i>

(Sources: Appendix 3)

The above table shows the relationship between cash & bank balance and current assets of Hetauda Cement Industries Limited for 5 fiscal years from 2058/059 to 2062/063.

In the fiscal year 2058/059 percentage of cash & bank to current assets is 3.31%. It is decreased to 2.62% in 2059/060. After that it is gradually increased to 2.92% & 7.21% in 2060/061 & 2061/062 respectively. After that it is decreased to 3.13% in 2062/063. The average percentage of cash & bank to current assets is 3.89%.

The fiscal year 2061/062 leads higher percentage of cash bank balance to current assets. As a whole percentage of cash & bank balance is very low. It shows that liquidity position of the firm is very poor. The above table indicates that there is no management of cash in the company.

In order to test the relationship between cash & bank balance and current assets of Hetauda Cement Industries Limited

5 fiscal years, Karl Pearson's coefficient of correlation 'r' is calculated in appendix 10 and the results are as follows.

Coefficient of correlation (r) = 0.443

Probable error = 0.242

Since correlation is positive, there is positive relationship between cash & bank and current assets. Coefficient of correlation is not greater than 6 PE, so the value of correlation is not significant.

4.6 Liquidity Analysis :-

Under this section, to test the liquidity various ratios are calculated & analyzed which are as follow:

4.6.1.Current Ratio :- The current ratio shows the ability for payment of debt from current assets. This ratio reveals the solvency & financial strength of the company. It is the basic yard stick of measuring the solvency & liquidity

position of the firm. It is computed by dividing current assets by current liabilities. Current assets normally include cash, account receivable, inventories etc.& current liabilities consists of account payable, creditors, out standing expenses etc.

The current ratio is calculated by using the following formula.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Current ratio of Hetauda Cement Industries Limited for 5 fiscal years from 2058/059 to 2062/063 are presented below in table 4.6.1.

Table 4.6.1

Hetauda Cement Industries Limited

Current ratio

(Amount in Rs. 100000)

<i>Fiscal Year</i>	<i>Current assets</i>	<i>Current liabilities</i>	<i>Current ratio</i>
2058/059	5258.42	4178.27	1.26 times
2059/060	5751.95	4380.97	1.31 times
2060/061	5577.25	4819.16	1.16 times
2061/062	6360.65	5902.74	1.08 times
2062/063	7045.83	6339.11	1.11 times

<i>Average</i>	<i>5998.82</i>	<i>5124.05</i>	<i>1.17</i>
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The above table shows the current ratio of Hetauda Cement Industries Limited for 5 fiscal years from 2058/059 to 2062/63. All years current ratio is below standard i.e. 2:1. Average ratio of 5 year is equal to 1.17 times. Current ratio of fiscal 2058/059, 2059/060, 2060/061, 2061/062 & 2062/063 are 1.26, 1.31, 1.16, 1.08, 1.11 times respectively which all are less than standard current ratio. It shows that the liquidity position of firm is very bad. The company has to invest his funds in current asset to get strong liquidity position.

In order to test the relationship between current assets & current liabilities during the study period of Hetauda Cement Industries Limited

Karl Pearson's coefficient of correlation 'r' is calculated in appendix 18 and the results are as follows.

Coefficient of correlation (r) = 0.95

Probable error (P.E.) = 0.0294

The correlation coefficient 'r' between current assets & current liabilities is positive i.e. there is positive relationship between current assets and current liabilities. Since r is greater than 6 P.E., So the value of r is definitely significant.

4.6.2.Quick ratio / Acid test ratio / Liquid ratio :- The quick ratio establishes the relationship between quick assets & current liabilities. This ratio measure the company's ability to convert its liquid assets quickly into cash in order to meet its current liabilities or immediate cash needs. Quick assets

include all of the current assets excluding inventory and prepaid. Quick assets are those assets which can be converted into cash immediately without diminution of value. This ratio shows a firm's ability to meet current liabilities with its most liquid assets. Standard of this ratio is 1:1. The quick ratio is calculated by using the following formula. **Quick ratio =**

Where,

Quick assets = Current assets - Inventory & Prepaid expenses Quick ratios of Hetauda Cement Industries Limited for 5 fiscal years from 2058/059 to 2062/063 are presented below in table 4.6.2.

Table 4.6.2

Hetauda Cement Industries Limited

Quick Ratio

(Amount in 100000)

<i>Fiscal Year</i>	<i>Quick assets</i>	<i>Current liabilities</i>	<i>Quick ratio</i>
2058/059	1592.48	4178.26	0.3811 times
2059/060	1788.99	4380.96	0.4084 times
2060/061	1958.95	4819.16	0.4065 times

2061/062	2395.45	5902.74	0.4058 times
2062/063	2429.49	6339.10	0.3833 times
Total	10165.36	25620.22	-
Average	2033.07	5124.04	0.3968 times

Here, the quick assets include debtor & cash & bank balance. The above table shows the quick ratio of Hetauda Cement Industries Limited.

The trend of quick ratios are fluctuating. The lowest quick ratio in the study period is 0.3811 times in 2058/059. The highest quick ratio is 0.4084 times in 2059/060. The average ratio is 0.3968 times.

Lowest quick ratio of 0.3811 shows less liquidity and highest quick ratio of 0.4084 shows more liquidity position of the firm. However all years quick ratio is less than standard quick ratio of 1:1 which reflects that the firms liquidity position is very poor. Most of the current assets are blocked in stock. The company is not able to meet current liabilities

In order to test the relationship between quick assets & current liabilities of Hetauda Cement Industries Limited

during the study period. Karl Pearson's coefficient of correlation 'r' calculated in appendix 17 and the results are as follows:

Coefficient of correlation (r) = 0.983

Probable error (P.E.) = 0.0102

The coefficient of correlation r is positive which shows that there is positive relationship between quick assets & current liabilities. Since the value of r is greater than 6 PE, so the value of r is considered as highly significant.

4.7 Efficiency Analysis :-

Under this section, various ratios are calculated & analyzed to test the efficiency of working capital which are as follows.

4.7.1 Inventory turn over ratio :- Inventory turn over shows the relationship between inventory and sales. It indicates the number of times inventory replaced during the year. Production should be increased to meet the higher, level of sales target. To produce more, more raw materials will be require. The stock level of raw materials should be increased to meet the raw material requirement for higher level of production. Similarly, stock level of finished goods should be increased to meet the higher level of sales. The inventory turn over can be calculated by using the following formula.

$$\text{Inventory turn over} = \frac{\text{Sales}}{\text{Inventory}}$$

Higher inventory turnover ratio is the good indicator for the company view less inventory turn over is bad for the company.

The inventory turnover of Hetauda Cement Industries Limited for the 5 fiscal years from 2058/059 to 2062/063 are presented below in table 4.7.1.

Table 4.7.1

Hetauda Cement Industries Limited

Inventory turn over (Amount in 100000)

<i>Fiscal Year</i>	<i>Inventory</i>	<i>Sales</i>	<i>Inventory turn over (times)</i>
2058/059	3665.93	5184.93	1.414
2059/060	3962.95	7192.92	1.815

2060/061	3618.29	5153.10	1.424
2061/062	3965.19	4733.88	1.194
2062/063	4616.33	5464.65	1.184
Total	19828.69	27729.48	-
Average	3965.74	5545.89	1.398

The above table shows the inventory turn over ratio of Hetauda Cement Industries Limited.

It has a fluctuating trend i.e. some times increasing & sometimes decreasing. The highest inventory turn over ratio is 1.815 in the fiscal year 2059/060 and lowest inventory turn over ratio is 1.184 in 2062/63. The average inventory turn over during the study period is 1.398.

The increase in turn over is due to the higher increase in sales as compared to the increase in inventory. During the study period, the inventory turn over is not found satisfactory. It is due to the poor management in inventory. It has kept unnecessary inventory instead of increasing production.

In order to test the relationship between inventory & sales of Hetauda Cement Industries Limited during 5 years from 2058/060 to 2062/63, Karl Pearson's coefficient of correlation (r) is calculated in appendix table no. 11 and the results are as follows.

Coefficient of correlation (r) = 0.123

Probable error (P.E.) = 0.297

The coefficient of correlation (r) between inventory & sales during the study period is positive i.e. there is positive relationship between inventory and

sales. Since value of r is not greater than 6 P.E. the value of r is not considered to be significant.

4.7.2. Cash and bank balance turn over :- Cash and bank balance is the most liquid assets. It is the most important assets for day to day operation of a business. Without adequate cash, business is not possible but the excess cash and bank balance increase unnecessary holding cost. So the company should maintain the optimum level of cash & bank balance. Relationship between cash bank balance and sales is known as cash & bank balance turn over ratio. This ratio indicates the no. of times the cash balance is turned over during the year. Greater the turn over of cash & bank balance turn over represents the greater utilization of cash i.e. better the efficiency of the company in using its current assets. Cash & bank balance turnover of Hetauda Cement Industries Limited for the period from 2058/059 to 2062/63 are as follows.

Table 4.7.2.

Hetauda Cement Industries Limited

Cash & bank balance turn over ratio (Amount in Rs. 100000)

<i>Fiscal Year</i>	<i>Cash and bank balance</i>	<i>Sales</i>	<i>Cash & bank balance turn over (times)</i>
2058/059	174.07	5184.93	29.79
2059/060	150.54	7192.92	47.78
2060/061	163.12	5153.10	31.59
2061/062	458.53	4733.88	10.32
2062/063	220.39	5464.65	24.80

<i>Total</i>	<i>1166.65</i>	<i>27729.48</i>	<i>-</i>
<i>Average</i>	<i>233.33</i>	<i>5545.90</i>	<i>23.77</i>

The above table shows the cash & bank balance turnover of Hetauda Cement Industries Limited for 5 years from 2058/059 to 2062/063. The turnover ratio has the fluctuating trend. The lowest turn over is 10.2 times in 2062/063 & the highest turn over is 47.78 times in 2059/060. The average turn over ratio is 23.77 times. Cash and bank balance turn over ratio of Hetauda Cement Industries Limited is satisfactory.

In order to test the relationship between cash & bank balance and sales of Hetauda Cement Industries Limited during 5 years from 2058/059 to 2062/63, Karl

Pearson's coefficient of correlation (r) is calculated in appendix table no. 12 and the results are as follows.

Coefficient of correlation = -0.0544

Probable error (P.E.) = 0.212

The coefficient of correlation (r) between cash & bank balance and sales in

negative i.e. there is negative relationship between cash & bank balance and sales.

The value of r is not greater than 6 P.E. the value of r is not significant.

4.7.3. Net working capital turn over :- Net working capital is the difference

between current assets and current liabilities. In other word, excess of current

assets over current liabilities is known as net working capital. Net working capital

turn over is the relationship between sales & net working capital. It is calculated

by dividing the sales by networking capital. This ratio indicates the no. of times the

net working capital turned over during the year. Higher the net working capital

turnover is better & lower the net working capital turn over is bad for the

company.

The net working capital turn over of the Hetauda Cement Industries Limited for 5 years from 2058/059 to 2062/063 are as follows.

Table no. 4.7.3

Hetauda Cement Industries Limited

Networking Capital Turnover (Amount in Rs. 100000)

<i>Fiscal Year</i>	<i>Net working capital</i>	<i>Sales</i>	<i>net working capital turn over times</i>
2058/059	1080.15	5184.93	4.80
2059/060	1370.98	7192.92	5.25
2060/061	758.09	5153.10	6.80
2061/062	457.09	4733.88	10.34

2062/063	706.72	5464.65	7.73
Total	4373.84	27729.48	-
Average	874.77	5545.90	6.34

The above table shows the networking capital turnover of Hetauda Cement Industries Limited for 5 years from 2058/059 to 2062/063. The ratios are in increasing trend from 2058/059 to 2061/062 & decreased in 2062/063. The highest turn over ratio is 10.34 in 2062/063 and lowest ratio is 4.80 in 2058/059. The average networking capital turn over during the study period is 6.34. The net working capital turn over of Hetauda Cement Industries Limited seems satisfactory. Increasing trend slows effective utilization of net working capital & decreasing trend shows that there is decreasing in utilization of net working capital.

In order to test the relationship between working capital & sales of Hetauda Cement Industries Limited during 5 years period, Karl Pearson's coefficient of correlation is calculated in appendix table no. 13 and the results are as follows.

Coefficient of correlation (r) = 0.835

Probable error (P.E.) = 0.0913.

The coefficient of correlation between net working capital and sales during the study period is positive i.e. there is positive relationship between net working capital and sales. Since value of r is greater than 6 P.E., so the value of r is significant.

4.7.4.Receivables / Debtors turn over ratio :- Account receivables is the amounts of money owned to a firm by customer who have bought goods or service on credit. It is current assets. This is also called receivables.

The analysis of the receivable turnover ratio supplement the information regarding the liquidity of one item of current assets of the firm.

The ratio measure how rapidly debts are collected. A high ratio is

indicator of shorter time lag between credit sales and cash collection. A low ratio shows that debts are not being collected rapidly.

Thus, receivable turnover ratio is a test of liquidity of the debtors of a firm. It shows how quickly receivable are converted into cash. It indicates the velocity of debt collection of a firm.

The receivable turn over ratio of Hetauda Cement Industries Limited for 5 years are presented below.

Table no. 4.7.4.

Hetauda Cement Industries Limited

Receivable turn over ratio (Amount in Rs. 100000)

<i>Fiscal Year</i>	<i>Sales</i>	<i>Receivables</i>	<i>Receivable turn over ratio</i>
2058/059	5184.93	1418.41	3.66
2059/060	7192.92	1638.44	4.39
2060/061	5153.10	1795.83	2.87
2061/062	4733.88	1936.92	2.44
2062/063	5464.65	2209.10	2.47
Total	27729.48	8998.7	-
Average	5545.90	1799.74	3.08

The above table shows the receivable turnover of Hetauda Cement Industries Limited for 5 years study period from 2058/059 to 2062/063. In fiscal year 2058/059, this ratio was 3.66 times & increased to 4.39 in 2059/060. After that it is decreased to 2.87 in 2059.60. Again it is decreased to 2.44 in 2062/063 & increased to 2.47 in 2062/63. The highest ratio in study period is 4.39 in 2059/060 & lowest ratio is 2.44 in 2062/063. The average ratio is 3.08 times.

The average receivables turn over of Hetauda Cement Industries Limited is not satisfactory which indicates that the receivables management is very poor.

In order to test the relationship between receivables & sales of Hetauda Cement Industries Limited during the study period, Karl Pearson's coefficient of correlation (r) is calculated in appendix table no. 14 and the results are as follows.

Coefficient of correlation (r) = -0.236

Probable error (P.E.) = 0.285

Since value of coefficient of correlation is negative, so there is negative relationship between receivable & sales. Also the calculated value of r is less than 6 PE, the value of r is not significant.

4.7.5 Current assets turn over ratio :- The relationship between sales and current assets is known as current assets turn over ratio. It indicates the adequacy of sales in relation to the investment in current assets. It shows the effectiveness of utilizing current assets in relation to sales. The current assets turn over is calculated by using the following formula.

$$\text{Current assets turnover ratio} = \frac{\text{Sales}}{\text{Current assets}}$$

The current assets turn over ratio of Hetauda Cement Industries Limited for 5 years study period from 2058/059 to 2062/63 are presented below.

Table no. 4.7.5.

Hetauda Cement Industries Limited

Current assets turn over

<i>Fiscal Year</i>	<i>Sales</i>	<i>Current assets</i>	<i>Current turn over</i>
2058/059	5184.93	5258.41	0.986 times
2059/060	7192.92	5751.95	1.251 times
2060/061	5153.10	5577.25	0.924 times
2061/062	4733.88	6360.65	0.744 times
2062/063	5464.65	7045.83	0.776 times
<i>Total</i>	<i>27729.48</i>	<i>29994.09</i>	<i>-</i>
<i>Average</i>	<i>5545.90</i>	<i>5998.82</i>	<i>0.924</i>

The above table shows that current assets turnover in 2058/059 was 0.986 times & it is increased to 1.251 times in 2059/060. After that it is decreased up to 0.744 & increased to 0.776 in 261.062. The highest turn over ratio is 1.251

times in 2059/060 & lowest turnover ratio is 0.744 times in 2061/062. Average current assets turnover ratio in study period is 0.92 times.

It reflects that the company hold higher level of current assets but unable to increase sales.

In order to test the relationship between sales and current assets of Hetauda Cement Industries Limited during the study period, Karl Pearson's coefficient of correlation (r) is calculated in appendix 7 and the results are as under.

Coefficient of correlation (r) = -0.129

Probable error (P.E.) = 0.297

The coefficient of correlation between sales & current assets during the study period is negative i.e. there is negative relationship between sales and current assets. Since r is not 6 times greater than probable error, the value of r is not significant.

4.7.6. Average collection period :- Average collection period presents the average no. of days for collecting the cash from debtors. It is calculated by dividing days in a year by debtor's turnover ratio. It is also called days sales outstanding. The average collection period examines quality of debtor because it gives the period in which debts can be collected by the firm. So it indicates the rapidity of collecting debt. Thus, shorter the average collection period better will be the quality of debtors because it ensures prompt payment from debtors. Therefore it is the indicator of the efficiency of trade credit management.

The result of this ratio will be in a no. of days & minimum days are preferable. Hence, average collection period shows the no. of days required for collecting the debtors.

The average collection period of Hetauda Cement Industries Limited for five fiscal year from 2058/059 to 2062/063 are as follows.

Table no. 4.7.6.

Hetauda Cement Industries Limited

Average collection period

<i>Fiscal Year</i>	<i>Days in a year</i>	<i>Debtor turn over ratio</i>	<i>Average collection period in days</i>
2058/059	365	3.66	100 days
2059/060	365	4.39	83 days
2060/061	365	2.87	127 days
2061/062	365	2.44	150 days
2062/063	365	2.47	148 days
<i>Average</i>		<i>3.08</i>	<i>119 days</i>

The above table shows the average collection period of Hetauda Cement Industries Limited for 5 years. While comparing each year's average collection period with average collection period it was found that in 2058/059 and 2059/060 it is below than average value. It can be concluded that its debtors are delayed in refunding debts. Side by side it also depicts in efficiency collection effort of management.

4.8 Profitability Analysis :-

The following ratio shows the profitability of the firm.

4.8.1. Return on inventory :- This ratio shows the relationship between net profit after tax and inventory. Thus, it is calculated by dividing net profit after tax by inventory. By calculating this ratio, questions such as how will be inventories are moving and to which extent is helpful to obtain profit can be solved. Thus, it is also an effective measure of profitability.

Return on inventory of Hetauda Cement Industries Limited for 5 fiscal year from 2058/059 to 2062/063 are as follows.

Table No. 4.8.1

Hetauda Cement Industries Limited

Return on Inventory (Amount in 100000)

<i>Fiscal Year</i>	<i>Net profit after tax</i>	<i>Inventory</i>	<i>Return on inventory</i>
2058/059	(1557.78)	3665.93	(4.25%)
2059/060	(2778.18)	3962.95	(70.10%)
2060/061	(1357.93)	3618.29	(37.53%)
2061/062	(1250.82)	3965.19	(31.55%)
2062/063	(943.73)	4616.33	(20.44%)

Analysis of 5 years ratio shows that, whole years have negative ratios. The firm has negative earning. So, it causes the ratio to be negative. All these denote inefficiency in management of inventory to earn the return during the year. The condition is not satisfactory.

4.8.2. Gross Profit Margin :- The gross profit is obtained by deducting cost of goods sold from net sales. The ratio is the relationship between gross and net sales. This ratio measures the efficiency of the company & soundness of the management. Higher percentage indicates the better efficiency.

The gross profit margin ratio of Hetauda Cement Industries Limited for 5 fiscal years from 2058/059 to 2062/063 are presented below :

Table No. 4.8.2

Hetauda Cement Industries Limited

Gross Profit Margin (Amount in 100000)

<i>Fiscal Year</i>	<i>Sales</i>	<i>Gross Profit</i>	<i>Rate in percentage</i>
2058/059	5184.94	1240.37	23.92%
2059/060	7192.92	2462.08	34.23%
2060/061	5153.11	1291.36	25.06%
2061/062	4733.88	1168.29	24.68%
2062/063	5464.88	1501.77	19.25%
<i>Average</i>	<i>5545.90</i>	<i>1532.77</i>	<i>27.64%</i>

The above table shows the gross profit margin ratio of Hetauda Cement Industries Limited for 5 fiscal from 2058/059 to 2062/063. Profit margin ratio is in fluctuating trend. In fiscal year 2058/059 the ratio is 23.92% & increased to 34.23% in 2059/060. After that it is decreased to 25.06 & 24.68 & 19.25 in fiscal year 2060/061, 2061/062 & 2062/063 respectively. In fiscal year 2059/060, the company is able to maintain the largest gross profit margin of 34.23%. The average gross profit margin in 5 years study period is 27.64%.

In order to test the relationship between gross profit and sales of Hetauda Cement Industries Limited during the study period Karl Pearson's coefficient of

correlation 'r' is calculated in appendix table no. 15 and the results are as follows:

Coefficient of correlation (r) = 0.987

Probable error (P.E.) = 0.078

The coefficient of correlation between gross profit & sales during the study period is positive i.e. there is positive relationship between gross profit and sales. Since the value of r is 6 times greater than probable error, the value of r is considered to be significant.

4.8.3. Operating cost ratio :- The operating ratio establish the relationship between operating expenses and sales volume. It is an important ratio that explains the changes in the net profit margin ratio. It also measures the efficiency of the company as a regard to minimizing costs. Operating ratio is an indicator of operational efficiency. This ratio is calculated by dividing operations cost by sales. Operating cost include cost of good sold, office & administrative overhead and selling & distribution expense. Lower ratio is better. Higher proportion shows limited availability of income. Hence, this ratio can be assumed as yard stick for measuring the operating efficiency.

The operating ratio of Hetauda Cement Industries Limited for 5 fiscal years from 2058/059 to 2062/063 are presented below.

Table no. 4.8.3.

Hetauda Cement Industries Limited

Operating Cost Ratio

<i>Fiscal Year</i>	<i>Operating expenses</i>	<i>Sales</i>	<i>Operating cost ratio</i>
--------------------	---------------------------	--------------	-----------------------------

2058/059	4304.29	5184.93	83.02%
2059/060	5064.83	7192.92	70.41%
2060/061	4172.28	5153.10	80.97%
2061/062	3894.25	4733.88	82.26%
2062/063	4326.26	5464.65	79.17%
Total	21761.91	27729.08	-
Average	4352.38	5545.82	78.48%

The table shows that the operating ratio of Hetauda Cement Industries Limited are in fluctuating trend. Highest operating ratio was in 2058/059 i.e. 83.02% and 70.41%, 80.97%, 82.26%, 79.17% in 2059/060, 2060/061, 2061/062 & 2062/063 respectively. Average operating cost ratio of study period is 78.48%.

The decreasing percentage of operating cost to sales is the indication of operating efficiency.

In order to test the relationship between operating cost & sales of Hetauda Cement Industries Limited, during the study period. Karl Pearson's coefficient of correlation 'r' is calculated in appendix no. 16 & the results are as under :

Coefficient of correlation 'r' = 0.98

Probable error (P.E.) = 0.012

The correlation coefficient between operating cost & sales of Hetauda Cement Industries Limited during the study period is positive i.e. there is positive relationship between operating cost & sales. Since value of r is greater than 6 times of P.E., we can conclude that the value of r is significant.

4.8.4 Net profit margin ratio :- Net profit margin ratio is the relationship between net profit and sales. It is calculated as the net profit divided by net sales. It shows the over all effect of the firm. The net profit margin ratio of Hetauda Cement Industries Limited during the study period are as follows.

Table No. 4.8.4

Hetauda Cement Industries Limited

Net Profit Margin (Amount in 100000)

<i>Fiscal Year</i>	<i>Net Profit</i>	<i>Sales</i>	<i>Net Profit Margin</i>
2058/059	(1557.82)	5184.93	(30.05)%
2059/060	(2778.18)	7192.92	(38.62)%
2060/061	(1357.93)	5153.10	(26.35)%
2061/062	(1250.82)	4733.88	(26.42)%
2062/063	(943.73)	5464.65	(17.27)%
<i>Total</i>	(78888.48)	27729.08	-
<i>Average</i>	(1577.70)	5545.82	(28.45)%

The above table shows that the net profit margin ratio of the Hetauda Cement Industries Limited is very bad. The company is operating at loss. Average loss of the industry is (28.45)%. It also reveals that the overall ratio of the firm are badly managed. Liquidity, efficiency, leverage ratio are not properly managed.

4.9 Trend Analysis :-

Under this topic, various data related to working capital have been analyzed in term of trend percentage taking fiscal year 2058/059 as a base year. In this segment the related variable such as total current assets & total current liabilities in graph-1, net working capital and current assets in graph-2, inventory and cash & bank balance in graph-3, sundry debtors & outstanding expenses in graph-4, cost of goods sold & inventory in graph-5 and gross profit and sales in graph-6 and analysis is performed there after. Here the value of related variables of fiscal year 2058/059 are expressed as 100 percentage and in the same way , the value of the same times of remaining for years are converted in percentage based upon above base year.

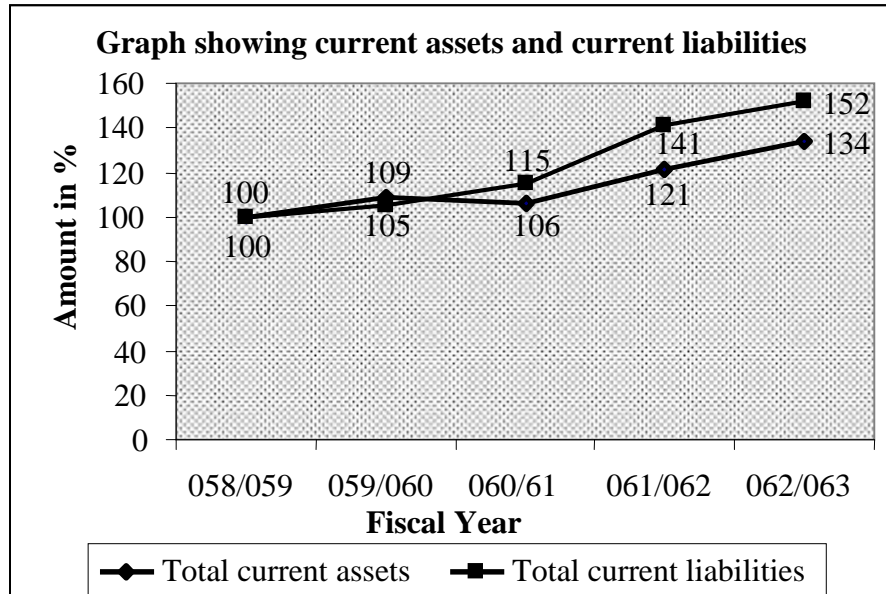
Trend is the basic tendency of a series to grow or decline over a period of time. The concept of trend doesn't includes short range oscillations, but rather the steady movement over a long times. The following table shows the trend percentage based on fiscal year 2058/059 as 100 percent.

Table 4.9

***Hetauda cement Industry Limited
Trend analysis in percentage***

S.N.	particulars/Year	2058/059	2059/060	2060/061	2061/062	2062/063
1.	Total current assets	100	109	106	121	134
2.	Total current liabilities	100	105	115	141	152
3.	Networking capital	100	127	70	42	65
4.	Inventory	100	108	99	108	126
5.	Cash & Bank balance	100	86	94	263	127
6.	Outstanding expenses	100	103	112	138	148
7.	Sundry debtors	100	116	127	137	156
8.	cost of goods sold	100	120	99	90	100
9.	Gross profit	100	198	104	94	121
10.	Sales	100	139	99	91	105

Graph no.49.1



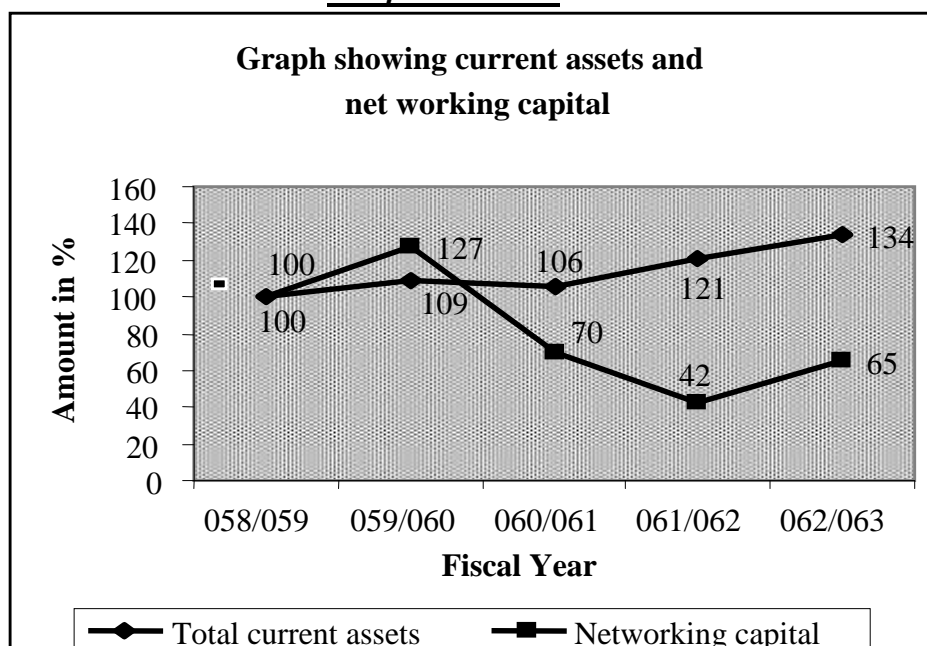
Graph no. 4.9.1

Graph no. 4.9.1 shows the trend line of total current assets & total current liabilities in terms of percentage. The trend line of total current assets is in increasing way. The total current assets in the fiscal year 2058/059 is 100% then increased to 109%, 106%, 121% & 134% in the fiscal year 2059/060, 2060/061, 2061/062 & 2062/063 respectively.

In the same way the total current liabilities in the fiscal year 2058/059 is 100% then increased to 105%, 115%, 141%, and 152% in the fiscal year 2059/060, 2060/061, 2061/062 & 2062/063 respectively?

Therefore, both trends to some extent adopt same features and the difference is only in volume not in nature.

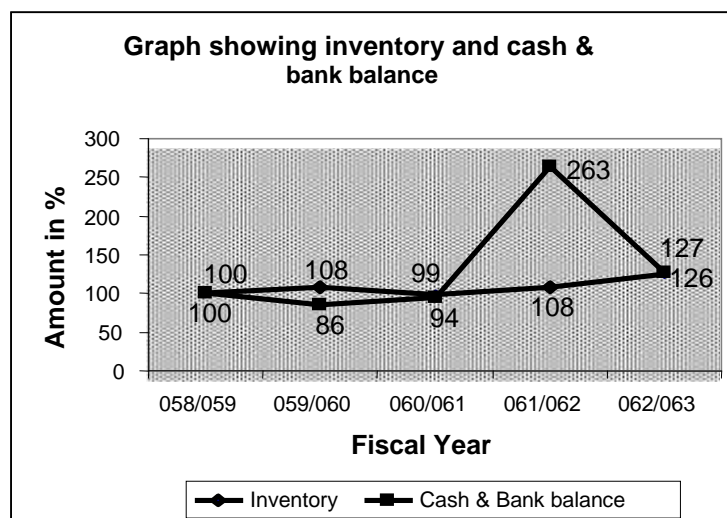
Graph no 4.9.2



Graph no. 4.9.2

Graph no. 4.9.2 shows the trend line of total current assets and net working capital in terms of percentage. In the fiscal year 2058/059 both the current assets & net working capital is 100%. In the fiscal year 2059/060 net working capital is increased to 127% and then decreased to 70%, 42% & 65% in 2060/061, 2061/062 and 2062/063 respectively. It shows that net working capital in last three years is poor than first two years.

Graph no 4.9.3



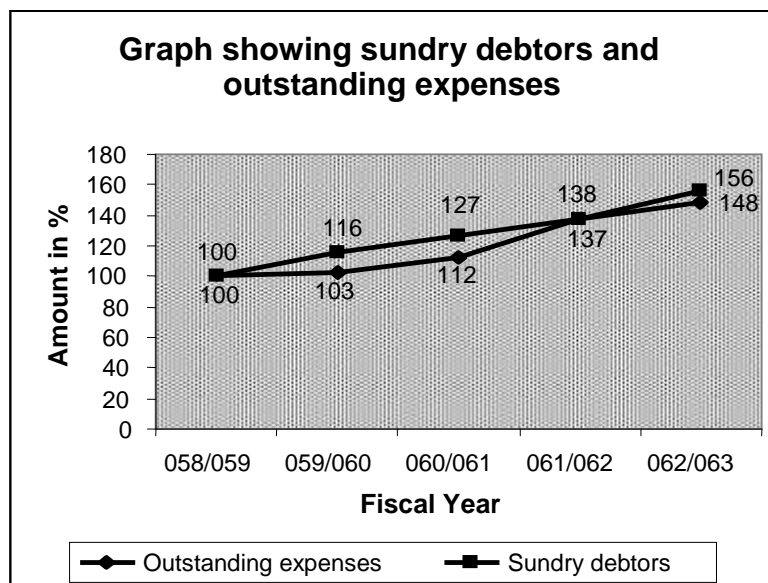
Graph no. 4.9.3

Graph no. 4.9.3 shows the trend line of inventory and cash & bank balance. Inventory is 100% in the fiscal year 2058/059 and then 108%, 99%,

108% & 126% in the fiscal year 2059/060, 2060/061, 2061/062 & 2062/063 respectively.

In the same way cash and bank balance in the fiscal year 2058/059 is 100% and then decreased to 86% & 94% in 2059/060 & 2060/061 respectively. After that it is increased to 263% & 127% in the fiscal year 2061/062 & 2062/063 respectively. The cash position in 2061/062 & 2062/063 seems very strong and there is an excess inventory in the company.

Graph no 4.9.4



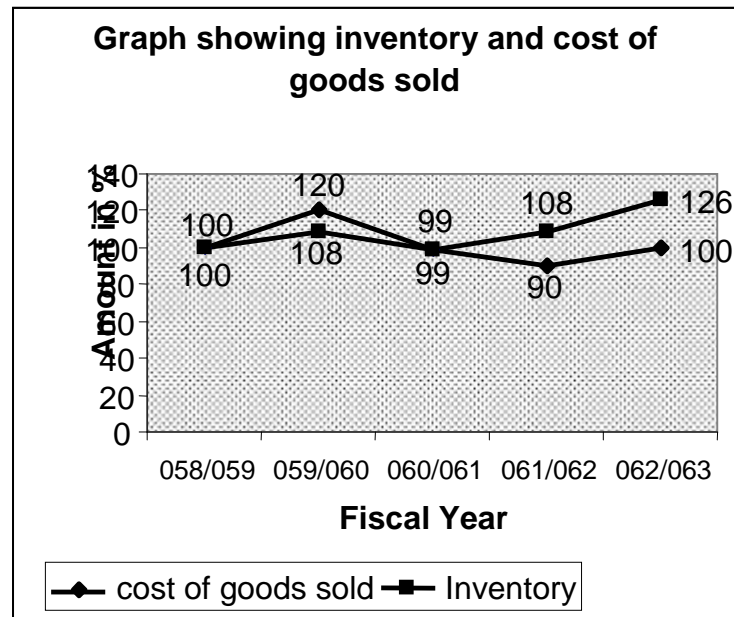
Graph no. 4.9.4

Graph no. 4.9.4 shows the trend line of two major components of working capital; sundry debtors & outstanding expenses. The trend line of sundry debtor is in increasing way when it is assumed 100% in fiscal year 2058/059 , the debtor are 116%, 127%, 137%, 156% in the fiscal year 2059/060, 2060/061, 2061/062 & 2062/063 respectively.

It shows that the company's collection policy is not well managed & the company is considering liberal policy.

In the same way the trend line of outstanding expenses is in increasing way. Trend of outstanding expenses are 100%, 103%, 112%, 138% and 148% in the fiscal year 2058/059, 2059/060, 2060/061, 2061/062 & 2062/063 respectively.

Graph no. 4.9.5

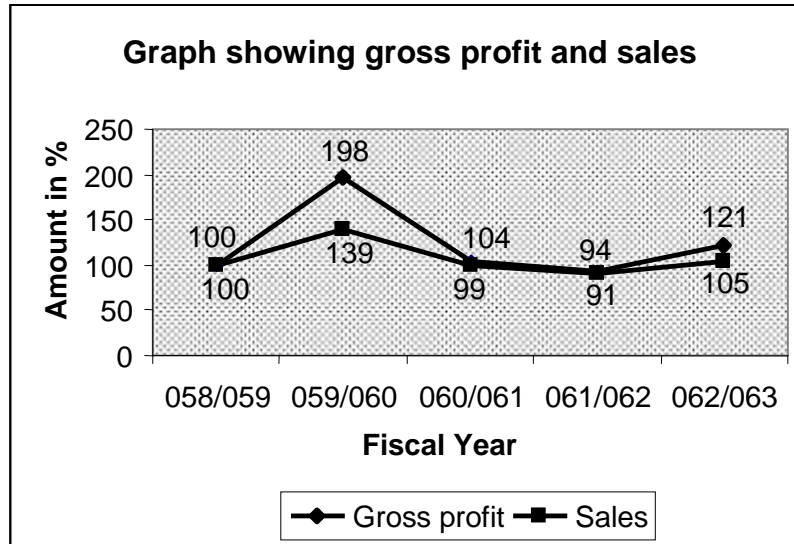


Graph no. 4.9.5

Graph no. 4.9.5 shows the trend line of cost of goods sold and inventory. The trend line of both in the fiscal year 2058/059 is 100%. Cost of goods sold is increased to 120% in the fiscal year 2059/060 and then decreased to 99%, 90% and 100% in 2060/061, 2061/062 and 2062/063 respectively.

The trend line is increased in the fiscal year 2059/060 to 108% and then decreased to 99% in 2060/061. After that it increased to 108% and 126% in the fiscal year 2061/062 and 2062/063 respectively.

Graph no 4.9.6



Graph no. 4.9.6

Graph no. 4.9.6 shows the trend line of gross profit and sales. Both the gross profit and sales percentage of fiscal year 2058/059 is 100 percentages. The gross profit percentage inn 2059/060, 2060/061, 2061/062and 2062/063 are 198%, 104%, 94% and 121%respectively. The gross profit in average is in increasing way.

The trend line of sales is some times increasing and sometimes decreasing. The percentage sale in 2059/060 is 139% and decreased to 99% and 91% in the fiscal year 2060/061 and 2061/062 respectively. After that is has increased to 105% in 2062/063.

Chapter - Five

Summary, Conclusion and Recommendations

5.1 Summary :-

In the introduction chapter, we have discussed the process of industrialization and its role & importance in Nepal with overall picture of Hetauda Cement Industries Limited. The concepts of working capital & its role and importance in manufacturing company like Hetauda Cement Industries Limited has also been included. Besides it, statements of problems and the objective of the study are also included there in.

The Second Chapter i.e. reviews of literature gives the concept of working capital, where views of different writers have been discussed. Findings of different research paper related to the cement factory have also been discussed here.

The basic objective of the study is to examine the management of working capital in Hetauda Cement Industries Limited. To fulfill the objective and other specific objective as described in chapter one, an appropriate research methodology has been developed which includes the ratio analysis as a financial tools & coefficient of correlation as statistical tools. The major ratio analysis consists of the composition of working capital position, turnover position, liquidity position and profitability position of the industries. Under these main ratios, various ratio positions are studied in the chapter four. In order to test the relationship between various components of working capital Karl Pearson's coefficient of correlation 'r' is calculated in the appendixes and the result have been analyzed in the chapter four.

The necessary data have been taken desired from the balance sheet and profit and loss account of Hetauda Cement Industries Limited from fiscal year 2958/059 to 2062/063 with the help of methodology described in chapter three. These data are represented and analyzed in chapter four. In the last chapter an

attempt has been made to present summary of findings, conclusion & recommendations for Hetauda Cement Industries Limited.

5.2 Conclusion :-

The following conclusions have been drawn through the study.

5.1.1. Analysis of current assets:-

The major components of current assets of Hetauda Cement Industries Limited are inventories, receivables & cash & bank balance respectively. The inventory occupies major share in current assets i.e. 66.27%. It has shown fluctuating trend. Debtors, advance expenses & receivable maintain second position in ranking i.e. 29.03. %. It has also sometimes increased and some time decreased. Cash & bank balance maintain last i.e. 3rd rank i.e. 4.70%. It has also sometimes increased and sometimes decreased.

5.1.2. Analysis of current liabilities

The trends of current liabilities of Hetauda Cement Industries Limited have no consistency. It adopts sometime increased & sometime decreased. When percentage of current liabilities for fiscal year 2058/059 is assumed as 100%, the percentage current liabilities in 2059/060, 2060/061, 2061/062 & 2062/063 are 104.85%, 115.34%, 141.27% & 151.72% respectively.

5.2.3 Analysis of networking capital

Networking capital has occupied major portion in working capital. The liquidity position of the Industry during the study period seems very poor. The networking capital in fiscal year 2058/059 is 20.54% then increased to 23.84% in 2059/060 after that decreased to 13.60%, 7.20% & 10.03% in 2060/061, 2061/062 and 2062/063 respectively. Decreasing trend of net working capital is not good sign for the company. Increased net working capital signifies that the

management has sufficient funds available to manage day to day affairs of the company

5.2.4 Liquidity analysis

5.2.4.1 Current ratio:-

The current ratio of Hetauda Cement Industries Limited in average is 1.17 time. Taking standard ratio 2:1 the average ratio of industry is not looked satisfactory i.e. liquidity position of Hetauda Cement Industries Limited looks poor.

5.2.4.2 Quick ratio:-

The average Quick ratio of Hetauda Cement Industries Limited during the study period is 0.3968. Standard of this ratio is 1:1. Quick ratio of industry of each study period is below the standard which shows that the liquidity position of the Hetauda Cement Industries Limited seems not satisfactory. The company has invested an excess amount on inventory.

5.2.5 Analysis of efficiency of working capital

5.2.5.1 Inventory turn over ratio:-

The average inventory turn over ratio of Hetauda Cement Industries Limited is 3.98 times which looks very poor. It shows that the inventory management of the industry seems very poor. The company is not able to maintain proper balance between inventory and sales.

5.2.5.2 Receivable turn over ratio:-

The receivables are generally affected by credit sales. Credit sales are unavoidable in today's business world turnover of Hetauda Cement Industries Limited during study period receivables are 3.66, 4.39, 2.87, 2.44, 2.47 times respectively. The average receivables turnover ratio of Hetauda cement Industry limited is 3.08 times. The investment made by the company in receivable

reveals liberal credit policy. Liberal credit policy follows loose credit policy and as a result it can incur higher bad debt losses & face the problems of liquidity. Thus the management of Hetauda Cement Industries Limited should take care to achieve optimum balance that maximizes the overall return of the firm.

5.2.6 Analysis of profitability of the firms:-

The average gross profit of Hetauda Cement Industries Limited during the study period is 27.64% but the company is operating at an average loss of 28.45%. Operating cost of the industry is also high. It reveals the poor management of assets and liabilities. The company is suffering from loss due to poor liquidity position & over investment in inventory. The main reason is that the company is not operating at full capacity. When the company will operate at full capacity, there will be positive impact on profitability.

5.3 Recommendation :-

Following recommendations are made on the basis of this study:-

- 1) The Hetauda Cement Industries Limited should pay proper attention on the investment in current assets. This avoids risk in management of working capital. Many financial tools and techniques (i.e. ratio analysis, funds flow analysis, and hypothesis test) help the Hetauda Cement Industries Limited to identify the deviation.
2. The Hetauda Cement Industries Limited should have proper cash planning to estimate the cash receipts & payment. This will help to minimize the problems if it has excess or deficit cash balance. As a result there will neither be excess nor the shortage of cash balance in the industry and the liquidity & profitability position of the industries can also be improved.
3. Inventory is occupying large portion in the total current assets. Therefore the huge amount of raw materials & inventory kept by Hetauda Cement Industries Limited should be reduced in order to maintain proper balance in sales and production. The problem of over and under stocking have also

been faced by the industry. To avoid this situation, Hetauda Cement Industries Limited should apply stable inventory policy.

4. The Hetauda Cement Industries Limited has invested huge amount of capital in current assets like inventory. The amount of over investment in inventory should be reduced & the surplus from this should be invested in capital expenditure in order to expand the production capacity & increase the sales volume to earn more profit.
5. Effective inventory control technique should be introduced in order to control inventory in accordance with their value & importance. To maintain good inventory position statistical tools and mathematical tools like ratio and technique of ABC inventory control must be introduced in determining the stock position.
6. Receivables with reference to sales, Hetauda Cement Industries Limited have fluctuating trend, which implies there is loose credit policy i.e. liberal credit policy. To avoid the problems of higher level of investment in receivables the industry should have maximum cash sales for this the customers should be provided discounts facilities on cash purchases. It should avoid policy of credit sales. The customers should be acquainted with the period of credit. To accelerate the collection, the customers should be provided discount facilities.
7. The management of Hetauda Cement Industries Limited should give due attention for minimizing the administrative and operating cost of the industry. The unskilled man Power, over staffing, non systematic purchasing of raw materials, unnecessary expenses and misuse of facilities are the major causes for higher operating cost. Systematic purchasing system, appropriate number of staff and reduction in other overhead are main elements to overcome this problem.
8. Both the inventory turn over ratios and the receivable turn over ratios are in miserable condition. If present trend has not been controlled, Hetauda Cement Industries Limited may have to pay huge cost for it It is suggested that industry should curtail its unnecessary stock of material and should

collect debtors as quick as possible. For this the company should make regular supervision to find adequacy in working capital when ever possible. This help a lot to avoid risk is management of working capital.

9. The Hetauda Cement Industries Limited should maintain optimum cash balance by removing the situation of excess and deficiency in cash balance. The company should consider general economic factors investment opportunities and availability of its bank credit while determining optimum cash balance.
10. The sales of Hetauda Cement Industries Limited during the study period have not maintained according to the size of current assets. To maintain optimum size of sales as per the size of current assets the company should invest on advertisement as well as other promotional aspects.
11. The divisional manager should be specialized in his department so that he will be more familiar with the problems and situation of the particular department could deal with the problems of the department.
12. The Hetauda Cement Industries Limited should develop positive managerial attitude towards productive investment. The manager & directors have to bear huge responsibility and to keep interest to exercise the knowledge in investment decision

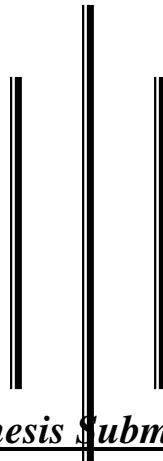
*Working Capital Position of Cement Industries
in Nepal with Special Reference to
Hetauda Cement Industry Limited*

By

Hari Lal Das

Ramswarup Ram Sagar Multiple Campus, Janakpur

T.U. Registration No. - 7-1-14-1373-99



A Thesis Submitted to

Office of the Dean

Faculty of Management

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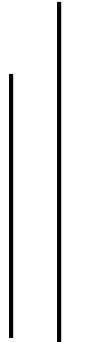
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DECLARATION

I here by declare that the work reported in this thesis entitled working capital position of cement industries in Nepal with special reference to 'Hetauda Cement Industry Limited' submitted to faculty of Management, RRM Campus, Janakpurdham, TU, is my original work done in the form of partial fulfillment of the requirement of the degree of master of business studies (MBS) under the supervision of Dr Braham Dev Jha, Reader, faculty of Management, RRM Campus, Janakpurdham.

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Hari Lal Das

Abbreviation

ACP	-	Average Collection Period
AR	-	Account Receivable
AP	-	Account Payable
BR	-	Bills Receivable
BP	-	Bills Payable
CA	-	Current Assets
CL	-	Current Liabilities
DSO	-	Days Sales Outstanding
EBT	-	Earning Before Tax
GP	-	Gross Profit
LTD	-	Long Term Debt
NPAT	-	Net Profit After tax
NWC	-	Net Working Capital
PE	-	Probable Error
QA	-	Quick Assets
ROI	-	Return on Inventory
TA	-	Total Assets
UCIL	-	Hetauda Cement Industry Limited
WC	-	Working Capital

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Chapter - Five

Summary, Conclusion & Recommendation

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Appendix

Appendix Table No. 3

Hetauda Cement Industries Limited
Component of Current Assets

(Amount in Rs.)

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Inventory	366593428	396295522	361829425	396519340	461633273
Cash & bank balance	17407078	15054910	16312202	45853821	22039693
Debtor & receivable	141841135	163844967	179583784	193692086	220910035
<i>Total Current Assets</i>	<i>525841641</i>	<i>575195399</i>	<i>557725411</i>	<i>636065247</i>	<i>704583001</i>

(Sources: Appendix no.2)

Appendix Table No. 4**Hetauda Cement Industry Limited
Component of Current Liabilities***(Amount in Rs.)*

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Outstanding expenses	388929154	402235267	436006595	538592205	576593792
Provisions	28897416	35861270	45909546	57682089	57317002
<i>Total Current Liabilities</i>	<i>417826570</i>	<i>438096537</i>	<i>481916141</i>	<i>590274294</i>	<i>633910794</i>

(Sources: Appendix no.2)

Appendix Table No. 1

Income Statement of Hetauda Cement Industry Limited
From fiscal year 2058/059 to 2062/063

(Amount in Rs.)

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Sales	518498875	719292020	515310520	473388070	546465285
Less : Cost of Sales	(394456399)	(473084345)	(386174692)	(356558452)	(396288218)
Gross Profit	124037476	246207675	129135828	116829618	150177067
Less : Administrative Expenses	(32188191)	(31417796)	(29684003)	(31881662)	(34666690)
Less : Advertisement & Sales Promotion Expenses	(3783936)	(1980964)	(1369212)	(985025)	(1671161)
Operating Profit	88065349	212808915	98082613	83962931	113839216
Add: Another income	8668231	9113411	9888535	9897756	9908032
Less : Bad debt	(118935)	(45420)	-	-	-
Less : Interest Expenses	(103946100)	(101028208)	(97102750)	(94679167)	(93810070)
Less : Depreciation	(111212940)	(111392765)	(109423811)	(87026181)	(87072783)
Less : Write off of deferred expenses	(37237745)	(37237745)	(37237745)	(37237745)	(37237745)
Profit before tax adjustment	(155782140)	(277818112)	(135793158)	(125082406)	(94373350)

Less : Provision fix tax	-	-	-	-	-
Net profit / loss	(155782140)	(277818112)	(135793158)	(1250825406)	(94373350)
Previous year profit & loss adjusted	-	(3510563)	-	(60032)	(113636)
Previous year balance	(508860177)	(664642318)	(695934694)	(831727852)	(956870291)
Balance Carried to balance sheet	664642317	(695934693)	(831727852)	(956870290)	(1051357277)

Appendix Table No. 2
Limited

Balance Sheet of Hetauda Cement Industry

From fiscal year 2058/059 to

2062/063

(Amount in Rs.)

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
<u>Capital & Liabilities</u>					
Share Capital	3648051000	3648051000	3648051000	3648051000	3648051000
Reserve & Surplus	(664642317)	(695934693)	(831727852)	(956870290)	(1051357278)
Long term loan unsecured	2046175274	1966175274	1910000000	1880000000	1855000000
Total Capital & Liabilities	5029583957	4918291581	4726323148	4571176720	4451693722
<u>Assets</u>					
Fixed assets	2531820998	2535573543	2538914507	2540808280	2542036605
Less : Depreciation	(918936443)	(1030329207)	(1139753019)	(1226740058)	(1313812841)
Net fixed assets	161884555	1505244336	1399161488	314068222	1228223764
Work in progress	3059742540	3058744340	305844153	3058247055	3059465006
Total fixed assets (1)	4672627095	4563988678	4457705641	4372315276	4287688770
Fixed deposit	57500000	60000000	70000000	67500000	45000000
Short term	3400000	3400000	3400000	3400000	3400000

investment					
Share investment	1853062	4853062	7695000	7695000	7695000
Total inv. (2)	62753062	68253062	81095000	71669500	56095000
Current assets :	366593428	396295522	361829425	396519340	461633273
Inventory					
Cash & bank balance	17407078	15054910	16312202	45853821	22039693
Debtor & receivable	141841135	163844967	179583784	193692086	220910035
Total Current Assets (3)	525841641	575195399	557725411	636065247	704583001
<u>Current Liabilities</u>					
Out Standing expenses	388929154	402235267	436006595	538592205	576593792
Provisions	28897416	35861270	45909546	51682089	57317002
Total Current Liabilities (4)	417826570	438096537	481916141	590274294	633910794
Net Current Assets (3-4)	108015071	137098862	75809270	45790953	70672207
Deferred Expenses (5)	186188729	148950981	111713237	74475491	37237745
Total Assets [(1+2+(3-4)+5]	5029583957	4918291581	4726323148	4571176720	4451693722

Appendix Table - 5

**Calculation of Coefficient of Correlation
Between Current Assets & Total Assets**

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Total Assets (y)</i>	x^2	y^2	xy
2058/059	5258.41	50295.83	27650875.73	2529670515	264476095.4
2059/060	5751.95	49182.91	33084928.80	2418958636	282897639.2
2060/061	5577.25	47263.23	31105717.56	2233812910	263598849.5
2061/062	6360.65	45711.76	40457868.42	2089565002	290756506.2
2062/063	7045.83	44516.93	49643720.39	1981757057	313658720.9
Total	$\Sigma x =$ 29994.09	$\Sigma y =$ 236970.66	$\Sigma x^2 =$ 181943110.90	$\Sigma y^2 =$ 11253764120	$\Sigma xy =$ 1415387811.2

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{N\Sigma y^2 - (\Sigma y)^2}}$$

Probable error $\frac{1-r}{\sqrt{N}}$

$$(P.E.) = \frac{5141538781.2 - 29994.09 \times 236970.66}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 11253764120 - (236970.66)^2}}$$

$$= -0.909$$

$$= 0.0524$$

Appendix Table - 6

**Calculation of Coefficient of Correlation
Between Current Assets & Fixed Assets**

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Fixed Assets (y)</i>	x^2	y^2
--------------------	---------------------------	-------------------------	-------	-------

2058/059	5258.41	46726.27	27650875.73	2183
2059/060	5751.95	45639.88	33084928.80	2082
2060/061	5577.25	44577.05	31105717.56	1987
2061/062	6360.65	43723.15	40457868.42	1911
2062/063	7045.83	42876.88	49643720.39	1838
Total	$\dot{y}_x = 29994.09$	$\dot{y}_y = 223543.23$	$\dot{y}_x^2 = 181943110.90$	$\dot{y}_y^2 = 10003$

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{N\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{5 \times 1337052406.7 - 29994.09 \times 223543.23}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 1000359702.6 - (223543.23)^2}} \quad 1 - ($$

$$= -0.912$$

$$= 0.0507$$

Appendix Table - 7

Calculation of Coefficient of Correlation Between Current Assets & Sales

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	5258.41	5184.93	27650875.73	26883
2059/060	5751.95	7192.92	33084928.80	51738
2060/061	5577.25	5153.10	31105717.56	26554
2061/062	6360.65	4733.88	40457868.42	22409
2062/063	7045.83	5464.65	49643720.39	29862
Total	$\dot{y}_x = 29994.09$	$\dot{y}_y = 27729.48$	$\dot{y}_x^2 = 181943110.90$	$\dot{y}_y^2 = 157488$

(Sources: Appendix no. 1 and 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x.\Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{N\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error}$$

$$(P.E.) = \frac{5 \times 165991479.66 - 29994.09 \times 27729.48}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.129$$

$$= 0.297$$

Appendix Table - 8

**Calculation of Coefficient of Correlation
Between Net Working Capital & Current Assets**

(In 100000)

<i>Fiscal Year</i>	<i>NWC (x)</i>	<i>CA (y)</i>	<i>x²</i>	<i>y²</i>
2058/059	1080.15	5258.41	1166724.02	27650
2059/060	1370.98	5751.95	1879586.16	33084
2060/061	758.09	5577.25	574700.45	31105
2061/062	457.90	6360.65	209672.41	40457
2062/063	706.72	7045.83	499453.15	49643
Total	$\Sigma x = 4373.84$	$\Sigma y = 29994.09$	$\Sigma x^2 = 4330136.19$	$\Sigma y^2 = 181943110.90$

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x.\Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{N\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error}$$

$$(P.E.) = \frac{5 \times 25685708.04 - 4373.84 \times 29994.09}{\sqrt{5 \times 4330136.19 - (4373.84)^2} \sqrt{5 \times 181943110.90 - (29994.09)^2}}$$

$$= -0.548$$

$$= 0.211$$

Appendix Table - 9

**Calculation of Coefficient of Correlation
Between Inventory & Current Assets**

(In 100000)

<i>Fiscal Year</i>	<i>Inventory (x)</i>	<i>Current Assets (y)</i>	x^2	y^2
2058/059	3665.93	5258.41	13439042.76	27650
2059/060	3962.95	5751.95	15704972.70	33084
2060/061	3618.29	5577.25	13092022.52	31105
2061/062	3965.19	6360.65	15722731.74	40457
2062/063	4616.33	7045.83	21310502.68	49643
Total	$\Sigma x = 19828.69$	$\Sigma y = 29994.09$	$\Sigma x^2 = 79269272.40$	$\Sigma y^2 = 181943110.90$

(Sources: Appendix no.2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} = \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 119998823.29 - 19828.69 \times 29994.09}{\sqrt{5 \times 79269272.40 - (19828.69)^2} \sqrt{5 \times 181943110.90 - (29994.09)^2}}$$

$$= -0.929$$

$$= 0.0413$$

Appendix Table - 10

**Calculation of Coefficient of Correlation
Between Cash, Bank & Current Assets**

(In 100000)

<i>Fiscal Year</i>	<i>Cash Bank (x)</i>	<i>Current Assets (y)</i>	x^2	y^2
2058/059	174.07	5258.41	30300.36	27650.00
2059/060	150.54	5751.95	22662.29	33084.00
2060/061	163.12	5577.25	26608.13	31100.00
2061/062	458.53	6360.65	210249.76	40450.00
2062/063	220.39	7045.83	48571.75	49640.00
Total	$\dot{y}x = 1166.65$	$\dot{y}y = 29994.09$	$\dot{y}x^2 = 338392.29$	$\dot{y}y^2 = 181943.10$

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

(P.E.)

$$= \frac{5 \times 7160370.32 - 1166.65 \times 29994.09}{\sqrt{5 \times 338392.29 - (1166.65)^2} \sqrt{5 \times 181943.10 - (29994.09)^2}} \quad \frac{1}{\sqrt{5}}$$

$$= -0.443$$

$$= 0.242$$

Appendix Table - 11

**Calculation of Coefficient of Correlation
Between Inventory & Sales**

(In 100000)

<i>Fiscal Year</i>	<i>Inventory (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	3665.93	5184.93	13439042.76	26883
2059/060	3962.95	7192.92	15704972.70	51738
2060/061	3618.29	5153.10	13092022.52	26554
2061/062	3965.19	4733.88	15722731.74	22409
2062/063	4616.33	5464.65	21310502.68	29862
Total	$\dot{y}_x = 19828.69$	$\dot{y}_y = 27729.48$	$\dot{y}_x^2 = 79269272.40$	$\dot{y}_y^2 = 157488056.31$

(Sources: Appendix no. 1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 110155544.30 - 19828.69 \times 27729.48}{\sqrt{5 \times 79269272.40 - (19828.69)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.123$$

$$= 0.297$$

Appendix Table -12

**Calculation of Coefficient of Correlation
Between Cash, Bank & Sales**

(In 100000)

<i>Fiscal Year</i>	<i>Cash & Bank (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	174.07	5184.93	30300.36	26883.14
2059/060	150.54	7192.92	22662.29	51731.16
2060/061	163.12	5153.10	26608.13	26554.21
2061/062	458.53	4733.88	210249.76	22407.66
2062/063	220.39	5464.65	48571.75	29862.82
Total	$\Sigma x = 1166.65$	$\Sigma y = 27729.48$	$\Sigma x^2 = 338392.29$	$\Sigma y^2 = 157488.31$

(Sources: Appendix no. 1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} = \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 6200916.82 - 1166.65 \times 27729.48}{\sqrt{5 \times 338392.29 - (1166.65)^2} \sqrt{5 \times 157488.31 - (27729.48)^2}}$$

$$= -0.544$$

$$= 0.212$$

Appendix Table -13**Calculation of Coefficient of Correlation
Between Networking Capital Sales***(In 100000)*

<i>Fiscal Year</i>	<i>NWC (x)</i>	<i>Sales (y)</i>	<i>x²</i>	<i>y²</i>
2058/059	1080.15	5184.93	1166724.02	26883
2059/060	1370.98	7192.92	1879586.16	51738
2060/061	758.09	5153.10	574700.45	26554
2061/062	457.90	4733.88	209672.41	22409
2062/063	706.72	5464.65	499453.15	29862
Total	$\dot{y}_x = 4373.84$	$\dot{y}_y = 27729.48$	$\dot{y}_x^2 = 4330136.19$	$\dot{y}_y^2 = 157488056.31$

(Sources: Appendix no.1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{5 \times 25397986.28 - 4373.84 \times 27729.48}{\sqrt{5 \times 4330136.19 - (4373.84)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}} \quad \frac{1}{\sqrt{5}}$$

$$= -0.835$$

$$= 0.0913$$

Appendix Table -14

**Calculation of Coefficient of Correlation
Between Debtor, Receivable & Sales**

(In 100000)

<i>Fiscal Year</i>	<i>Debtor & Receivables (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	1418.41	5184.93	2011886.93	26883
2059/060	1638.44	7192.92	2684485.63	51738
2060/061	1795.83	5153.10	3225005.39	26554
2061/062	1936.92	4733.88	3751659.08	22409
2062/063	2209.10	5464.65	4880122.81	29862
Total	$\dot{y}_x = 8998.7$	$\dot{y}_y = 27729.48$	$\dot{y}_x^2 = 16553159.84$	$\dot{y}_y^2 = 157488056.31$

(Sources: Appendix no. 1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}}$$

Probable error $\frac{1}{\sqrt{N}}$

$$(P.E.) = \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 49634721.14 - 8998.7 \times 27729.48}{\sqrt{5 \times 16553159.84 - (8998.7)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.236$$

$$= 0.285$$

Appendix Table -15

**Calculation of Coefficient of Correlation
Between Sales & Gross Profit**

(In 100000)

<i>Fiscal Year</i>	<i>Sales (x)</i>	<i>Gross Profit (y)</i>	x^2	y^2
2058/059	5184.93	1240.37	26883499.10	1538
2059/060	7192.92	2462.07	51738098.13	6061

2060/061	5153.10	1291.35	26554439.61	1667
2061/062	4733.88	1168.29	22409619.85	1364
2062/063	5464.65	1501.77	29862399.62	2255
Total	$\dot{y}_x = 27729.48$	$\dot{y}_y = 7663.85$	$\dot{y}_x^2 = 157488056.31$	$\dot{y}_y^2 = 12888$

(Sources: Appendix no. 1)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$\begin{aligned} \text{(P.E.)} &= \frac{5 \times 44532351.95 - 27729.48 \times 7663.85}{\sqrt{5 \times 157488056.31 - (27729.48)^2} \sqrt{5 \times 12888105.88 - (7663.85)^2}} \quad \frac{1}{\sqrt{5}} \\ &= \frac{5 \times 44532351.95 - 27729.48 \times 7663.85}{\sqrt{5 \times 157488056.31 - (27729.48)^2} \sqrt{5 \times 12888105.88 - (7663.85)^2}} \end{aligned}$$

$$= 0.987$$

$$= 0.0078$$

Appendix Table -16

**Calculation of Coefficient of Correlation
Between Operating Cost & Sales**

(In 100000)

<i>Fiscal Year</i>	<i>Operating Cost (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	4304.29	5184.93	18526912.40	26883
2059/060	5064.83	7192.92	25652502.93	51738
2060/061	4172.28	5153.10	17407920.40	26554
2061/062	3894.25	4733.88	15165183.06	22409
2062/063	4326.26	5464.65	18716525.59	29862
Total	$\Sigma x = 21761.91$	$\Sigma y = 27729.48$	$\Sigma x^2 = 95469044.38$	$\Sigma y^2 = 157448056.31$

(Sources: Appendix no.1.)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}}$$

Probable error $\frac{1}{\sqrt{N}}$

$$(P.E.) = \frac{5 \times 122324944.32 - 21761.91 \times 27729.48}{\sqrt{5 \times 95469044.38 - (21761.91)^2} \sqrt{5 \times 157448056.31 - (27729.48)^2}}$$

$$= 0.98$$

$$= 0.012$$

Appendix Table -17

**Calculation of Coefficient of Correlation
Between Quick Assets & Current Liabilities**

(In 100000)

<i>Fiscal Year</i>	<i>Quick Assets (x)</i>	<i>Current Liabilities (y)</i>	x^2	y^2
2058/059	1592.48	4178.26	2535992.55	17457
2059/060	1788.99	4380.96	3200485.22	19192
2060/061	1958.95	4819.16	3837485.10	23224
2061/062	2395.45	5902.74	5738180.70	34842
2062/063	2429.49	6339.10	5902421.66	40184
Total	$\dot{y}_x = 10165.36$	$\dot{y}_y = 25620.22$	$\dot{y}_x^2 = 21214565.23$	$\dot{y}_y^2 = 134901498.58$

(Sources: Appendix no.2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$\begin{aligned} \text{(P.E.)} &= \frac{5 \times 53472281.18 - 10165.36 \times 25620.22}{\sqrt{5 \times 21214565.23 - (10165.36)^2} \sqrt{5 \times 134901498.58 - (25620.22)^2}} \\ &= \frac{5 \times 53472281.18 - 10165.36 \times 25620.22}{\sqrt{5 \times 21214565.23 - (10165.36)^2} \sqrt{5 \times 134901498.58 - (25620.22)^2}} \end{aligned}$$

$$= 0.983$$

$$= 0.0102$$

Appendix Table -18

**Calculation of Coefficient of Correlation
Between Current Assets & Current Liabilities**

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Current Liabilities (y)</i>	x^2	y^2
2058/059	5258.41	4178.26	27650875.73	1745
2059/060	5751.95	4380.96	33084928.80	1919
2060/061	5577.25	4819.16	31105717.56	2322
2061/062	6360.65	5902.74	40457868.42	3484
2062/063	7045.83	6339.10	49643720.39	4018
Total	$\dot{y}_x = 2994.09$	$\dot{y}_y = 25620.22$	$\dot{y}_x^2 = 181943110.90$	$\dot{y}_y^2 = 13490$

(Sources: Appendix no.2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 156257211.28 - 29994.09 \times 25620.22}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 134901498.58 - (25620.22)^2}} \quad \frac{1}{\sqrt{5}}$$

$$= \frac{5 \times 156257211.28 - 29994.09 \times 25620.22}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 134901498.58 - (25620.22)^2}}$$

$$= 0.95$$

$$= 0.0294$$

Appendix Table No. 3

Hetauda Cement Industries Limited
Component of Current Assets

(Amount in Rs.)

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Inventory	366593428	396295522	361829425	396519340	461633273
Cash & bank balance	17407078	15054910	16312202	45853821	22039693
Debtor & receivable	141841135	163844967	179583784	193692086	220910035
<i>Total Current Assets</i>	<i>525841641</i>	<i>575195399</i>	<i>557725411</i>	<i>636065247</i>	<i>704583001</i>

(Sources: Appendix no.2)

Appendix Table No. 4**Hetauda Cement Industry Limited
Component of Current Liabilities***(Amount in Rs.)*

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Outstanding expenses	388929154	402235267	436006595	538592205	576593792
Provisions	28897416	35861270	45909546	57682089	57317002
<i>Total Current Liabilities</i>	<i>417826570</i>	<i>438096537</i>	<i>481916141</i>	<i>590274294</i>	<i>633910794</i>

(Sources: Appendix no.2)

Appendix Table No. 1

Income Statement of Hetauda Cement Industry Limited
From fiscal year 2058/059 to 2062/063

(Amount in Rs.)

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
Sales	518498875	719292020	515310520	473388070	546465285
Less : Cost of Sales	(394456399)	(473084345)	(386174692)	(356558452)	(396288218)
Gross Profit	124037476	246207675	129135828	116829618	150177067
Less : Administrative Expenses	(32188191)	(31417796)	(29684003)	(31881662)	(34666690)
Less : Advertisement & Sales Promotion Expenses	(3783936)	(1980964)	(1369212)	(985025)	(1671161)
Operating Profit	88065349	212808915	98082613	83962931	113839216
Add: Another income	8668231	9113411	9888535	9897756	9908032
Less : Bad debt	(118935)	(45420)	-	-	-
Less : Interest Expenses	(103946100)	(101028208)	(97102750)	(94679167)	(93810070)
Less : Depreciation	(111212940)	(111392765)	(109423811)	(87026181)	(87072783)
Less : Write off of deferred expenses	(37237745)	(37237745)	(37237745)	(37237745)	(37237745)
Profit before tax adjustment	(155782140)	(277818112)	(135793158)	(125082406)	(94373350)

Less : Provision fix tax	-	-	-	-	-
Net profit / loss	(155782140)	(277818112)	(135793158)	(1250825406)	(94373350)
Previous year profit & loss adjusted	-	(3510563)	-	(60032)	(113636)
Previous year balance	(508860177)	(664642318)	(695934694)	(831727852)	(956870291)
Balance Carried to balance sheet	664642317	(695934693)	(831727852)	(956870290)	(1051357277)

Appendix Table No. 2**Balance Sheet of Hetauda Cement Industry Limited****From fiscal year 2058/059 to****2062/063****(Amount in Rs.)**

<i>Particulars / Fiscal Year</i>	<i>2058/059</i>	<i>2059/060</i>	<i>2060/061</i>	<i>2061/062</i>	<i>2062/063</i>
<u>Capital & Liabilities</u>					
Share Capital	3648051000	3648051000	3648051000	3648051000	3648051000
Reserve & Surplus	(664642317)	(695934693)	(831727852)	(956870290)	(1051357278)
Long term loan unsecured	2046175274	1966175274	1910000000	1880000000	1855000000
Total Capital & Liabilities	5029583957	4918291581	4726323148	4571176720	4451693722
<u>Assets</u>					
Fixed assets	2531820998	2535573543	2538914507	2540808280	2542036605
Less : Depreciation	(918936443)	(1030329207)	(1139753019)	(1226740058)	(1313812841)
Net fixed assets	161884555	1505244336	1399161488	314068222	1228223764
Work in progress	3059742540	3058744340	305844153	3058247055	3059465006
Total fixed assets (1)	4672627095	4563988678	4457705641	4372315276	4287688770
Fixed deposit	57500000	60000000	70000000	67500000	45000000
Short term	3400000	3400000	3400000	3400000	3400000

investment					
Share investment	1853062	4853062	7695000	7695000	7695000
Total inv. (2)	62753062	68253062	81095000	71669500	56095000
Current assets :	366593428	396295522	361829425	396519340	461633273
Inventory					
Cash & bank balance	17407078	15054910	16312202	45853821	22039693
Debtor & receivable	141841135	163844967	179583784	193692086	220910035
Total Current Assets (3)	525841641	575195399	557725411	636065247	704583001
<u>Current Liabilities</u>					
Out Standing expenses	388929154	402235267	436006595	538592205	576593792
Provisions	28897416	35861270	45909546	51682089	57317002
Total Current Liabilities (4)	417826570	438096537	481916141	590274294	633910794
Net Current Assets (3-4)	108015071	137098862	75809270	45790953	70672207
Deferred Expenses (5)	186188729	148950981	111713237	74475491	37237745
Total Assets [(1+2+(3-4)+5]	5029583957	4918291581	4726323148	4571176720	4451693722

Appendix Table - 5

Calculation of Coefficient of Correlation Between Current Assets & Total Assets

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Total Assets (y)</i>	x^2	y^2	xy
2058/059	5258.41	50295.83	27650875.73	2529670515	264476095.4
2059/060	5751.95	49182.91	33084928.80	2418958636	282897639.2
2060/061	5577.25	47263.23	31105717.56	2233812910	263598849.5
2061/062	6360.65	45711.76	40457868.42	2089565002	290756506.2
2062/063	7045.83	44516.93	49643720.39	1981757057	313658720.9
Total	$\Sigma x =$ 29994.09	$\Sigma y =$ 236970.66	$\Sigma x^2 = 181943110.90$	$\Sigma y^2 = 11253764120$	$\Sigma xy = 1415387811.2$

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{N\Sigma y^2 - (\Sigma y)^2}}$$

Probable error $\frac{1-r}{\sqrt{N}}$

$$(P.E.) = \frac{5141538781.2 - 29994.09 \times 236970.66}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 11253764120 - (236970.66)^2}}$$

$$= -0.909$$

$$= 0.0524$$

Appendix Table - 6

Calculation of Coefficient of Correlation Between Current Assets & Fixed Assets

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Fixed Assets (y)</i>	x^2	y^2
--------------------	---------------------------	-------------------------	-------	-------

2058/059	5258.41	46726.27	27650875.73	2183
2059/060	5751.95	45639.88	33084928.80	2082
2060/061	5577.25	44577.05	31105717.56	1987
2061/062	6360.65	43723.15	40457868.42	1911
2062/063	7045.83	42876.88	49643720.39	1838
Total	$\dot{y}_x = 29994.09$	$\dot{y}_y = 223543.23$	$\dot{y}_x^2 = 181943110.90$	$\dot{y}_y^2 = 10003$

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\sum xy - \sum x \sum y}{\sqrt{N\sum x^2 - (\sum x)^2} \sqrt{N\sum y^2 - (\sum y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{5 \times 1337052406.7 - 29994.09 \times 223543.23}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 1000359702.6 - (223543.23)^2}} \quad 1 - (r^2)$$

$$= -0.912$$

$$= 0.0507$$

Appendix Table - 7

Calculation of Coefficient of Correlation Between Current Assets & Sales

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Sales (y)</i>	<i>x²</i>	<i>y²</i>
2058/059	5258.41	5184.93	27650875.73	26883
2059/060	5751.95	7192.92	33084928.80	51738
2060/061	5577.25	5153.10	31105717.56	26554
2061/062	6360.65	4733.88	40457868.42	22409
2062/063	7045.83	5464.65	49643720.39	29862
Total	$\dot{y}_x = 29994.09$	$\dot{y}_y = 27729.48$	$\dot{y}_x^2 = 181943110.90$	$\dot{y}_y^2 = 157488$

(Sources: Appendix no. 1 and 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x.\Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{N\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error}$$

$$(P.E.) = \frac{5 \times 165991479.66 - 29994.09 \times 27729.48}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.129$$

$$= 0.297$$

Appendix Table - 8

**Calculation of Coefficient of Correlation
Between Net Working Capital & Current Assets**

(In 100000)

<i>Fiscal Year</i>	<i>NWC (x)</i>	<i>CA (y)</i>	<i>x²</i>	<i>y²</i>
2058/059	1080.15	5258.41	1166724.02	27650
2059/060	1370.98	5751.95	1879586.16	33084
2060/061	758.09	5577.25	574700.45	31105
2061/062	457.90	6360.65	209672.41	40457
2062/063	706.72	7045.83	499453.15	49643
Total	$\Sigma x = 4373.84$	$\Sigma y = 29994.09$	$\Sigma x^2 = 4330136.19$	$\Sigma y^2 = 181943110.90$

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x.\Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{N\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error}$$

$$(P.E.) = \frac{5 \times 25685708.04 - 4373.84 \times 29994.09}{\sqrt{5 \times 4330136.19 - (4373.84)^2} \sqrt{5 \times 181943110.90 - (29994.09)^2}}$$

$$= -0.548$$

$$= 0.211$$

Appendix Table - 9

**Calculation of Coefficient of Correlation
Between Inventory & Current Assets**

(In 100000)

<i>Fiscal Year</i>	<i>Inventory (x)</i>	<i>Current Assets (y)</i>	x^2	y^2
2058/059	3665.93	5258.41	13439042.76	27650
2059/060	3962.95	5751.95	15704972.70	33084
2060/061	3618.29	5577.25	13092022.52	31103
2061/062	3965.19	6360.65	15722731.74	40457
2062/063	4616.33	7045.83	21310502.68	49643
Total	$\Sigma x = 19828.69$	$\Sigma y = 29994.09$	$\Sigma x^2 = 79269272.40$	$\Sigma y^2 = 181943110.90$

(Sources: Appendix no.2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} = \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 119998823.29 - 19828.69 \times 29994.09}{\sqrt{5 \times 79269272.40 - (19828.69)^2} \sqrt{5 \times 181943110.90 - (29994.09)^2}}$$

$$= -0.929$$

$$= 0.0413$$

Appendix Table - 10

**Calculation of Coefficient of Correlation
Between Cash, Bank & Current Assets**

(In 100000)

<i>Fiscal Year</i>	<i>Cash Bank (x)</i>	<i>Current Assets (y)</i>	x^2	y^2
2058/059	174.07	5258.41	30300.36	27650.00
2059/060	150.54	5751.95	22662.29	33084.00
2060/061	163.12	5577.25	26608.13	31100.00
2061/062	458.53	6360.65	210249.76	40450.00
2062/063	220.39	7045.83	48571.75	49640.00
Total	$\Sigma x = 1166.65$	$\Sigma y = 29994.09$	$\Sigma x^2 = 338392.29$	$\Sigma y^2 = 181943.10$

(Sources: Appendix no. 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

(P.E.)

$$= \frac{5 \times 7160370.32 - 1166.65 \times 29994.09}{\sqrt{5 \times 338392.29 - (1166.65)^2} \sqrt{5 \times 181943.10 - (29994.09)^2}} \quad \frac{1}{\sqrt{5}}$$

$$= -0.443$$

$$= 0.242$$

Appendix Table - 11

Calculation of Coefficient of Correlation Between Inventory & Sales

(In 100000)

<i>Fiscal Year</i>	<i>Inventory (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	3665.93	5184.93	13439042.76	26883
2059/060	3962.95	7192.92	15704972.70	51738
2060/061	3618.29	5153.10	13092022.52	26554
2061/062	3965.19	4733.88	15722731.74	22409
2062/063	4616.33	5464.65	21310502.68	29862
Total	$\Sigma x = 19828.69$	$\Sigma y = 27729.48$	$\Sigma x^2 = 79269272.40$	$\Sigma y^2 = 157488056.31$

(Sources: Appendix no. 1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 110155544.30 - 19828.69 \times 27729.48}{\sqrt{5 \times 79269272.40 - (19828.69)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.123$$

$$= 0.297$$

Appendix Table -12

**Calculation of Coefficient of Correlation
Between Cash, Bank & Sales**

(In 100000)

<i>Fiscal Year</i>	<i>Cash & Bank (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	174.07	5184.93	30300.36	26883.36
2059/060	150.54	7192.92	22662.29	51738.36
2060/061	163.12	5153.10	26608.13	26554.41
2061/062	458.53	4733.88	210249.76	22409.49
2062/063	220.39	5464.65	48571.75	29863.12
Total	$\Sigma x = 1166.65$	$\Sigma y = 27729.48$	$\Sigma x^2 = 338392.29$	$\Sigma y^2 = 157488.31$

(Sources: Appendix no. 1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}}$$

Probable error = $\frac{1}{\sqrt{N}}$

$$(P.E.) = \frac{5 \times 6200916.82 - 1166.65 \times 27729.48}{\sqrt{5 \times 338392.29 - (1166.65)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.544$$

$$= 0.212$$

Appendix Table -13

**Calculation of Coefficient of Correlation
Between Networking Capital Sales**

(In 100000)

<i>Fiscal Year</i>	<i>NWC (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	1080.15	5184.93	1166724.02	26883
2059/060	1370.98	7192.92	1879586.16	51738
2060/061	758.09	5153.10	574700.45	26554
2061/062	457.90	4733.88	209672.41	22409
2062/063	706.72	5464.65	499453.15	29862
Total	$\dot{y}_x = 4373.84$	$\dot{y}_y = 27729.48$	$\dot{y}_x^2 = 4330136.19$	$\dot{y}_y^2 = 157488056.31$

(Sources: Appendix no.1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 25397986.28 - 4373.84 \times 27729.48}{\sqrt{5 \times 4330136.19 - (4373.84)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.835$$

$$= 0.0913$$

Appendix Table -14**Calculation of Coefficient of Correlation
Between Debtor, Receivable & Sales***(In 100000)*

<i>Fiscal Year</i>	<i>Debtor & Receivables (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	1418.41	5184.93	2011886.93	26883
2059/060	1638.44	7192.92	2684485.63	51738
2060/061	1795.83	5153.10	3225005.39	26554
2061/062	1936.92	4733.88	3751659.08	22409
2062/063	2209.10	5464.65	4880122.81	29862
Total	$\dot{y}_x = 8998.7$	$\dot{y}_y = 27729.48$	$\dot{y}_x^2 = 16553159.84$	$\dot{y}_y^2 = 157488056.31$

(Sources: Appendix no. 1 & 2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}}$$

Probable error $\frac{1}{\sqrt{N}}$

$$(P.E.) = \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 49634721.14 - 8998.7 \times 27729.48}{\sqrt{5 \times 16553159.84 - (8998.7)^2} \sqrt{5 \times 157488056.31 - (27729.48)^2}}$$

$$= -0.236$$

$$= 0.285$$

Appendix Table -15**Calculation of Coefficient of Correlation
Between Sales & Gross Profit***(In 100000)*

<i>Fiscal Year</i>	<i>Sales (x)</i>	<i>Gross Profit (y)</i>	x^2	y^2
2058/059	5184.93	1240.37	26883499.10	1538
2059/060	7192.92	2462.07	51738098.13	6061

2060/061	5153.10	1291.35	26554439.61	1667
2061/062	4733.88	1168.29	22409619.85	1364
2062/063	5464.65	1501.77	29862399.62	2255
Total	$\dot{y}_x = 27729.48$	$\dot{y}_y = 7663.85$	$\dot{y}_x^2 = 157488056.31$	$\dot{y}_y^2 = 12888105.88$

(Sources: Appendix no. 1)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{5 \times 44532351.95 - 27729.48 \times 7663.85}{\sqrt{5 \times 157488056.31 - (27729.48)^2} \sqrt{5 \times 12888105.88 - (7663.85)^2}} \quad \frac{1}{\sqrt{5}}$$

$$= 0.987$$

$$= 0.0078$$

Appendix Table -16

**Calculation of Coefficient of Correlation
Between Operating Cost & Sales**

(In 100000)

<i>Fiscal Year</i>	<i>Operating Cost (x)</i>	<i>Sales (y)</i>	x^2	y^2
2058/059	4304.29	5184.93	18526912.40	26883
2059/060	5064.83	7192.92	25652502.93	51738
2060/061	4172.28	5153.10	17407920.40	26554
2061/062	3894.25	4733.88	15165183.06	22409
2062/063	4326.26	5464.65	18716525.59	29862
Total	$\Sigma x = 21761.91$	$\Sigma y = 27729.48$	$\Sigma x^2 = 95469044.38$	$\Sigma y^2 = 157448056.31$

(Sources: Appendix no.1.)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} = \frac{1}{\sqrt{N}}$$

$$= \frac{5 \times 122324944.32 - 21761.91 \times 27729.48}{\sqrt{5 \times 95469044.38 - (21761.91)^2} \sqrt{5 \times 157448056.31 - (27729.48)^2}}$$

$$= 0.98$$

$$= 0.012$$

Appendix Table -17

**Calculation of Coefficient of Correlation
Between Quick Assets & Current Liabilities**

(In 100000)

<i>Fiscal Year</i>	<i>Quick Assets (x)</i>	<i>Current Liabilities (y)</i>	x^2	y^2
2058/059	1592.48	4178.26	2535992.55	17457
2059/060	1788.99	4380.96	3200485.22	19192
2060/061	1958.95	4819.16	3837485.10	23224
2061/062	2395.45	5902.74	5738180.70	34842
2062/063	2429.49	6339.10	5902421.66	40184
Total	$\dot{y}_x = 10165.36$	$\dot{y}_y = 25620.22$	$\dot{y}_x^2 = 21214565.23$	$\dot{y}_y^2 = 134901498.58$

(Sources: Appendix no.2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{5 \times 53472281.18 - 10165.36 \times 25620.22}{\sqrt{5 \times 21214565.23 - (10165.36)^2} \sqrt{5 \times 134901498.58 - (25620.22)^2}} \quad 1 - (r^2)$$

$$= 0.983$$

$$= 0.0102$$

Appendix Table -18

**Calculation of Coefficient of Correlation
Between Current Assets & Current Liabilities**

(In 100000)

<i>Fiscal Year</i>	<i>Current Assets (x)</i>	<i>Current Liabilities (y)</i>	x^2	y^2
2058/059	5258.41	4178.26	27650875.73	1745
2059/060	5751.95	4380.96	33084928.80	1919
2060/061	5577.25	4819.16	31105717.56	2322
2061/062	6360.65	5902.74	40457868.42	3484
2062/063	7045.83	6339.10	49643720.39	4018
Total	$\dot{y}_x = 2994.09$	$\dot{y}_y = 25620.22$	$\dot{y}_x^2 = 181943110.90$	$\dot{y}_y^2 = 13490$

(Sources: Appendix no.2)

Now,

$$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \sqrt{\Sigma y^2 - (\Sigma y)^2}} \quad \text{Probable error} \quad \frac{1}{\sqrt{N}}$$

$$(P.E.) = \frac{5 \times 156257211.28 - 29994.09 \times 25620.22}{\sqrt{5 \times 181943110.90 - (29994.09)^2} \sqrt{5 \times 134901498.58 - (25620.22)^2}} \quad 1 - (r^2)$$

$$= 0.95$$

$$= 0.0294$$