CHAPTER – I

INTRODUCTION

1.1 Background of the study

Industrialization is an important (major) factor for achieving the basic objectives of a country's economic and social progress or in another words, industrialization is considered essential for economic development for the country these day. Industrialization not only provides goods and services but also creates employment opportunities. It facilitates an effective mobilization of resources of capital and skill, which might otherwise remain unutilized. Industrial development thus has a multiplier effect on the economy *(Pant, 2003:17).*

Industrialization plays a crucial role in the process of economic development and its importance is a means of achieving economic growth and prosperity within the country. Hence industrialization is universally accepted as a strategy of economic development as well as fundamental goals *(Pradhan, 1994: 44).*

It is believed that in order to achieve security stability and a high standard of living, the country must be industrialized. The most important for embarking an a performance of industrialization is to increase the national income *(Baryle, 1969).* The industrial sector has failed to contribute enough to the labor force *(Jhingan 2003:14).* The manufacturing sectors have to face Varian presets which have acted as constraint in growth of manufacturing industries. Such problems are arises due to land locked and underdevelopment situation of the country, lack of trained and skilled manpower, financial resource, inconvenience in transport and communication net works, non availability of assured energy at a reasonable rates, shortage of capital, small size of the market.

The industrial potential, higher cost of production, low productivity of inputs, instabilities in government policies etc. *(Pradhan, 1994:43).*

Industrialization is the process of manufacturing customer's goods and capital goods and of creating social overhead capital in order to provide goods and services to both individual and business *(Jhingan, 2003:25).*

The pace of industrialization in Nepal is very slow. It is completely new phenomenon. Biratnagar Jute Mills, 1936, marked up beginning of organized manufacturing industry in Nepal. By then Morang Cotton mills, Raghupati Jute Mills and Juddha Match Factory were established till 1946 in Biratnagar. On the period of Second World War, the promoters of these industries could reap wind fall profit with in a very short period because of extreme shortage of essential customer's goods in the world market. This made the attraction for establishment of new various industries 63 industries were opened during the period of 10 year. After the end of second world war, the Bitatnagar Jute mills and Juddha Match Factory in Biratnagar, Continued operating successfully. Most of other modern industries either closed down or declined.

During the third plan (1965-70) an industrial promotion and productivity centre, a joint project of NIDC and NG, was established to act as an agency for providing facilities for industry. It was felt that private sector could not set up all basic and feasible. Industries, capable of making special contribution to industrial development of the country in fourth plan. The government attempted to establish some industries with the aim of gradually selling them to private sector within the period of this plan. In 1981 new industrial policy was declared and the main feature of this policy was that all industries were kept open to the private sector except the defense industry. In 1992, again the industrial policy was declared and the policy was very liberal in respect of registration and other official procedures the private sector investment as well as foreign investment.

Development plans of Nepal have been emphasizing the development of both public and private sector industries. In every plan the word industrialization has been maintained too frequently. It is stated that private sector hasn't been able to come forward in industrial investment despite the several facilities provided by the

government. The policy of government to encourage industrialization in the private sector including financial support with establishing financial institution, tax concession, establishing other infrastructure. But there is also another view in this regard. It is mentioned that, that is not private sector which has not come foreword to stabilize industry. The development planner have felt that lack of industrial development strategy in Nepal has posed a curtail problem in designing an industrial program which is not most causes has been more listing of projects in the company's development plan *(Pradhan,1994).*

Both private and public sector have been contributing to our nation however the private sector is recognized as the driving force behind it with the dawn of multi party democracy. The Economic liberalization has made a sharp turn as the numbers of industries has increased greatly.

Public sector manufacturing companies has been quite unsatisfactory of capacity utilization. Most of the manufacturing units in Nepal run below its production capacity. The private as well as public sector company plays vital role of industrialization and economic growth of nation.

The government has to play a good attention and a very careful role to develop industrialization. Economic liberalization and privatization, tax rebates, developing infrastructures and other facilities is the main attraction for new establishment of industries. Many experts provided different policies and techniques for appropriate cash management. Due to inadequacy of knowledge, the policies and techniques have not been applied / implemented in Nepalese manufacturing companies.

Now the Nepal has adopted the policy of economic liberalization and privatization and also gets the membership of the world trade organization (WTO) through the globalization. For the strengthening the economy of any country both the private and public sector should play vital role. Now, Nepal government adopting foreign direct investment policy to encourage foreign investors. These policies create positive impact

to the private manufacturing companies for industrial development. Nepalese Private Sector industries reaping low profit due to the poor performance in term of capacity utilization, productivity, efficiency and profitability. Nepalese public sector manufacturing company need to take competitive strategy innovation research and development to be alive in competitive environment of globalization. Today industries can sustain their existence and growth only through a continuous process of innovation in functions quality and cost of product and its importance is as a means of achieving economic growth and prosperity within the country.

Simply, cash refers assets continuing the most liquid item among all the assets. A firm has focus for cash management for smooth run. The size of cash balance in hand and in account to be maintained on the behavior of operating cash flows of firms. Each business operation is unique in the matter of cash collection and disbursement, as such as, a firm needs to follow cash management strategies and policies.

A manufacturing company must maintain certain cash during production and sales.

The main objectives of cash management are as follows:

1) To meet payment schedule
2) To minimize funds committed to cash balances.
3) For speedy collection of usable cash.
4) To slowing disbursement.
5) Effective use of capital.
6) To maximize the profit of the origination.

1.1.1 Brief introduction of selected companies

a. Unilever Nepal Limited

Unilever Nepal limited was established in 1994 as a joint – Venture Company with an objective of establishing a factory to manufacture soap, detergents, cosmetics, toiletries, oleaginous, saponaceous, unguents and other chemical products under the brand name of the products of Hindustan Lever limited. Hindustan liver limited with 80 percent ownership has invested Rs. 73.7 million in equity. This is the first joint venture of Hindustan lever limited outside India.

b. Bottlers Nepal Limited.

Bottlers Nepal established as multinational company, its parent company is Coca-Cola (Asia) Ltd, a company incorporated in Dubai, UAE which holds 98.16 percent shares of Bottlers Nepal Ltd. The principal activity of the company is to manufacture and sell soft drinks under registered trademark of The Coca-Cola Company. It has listed its ordinary shares at Nepal stock exchange in 1984/06/21. It has two subsidiary company named Bottler (Terai) Ltd, and Troika Traders Pvt. Ltd. Troika Traders Pvt. Ltd involved in the distribution of the products of parent company. Company distributes its product through the "Manual Distribution Center" directly through the Troika traders. Four Boards of Directors of the company are nominated from Coca Cola Sabco (Asia) ltd and rest form the Nepalese Shareholders.

1.2 Statement of the problem

Cash management in manufacturing companies of Nepal is primarily based on traditional approach. A more serious aspect of cash management has been the absence of any formalized system of planning and budgeting.

The study attempts to have insights over the problem of cash management in listed manufacturing companies so that attempt has been made to identify the answer of following questions as a major problem.

Cash management refers to the proper management of form cash positions. It is concerned with all decisions and acts that influence the determations of the appropriate level of cash and their efficient use as well as choice of the financial method keeping in view of liquidity. The cash and bank balance of company is that the portion of its total current assets which is put to variables operative purpose and has the characteristics of greater divisibility liquidity and rapidly of turnover which influence the types and term of financing. Hence, cash management is in itself a decision making area with in the form work of the overall current assets management. Cash management has been the most intricate and challenging area of modern corporate finance as much as the management always face of trade off between liquidity and profitability of the firm.

Through most of the enterprise in Nepal have been well recognized the importance of proper cash management they are still facing the problem of cash management.

Thus the existing problems in the area of finance are mostly directed the management of cash rather than in any other area similar is the problem faced by BNL and UNL if we look on the financial statement of the corporation we can find the management is not satisfactory and encouraging. Very low level of cash in fluctuating trend is mentioned in the corporation which is one of the major problems in BNL and UNL.

- Defective cash management can impact on going concern ability of the company.
- Defective cash management influence on supplier's performance on providing goods and services.
- What is the liquidity position of the company and are the companies able to maintain appropriate level of liquidity position?
- What is the relationship between and among influencing variable of cash management?
- Are the companies able to collect and to make payment at a considerable time span?

1.3 Objective of the study

The major objective of this study is to examine the management of cash in listed manufacturing companies. The basic objectives of the study are as follows:

1) To see the liquidity position of the companies.
2) To see the relationship of cash with other variables.
3) To see the cash conversion cycle of the companies.
4) To provide necessary recommendation for improvement of cash management on the basis of analysis.

1.4 Significance of the study

The explosive growth of investing and raiding capital in the global market has put new emphasis on a policy which strives for zero- working capital. The worldwide financial analysts, together with analyst's researchers, users, regulatory bodies are involved in

great effort in the management of working capital through efficient cash management. The primary goal of cash management is to reduce the amount of cash held to the minimum requirements to conduct business.

The study of cash would be a crucial study because suggests to manage cash more efficiently by the selected Nepalese manufacturing companies. The study would be significant equally to the related/unrelated parties who are interested on cash management as business people, financial analysts and academician. This study helps business people to impose better cash management practices whereas analysis and academician can make further researcher.

1.5 Limitation of the Study

The study has very limited area of investigation. It is only a part and partial analysis of cash management of the selected manufacturing companies. Comprehensive study of cash management is not possible in this dissertation due to its deadline of completion and availability of data and information. The study is not bounded by the fixed standard of measurement and relationship between two or more variable with cash. So cash relationship with other variables is analyzed on the basis of average cash increments.

So the limitation of the study is as follows:

- Two companies are chosen as sample out of the total listed manufacturing companies.
- Only five year data has been used.
- The study is totally based on the secondary data.
- Financial and statistical tools and techniques have been used for analyzing data.

1.6 Organization of the Study

This study has been organized into five different organs (chapters) which are as follow:

Introduction:

This chapter includes background of the study, statement of the problem, objective and limitation of the study.

Review of Literature:

The second chapter, review of literature, deals a theoretical frame work and review of related studies.

Research Methodology:

This chapter deals with introduction, research design, population and sample, mature and source of data and tools and techniques for analysis data i.e. statistical and financial tools.

Presentation and Analysis Data:

The acquired data are presented and analyzed, through the way of designed methodology in this fourth chapter to accomplish the research objective.

Summary, Conclusion and Recommendation:

The last chapter provides the summary, recommendation and conclusion of overall study. At the end an extensive bibliography and appendices are also included at the end of the part of thesis book.

CHAPTER – II

REVIEW OF LITERATURE

2.1 Conceptual Framework

2.1.1 Meaning of Cash

The term cash has a meaning according to the purpose for which it is used and persons with varying branches of knowledge convey various meanings of cash. If you ask with an economist, he considers cash as the means to satisfy human wants. But a lawyer opines the view that cash is the legal lender money issued by a determinate authority. However, over concern of the meaning of cash is to look from a view point of the balance sheet. Cash is an asset constituting the most liquid item among all the assets. But to obtain cash involves cost because corporations have to rise through issue of share of by borrowing with interest. Indeed cash which has a cost, whether received internally through money market procurement is a liability and a wasted opportunity unless it is not put to its optimal use *(Saksen, 1974:54).*

2.1.2 Meaning of Cash Management

Approximately 1.5 percent of the average industrial firm's assets are held in the form of cash, which is defined as demand deposits plus currency. Cash is often called a "nonearning assets". It is needed to pay for labor and raw materials, to buy fixed assets, to pay taxes, to service debt, to pay dividends, and so on. However, cash itself (and also most commercial checking accounts) earns no interest. Thus, the goal of the cash manager is to minimize the amount of cash the firm must hold for use in conducting its normal business activities, yet, at the same time, to have sufficient cash (1) to take trade discounts, (2) to maintain its credit rating, and (3) to meet unexpected cash needs. *(Brigham and Ehrhardt 2004: 847).*

As such whatever cash a corporation has must be utilized efficiently to meet obligations of interest payment of Cash Corporation has responsibility to owners in assuring them to pay favorable rate of return. Since cash is not easy to obtain, the available cash must

be prudently spent without incurring loss although it is on possible to formulate a set of assets management policies of universal applicability, one rule or policy that appears to be unanimously accepted is that cash must be conserved. It is the rule of conversion of cash which holds the view that cash is expensive so it is ought to be acquired and used with adequate caution. If cash holding is bad for inefficient corporation, cash shortage is dangerous for efficient corporation. As for Inefficient Corporation it does not matter whether cash increases or decreases if they are not in a position to utilize them. But efficient corporation due to undertaking of more operation need more cash besides having profit *(Shrestha, 1980: 147)*

2.1.2 Principles of Cash Management

The size of cash balance in hand and in account to be maintained depends on the behavior of operating cash flows of the firms. Each business operation is unique in the matter of cash collection and disbursement, as such, a firm needs to follow cash management strategies based on its own financial strength and objective in the matter of cash management, financial manager are mainly concerned with the (a) Management of cash receipt, (b) management of disbursement, (c) minimization of cash balances, (d) use of most inexpensive source of financing for cash balance and (e) investment of excess balance of cash. The standard principles of cash management are follows:

a) To collect account receivable as soon as possible without annoying and loosing potential customers by establishing a system of lock boxes, electronic fund transfer, preauthorized checks, and deposit concentration.
b) To delay payment as long as permitted without damaging the firm's credit rating by establishing controlled disbursement system.
c) To minimize cash balance without adversely affecting the business operation by following the techniques of cash balance management such as Baumol &miller Orr-Models.
d) To manage most inexpensive source of financing for meeting short term cash deficiency by optimally balancing between cost and risk.
e) To invest short term excess cash in most efficient market portfolios of securities such as some by market instruments. (Pradhan, 1992:98)

2.1.3 Motives for Holding Cash

The term cash with reference to cash management is used in two senses. In a narrow sense, it is used broadly to cover currency and generally accepted equivalent of cash, such as cheques, draft and demand deposits in bank. The broad view of cash is also includes near cash assets, such as marketable securities and time deposits in banks. The main characteristics of this are that they can be readily sold and converted in to cash. They serve as a reserve pool of liquidity that provides cash quickly when needed. They also provide a short term investment out let for excess cash are also useful for meeting planned out flow of fund. Irrespective of the firm in which it holds a distinguishing feature of cash, as an asset, is that it has no earning power. Cash does not earn any return, why it is hold? There are four primary motives of cash balance, these are:

2.1.3.1 Transaction Motive

This refers to holding of cash to meet routine cash requirement to finance the transaction which a firm carries in the ordinary course of business. A firm enters in to a variety of transaction to accomplish its objectives which have to pay for in the form of cash. The requirement of cash balance to meet routine cash needs is known as transaction motive and such motive refers to the holding of cash to meet anticipated obligation whose timing is not perfectly synchronized with cash receipt

2.1.3.2 Precautionary Motive

The cash balance hold in reserves for random and unforeseen fluctuation in cash flows are called as precautionary balances. In other word precautionary motives of holding cash implies the need to hold cash to meet unpredictable obligation. Thus, precautionary cash balance serves to provide a cushion to meet unexpected contingences. The more unpredictable are the cash flows, the larger is the need for such balance. Another factor which has a bearing as the level of such cash balances is the availability of short tern credit. If a firm borrows at short notice to pay for unforeseen obligation, it will need to maintain a relatively small balance and vice versa

2.1.3.3 Speculative motive

It refers to the desire of a firm to take advantage of opportunities which presents themselves at unexpected moments and which is typically outside the normal course of business. While the precautionary motive is defensive in nature in that firm must make provision to tide over unexpected contingencies, the speculative motive represents a positive and aggressive approach. The firm's aim to exploit profitable opportunities and keep cash in reserve to do so. The speculative motive helps to take advantages of

- An opportunity to purchase raw materials at a reduced price on payment of immediate cash.
- A change to speculate on interest rate movement by buying securities when interest rates are expected to decline.
- Delay purchases of raw materials on the anticipation of decline in prices , and
- Make purchases at favorable prices.

2.1.3.4 Compensating Motive

It is to compensating banks for providing certain services and loans. Usually, clients are requested to maintain a minimum balance of cash at the bank since this balance cannot be utilized by the firm for transaction purpose, the banks themselves can use the amount to earn a return. Such balances are compensating balance.

Compensating balance is also required by some loan arrangement between a bank and its customer. During periods when the supply of credit is restricted and interest rates are rising, banks require a borrower to maintain a minimum balance in his account as a condition precedent to the grant of loan. This is presumably to 'compensate' for a rise in the interest rate during the period when the loan will be pending.

Of four primary motives of holding cash balances the two most important are transaction motive and the compensation motive. Business firm do not normally speculate and need not have speculate balances requirement of precautionary balances can be met out of short term borrowing. *(Khan and Jain 2003:302-308)*

2.1.4 Objective of cash Management

The basic objective of cash management is to reconcile two mutually contradictory and conflicting tasks. They are:

2.1.4.1 Meeting payment schedule

In the normal course of business, firm have to make payments of cash as a continuous and regular basis to supplier of good, employees and so on. At the same time, there is constant inflow of cash though collection from debtors. Cash is therefore, aptly described as “oil to lubricate the ever turning wheels of business: without it the process grinds to a stop “ a basic objective of cash management is to meet the payment, schedule, that is , to have sufficient cash to meet the cash disbursement needs of a firm.

2.1.4.2 Minimizing Funds Committed to Cash Balances

In minimizing the cash balances, two conflicting aspects have to be reconciled. A high level of cash balance will ensure prompt payment together with all the advantages. But it also implies that large fund will remain idle, as cash is non earning assets and the firm will have to forgo profit. A low level of cash balances, on other hand, may mean failure to meet the payment schedule. The aim of cash management, therefore, should be to have an optimal amount of cash balances.

2.1.5 Efficiency of Cash Management

Cash performs a number of functions as it makes payment possible and serves to meet emergencies. But if cash is kept idle it contributes directly mouthing to earning of corporations. As such corporations must adopt such a policy that makes optimum cash management possible. The financial manager of the corporation should try to minimize the corporation’s holding of cash while still maintaining enough to ensure payment of obligation. For improving the efficiency of cash management, effective method of collection and disbursement should be adopted. The method of efficiency of cash management is described as:

2.1.5.1 Speedy Collection of Usable Cash

When a customer writes and mails a cheque, this does not mean that the funds are immediately available to the receiving form (Weston and Copeland, 1992) so method of speeding collection of usable cash from customer payment of receivable should be used for optimization of cash management. This can be done through lock- box system concentration banking and spinal handling of the movement of fund *(Shrestha1980: 87).*

Concentration Banking

Concentration banking is a system of centralizing corporate cash in order to control the firm's fund and minimize the idle cash balances. Under this system a concentration bank is designated to receive funds from lock-boxes or any of subsidiaries depository banks. Write transfer can be made automatically, according to instruction given by the firm. The concentration bank reports available balances daily so the firm's treasures can take maximum advantages of investing opportunities.

A second method of concentration banking employs a depositary transfer cheque (DTC), which is non-negotiable demand deposit instrument, used to transfer money from our bank account to another.

Special Handling of Cash

Special handling of cash enable corporations to have sufficient funds the a can be pit to profitable user it is often found that some corporations pen too many accounts in a bank and thereby creating excessive idle fund in a bank such policy no doubt profitable in strengthening the4 degree of good will either bankers. Yet they make little sense in the overall cash management of the corporations. Moreover, the corporations should give special attention to the handling of large remittances with a view of get them quickly deposited in a bank and undertake, measures to pickup these cheques personally on the use of air mail and special delivery.

2.1.5.2 Slowing Disbursement

Apart from speedy collection of account receivable the operating cash requirement can be reduced by slow disbursement of account payable (Khan and Jain 2003: 662). Quick collection and slow disbursement accomplish the corporation with adequate cash on hand for larger period. Effective control of disbursement can result in a faster turnover of cash. The idea is to collect receivable as soon as possible, but pay account payable as late as it consist with maintaining the firm's credit standing with suppliers. In other word most firms desire to maintain reputations and good relation with suppliers by disbursing funds in a timely and accurate fashion. At the same time, a disbursement system should have a low operating cost, provide accurate management reports and extend disbursement float where practical and reasonable *(Hampton, 1989:89).*

Zero balance account disbursing

A number of banks offer a zero balance account (ZBA) services that allow the writing of cheques against individual operating accounts containing no fund. The cheque clear through regular banking channels and are then presented for collection. at the close of business, the bank automatically transfer funds from the company's concentration or master account to the different operating account in order to return each operating account to zero balance

Controlled Disbursing

In this method, checks ate drawn on bank, in areas that do not receive frequent clearing services from the Federal Reserve. Firm is not tying up funds before the checks are presented for payment.

Electric fund transfer

Transaction are recorded on magnetic tape and cleared directly through an automated clearing house. This will eliminate the need to print checks, will minimize float and will significantly reduce proper week and related expenses.

2.1.5.3 Cash velocity

Efficiency in the use of cash depends upon the cash velocity i.e. Level of cash over period of time. But the amount of sales in crucial factor that determines the cash velocity. The greater amount of sales is the greater would be the additional cash necessary to conduct the higher scale of operation.

$$\text{Cash Velocity} = \frac{\text{Annual sales}}{\text{Average cash balances}}$$

2.1.5.4 Minimum Cash Balance

Corporations are required to keep a minimum cash Balance requirement of bank either for services it renders of in consideration of lending arrangement. Every bank calculates the average collected balances and the account deems to be profitable if the total cost is less than total income. But in practice cash balance of the corporation with the banks is higher than cash in hand. It is because corporation always finds if to keep large funds with bank otherwise it may be utilized or misappropriated if kept in hand. *(Shrestha1980: 89).*

2.1.6 Factors Determining Cash Needs

2.1.6.1 Synchronization of Cash Flows

With a perfect synchronization of cash inflows and out flows and a higher degree of predictability, cash balances could be held to low levels. An example of synchronization demonstrates l of cash flows can be improved through more frequent requisitioning of fund to divisions offices from the firm's central office. if funds are requisitioned once a month, we may now explore the possibility of requisitioning of funds on fortnightly, or weekly of daily basis. Moreover, effective forecasting can be achieved; it will enable the firm to economic on the amount of money it must borrow and thereby keeping interest expenses to a minimum. It is necessary to understand now that there are different types of float. We have seen that the float of the different between book cash bad back cash, representing the net effect of changes in process of clarity. The first type of float is disbursement float. As we write check, it declares book balance but does not

immediately change available balance. Similarly, the collection float refers to the result of cheque received, which increases book balance nut not immediately change available balance. The net float is the overall different between the firm's available and is book balance. *(Pradhan, 2004: 420)*

2.1.6.2 Short cost

Another general factors to be considered to determine cash need is the cps associated with a short fall in the cash needs forecast presented in the cash budget would reveal periods of cash shortages. In addition, there may be some unexpected involves a cost depending upon the security, duration and frequency of the of the shortfall and how the shortage is covered. Expense incurred as results of shortfall are called short costs included in the short cost is the following:

- Transaction cost associated with raising cash to tide over the shortage. This is usually the brokerage incurred in relation to the sale of some short term meat cash assets as marketable securities.
- Borrowing cost associated with borrowing to cover the shortages these include items such as interest on loan commitment charge and other expenses relating to the loan.
- Loss of cash discount, which is a substantial loss because of temporary shortage of cash.
- Cost associated with determination of the credit rating which is reflected a higher bank charges on loans , stoppages of supplies , demand for cash payments ,refusal to sale, loss of image and the attendant decline in sales and profits.
- Penalty rates by bank to meet a shortfall in compensating balances.

  (Khan and Jain, 2003: 82).

2.1.6.3 Excess cash balance cost

The cost of having excessively large cash balance is known as the excessive cash balance cost. If large funds are idle, the implication is that the firm has missed

opportunities to invest those funds and has thereby lost interest which it would otherwise have earned. This loss of interest is primarily the excess cost

2.1.6.4 Procurement and management

There are the cost associated with the establishing and operating cash management staff and activities. They are generally fixed and are mainly accounted for by salary, shortage, handling of securities and so on

2.1.6.5 Uncertainty and Cash Management

Finally, the impact of uncertainty of cash management strategy is also relevant on cash flows cannot be predicted with complete accuracy. The first requirement is a precautionary cushion to cope with irregularities in cash flows, unexpected delays in collections and disbursements, default and unexpected cash needs.

The impact of uncertainty on cash management can, however, be mitigate through (1) improved forecasting of tax payments, capital expenditure, dividend, and so on and (2) increased ability to borrow though over draft facility.

2.1.7 Techniques for Effective Cash Management

2.1.7.1 Cash planning

Cash planning is a technique to plan and control the use of cash. It protects the financial condition of the firm by developing a projected cash statement from a forecast of expected cash inflows for a given period. Cash plans are very crucial in developing the overall operating plans of the firm *(Pandey, 1999:839).*

2.1.7.2 Cash forecasting and budgeting

Cash budget is the most significant device to plan foe and control ash receipt and payment a cash budget is a summary statement of the firm's expected cash inflows and outflows over a projected time period:

Cash forecast are needed to prepare cash budget generally forecasts covering period of one year of less are considered as short term forecast. The important functions of

carefully developed short term forecast are ton (a) determine operating cash requirement (b) anticipate short term financing and (b) manage investment surplus cash methods of short term forecasts are :

- **Receipt and Disbursement Method**

The prime aim of receipt and disbursement forecast is to summarize these floes during a predetermined period. In case of these companies where each items of income and expenses involve floes of cash; this method is favored to keep a close control over cash.

Adjusted net Income Method

This method of cash forecasting involves the tracing of working capital flows it is same time called the sources and uses approach. Three are two objectives of the adjusted net income method. They are to Project Company's need for cash at a future date and to show whether the company can generate the required fund internally and if not how much will have to be borrowed or raised in the capital market. it is a projected cash flow statement based on preformed financial statement one popularly used method of projecting working capital is to use ratios relating account receivable and inventory to sales

- **Sensitivity analysis**

One useful method of getting insights about the variability cash flow is sensitivity analysis. Cash budget can be prepared under three sales condition, they are, optimistic, most probable and pessimistic. Knowledge of the out cone of extreme expectation will help the firm; to be prepared with contingency plans a cash budget prepared under worst condition will prove to be useful to management to face these circumstances.

- **Long Term Cash Forecasting**

Forecasts, these extending beyond one year are considered long term. Once a company has developed long term cash forecast, it can be used to evaluate the impact of say, new predict development acquisition on the firm's financial condition three, five or more years in the future the major uses of long term forecasts are

- To indicate as company's future financial needs especially for its working capital requirement.
- To evaluate proposed capital projects. It pinpoints the cash required to finance these project as well as the cash to be generated by the company to support the.
- To improve corporate planning long term cash forecast compel each division to plan for future and no formulate project carefully.

(Pandey, 1999:843)

2.1.7.3 Managing the Cash Flows

The flow of cash should be properly managed the cash inflows should be accelerated while, as far as possible, the cash out flow should be declared.

2.1.7.4 Optimum Cash Level

The firm should decide about the appropriate level of cash balances the cost of excess cash and danger of cash deficiency should be matched to determine the optimum level of cash balances.

2.1.7.5 Investing Surplus Cash

The surplus cash balance should be properly invested to earn profits. The firm should decide about the decision of such cash between alternative short term investment opportunities such as bank deposits, marketable securities, or incorporate landing.

2.1.8 Determining the Optimum Cash Balance

The firm needs cash to purchase raw materials and pay wages and other expenses as well as for paying dividend, interest and taxes. There test of liquidity is the availability of cash to meet the firm's obligation when they become due. In other word firm require cash for various purpose, our or total requirement, how much to maintain in cash and how much in marketable securities is the question which needs a careful analysis of behavior of cash inflows and outflows may not synchronize all the time, the cash balance often fluctuates, and as a result, the balance could be sometime more and other

time less than necessary. It is, therefore, necessary to adopt a system to correct such fluctuation and, maintain an optimal balance at all time.

If the firm keeps high cash balance, it will have a strong liquidity but its profitability will be low. The potential profit forgone as holding large cash balance is an opportunity cost to the firm the firm should maintain optimum cash balance.

The models for maintaining optimal cash balances are described below.

2.1.8.1 Baumol's Model *(Baumol 1952:545-556)*

This model, developed by William Baumol (1952) essentially applies a basic Inventory model to cash management. The purpose of their model ids to determine the minimum cost amount of cash that a financial manager can obtain by converting securities to cash, considering the cost of conversion and the counter balancing cost of keeping idle cash balance which otherwise could have been invested in marketable securities the total cost associated with cash management, according to the model, has two elements they are (i) cost of concerting marketable securities in cash and (ii) cost of opportunity cost as such the firm attempts to minimize the cost of holding cash and cost of holding cash and cost of marketable securities are converted in to cash. Symbolically total conversion cost for period:

$$B = \frac{Tb}{C}$$

Where,

B = cost per conversion assumed to be independent of the size of the transaction.

T = total transaction cash needs for period

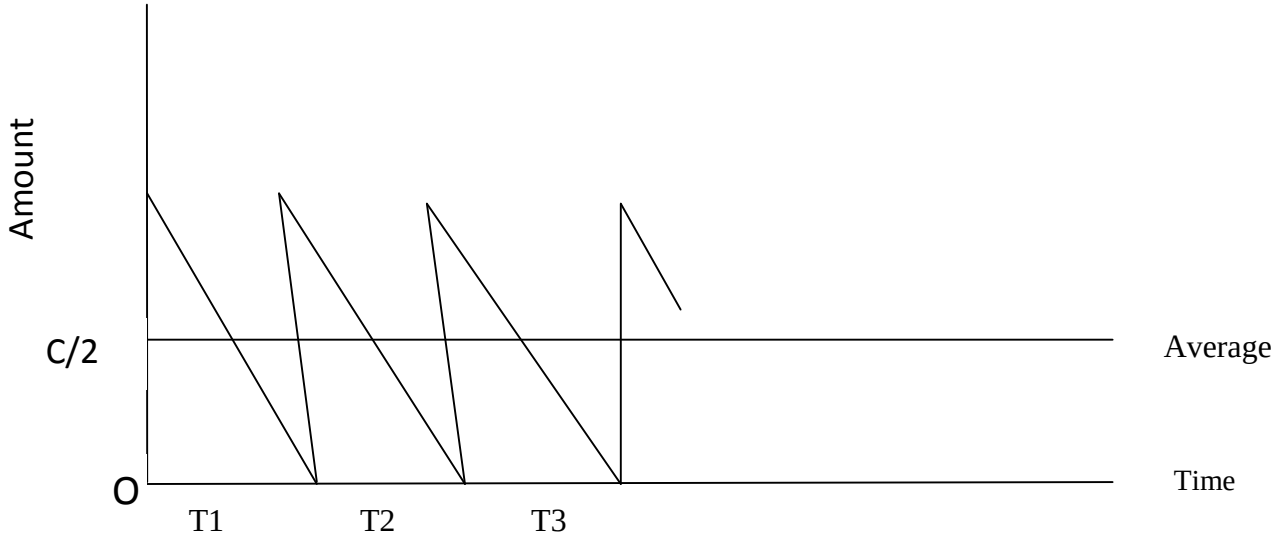
C = value of marketable securities sold at each conversion.

The opportunity cost is derived from the cost / forfeited interest rate (i) that could have been earned on the investment of cash balances. Total opportunity cost in the interest rate times the average cash balance kept by the firm. The model assumes a constant and

a certain pattern of cash out flows. At the beginning of watch period, the firm starts with a cash balance which is gradually spends until at the end of the period, the firm starts with a cash balance which is gradually spends until at the end of the period it has a zero cash balance and most replenish its each supply to the level of cash balance in the beginning which is shown graphically as

Figure: 2.1

Baumol Model for Optimum Cash Balance



Source: I. M. Pandey, Financial Management.

Mathematically,

The Opportunity Cost of Holding Cost = $[\frac{C}{2}]$

Where,

I = interest rate that could have earned.

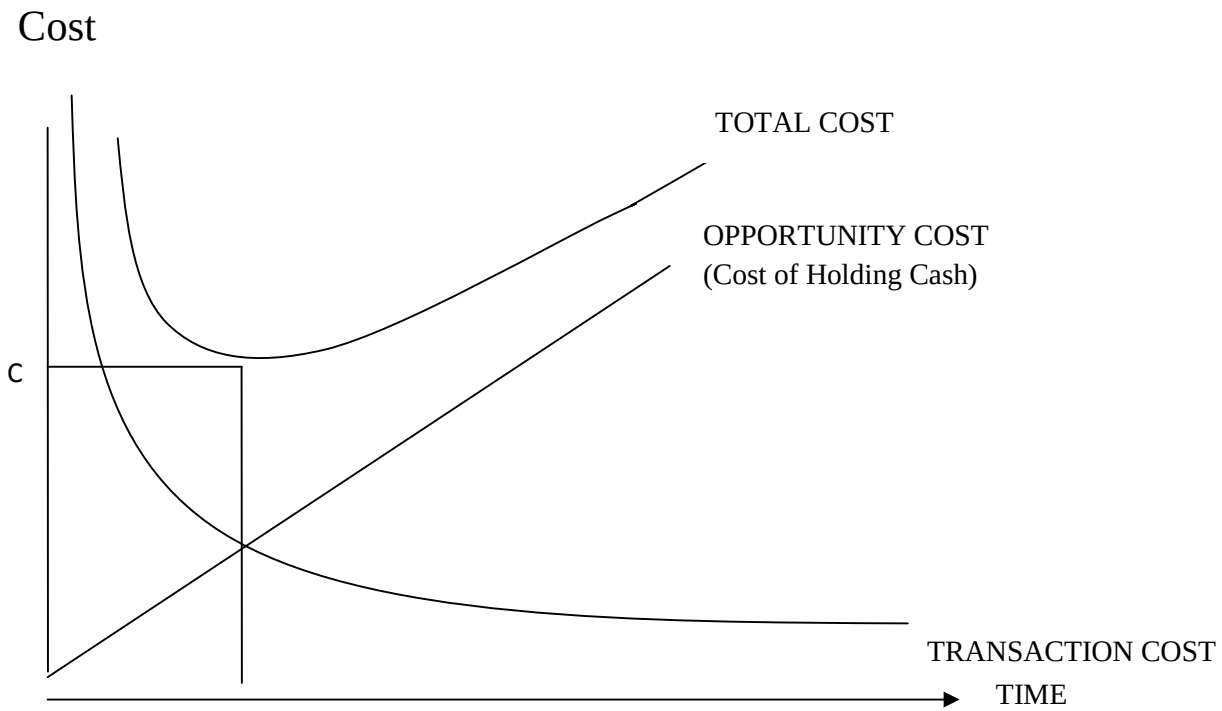
C/2 = the average cash balance, the beginning cash plus the ending cash balance of the period (0) divided by '2'.

The total cost associated with cash management comprising. Total conversion cost plus opportunity cost of not investing cash until needed in interest bearing instruments can be symbolical

$$C = \sqrt{\frac{2bt}{i}}$$

Figure: 2.2:

Cost Trade off, Baumol's



(Source: I. M. Pandey, Financial Management.)

In sum the Baumol model of cash management is very simplistic. Further, its assumptions of certainly and regularity of withdrawal of cash do not realistically reflect the actual situation in any firm. Also the model is concerned only with transaction balance and not with precautionary balances. In addition the assumed fixed mature of cash withdrawal is not also realistic.

Nevertheless, the model does clearly and concisely demonstrate the economics of scale and the counteracting nature of the conversion and opportunity costs which are undoubtly major consideration in any financial manager's cash management strategy.

2.1.8.2 Miller – Orr model *(Miller – Orr model, 1966:413-435)*

The objective of cash management, according to miller off (MO), is to determine the optimum cash balance level which minimizes the cost of cash management. It assumes that net cash flows are normally distributed with a zero value of mean and a standard deviation. Each firm's cash floes fluctuates randomly and hit the upper control limit the it buys sufficient marketable securities to come back a normal level of cash balance. Similarly, when the firm's cash flows wander and hit the lower limit, it sells sufficient marketable securities to bring cash balance back to the modal level.

Symbolically: $C = \frac{bE(N)}{T} + i\,E(M)$

Where,

b = the fixed cost per conversion

E (M) = the expected average daily cash balance.

E (N) = the expected number of conversion

t = number of days in the period

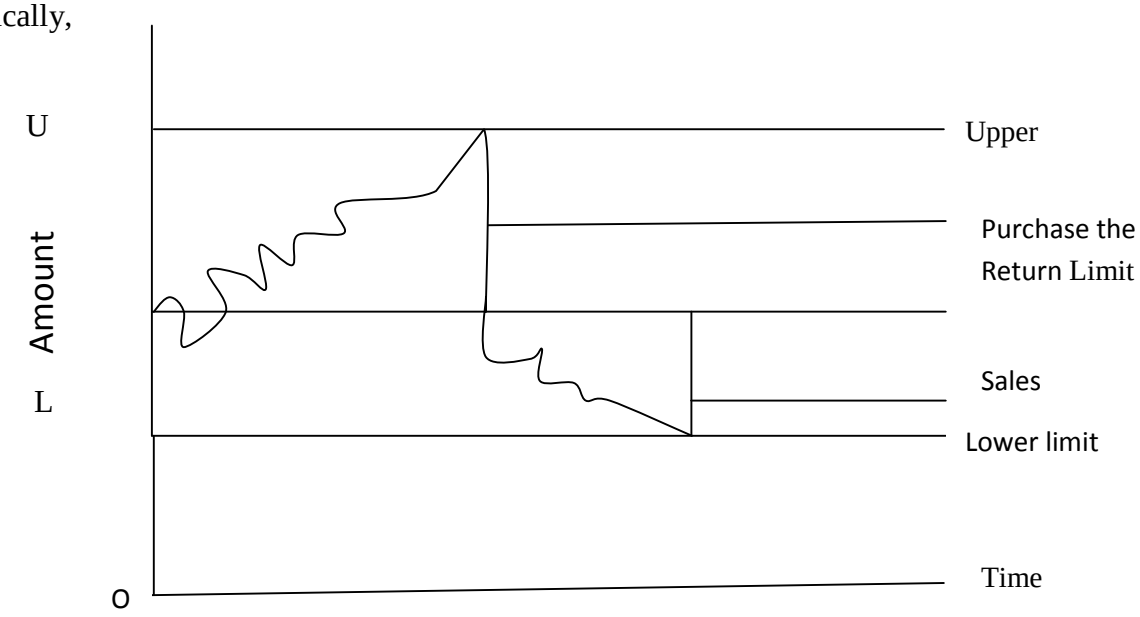
i = cost opportunity cost

C = total cash management cost

Figure: 2.3

Miller – Orr Model of Optimum Cash Management

Graphically,



According to Miller-Orr Model the optimal cash balance (Z) can be expressed symbolically as

$$z = \sqrt{\frac{3br2}{4i}} + LL$$

Where

r2 = the variance of daily change in cash balance.

Miller – Orr model also specifies the optimum upper boundary (u) as

U = lower limit + 3Z

Similarly return point

R = lower limit +z

If lower limit is zero,

Upper limit is there times of optimum level of cash and return point is equal to the optimal level of cash.

Further, the financial manager could consider the use of less liquid, potentially more profitable securities on investment for the cash balance excess of 'U'.

2.1.8.3 Orgler's model *(Orgler, 1970)*

According to this model an optimum cash management strategy can be determined through the use of multiple linear programming model the comprise of the model comprises three sectors. They are, (i) selection of appropriate planning horizon,(ii) selection of appropriate decision variable and (iii) formulation of cash management strategy itself. The advantage of linear programming model is that it enables coordination of optimum cash management strategy with the other operation of the firm such as production and with less restriction o working capital balances.

Orgler's objective function is to minimize the horizon value of the net revenues from the cash budget over the entire planning period. The objective function recognizes each operation of the firm that generate cash inflows or outflows on adding or subtracting profit opportunities for the firm from its cash management operation. In the objective functions, decision variables which cause inflows such payments of receivable, have positive coefficient while decision variable which generate cash inflows, such as interest and short term borrowing have negative coefficient. The formulation of the model requires that the financial managers first specify an objective function and then specific a set of constraint.

The constraint of the model could be (I) institutional of policy constraint. The institutional constraint are those imposed but external factors that is bank required compensating balance policy constraint are imposed on cash management by the firm itself. For instance, the financial manager may be prohibited from selling securitized before maturity either constraint can occur in the model during on monthly period for over several of all the month in one yea planning horizon.

An example of linear programming model is as follows:

Objective function

$$Maximize \quad \Pr ofit \quad X a1 x1 \Gamma a2 x2$$

Subject to

b1 $\leq$ production

b2 x2 $\leq$ constraint

c1x1 + c2x2 $\leq$ cash available constraint

8x1+8x2 $<$ Current assets requirement constraint

xi $>$ 0; = n non- negatively constraint.

A very important feature of the model is that it allows the financial managers to integrate cash management with production and other aspects of the firm

2.1.8.4 Monte Carlo simulation

Although the Baumol model and other theoretical models provides insights into the optimum cash balance , they are genera;;u not practical for use rather, firms generally sat they target cash balances based as some " safety stock " of cash that holds the risk of running out of money to some acceptability law level. One commonly used procedure is Monte Carlo simulation. Sales and collections are the driving forces in cash budget and of course are subject to un certainty. In the cash budget we used expected values for sales and collection as well as for other cash flows. However, it would be relatively easy to use Monte Carlo simulation to introduce uncertainty. If cash budgets are constructed using a spread sheet program with Monte Carlo add in software, then the key uncertain variables could be specified as continuous probability distributions rather than point value.

2.1.9 Basic Strategies for Cash Management

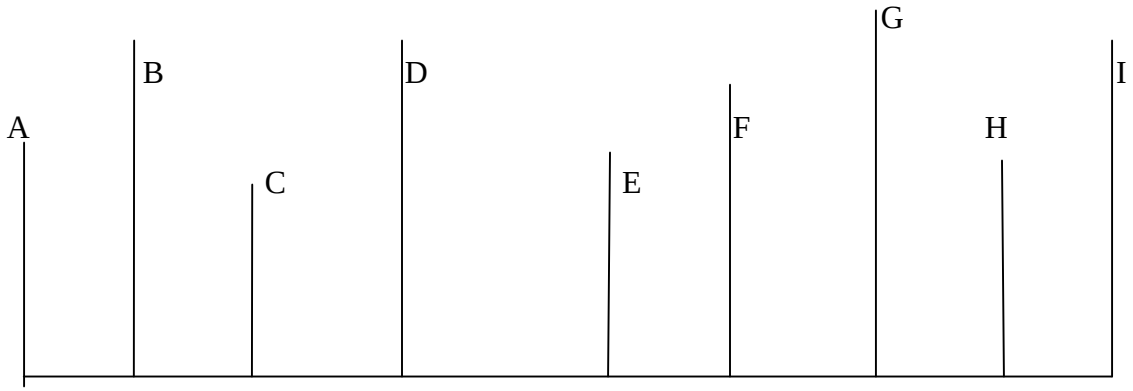
The budget as a cash management tool would throw light on the net cash position the management should work out the basic strategies to be employed to manage its cash.

2.1.9.1 Cash Cycle

The financial needs of the corporations are affected by the details of the cash cycle involved in the process of conversion from purchase production and sales to ultimate collection. Opportunities to improve cash cycle help in best management of cash. The cash cycle of the corporate is as follows *(Shretha, 1980)*

Figure: 2.4:

Details of Cash Cycle



Source: M. k. Shrestha Financial management, 1982

Where

A = Material Ordered

B = Material Received

C = Payment

D = Check Clearance

DE = Good Sold

F = Customer Mails Payments

G = Payment Received

H = Check Deposited

I = Fends Collected

In addressing the issue of cash management strategies we are concerned with the time period involved in strategies BCD & FGHI. A firm has no control over time involved

between stage A &B. The lag between D & E is determined but the production process and inventory policy the time period between stage E and F is determined by credit terms and payment policy of customers.

2.1.9.2 Minimum Operating Cash

The higher the cash turnover the less is the cash a firm should, therefore try to maximize cash turnover. But it must maintain a minimum amount of operating cash balance so that it doesn't run out of cash the minimum level of operating g cash in determined bun dividing the total operating annual out lays by the cash turnover rate. Cash management strategies are intended to minimize the operating cash requirement. The basic strategies that can be employed to do the needful are as follows:

Stretching Account Payable

One basic strategy of efficient cash management is to stretch the account payable. In other words, a firm should pay its account payable as late as possible without damaging its credit standing. It should, however take advantages of cash discount available on payments.

Efficient Inventory, Production Management

This strategy is to increase the inventory turnover ratio, avoiding stock outs that are shortage of stock this can be done in following ways:

- Increasing the raw materials turnover by using more efficient inventory control techniques.
- Decreasing production cycle through better production planning scheduling and control techniques into will lead an increase in the work-in progress inventory turnover
- Increasing finished good turnover through better forecasting of demand and a better planning of production.
- Efficient inventory and production management cause a decline in operating cash, and hence, a saving in cash operating cost.

Speeding Collection of Account Receivable

Combined Cash Management Strategies

We spell out the implication of these strategies to minimum cash balance and the associated cost with the underlying assumption that a firm should adopt such cash management strategies as will lead to the minimizing of to operating cash requirement in other words efficient cash management implies minimum cash balances consistent with the need to pay wills when they become due. *(Khan & Jain 2003:352)*

2.1.10 Cash Conversion Cycle

The cash conversion cycle model diagrams the length of time between when the company makes payments and even it receive cash. The following terms are used in the model.

- Inventory conversion period
- Receivable collection period
- Payable deferral period

The cash conversion cycle net outs these three periods and thus equals the length of time between the firm's actual cash expenditures for productive resources and its own cash receipts from the sale of products. The cash conversion cycle w quails the average length of time a dollar is tied up in current assets:

Symbolically,

1	+	2	-	3	=	4
Inventory conversion cycle	+	Receivables Collection Period	-	Payables deferral period	=	Cash Conversion Cycle

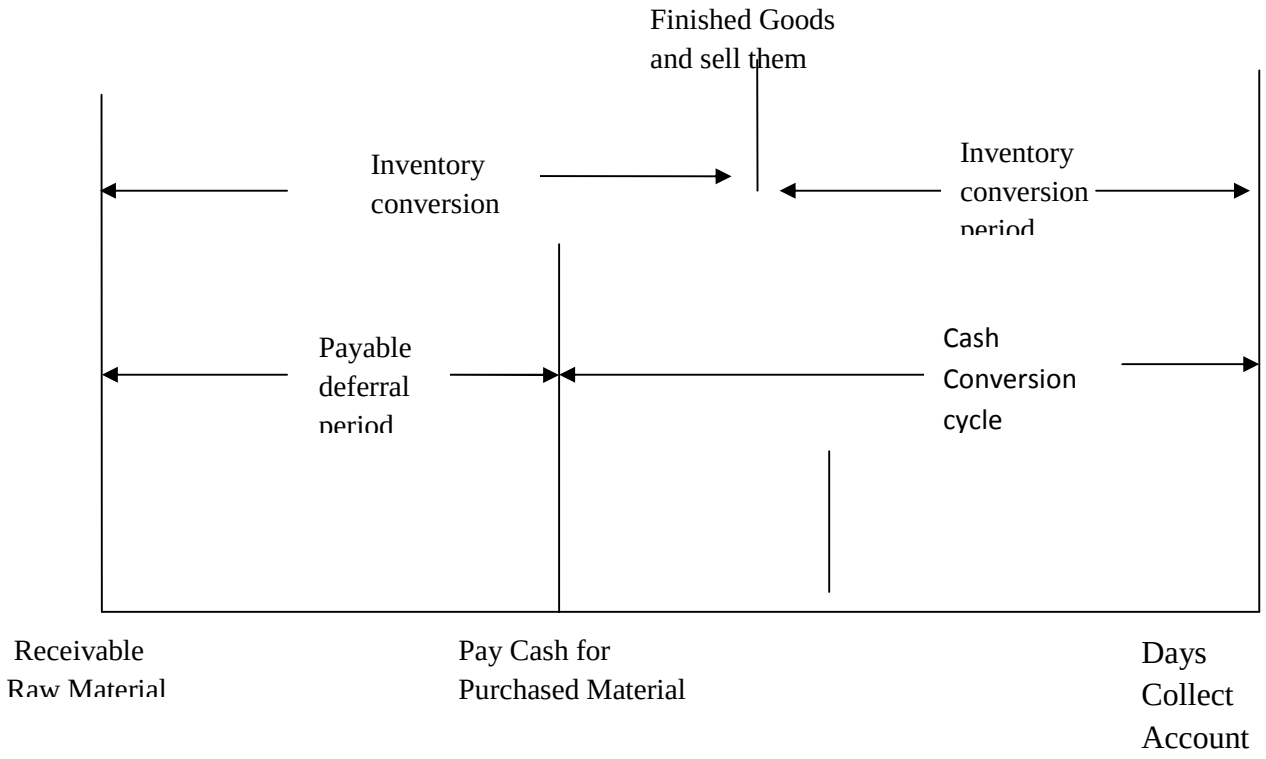
In another way,

Receipt delay	–	payment delay	=	net delay

Table for Cash Conversion Cycle Model

Figure: 2.5

Cash Management Cycle Model



Source: Brigham, Gapenski , Ehrhardt, Financial Management , 2001, P. 870.

The cash conversion cycle can be shortened (1) if the firm can reduce the inventory conversion period by processing and selling goods quickly (2) if it can reduces the receivable collection period by speeding up collection period by speeding up collection or (3) if it cans lengthen the payable deferral period by slowing down its own payments. To tale extents that these actions can be taken without increasing cost or depressing sales they should be carried out. *(Brigham, Gape ski and Earnhardt: 2001)*

2.2 Review of Books

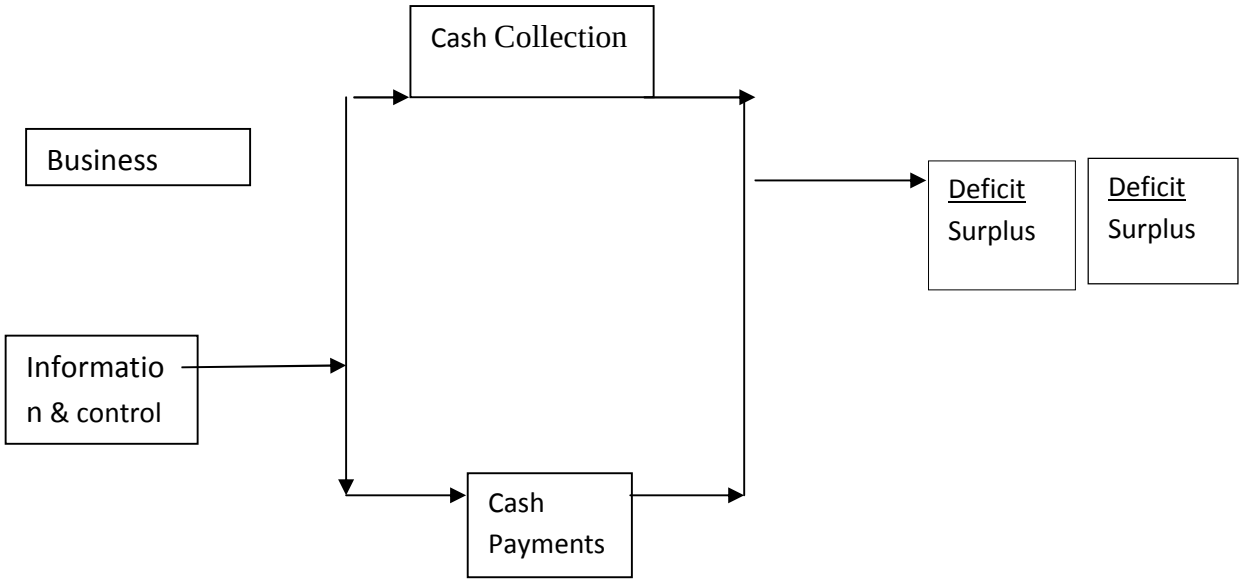
Various scholars as well as authors have gave different views about cash management some of them have to be taken as review of nooks for cash management. According to batty (1972) cash in only none constituent t of what is essentially a combination of

business resources. It is the part of working capital and as such provides the means of earning of a profit investment for useless. the objective should aim to obtain an optimum level for each component of current assets figu8re and a smooth and rapid conversion of these asses to cash both of these lead to on prove earning power he again suggested that if cave is taken for crash program me for improving cash may have unexpected consequences. In the short term it will be possible to cut back expenditure on marketing and other functions, but future sales will probably suffer and , consequently, there will be further detritions in cash flow further he defined cash management as the process involved in the effective planning and control of cash requirements of a business.

Similarly, Pandey (1999) suggested that the firm should keep sufficient cash either more or less. Cash shortage will disrupt the firm's manufacturing operations while excessive cash will simply remain. Idle, without contributing anything toward. The firm's profitability according to him the major function of financial manager is to maintain sound cash position. Some theoretical insights about cash management has presented by him. he said that cash management id concerned with the managing of , (1) cash flows into and out of the firm , (ii) cash flows within the firms, (iii) cash balance hold by the firm at point of time by financing deficit or investing surplus cash it can be represented by a cash management cycle. A sale generates cash which has to be disbursed out. The surplus cash has to be invested while deficit has to be borrowed cash management sees to accomplish this cycle at a minimum cost at the sometime, it also seeks to achieve liquidity and control cash management assumes more importance than other current assets because cash is the most significant and the least productive asset that a firm holds it is significant because it is used or pay the firm's obligation however, cash is unproductive. Unlike fixed assets or inventories it does not produce goods for sale. Therefore, the aim of cash management is to maintain adequate control over cash position to keep the firm sufficiently liquid and to use excess cash in some profitable way. The cash management cycle is shown as follows:

Figure: 2.6

Cash Management Cycle



(Source: Pandey, 2002:49)

The management of cash is also important because it is difficult to predict cash flows accurately, particularly the inflows, and there is no prefect coincidence between inflows and out flows of cash. During some period cash outflows will exceed cash inflows because payment of taxes, dividend or seasonal inventory builds up. At other tunes, cash inflows will e more than cash payment because there may be large cash sales and debtors may be realized in large sums promptly. Cash management is also important because cash constitutes the smallest portion of the total current assets. Yet management's considerable time is devoted in managing it. In recent past / a number of innovations have been done in cash management techniques. An obvious aim of the firm new a days is to manage its cash affairs in such a way as to keep cash balance at a minimum level and to invest the surplus cash in profitable investment opportunities.

Jain & Narang (1993) have described about cash management. He said that cash is crucial component of working capital of a concern. Cash like bloodstream of human body, gives strength to human body gives strength to business unit/. He explained that cash is ultimate resource for business, so management of each business unit should

Endeavour to secure larger cash at the end of each working capital cycle than what it had at the beginning of working capital cycle. Further the important objective in managing cash should be trad4e off liquidity and profitability in order to maximize profits. By keeping larger amount of cash, the firm is able more to meet its obligation when they fall due and the risk of technical insolvency is reduced. However, cash is no warning assets, so unnecessary cash should not be kept as hand than the optimum required to continue the operation of the business efficiency. Liquidity and profitability must be balanced in such a way that the organization retains its liquidity and at the same time maximizes its profitability. They also stressed that business transaction, without involvement of cash is mythical in this monetary world. Today the importance of cash management in recognized by all segments of organization activities. If some of departments are handled independent without considering their implication of cash management the conflicting interest of these departments are bound to create serious problem. The study of cash management is therefore considered as an integrated approach to management science.

Simons & kerrenbrock (1964) expressed that cash is more often than other assets is the item involved in business transaction. This is due to nature of business transactions, which include a price and condition calling for settlement interims of medium of exchange. In striking contrast to activity of cash it is unproductive in nature. Since cash is measure of value, it cannot expand to grow unless it is converted in to other properties excessive balance of cash on hand is often referred to as “idle cash “. To be most useful to a business enterprise, cash must be kept moving. *(Simons & Kerrenbrock 2003:38)*

Hampton (1989) has given more suggestion for effective management of cash. He explained that net working capital is the measure of liquidity, which is defined in the adequacy of neat term cash to meet the firm’s obligation. The highly liquid firm has sufficient cash to pay its bills at all time. An illiquid firm is unable to pay its bills when due. The investment of excess cash, minimizing of inventory, speedy collection of receivables, and elimination of unnecessary and costly short-term financing all contribute to maximizing the value of firm. In a periled of high interest rate, customer

may be slow in paying their bills, a fact that evil because an increase in receivable3. If the level of cash is linked to the level of sales, variable working capital may be changed. Khan and Jain (2003) explained that cash management link aged both working capital management. He expressed that cash management id one part of the key areas of working capital management. A part from the fact that is the most liquid current asset, cash is the common denominator or which all current assets can hoe reduced because the other major liquid assets, that is. Receivables and inventories get eventually converted into cash. This underlines the significance of management. He presented a detail account of the problem involved in managing cash, i.e. ., and motive for holding cash , objective of cash management, factors determining cash needs, cash management models , cash budgets, basic strategies fir efficient management of cash, and specific techniques to manage cash subsequently.*(Khan & Jain; 2003:39)*

Shrestha (1980) has described some conceptual ingredient s about cash management which is based on his various research studies. We can learn lesson from it and also helpful for this study indeed. He adjusted the relation of cash with efficient and inefficient corporations. He suggested that if cash holding is bad for inefficient corporations. As for inefficient corporations. Of does not matter feather cash inverses or devisees if they are not in a position to utilize them? But efficient corporation due to undertaking of more operations need more cash besides having profit.

Weston and Brigham (1978) have poured some views about cash management after their various studies on it. The bond conceptual finding of their studies proved sound knowledge and guide lines for the future studies in the fired of cash management. They explained in the beginning the motives for holding cash , specific advantage of adequate cash , synchronization of cash flows, expanding collection and cheque clearing , using float , cost of cash management, determining minimum cash balance , compensating balance, marketable securities. Substitutes for cash criteria for setting securities investment alternatives.

Van Horne (2002) has prescribed the knowledge about cash management. He said that cash management involves managing the monies of the firm to maximize the cash availability and interest income to any idle funds. At one end the function starts when a customer writes a check to pay the firm on its account receivable. The function ends when a supplier, an employee of government realizes collected fund from the firm as an amount payable of accruals. All activities between these two points fail within the realm of cash management. the firm's efforts to get customers to pay their bills at a certain time fall within account receivable management on other hand, the firm's decision about when to pay its bills involves account payable and accrual management. He again described an idea of effective collection and disbursement of cash, we should attempt to accelerate collection & handle disbursement so that maximum cash is available. Collection can be accelerated by me and of concentration banking, a lock box system and certain other procedures. Disbursement should be handled to give maximum transfer flexibility and the optimum timing of payment, heeding meaningful, however, of supplier relations. Methods of controlling disbursement I. e. Electronic fund transfer is becoming increasingly important, and most corporation use such transfer in one way of another.

Brigham, Gapenski and Ehrhardt (2001) described some conceptual insights which sure based in various research studies. They believed that cash is often called on earning assets. it is needed to pay for labor ad raw materials, to buy fixed assets, top pay taxes, to service debt , to pay dividend and so on . However, cash itself earns no interest thus the goals of the cash manager is to minimize the amount of cash the firm must hold for use in conducting its normal business activities. Yet, the same time, to have sufficient cash (i) to take trade discount, (ii) to maintain its credit rating, and (iii) to meet unexpected cash needs.

Pradhan (2004) explained about cash and it management. He told that cash includes coins, currencies, cheque hold but a firm, and balances in its bank account. This money is immediately useable to pay bills. Some times "hear cash items" are also includes in cash, e g, marketable securities. . if the firm has excess cash, it may decide to convert it

to short term investments . The financial manager will purchase low risk, high liquidity money market instruments that can he converted aback to cash without delay if the has been arise. The securities provide a small profit on cash that may not be needed immediately for the firm's operation. These securities are widely used as short term investment by the firm in developed countries. Each security offers different characteristics that make it suitable for different firms. He said cash management is also called management of money position because cash includes not only the cash or currency in hand but also the easily convertible securities or other neat cash items. E.g. time and demand deposits, readily available credit and so on. According to him concerning area of cash management are:

- Management of cash flows into and out of the firms.
- Management of cash flow within the firm
- Management of cash balance held by the firm at a point of time

Weston & Copeland (1992) suggested about cash management firm various study and research. they said that relatively high level of interest rates have increased the importance of cash management , while , at same time advances' in technology have changed the mature of cash management function . Financial manager have developed new techniques for optimizing cash balance and determining the appropriate relation between holding cash & holding investments in marketable securities.

2.2.1 Review of Independent Study in Nepal

The study conducted by Radhe Shyam Pradhan (2000) in a topic of "The demand for cash by corporations" has been useful to take knowledge regarding demand of cash.There are two studies in which one is conducted by Radhe Shyam pradhan and Kundan Dutta Koirala in a topic of "Aspects of working capital management in Nepalese Corporations." Radhe Shyam pradhan conducts another in a topic of "Demand for working capital by Nepalese Corporations."Above studies has provide us a little but more knowledge for our research purpose. Reviewing various books, journals, and thesis.

2.3 Review of Related Thesis

In this section an attempt has been made to review some thesis / dissertation and their related publications related to cash management. Only four dissertations have been found which are written on cash management in different categories in Nepal. No on dissertation has shown the significant result. In other word, cash management was found on very weak position in Nepalese companies.

Bajracharya, (1990) has studied the "*Cash Management Practices in Nepalese Public Enterprises"* he has taken 18 enterprises as a sample. According to his study, he concluded that,

i. Cash management in public enterprises of Nepal is primarily based in the traditional practices, lacking in a scientific approach. A more serious aspect of cash management has been the any formalized system of cash planning and cash budgeting in many of enterprises, although the executive of some enterprises do have the practices of forecasting cash requirements on a formal basis.
ii. Modern practices with respect to debt collection, monitoring the payment behavior of customers and relevant banking arrangement in connection with collection of receivable have been virtually ignored in May enterprises.
iii. Majority of the enterprises didn't face a serious liquidity problem. However, this was not because of the effectiveness of cash planning and budgeting. The problem of liquidity actually didn't arise due to the coincidence of delay in payment to creditors.
iv. By and large most enterprises have periodic accumulation of surplus cash and corresponding cash shortage from time to time. However, none of the enterprises considered the Implications of holding idle cash balance and few took in to account the potential benefit of consider the cost of administering such investments.
v. There had been wide variation overt time in the state of financial health of enterprises in terms of the composition of current assets to current liabilities as revealed but the relevant financial ratios.

vi. Neither nether interest rate nor the rate of inflation had any effect on the cash balance. Further there was very little evidence of effect of economy of scale on cash balance holding in most cases.

Further he recommended for developing appropriate strategies for cash management. He stressed on cash planning and budgeting to cash project cash surplus and cash deficit. Firm can accelerate the inflows as far as possible to decelerate out flow. He also stressed to maintain optimal level of cash and at last, it can be better to invest idle fund in marketable securities.

Similarly, Pradhan (2005) from his *"Case Study of Cash Management"* in STCL, had fund that,

i. STCL could not make the best are of available cash balance prudently.
ii. The cash collection efficiency in this corporation is very low.
iii. The collection of trade credit in the corporation is low during three years of study period.
iv. Management has taken liberal credit policy; to sales of goods. Hence the cash and bank balance of study period is minimum AR.
v. No, optimum cash balance is maintained. The cash and bank balance with inspect to current assets has been fluctuating trend. Similar in the case with respect to the total assets.

To improve such problem i.e. major critical findings, he had recommended the STCC, to

a) Efficient management of cash
b) Prepare monthly trail balance cash, fund statement and finical report.
c) Design the effective A/R management adopts efficient credit policy.
d) Invest surplus cash in profitable opportunities
e) Prepare cash budge
f) Maintain optimum cash balance
g) Investment in marketable securities

Another research which currently submitted has been found to make the study easier. This study has concerned on cash management in public manufacturing enterprises of Nepal: a case study of Royal Drugs and studied by Sanju (2005). Over ally, he concluded the poor cash Royal Drugs management practice of Royal Drugs limited.
He concluded that

i. Overall cash management practices has been found disappointing
ii. Overall liquidity position of the firm has been found moderately dissatisfactory
iii. Overall, yearly cash inflow and out flow in RDL is not properly managed. surplus cash hasn't been properly employed t o earn return but investing in short term investment opportunities
iv. Profitability has been found in very weak position.
v. Overall cash budgeting practice of RDL in very poor.

On this study payable deferral period, inventory conversion period and receivable collection period and there aggregate effect as cash management has not been identified i.e. cash conversion cycle of the company has been identified which helps to analysis overall status of collection of not cash in organization.

These studies were not able to represent overall status on the companies. So that the effort has been make on the study of cash management in listed manufacturing companies with taking 5 companies as a sample. Identification of cash conversion cycle is the uniqueness of the study.

Finally, the study of cash management in manufacturing companies has not been done yet. So that the researcher has chosen this topics (A cash management of cash management system in listed manufacturing companies.

Raymajhi (2006) conducted a study under topic "*Cash management of Nepalese Commercial Banks."* Sample companies under study are NABIL Bank Ltd. and Himalayan Bank Ltd. The major objectives of the study are:

- To present overall cash management picture of the selected commercial banks in Nepal.
- To examine their demand of cash.
- To critically analyze the cash management techniques practiced by the commercial banks.

Secondary data are used for the research purpose. Various ratios and statistical used for data analysis purpose. Data from 2000/01 to 2004/05 are used. Major findings of the study are:

Analysis of cash turnover, share is no fixed trend (increasing/decreasing) of cash turnover for their banks during the study period.

Analysis of average collection period shows among five listed commercial banks SCBL and NABIL have less average collection days where as HBL and EBL have more average collections days in the study period.

Regression analysis revealed that there was little effect of the opportunity cost of holding cash on the cash balances help the banking sector. Neither interest rate nor the rate of inflation had any effect on the cash balance. Further there was very little evidence of the effect of economy of scale. On cash balance holding in most cases.

Recommendations of the study are:

- Cash planning and cash budget is need on a formal basis so as to project cash surplus or cash deficit for a period not exceeding one year and broken up into shorter intervals.
- Cash planning manager or experts should be appointed. The lack of knowledge of modern financial management tools and technique among existing employee in the banking sector is one of the causes of poor financial performance of the banks. Therefore, Commercial banks must ensure to upgrade the current financial management skill.

Kunwar, (2007) conducted a research on topic, *"Cash management of manufacturing companies."* He has studied cash management of five manufacturing companies. Nepal Lever Ltd., Nepal Lube Oil Ltd., Bottler Nepal (Terai) Ltd, Nepal Banaspati Ghee Ltd. and Raghupati Jute Mill Ltd. Major objectives of the study are to identify the liquidity position, Relationship of cash with other influencing variables of cash and Analysis of cash conversion cycle. Mainly secondary data are used, for analysis ratio analysis like current ratio; cash turnover ratio etc and statistical tools like mean, standard deviation, coefficient of variation and correlation coefficient are used for data analysis purpose. Data forms 2002 to 2006 are used.

Major findings of the study are:
A listed manufacturing company doesn't have any definite policy regarding how much cash balance to hold in each period. Companies have not been able to trade of liquidity and profitability. The CR and NPM are found with insignificant correlation. Companies are not been able to collect cash in considerable time span. The average cash conversion cycle of manufacturing companies have been obtained to be 114 days. Due to the high inventory conversion period the result was seen not satisfactory. Conclusions derived from this research are cash management being the major elements in financial function. It is said that main function of financial manager is to apply better technique to improve cash management in companies. There are other numerous aspects of finance involved in the overall financial performance addition of a firm. In addition to this, the overall performance of a firm counts for other managerial aspects such as human resources management, organizational structure marketing management etc. However, all down falling trend of the financial position is indication of the fact that listed manufacturing companies should immediately seek for drastic change in its managerial structure so far cash management is concerned the recommendations suggested above could to a greater extent, uplift the listed manufacturing companies cash management situation.

He recommends manufacturing companies should try to reduce cash conversion cycle: Cash conversion cycle of the companies has been found to be higher. However, RCP and PDP have been found to be considerable period. Inventory conversion period was too long. High level of inventory has affected to make CCC longer. It is recommended

that the companies should improve their inventory management system. Manufacturing companies should try to trade off liquidity and profitability in order to increase profit.

2.4 Research Gap

All the above studies are conducted with the research title "Cash Management of manufacturing Companies". Some researchers have selected various companies for the research and some have concentrated in only one or two companies. As to research gap is concerned, there are many changes taken place in the Cash Management of manufacturing Companies process as compared to the last few years. So, fresh study related to manufacturing Companies of unilever Nepal ltd. and Bottlers Nepal Ltd. has been done in this research. The most of the studies has been considered many more objectives which made their study more complicated but in this research report only four objectives are taken into study. Primary and secondary data are considered in this research. Both financial as well as statistical tools like ratio analysis, cash turnover ratio, quick ratio, Current Liabilities ratio, cash conversion cycle ratio, Inventory conversion period ratio, mean, standard deviation, coefficient of variance, correlation and probable error are used in this research. Almost all the ratios have been applied to cover the analytical part and fulfill the objective of this study. It involves more recent data of manufacturing Companies for five years (2061/062 to 2065/066).

CHAPTER -III

RESEARCH METHODOLOGY

3.1 Introduction

Methodology states the method with which data have been extracted and discuss the tools of that have been used in interpretation of such data to fulfill the objectives. More specifically, it describes about the research design. The population and samples nature of source of data and tools that will be used to analyze data.

3.2 Research Design

The research study attempts to analyze the cash management techniques adopted by the manufacturing companies in Nepal. Hence, analytical and descriptive research is applied. Descriptive research is essentially a fact finding approach relative largely to present and abstracting generalization by the cross section study of the current situation. Analytical approach is followed to parametric and non parametric test of data. It is the process of micro analysis and appraisal to the data.

3.3 Population and Sample

The total numbers/ population of the manufacturing companies which are listed in Nepal Stock exchange of Nepal are 10, with different nature of production. Among them only two manufacturing companies are selected as a sample for the study. They are:

i. Bottlers Nepal ltd.
ii. Unliver Nepal limited.

3.4 Nature and Sources of Data

Only secondary data are collected for the study. Financial statement, such as balance sheet and profit sheet and profit and loss account of the companies are major source of data.

The major sources of information collections are as follows:

- Annual reports of related companies and security board of Nepal.
- Financial statistics of listed companies, published by security board of Nepal.
- Journals, government and non-government publication other supportive books a mostly.
- Website of the companies.
- Other related published and unpublished documents.

3.5 Methods of Data Analysis

Only financial and statistical tools are use for the analysis of data which is already stated in the limitation f the study. The producers of analyzing data are described as follows:

3.5.1 Financial Tools and Techniques

The focus of financial analysis is on key figures in the financial statements and the significant relationship that exist between them. The analysis of financial statements is a process of evaluating the relationship between component parts of financial statements to obtain a better understanding the firm's position and performance. Financial analysis is the process of selection, relation and evolution.

A. Ratio Analysis

i) Liquidity Ratio

Analysis of Current Ratio

This ratio examines the short term solvency, i.e. liquidity position of the firm. The higher the current ratio, the larger is the amount of rupee available per rupee of current liability, the more is the firm's ability to meet current obligations and the greater is the safety of funds of short term creditors. The ideal current ratio is 2:1 lesser the ratio indicates the lower liquidity position of the firm.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Analysis of Quick Ratio/ Acid – Test Ratio

It is a measure of liquidity designed to overcome the defect of current ratio. It is often referred as a quick ratio because it is a measurement of a firm's ability to convert its current assets quickly in to cash in order to meet current liabilities. The ideal quick ratio is 1: 1

$$\text{Quick Ratio} = \frac{\text{quick assets}}{\text{Current liabilities}}$$

Where,

Quick assets = current assets – inventory

B) Turn -Over Ratio

Cash Turnover Ratio

Cash turnovers ratio explains how quickly the cash is received from the sales, or in other words it measures the speed with cash move through a company's operation. Cash turnover ratio is obtained by the following:

Formula,

$$\text{Cash turnover ratio} = \frac{\text{Sales}}{\text{Cash in Hand + Bank Balance}}$$

Inventory Turnover Ratio

This ratio indicates the number of times inventory is converted in sales during the year. Mathematically,

$$\text{Inventory Turnover Ratio} = \frac{\text{Sales}}{\text{Closing Inventory}}$$

It indicates that the gap of the period which the inventory to be sold in each time of conversion.

Receivables Turnover Ratio

Receivables turnover ratio shows how quickly receivables or debtors are converted in to cash. In other words, the receivables turnover ratio is the test of liquidity of debtors of a firm. Symbolically,

$$\text{Receivables Turnover Ratio} = \frac{\text{Sales}}{\text{Receivables}}$$

Receivable Collection period / Average Collection Period

$$\text{Receivable Collection period} = \frac{\text{Daysin aYear}}{\text{Receivable Turnover Ratio}}$$

The higher turnover ratio and shorter the receivable collection period, the better ids trade credit management and the better is the liquidity of the debtors as short collection period and high turnover ratio imply prompt payment on the part of debtors. On the other hand, low turnover ratio and long collection period reflect delayed payment by debtors. In general, therefore, short collection period is preferable.

iii) Cash and Bank Balance to Other Aspects

Cash & Bank Balance to Current Liabilities

It calculates the cash balance available with the firm in meeting payment of current liabilities moderately higher ratio indicates good liquidity. Too high and too low ratio is unfavorable for the firm since too high indicates excess cash balance held idle too low ratio means the firm unable to meet current liabilities.

Symbolically,

$$\text{Cash to Current Liabilities} = \frac{\text{Cash + Bank Balance}}{\text{Current Liabilities}}$$

Cash and Bank Balance to Total Assets

It indicates the position of cash with relation to total assets. It measures ratio of productive assets with unproductive assets moderately high is the best. Too much high measures the idle cash which is losing opportunity income and vice versa

$$= \frac{Cash + Bank\ Balance}{Total\ Assets}$$

c) Cash Conversion Cycle

It measures the length of time between when the company makes payment and it receive cash. Lower the conversion cycle is preferable.

Mathematically,

Cash conversion cycle	=	Inventory Conversion Period	+	Inventory Conversion Period	-	Payable Deferral Period

Payable deferral period is calculated by,

$$= \frac{A/C\ Payable}{Cost\ of\ Good\ Sold} \times 360\ days$$

Higher the payable deferral period is preferred but credit rating of the companies towards suppliers must be maintained.

Average Collection Period

$$= \frac{Reciable}{Sales} \times 360\ days$$

3.5.2 Statistical tools

Statistical tools are the measures or the instruments to analyze the collected data from different sources. In statistics, there are numerous tools to analyze data of various natures. In this study, the researcher has used the following statistical tools to analyze the data:

Average/Mean

An average is a single value related from a group of values to represent them in some way, a value, which is supposed to stand for whole group of which it is a part, as typical of all the values in the group. There are various types of averages. Arithmetic mean (AM, Simple & Weighted), median, mode, geometric mean, harmonic mean are the major types of averages. The most popular and widely used measure representing the entire data by one value is the AM. The value of the AM is obtained by adding together all the items and by dividing this total by the number of items.

Mathematically:

Arithmetic Mean (AM) is given by,

$$\bar{X} = \frac{X}{n}$$

Where, $\bar{X}$ = Arithmetic mean

$\sum x$ = Sum of all the values of the variable X

n = Number of observations

Standard Deviation

The standard deviation $(\pm)$ measures the absolute dispersion. The greater the standard deviation, the greater will be the magnitude of the deviations of the values from their mean. A small standard deviation means a high degree of uniformity of the observations as well as homogeneity of a series and vice versa.

Mathematically:

$$\pm = \sqrt{\frac{1}{n} (X - \bar{X})^2}$$

Coefficient of Variation

The standard deviation is absolute measures of dispersion; whereas the coefficient of variation (CV) is a relative measure. To compare the variability between two or more series, CV is more appropriate statistical tool.

Mathematically,

$$CV = \frac{\pm}{\bar{X}} \varepsilon \ 100$$

Correlation Coefficient

When the relationship is of quantities nature, the appropriate statistical tool for discovering and measuring the relationship and expressing it in a brief formula is known as correlation. If the values of the variables are directly proportional then the correlation is said to be positive. On the other hand, if the values of the variables are inversely proportional, the correlation is said to be negative, but the correlation is said to be negative, but the correlation coefficient always remains within the limit of + 1 to – 1. By

Karl person, the simple correlation coefficient (between tow variables, say X and Y) is given by:

$$r_{xy} = \frac{Cov(x, y)}{\pm_x \pm_y}$$

Where,

r xy = is the correlation coefficient between two variables x & y

'r' lies between +1 to -1

When r = +1, there is perfect positive correlation

When r= -1, there is perfect negative correlation

When r = 0, there is no correlation

When r lies between 0.7 to 0.999 9 (or -0.7 to -0.999), there is high degree of positive or negative correlation

When r lies between 0.5 and 0.699, there is moderate degree of correlation

When r is less than 0.5, there is low degree of correlation.

Simple Regression

Regression and correlation analysis are the techniques of studying how the variations in one series are related to the variations in another series. Measurement of the degree of relationship between two or more variables is called correlation analysis and using the relationship between a known variable and an unknown variable to estimate the known one is termed as regression analysis. Thus, correlation measures the degree of relationship between the variables while regression analysis shows how the variables are related. Thus, regression and correlation analysis determines the nature and the strength of relationship between variables.

The equation of regression line where the dependant variables Y is determined by the independent variable X is given by:

Y = a + b x

a = y – intercept

Where:

b = slope of the regression line (i.e. it measures the change in Y per unit X) or regression coefficient of Y on X.

Multiple Regressions

Assuming that all variables are closely related, we can estimate the unknown value of one variable from the given or known values pf the other variables. Multiple regression analysis is a logical extension of the simple linear regression analysis. In multiple regression analysis, instead of single independent variable, two or more independent variables are used to estimate the unknown values of dependant variables.

The multiple regression equation describes the average relationship between dependant variable and two or more independent variables and this relationship is very much useful for estimating (or predicting) the dependant variable. Thus, the multiple regression equation of X1 on X2, X3 and X4 is an equation for estimating a dependant variable X, from three independent variables X2, X3 and X4.

The multiple regression equation of dependant variables X1 on three independent variables X2, X3 & X4 is given by:

X1= a + b1x2 + b2x3 + b3x4

Where,

a = x1 – intercept = the value of x1 when three independent variables x2, x3 and x4 are zero.

b1 = the partial regression coefficient of x1 on x2 when x3 & x4 are held constant

b2 = the partial regression coefficient of x1 on x3, when x2 & x4 are held constant

b3 = the partial regression coefficient of x1 on x4, when x2 & x3 are held constant

Coefficient of Determination

The coefficient of determination gives the percentage variation in the dependant variable that is accounted for by the dependant variable/s. In other words, the coefficient of determination gives the ratio of expected variance to the total variance. The coefficient of determination is given by the square of the correlation coefficient, i.e. r2

So the coefficient of determination = r2 = $\frac{Expected\ \text{var}\,ience}{Total\ \text{var}\,ience}$

CHAPTER–IV

PRESENTATION AND ANALYSIS OF DATA

The presentation and analysis of data section is the main text the study to find out answer of research question and get objectives of the study. For the purpose of presentation of data, the published most recent financial statements of the listed companies of the study are analyzed. The collected and tabulated data have been analyzed using different financial and statistical tools. This chapter includes presentation, analysis and integration of collected data with organizing sequentially as per the objectives of the study.

4.1 Analyses of Cash and Bank Balance

Holding of optimum cash balance is the rational cash management practice of a business form. Total cash balance refers to the cash in hand, cash at bank and cash in transit.

The following table presents the level of cash, in sampled manufacturing companies, and the average, during the study period.

Table: 4.1

Level of Cash and Bank Balance is selected manufacturing Companies

Rs. In "000"

Year	BNL	UNL
	CB (X)	**CB (X)**
2004/05	46,015	62,335
2005/06	22,165	317,404
2006/07	25,190	319,532
2007/08	14,856	443,311
2008/09	21,474	242,672
Total	129,700	1,385,254
Average	25,940	277,051
SD	10588.852	223128.25
CV	40.820%	16.107%

Source: Annex - XI

The average cash balance held by BNL is 25950 and UNL is 277051. The cash balance of two companies varied widely in all year of study period. Here UNL hold more cash balance than that of BNL. Cash holding of BNL is highest in the fiscal year 2004/05 i.e. 46015 and lowest in the fiscal year 2007/08 i.e. 14856. BNL cash balance has been observed in a wide variation in different period of study poses high fluctuation on cash holding pattern.

Cash holding pattern of UNL ranges highest of 443311 in the fiscal year 2007/08 and lowest 62335 in the fiscal year 2004/05. Cash balance of UNL also has been observed in a wide variation and poses high fluctuation on cash holding pattern.

4.1.1 Analysis of changes in Cash Balance

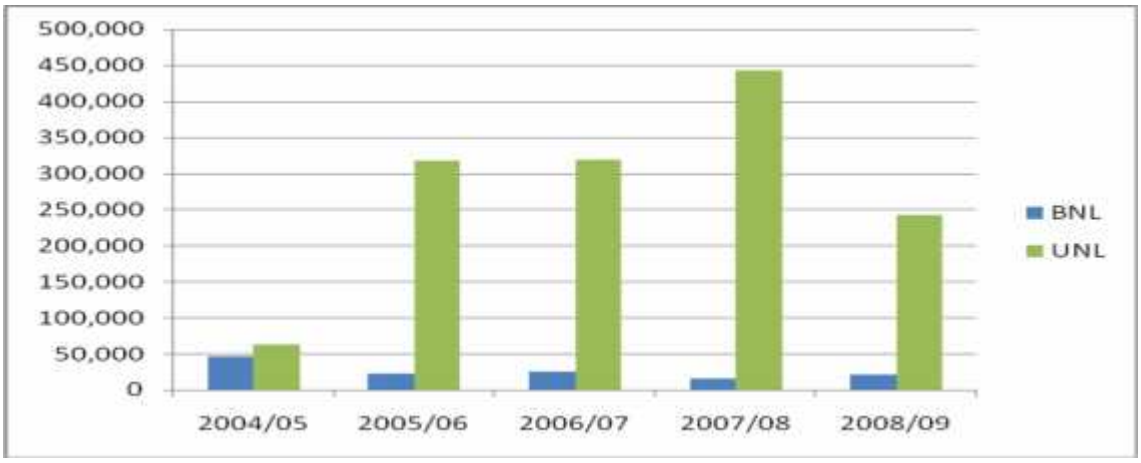
Table: 4.2

Analysis of change in cash balance

Year	BNL		UNL	
	Cash Balance	**% change**	**Cash Balance**	**% change**
2004/05	46,015	-	62,335	-
2005/06	22,165	-0.5183	317,404	4.091907
2006/07	25,190	0.1365	319,532	0.006704
2007/08	14,856	-0.4102	443,311	0.387376
2008/09	21,474	0.4455	242,672	-0.45259

Figure: 4.1

Analysis of cash and bank balance of UNL and BNL



Above table and figure shows the fluctuating trend in study period for both UNL and BNL. While for Maximum increase in holding cash for UNL is 409.19% and for BNL is 44.55% and a decrease in holding for UNL is -45.26% and for BNL is -51.83%.

The strong position of cash balance of UNL has been observed in year 2007/08 and weak position has been observed in year 2004/05. Similarly, BNL has the strongest

position of cash balance has been observed in year 2005/06 and weak position in year 2008/09. Moreover the manufacturing companies have not planned cash inflow and outflow forecasts. It is very importance for the companies to keep careful watch over the careful watch over the cash management.

4.2 Cash and Sales

4.2.1 Analysis of cash turnover ratio

The cash balance of the company should be optimum to meet its current obligation in course of daily business transaction. The cash turnover ratio explains how quickly cash is received from the sales; in other words it measures the speed with which cash move through an enterprise's (company's) operation. Higher ratio represents sound liquidity and vice-versa. However, too high ratio indicates excess cash balance being held idle.

Table: 4.3

Cash Turnover Ratio of selected Manufacturing Companies

Rs. In "000"

Years	UNL			BNL		
	Sales	**Cash Balance**	**Ratio in Times**	**sales**	**cash Balance**	**Ratio in Times**
2004/05	1236052	62,335	19.82918	461,490	46,015	10.02912
2005/06	1244727	317,404	3.921586	465,439	22,165	20.99883
2006/07	1524901	319,532	4.772295	424,315	25,190	16.84458
2007/08	1481560	443,311	3.342033	401,320	14,856	27.014
2008/09	1469685	242,672	6.056261	354,095	21,474	16.48948
Total			37.92135603			91.37601
Average			7.584271206			18.2752
S.D.			5.603			6.190
C.V.			30.65%			81.619%

Source: Annex-XII

Erratic fluctuations have been observed in cash turnover ratio of manufacturing companies. Fluctuation of cash turnover ratio is the indication of no definite policy on

holding cash balance in relation to sales volume, is applied by selected manufacturing companies of Nepal. Average cash turnover ratio of BNL and UNL are 18.27 and 7.58 respectively. Cash turnover ratio of BNL varies highest 21 in the fiscal year 2005/06 to lowest 10.03 in the fiscal year 2004/05. Similarly cash turnover ratio of UNL varies highest 19.83 in the fiscal year 2005/06 to lowest 3.35 in the fiscal year 2007/08. From the above we can conclude that cash turnover ratio varied widely across the companies in all the year of study period.

As a fact the higher turnover ratio of cash indicates the sound liquidity position of the company and vice versa, but too much ratio indicates the excess cash balance being held idle. The fluctuating of this ratio interprets that the cash management practices of the companies has not done by any definite policy and any planned approach.

4.2.2 Analysis of the relation between Cash (y) and Sales (x)

	Coefficient of correlation (r)	Relationship	Coefficient of determination (r^2)	P.E.	Remarks
UNL	0.581823	Positive	0.338518	0.199533	Insignificant
BNL	0.53154	Positive	0.282535	0.21642	Insignificant

Source: Annex-II

To analyze the relationship between cash (y) and sales (x), Karl Pearson's correlation coefficient has been observed to be 0.5315 of BNL and 0.5818 of UNL. Which, it indicates the positive relationship between cash and sales of UNL and BNL. To make confirm, whether it is real or not selected companies, it is compared with probable error and $r<6P.E.$ of BNL indicates that the correlation coefficient is not practically certain i.e. the value of r is not significant, it is said that it is not sure that of increment of one may not increase in other. Similarly, correlation coefficient of UNL (r) less than 6PE indicates that the correlation coefficient between cash and sales is not practically certain. That is the value of r is not significant.

4.3 Analysis of cash to total assets ratio

Investment in money assets differs not only from the industry to another but it also varies from one company to another within the same company thus making cash management task is more difficult.

Table: 4.4

Cash to total assets ratio

Rs. in (000.)

Years	UNL			BNL		
	Total Assets	**Cash Balance**	**Ratio**	**Total Assets**	**Cash Balance**	**Ratio**
2004/05	571,335	62,335	0.109104116	687,917	46,015	0.06689
2005/06	784,480	317,404	0.404604324	667,803	22,165	0.033191
2006/07	939,720	319,532	0.340028945	545,055	25,190	0.046216
2007/08	1,098,956	443,311	0.403392856	619,010	14,856	0.024
2008/09	967,147	242,672	0.250915321	418,772	21,474	0.051278
Total			1.508045562			0.221575
Average			0.301609112			0.044315
S.D			0.016569612			0.124571327
C.V			37.41%			41.30%

Source: Annex-XIII

Above table shows the cash to total assets ratio of selected manufacturing over the study period. The average investment in cash by BNL and UNL has been observed to be 0.044 and 0.3016 respectively.

According to above table same individual company's cash to total assets ratio has been observed in widely fluctuation trend in different study period. The ratio was highest for BNL i.e. 0.067 in the fiscal year 2007/08 and lowest 0.024 in the fiscal year 2007/08. Similarly ratio of UNL was highest of 0.4046 in the fiscal year 2005/06 and lowest of 10.911% in the fiscal year 2004/05. The strong variation in cash to total assets ratio explains that the company has not been adopted specific policy for investment of cash in total assets.

4.3.1 Analysis of the relation between Cash (x) and Total Assets (y)

	Coefficients of correlation (r)	Relationship	Coefficients of determination (r^2)	P.E.	Remarks
UNL	0.869812	Positive	0.756573	0.073429	Significant
BNL	0.415124	Positive	0.172328	0.249664	Insignificant

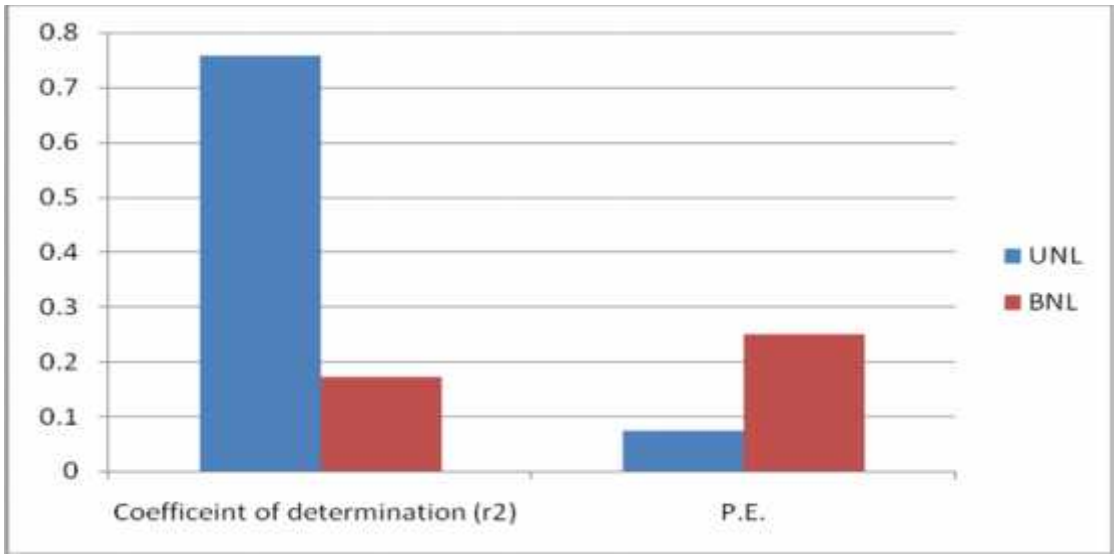
Source: Annex-III

To analyze the relationship between cash (y) and sales (x), Karl Pearson's correlation coefficient has been observed to be 0.4151 of BNL and 0.8698 of UNL. Generally, it indicates the positive relationship between cash and sales of UNL and BNL. To make confirm, whether it is real or not selected companies, it is compared with probable error and r<6P.E of BNL indicates that the correlation coefficient is not practically certain i.e. the value of r is not significant, it is said that it is not sure that of increment of one may not increase in other. Similarly, correlation coefficient of UNL r>6P.E, indicates that the correlation coefficient between cash and sales is not practically certain. That is the value of r is significant.

4.3.2 Graphical presentation of cash to total assets ratio

Figure: 4.2

Graphical presentation of cash to total assets ratio



4.4 Cash and bank balance and current assets

4.4.1 Analysis of cash and bank balance to current assets ratio

Cash is the liquid current asset and as such more the amount of cash balance in a company , more liquid the company , liquid the company in meeting the current obligation . However bearing excess cash signifies cash balance being held idle without any motive.

Table: 4.5

Cash to Current Assets Ratio of Selected Manufacturing Companies

Rs. in (000.)

Years	UNL			BNL		
	Current Assets	Cash	Ratio in Times	Current Assets	Cash	Ratio in Times
2004/05	399136	62,335	0.156175	561,489	46,015	0.081952
2005/06	589884	317,404	0.538079	518,661	22,165	0.042735
2006/07	724244	319,532	0.441194	435,719	25,190	0.057812
2007/08	891414	443,311	0.497312	298,685	14,856	0.049738
2008/09	761606	242,672	0.318632	225,149	21,474	0.095377
Total			1.951391			0.327614
Average			0.390278			0.065523
S.D			0.022299461			0.154783088
C.V			34.0%			39.65%

Source: Annex-XIV

Above table shows the cash to current assets of selected manufacturing companies over the study period. The average cash to current assets ratio has been observed in selected manufacturing companies in study period are 0.0655 percent and 0.3903 of BNL and UNL respectively.

The ratio varied widely over the study period. Ratio of BNL varies highest of 0.0954 percent in the fiscal year 2008/09 and lowest 0.042 in the fiscal year 2005/06. Similarly

ratio of UNL varies highest of 0.538 in the fiscal year 2005/06 to lowest 0.1562 in the fiscal year 2004/05.

The erratic fluctuation suggest that the companies haven't been following the definite policy regarding how much cash balance to hold at the end of fiscal year. However, UNL seems to more competent than of BNL on making payment of shorts term obligation, being the ratios greater.

4.4.2 Relationship between Cash and Current Assets

	Coefficient of correlation (r)	**Relationship**	**Coefficient of determination (r^2)**	**P.E.**	**Remarks**
UNL	0.867518	Positive	0.752587	0.074631	Significant
BNL	0.689102	Positive	0.474862	0.158406	Insignificant

Source: Annex-IV

The correlation coefficient between cash and current assets ' CA' has been obtained to be 0.6891 and 0.868 of BNL and UNL respectively. It shows the positive relation between cash and current assets in UNL and negative relationship in BNL. There is not significant relationship of cash and current assets of BNL, in other word there is no evidence that cash and CA are correlated. i.e. r<6P.E, explain that it is not sure that increase in cash result to increase in current assets and vice- versa. But in case of UNL there is significant relationship between cash and current assets, that is cash and current are correlated. Here r>6P.E, explain that it is sure that increase in cash result to increase in current assets and vice- versa.

4.5 Cash and Current Liabilities

Among the technique of measuring corporate liquidity the ratio of cash to current liabilities indicates the amount of cash (in percentage) available to pay the current

obligation of t he firm. In general a low percentage of cash to current liabilities may be regarded an it may lead to corporate insolvency.

4.5.1 Analysis of Cash to Current Liabilities Ratio

This ratio indicates the amount of cash available to pay the current obligation of the firm.

Table: 4.6

Cash to Current Liabilities Ratio

Rs. in (000.)

Years	UNL			BNL		
	Cash Balance	**Current liabilities**	**Ratio**	**Cash Balance**	**Current liabilities**	**Ratio**
2004/05	62,335	223210	0.279266162	46,015	305,683	0.1505318
2005/06	317,404	426451	0.744291841	22,165	272,310	0.0813962
2006/07	319,532	543706	0.587692613	25,190	240,800	0.1046096
2007/08	443,311	882023	0.502607075	14,856	236,340	0.0628586
2008/09	242,672	742232	0.326948986	21,474	155,988	0.1376644
Total			2.440806678			0.5370606
Average			0.488161336			0.1074121
S.D			0.036892427			0.190620438
C.V			34.340%			39.04%

Source: Annex-XV

Above table shows the cash to current liabilities ratio of selected manufacturing companies over the study period.

The average cash to current liabilities ratio of selected manufacturing companies have been observed 0.1074 and 0.4882 of BNL and UNL respectively. The ratio of cash to current liabilities varied widely over the study period that ratio of BNL varies highest of 0.1304 in the fiscal year 2008/09 to lowest 0.062 in the fiscal year 2007/08. Similarly ratio of UNL varies with highest of 0.7443 to lowest 0.2793 in the fiscal year 2005/06.

Standard deviation and coefficient of variance shows ratio of BNL is less fluctuating in comparison to UNL.

The ratio was seen in highly fluctuating trend during the study period. It can be said that manufacturing companies has faced the problem of inefficient cash management practice.

4.5.2 Relationship between Cash and Current Liabilities

	Coefficient of correlation (r)	**Relationship**	**Coefficient of determination (r^2)**	**P.E.**	**Remarks**
UNL	0.782721	Positive	0.612652	0.116842	Significant
BNL	0.611174	Positive	0.373534	0.188971	Insignificant

Source: Annex-V

The correlation coefficient between cash and CL of BNL and UNL are 0.6112 and 0.7827 respectively. Here, positive relationship between cash (X) and CL (Y) of both companies. But it is not significant result for BNL because the result was seen to be r<6PE. UNL it is significant i.e. r>6PE, increase of one cause increase for other. It is the evidence the adequate (consistent) proportion of cash with CL has not been maintained by the UNL.

4.6 Cash and Quick Assets

4.6.1 Analysis of Cash and Quick Assets

Table: 4.7

Cash to Quick assets ratio

Rs. in (000)

Years	UNL			BNL		
	Cash Balance	Quick Assets	Ratio	Cash Balance	Quick Assets	Ratio
2004/05	62,335	254689	0.24474948	46,015	383,752	0.11990817
2005/06	317,404	463778	0.68438779	22,165	384,260	0.0576823
2006/07	319,532	540029	0.59169415	25,190	219,584	0.11471692
2007/08	443,311	661651	0.6700073	14,856	179,411	0.08280429
2008/09	242,672	485438	0.49990318	21,474	116,734	0.18395669
Total			2.6907419			0.55906836
Average			0.53814838			0.11181367
S.D			0.179711922			0.04756657
C.V			33.39%			42.54%

Source: Annex- XVI

Above table shows cash to quick assets ratio of selected manufacturing companies over the study period.

The average cash to quick assets ratio of selected manufacturing companies BNL and UNL are 0.1118 and 0.5381 respectively. The ratio of cash to quick assets varied widely over the study period that ratio of BNL varies highest of 0.1839 percent in the fiscal year 2008/09 to lowest 0.0577 in the fiscal year 2005/06. Similarly ratio of UNL varies with highest of 0.6843 to lowest 0.2448 in the fiscal year 2004/05. Standard deviation and coefficient of variance shows ratio of UNL is less fluctuating in comparison to BNL.

4.6.2 Relationship between Cash and Quick Assets

	Coefficient of correlation (r)	Relationship	Coefficient of determination (r^2)	P.E.	Remarks
UNL	0.968768	Positive	0.938512	0.018548	Significant
BNL	0.620372	Positive	0.384862	0.185554	Insignificant

Annex-VI

The correlation coefficient between cash (X) and QA (Y) of BNL and UNL are 0.6204 and 0.9688 respectively. There is positive relationship between cash and quick assets of both companies. But it is not significant result for BNL because the result was seen to be r<6PE. So, it is explained increase of one cause may not be increase for other. But, in case of r>6PE. It is the proof that it has significant relationship between cash and quick asset; it shows positive relationship between cash and QA.

4.7 Relationship between Cash and Net Profit

	Coefficient of correlation (r)	Relationship	Coefficient of determination (r^2)	P.E.	Remarks
UNL	0.553313	Positive	0.306155	0.209295	Insignificant
BNL	0.505357	Positive	0.255386	0.22461	Insignificant

Source: Annex-VI

The correlation coefficient between cash (X) and net profit (Y) of BNL and UNL are 0.5053 and 0.5533 respectively. There is positive relationship between cash and quick assets of both companies. But it is not significant result for both companies because the result were seen to be r<6PE. So, it is explained increase in cash may not be increase net profit of both companies and vice- versa.

4.8 Analysis of Liquidity Position

Liquidity of a firm indicates the position to meet its current / short term obligation when it becomes due for payment. Thus, in cash management, the study of liquidity posits and

therefore such firms get their short term requirements readily. however , too much liquidity or in other words , holding more than enough cash balance to meet its current payment is also an indication of mismanagement of cash because such cash balances remained after meeting payments would remain idle. So an optimum liquidity is the necessity of the firm. The liquidity ratios measure the ability of the companies to meet their short term obligations and reflect the short term financial strength of a firm.

4.9. CA and CL

4.9.1. Analysis of Current Ratio

One of the reliable methods to examine liquidity position of the companies is by means of current ratio. It is calculated by dividing current assets with current liabilities. the standard current ratio is to be measured by 2:1 however , the depending upon the nature of the companies, the development of capital market and availability of long term funds to finance current assets, the satisfactory ratio varies.

Table: 4.8

Current ratio of BNL and UNL

Years	UNL			BNL		
	Current Assets	**Current Liabilities**	**Ratio**	**Current Assets**	**Current Liabilities**	**Ratio**
2004/05	399136	223210	1.78816361	561,489	305,683	1.8368342
2005/06	589884	426451	1.38323981	518,661	272,310	1.9046711
2006/07	724244	543706	1.33205078	435,719	240,800	1.8094643
2007/08	891414	882023	1.01064711	298,685	236,340	1.2637937
2008/09	761606	742232	1.02610235	225,149	155,988	1.4433738
Total			6.54020367			8.2581372
Average			1.30804073			1.6516274
S.D			0.318072939			0.281526963
C.V			24.31%			17.04%

Source: Annex- XVII

Above table shows the current ratio of selected manufacturing companies over the study period. The average current ratio during the study period has been studied 1.65 and 1.30 times respectively of BNL and UNL. There is no wide varies on the current ratio. However both companies are unable to meet the standard ratio of 2:1 current ratio. But, BNL perform best than that of UNL in terms of current ratio.

4.9.2 Relationship between CA & CL

	Coefficient of correlation (r)	**Relationship**	**Coefficient of determination (r^2)**	**P.E.**	**Remarks**
UNL	0.974614	Positive	0.949872	0.015121	Significant
BNL	0.92334	Positive	0.852556	0.044476	Significant

Source: Annex-VIII

The correlation coefficient between CA (X) and CL (Y) of BNL and UNL are 0.9233 and 0.9746 respectively. There is high degree positive relationship between current assets and current liabilities for both companies. And there is significant result for both companies because the result were seen to be r>6PE. There is significant relationship between current assets and current liabilities of both companies.

4.9.3 QA and CL

4.9.3.1 Analysis of Quick ratio

The quick ratio is more reliable measure of liquidity than current ratio. The preferable ratio is 1:1.

Table: 4.9

Quick ratio of BNL and UNL

Rs. in (000)

Year	UNL			BNL		
	Quick Assets	Current Liabilities	Ratio	Quick Assets	Current Liabilities	Ratio
2004/05	254689	223210	1.141029	383,752	305,683	1.255392
2005/06	463778	426451	1.087529	384,260	272,310	1.411112
2006/07	540029	543706	0.993237	219,584	240,800	0.911894
2007/08	661651	882023	0.750152	179,411	236,340	0.759122
2008/09	485438	742232	0.654025	116,734	155,988	0.748352
Total			4.625971			5.085873
Average			0.925194			1.017175
S.D			0.213154815			0.30078016
C.V			23.038%			29.57%

Source: Annex- XVIII

Above table shows the quick ratio of selected companies over the study period. The average quick ratio of the companies during the study period has been observed 1.017 and 0.9251 times. Here both companies were showing strong liquidity position i.e. BNL has higher the standard ratio of 1:1 and UNL is slightly below the standard ratio.

4.9.4 Relationship between QA and CL

	Coefficient of correlation (r)	Relationship	Coefficients of determination (r^2)	P.E.	Remarks
UNL	0.89023	Positive	0.792509	0.062589	Significant
BNL	0.90207	Positive	0.81373	0.056188	Significant

Source: Annex-IX

The correlation coefficient between quick assets and current liabilities of BNL and UNL are 0.9021and 0.8902 respectively. Here, positive relationship between cash (X) and CL (Y) of both companies. But it is significant result for both companies because the result was seen to be r>6PE. So, it is explained increase of one cause increase for other. It is the evidence the adequate (consistent) proportion of quick assets with current liabilities has been maintained.

4.10 Analysis of Account Receivable

The company sells goods in credit and cash basis when the company extends credited. Debtor/ account receivable are to be converted into ash over a short period and therefore are included in current assets. The liquidity position of the company depends upon the quality of debtors to great extents the investment of account receivable means the decrease the cash position of the company and vice versa.

Table: 4.10

Account receivable analysis of selected manufacturing companies

	BNL		UNL	
Year	**Receivable**	**Change in %**	**Receivable**	**Change in %**
2004/05	126,575	-	32163	-
2005/06	141,228	11.57654	64775	101.396
2006/07	98,725	-30.0953	97063	49.84639
2007/08	57,246	-42.0147	157721	62.49343
2008/09	16,413	-71.329	138319	-12.3015
Average		-32.9656		50.35859
S.D		51251.2837		51554.60316
C.V		58.21%		52.60%

Source: Annex- XIX

Above table shows the account receivable of selected companies over the study period. Average receivable of BNL is 88037 and it ranges highest of 141228 in the fiscal year 2005/06 and lowest in the fiscal year 2009/08 i.e. 16413. The overall trend of account

receivable of BNL doesn't show any clear direction. Average yearly change percentage is -32.97 % highest percentage change is in the fiscal year 2008/09with -71.32% decrease and lowest in the fiscal year 2005/06 with 11.57% increase.

Average receivable of UNL is 98008 and it ranges highest of 157721 in the fiscal year 2007/08 and lowest in the fiscal year 2004/05 i.e. 32163. The overall trend of account receivable of BNL shows increasing trend. Average yearly change percentage is 50.36 % highest percentage change is in the fiscal year 2007/08 with 62.49% and lowest in the fiscal year 2008/09 with -12.30%.

Higher receivable explains the inadequate capacity for credit collection. It means the position of cash collection has been decreased. Similarly, the lower the position of AR shows the positive situation for credit collection.

So that the policy of the company about to receivable have not been seen in the consistent level. The increasing trend of AR interprets the companies were not able to collect account receivable so there would be the possibility of increasing bad debt. In other word the quality of the debtor's might be weekend, however the company's the company's receivable might be increased due to increment of net sales. The analysis suggests the company to develop proper credit policy for timely collection of receivable.

4.10.1 Analysis of Receivable Collection Period

Receivable collection period is the length of time m required to convert the firm's receivable in to cash, that is to collect cash following a sales.

Receivable collection period is determined by the help of receivable turnover ratio. It is the indication of efficiency of trade credit. Higher the turnover ratio shorter the collection period. The better is the trade credit management and the better is the liquidity of the debtors, on short collection period and high turnover ratio imply prompt payment by debtors. In general, therefore, short collection period is preferable.

Table: 4.11

Analysis of receivable collection period

Years	UNL			BNL		
	Receivable	**Sales**	**Ratio**	**Receivable**	**Sales**	**Ratio**
2004/05	32163	1236052	9.36747	126,575	461,490	98.73887
2005/06	64775	1244727	18.73423	141,228	465,439	109.2347
2006/07	97063	1524901	22.91472	98,725	424,315	83.76089
2007/08	157721	1481560	38.32417	57,246	401,320	51.35194
2008/09	138319	1469685	33.8813	16,413	354,095	16.68671
Total			360			123
Average			72			25
S.D			37.83384461			11.65936329
C.V			0.525801495			0.473104378

Source: Annex – XX

Above table shows the receivable collection period of selected companies over the study period. Average RCP in BNL has been observed to be 72 days. In the fiscal year 2004/05 RCP is 99 days, 109 days in 2005/06, 84 days in 2006/07, 52 days in 2007/08, and 16 days in 2008/09.

Average RCP in UNL has been observed to be 25 days. In the fiscal year 2004/05 RCP is 10 days, Similarly 18 days, 22 days, 38 days and 33 days respectively from fiscal year 2004/05 to 2008/09 Above table shows that there was a wide variation on RCP for individual companies over the study period. The delay in collection of receivable would mean that, a part of interest cost involved in maintaining a higher level of debtors, and the liquidity position of the firm would be adversely affected. Similarly too short of RCP is not necessary good. while it is true that it avoids the risk of receivable being bad debts as well as burden of high interest on outstanding debtors, it many have an adverse effect on volume of sales of the firm.

4.11 Analysis of Inventory

A company requires an optimum level of inventory for efficient management. The incremental trend must be analyzed of r efficiently of cash management. The incremental trend of inventory would be the direct impact for lowering the cash in for company and increases. So that level of inventory and its trend must be analyzed for efficiency of cash management.

Table: 4.12

Analysis of inventory of BNL and UNL

Change in Inventory				
	BNL		**UNL**	
Year	**Inventory**	**Change in %**	**Inventory**	**Change in %**
2004/05	177,737	-	144447	-
2005/06	134,401	-24.3821	126107	-12.6967
2006/07	124,581	-7.30649	184216	46.07912
2007/08	119,274	-4.25988	229765	24.72587
2008/09	108,415	-9.10425	256168	11.49131
Average	**132,882**		**188,141**	
S.D	**26772.17184**		**55074.99097**	
C.V	**0.201473882**		**0.292733153**	

Source: Annex-XXI

Above table shows the inventory level and its yearly of selected companies over the study period. The average inventory of BNL is 132882 and UNL 188141. The standard deviation are 26772.17 and 55075 and its covariance coefficient are 0.2015 and 0.2927 indicates that the company unable to adopt specific policy toward inventory management. In other word, there was no uniformity of inventory in each period of study.

Average yearly inventory level change percentage of BNL is -11.26%, UNL has yearly percentage change at inventory level is 17.39%.

4.11.1 Analysis of inventory conversion period

Inventory conversion period is the length of time required to convert raw material into finished goods and then to sell these goods. The period indicates the efficiency of the firm in selling its product. ICP is calculated by dividing number of year with inventory turnover ratio. Where inventory is turning in to receivable and cash through sales.

Table: 4.13

Analysis of inventory conversion period

Rs. in (000.)

Analysis of Inventory Conversion Period Ratio						
Years	**UNL**			**BNL**		
	Inventory	**Cost of Goods Sold**	**Ratio**	**Inventory**	**Cost of Goods Sold**	**Ratio**
2004/05	144447	937734	55.45381	177,737	237,114	269.8505
2005/06	126107	843142	53.84445	134,401	238,590	202.7929
2006/07	184216	969109	68.43168	124,581	224,589	199.6944
2007/08	229765	937818	88.19984	119,274	191,959	223.6865
2008/09	256168	940236	98.08227	108,415	187,716	207.9173
Total			364.0121			1103.942
Average			73			221
S. D			19.72076064			28.93935621
C.V			0.270880599			0.131072867

Source: Annex- XXII

The above table shows the ICP of selected companies over the study period. There ICP was widely varied in the inventory conversion period of selected companies. Average ICP of BNL is 221 days and UNL is 73 days. ICP of BNL ranges highest in fiscal year 2004/05 i.e. 270 days and lowest in fiscal year 2006/07 200 days. ICP of UNL ranges highest in fiscal year 2008/09 i.e. 98 days and lowest in the fiscal year 2005/06 i.e. 54 days. The trend of ICP was fluctuating over the study period.

The research identified that BNL suffering from mismanagement of inventory system in other word there would be occurrence of over investment in inventory in period of study. There would be occurrence of either management inventory system or over investment inventories in fact selected companies are running without adopting a policy of effective inventory management system.

4.12 Analysis of Payable

PDP is the length of time for payment of labor and purchases in each period of year lengthening the PDP, cash conversion cycle (CCC) is shortened: PDP is the indicator the speed of making payment of account payable. A high PDP is favorable for the company but too much long period hampers the credit worthiness of the company.

Table: 4.14

Analysis of Payable

Year	BNL		UNL	
	Payable	**Change in %**	**Payable**	**Change in %**
2004/05	162,296	-	96,594	-
2005/06	117,387	-27.671	247,008	155.7177
2006/07	157,452	34.1307	335,716	35.91301
2007/08	150,817	-4.21398	370,237	10.2828
2008/09	109,043	-27.6985	353,309	-4.57221
Average	139,399		280,573	
S.D	24426.26159		113298.048	
C.V	0.175225515		0.403809806	

Source: Annex-XXIII

Above table shows the account payable and its yearly variation of selected companies over the study period. The average payable of BNL is 139339 and UNL 280537. The standard deviation are 24426.26 and 113298.05 and its covariance coefficient are 0.1752 and 0.4038 indicates that the company unable to adopt specific policy toward

payable management. In other word, there was no uniformity of payable in each period of study.

Average yearly payable level change percentage of BNL is -6.36%, UNL has yearly percentage change at inventory level is 49.33%.

4.11.1 Analysis of Payable Deferred Period

$$PDP = \frac{\text{Account Payable}}{\text{Cost of Good Sold}} \times \text{Days in a Year}$$

Table: 4.15

Analysis of payable deferred period

Year	UNL			BNL		
	Payable	**Cost of Goods Sold**	**PDP (Days)**	**Payable**	**Cost of Goods Sold**	**PDP (Days)**
2004/05	96,594	937734	37.08284	162,296	237,114	246.40704
2005/06	247,008	843142	105.4661	117,387	238,590	177.12109
2006/07	335,716	969109	124.7102	157,452	224,589	252.38422
2007/08	370,237	937818	142.1228	150,817	191,959	282.84227
2008/09	353,309	940236	135.2759	109,043	187,716	209.12165
Total			544.6578			1167.8763
Average			109			234
S.D			42.48203723			41.02049197
C.V			0.389988354			0.175620024

Source: Annex-XXIV

The above table shows the PDP of selected companies over the study period. There PDP was widely varied in the inventory conversion period of selected companies. Average PDP of BNL is 234 days and UNL is 109 days. PDP of BNL ranges highest in fiscal year 2007/08 i.e. 210 days and lowest in fiscal year 2005/06 178 days. PDP of UNL ranges highest in fiscal year 2007/08 i.e. 136 days and lowest in the fiscal year 2001/03 i.e. 38 days. The trend of PDP was fluctuating over the study period.

4.12 Cash Conversion Cycle

The cc is the length of time between when the company makes payment and when it receive cash the CCC net its three periods i.e. ICP, RCP AND PDP, thus equal the length of time between the firm's actual expenditures for productive resources and its own cash receipts from the sale of products. Once the purchase of raw material is made the inventory conversion period determines the average number of days, it takes to produce and sell the product. The average collection period determines the average numbers of days it take to produce and sells the product. The average collection period determent the average number of days which makes the receivables is collected. Payable of cash is made for labor and suppliers. Hence, CCC is determined by differentiating the operating cycle and payable deferral period. Operating cycle is calculated by totaling the ICP and RCP. The CCC should be shortened as much as possible without hurting the operation. This would improve profit because shorter the CCC, the smaller the need for external financing and thus the lower the cost of such financing. So that it plays the effective role on cash management system. The cash conversion cycle is calculated by reducing payable deferral period with the sum of inventory conversion period and receivable collection period.

We have,

$$CCC = RCP + ICP - PDP$$

Table: 4.16

Analysis of Cash Conversion Cycle

years	UNL				BNL			
	RCP	**ICP**	**PDP**	**CCC = RCP + ICP −PDP**	**RCP**	**ICP**	**PDP**	**CCC = RCP + ICP −PDP**
2004/05	9.36747	55.45381	37.08284	27.73844	98.73887	269.8505	246.407	122.1823
2005/06	18.73423	53.84445	105.4661	-32.8874	109.2347	202.7929	177.1211	134.9065
2006/07	22.91472	68.43168	124.7102	-33.3638	83.76089	199.6944	252.3842	31.07107
2007/08	38.32417	88.19984	142.1228	-15.5988	51.35194	223.6865	282.8423	-7.80383
2008/09	33.8813	98.08227	135.2759	-3.31233	16.68671	207.9173	209.1217	15.48236
Total				-57.4239				295.8384
Average				-11				59
S.D				22.6200				58.1200
C.V				-2.202306				1.098255084

Source: Annex-XXV

The above table shows that Cash Conversion Cycle of the selected manufacturing companies during the study period. Average Cash Conversion Cycle of BNL is 59 days and UNL is -11 days. Here Cash Conversion Cycle of UNL is negative, which indicates sum receivable collection period and inventory conversion period is less than payable deferral period. UNL delays for the payment to the creditors which may harm the goodwill of the company. BNL has satisfactory liquidity position.

4.13 Profitability Analysis

4.13.1 Analysis of Net profit

Table: 4.17

Net Profit of BNL and UNL

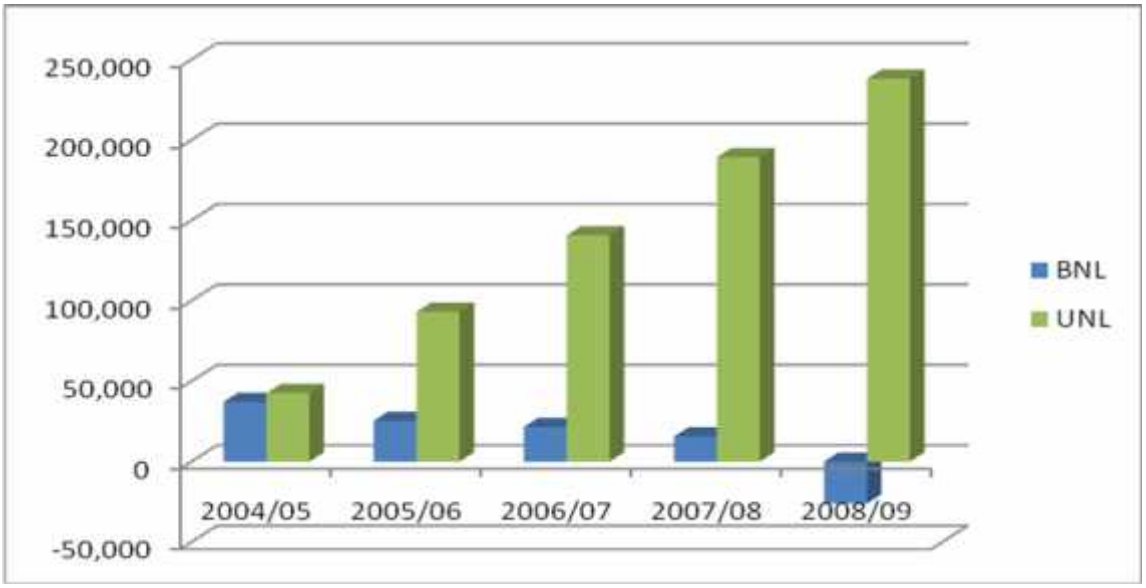
Rs. In "000)

Year	NP (X)BNL	NP (X) UNL
2004/05	37,141	42606
2005/06	25,359	93167
2006/07	21,565	140783
2007/08	15,625	189199
2008/09	-26,015	238157
	73,675	703,912
Average	14,735	140,782
S.D	24098.24533	77025.66409
C.V	1.635442506	0.547125664

Source: Annex-XXVI

Figure: 4.3

Net Profit of BNL and UNL



Above the table and figure shows the net profit margin of BNL and UNL over the study period. Both manufacturing companies were running with profitable condition. Average profit of BNL and UNL are 33.09 million and 147.80 million. Net profit of UNL is in increasing trend, while net profit of BNL is fluctuating over the study period. Net profit of BNL ranges highest of 48.61 million in the fiscal year 2004/05 and lowest in the fiscal year 19.37 million in the fiscal year 2005/06.

4.14 Liquidity and Profitability

Now bearing in mind conflicting nature of profitability and liquidity, correlation between the two has been analyzed subsequently. in a firm profitability and liquidity contradicts, and a such the firm should seek for trade off between the two . Conflicting nature of two could be justified by following example – if a firm holds large current assets so as to become more liquid, the consequence is that the profitability is adversely affected. Since the firm could have invested a large portion of a current assets, in warning profit. Conversely, if a firm doesn't keep enough current assets, and invest its large portion in earning pros the consequence is that the firm fails to meet to its current obligation i.e. Become illiquid and invite the risk of bankruptcy. The conflicting natures of these two is that when liquidity is being maintained, profitability trend to fall down, and vice versa

4.14.1 Relationship between Liquidity and Profitability

	Coefficient of correlation (r)	**Relationship**	**Coefficient of determination (r^2)**	**P.E.**	**Remarks**
UNL	-0.95151	Negative	0.90537	0.028545	Insignificant
BNL	0.546975	Positive	0.299182	0.211399	Insignificant

Source: Annex-X

The correlation between current ratio and net profit margin of BNL and UNL are 0.043 and -0.946 respectively. BNL correlation coefficient shows the positive relationship

between CR x and NPM y PE = 0.25< r= 0.306 < 6pe =1.5 indicates that there is no evidence of correlation between CR and NPM.

4.15 Major findings of the study

a. Selected manufacturing companies don't have any definite policy regarding how much cash balance to hold in each period. Cash and bank balance to hold each period. Cash and balance held during different period of study were observed to be highly fluctuated and thus the fact indicates the firm to be lacking definite policy regarding how much of cash balance to hold each period. The average cash balance held by BNL is 17.28 million and UNL is 291.45

b. Cash turnover ratio: as a fact the higher cash turnover ratio of cash indicates the sound liquidity position of company and vice versa. Average cash turnover ratio of BNL and UNL are 103.24 and 7.41 respectively. However, the cash turnover ratio was found to be highly fluted. Correlation coefficient has been observed to be -0.361 of BNL and 0.666 of UNL. It indicates the positive relationship between cash and sales of UNL and negative relationship of BNL. The company has not planned to hold cash specific proportion of sales volume in any year of study.

c. BNL has failed to maintain adequate proportion of cash on its current assets. While UNL has maintained high cash to current assts. Relationship between cash to current assets of BNL is low positive and UNL have high degree positive relationship. Level of significant of BNL in terms of cash to current assets is not significant where as UNL has significant.

d. Both companies have not been precisely meeting their current liabilities payment. The proportion and cash to current liabilities, of BNL and UNL are 5.97% and 51.47%. Cash and bank balance held compared to current liabilities indicates that for some year that for some year it was high where as for some other year was very low. This show mismanagement of cash. However NL (54.47%) has shown sound liquidity position.

e. BNL is unable to maintain adequate proportion of cash as its quick assets i.e 5.48% of BNL in an average. Correlation coefficient between cash on quick assets of BNL and UNL are 0.438 and 0.959. Here, both companies have positive relationship. But significant relationship on UNL while insignificant relationship on BNL.

f. UNL seem to be able to maintain the adequate proportion of cash in total assets i.e. Average 31.69% percentage. But BNL seem to be unable to maintain the adequate proportion of cash in total assets.

g. Average collection period and payable different period of BNL found to be 125 days and 171 days. Here payable deferral period is high. So, BNL have to pay its debt on time. ACP and PDP of UNL are 50 days and 108 days. So, the both companies neither in better position nor in the worst position.

h. Liquidity position of BNL is satisfactory i.e. CR is 2.02:1 and QR is 1:2 which is able to meet the standard 2:1 and 1:1. While liquidity profit or UNL is not satisfactory i.e. CR is 1.30:1 and QR is 0.90:1.

i. BNL has not been able to trade off liquidity and profitability. The CR and NPM are found with insignificant correlation. While, UNL has significant correlation. While UNL has significant correlation between CR and NPM.

j. Companies are not been able to collect cash in considerable time span. The average cash conversion cycle of BNL is days. While cash conversion cycle of UNL is (-25) days. UNL cash conversion cycle earlier due to high payable deferral period.

CHAPTER –V

SUMMARY AND CONCLUSION RECOMMENDATIONS

5.1 Summary

The study focuses on the cash management of selected manufacturing companies. As state in earlier, cash management refers to the management of cash, receivable and inventory. Likewise, as stated in the introduction section , the objective of the study are: to identify the liquidity position of the companies , to study the relationship of cash with other influencing variable of cash management , to make analysis of cash conversion cycle of the companies and to provide necessary recommendation for improvement of cash management on the basis of analysis.

To make research fulfill, review of related studies has been concerned in second chapter. To make major findings and to reach closer to summary of major findings, recommendation and conclusion explanation the tools and techniques have been concerned in chapter third then implemented in chapter four.

Hence an effort has been made in this chapter to present major finding on overall cash management practices in listed manufacturing companies recommendation and make conclusion**.**

5.2Conclusion

In conclusion, it can be stated that cash management system in selected manufacturing companies found to be satisfactory. Cash management was found traditional way where as no any plan and policy has been made for efficiency of cash management the companies have low liquidity position. The cash conversion cycle has been found very longer period the over investment in inventory has been found. The companies have not been able to trade of liquidity and profitability so that the profit was found to be low position. Cash management being the major elements in financial function. It is said that main function of financial manager is to apply better technique to Improve cash management in companies. There are other numerous aspects of finance involved in the overall financial performance of a firm counts for other managerial aspects such as

human resources management, organizational structure marketing management etc. However, all down falling trend of the financial position is an indication of the fat that selected manufacturing companies should immediately seek for drastic change in its managerial structure so far cash management is concerned the recommendations suggested above could to a greater extent; uplift the selected manufacturing companies' cash management situation.

5.3 Recommendation

Financial efficiency is one of the key elements to achieve the goal of any business enterprise. The major findings of the study shows that the selected manufacturing companies are not followed any specific and appropriate financial principles financial techniques. Following recommendations are given for better financial performance and good cash management of the company on the basis of the findings of the study.

- Cash Planning and cash budget is needed on a formal basis so as to project cash surplus or cash deficit for a period not exceeding one year and broken up into shorter period.
- Maintaining optimum cash balance every year. The study has identified that selected manufacturing companies have not been maintaining optimum cash balance. The balances held are at time too high and too low in other time, without any definite purpose as too why the firm has held excess or deficit balance of cash. Holding of optimum cash as per its sales, profit and other influencing variable are recommended.
- Try to reduce cash conversion cycle, cash conversation cycle of the companies has been found to be higher. However, RCP and PDP have been found to be considerable period. Inventory conversion period was too long. High level of inventory has affected to make CCC longer. It is recommendation that companies should improve their inventory management system.
- The main objectives of managing cash are to trade off liquidity and profitability in order to increase profit. By maintaining considerable liquidity position of the company should try to increase net profit.

- Company should prepare cash budget cash planning and cash budgeting on a formal basis so as to project cash surplus and cash deficit for a period not exceeding one year and broken up in to shorter intervals, cash budget should be prepared with considering the influencing variables on cash management.
- Surplus cash should be invested in profitable opportunities. Company should manage their cash in such a way as to keep cash balance at a minimum level for daily operating purpose and invest surplus cash in profitable opportunities. The idle cash increases opportunity cost and profit will be decrease.
- Cash planning manager or experts should be appointed. The lack of knowledge of modern financial management tools and technique among existing employees in the manufacturing sector is one of the causes of poor financial performance of the manufacturing companies.
- Company should try to maintain considerable liquidity position. So that company may be able to meet current obligation.
- Revised the strict provisions regarding cash: company should adopt practical procedure and practices for handling cash management and managing working capital work. To deal financial and cash matter, responsibilities, authority and accountability should be delegated, making process more practical and flexible. It encourages for prompt decision by responsible person. It helps to implement the budget timely.

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Annex-I

Level of Cash balance	
Year	UNL
2004/05	62,335
2005/06	317,404
2006/07	319,532
2007/08	443,311
2008/09	242,672

Level of Cash balance	
Year	BNL
2004/05	46,015
2005/06	22,165
2006/07	25,190
2007/08	14,856
2008/09	21,474

sales	
Year	UNL
2004/05	1236052
2005/06	1244727
2006/07	1524901
2007/08	1481560
2008/09	1469685

sales	
Year	BNL
2004/05	461,490
2005/06	465,439
2006/07	424,315
2007/08	401,320
2008/09	354,095

Total Assets	
Year	UNL
2004/05	571,335

2005/06	784,480
2006/07	939,720
2007/08	1,098,956
2008/09	967,147

Total Assets	
Year	BNL
2004/05	687,917
2005/06	667,803
2006/07	545,055
2007/08	619,010
2008/09	418,772

Current Assets	
Year	UNL
2004/05	399136
2005/06	589884
2006/07	724244
2007/08	891414
2008/09	761606

Current Assets	
Year	BNL
2004/05	561,489
2005/06	518,661
2006/07	435,719
2007/08	298,685
2008/09	225,149

Current Liabilities	
Year	UNL
2004/05	223210
2005/06	426451
2006/07	543706
2007/08	882023
2008/09	742232

Current Liabilities	
Year	BNL
2004/05	305,683
2005/06	272,310
2006/07	240,800
2007/08	236,340
2008/09	155,988

Quick Assets	
Year	UNL
2004/05	254689
2005/06	463778
2006/07	540029
2007/08	661651
2008/09	485438

Quick Assets	
Year	BNL
2004/05	383,752
2005/06	384,260
2006/07	219,584
2007/08	179,411
2008/09	116,734

Inventory	
Year	UNL
2004/05	144447
2005/06	126107
2006/07	184216
2007/08	229765
2008/09	256168

Inventory	
Year	BNL
2004/05	177,737
2005/06	134,401
2006/07	124,581
2007/08	119,274
2008/09	108,415

Receivable	
Year	UNL
2004/05	32163
2005/06	64775
2006/07	97063
2007/08	157721
2008/09	138319

Receivable	
Year	BNL
2004/05	126,575
2005/06	141,228
2006/07	98,725
2007/08	57,246
2008/09	16,413

Payable	
Year	UNL

2004/05	96,594
2005/06	247,008
2006/07	335,716
2007/08	370,237
2008/09	353,309

Payable	
Year	BNL
2004/05	162,296
2005/06	117,387
2006/07	157,452
2007/08	150,817
2008/09	109,043

COGS	
Year	UNL
2004/05	937734
2005/06	843142
2006/07	969109
2007/08	937818
2008/09	940236

COGS	
Year	BNL
2004/05	237,114
2005/06	238,590
2006/07	224,589
2007/08	191,959
2008/09	187,716

Net profit	
Year	UNL
2004/05	42606
2005/06	93167
2006/07	140783
2007/08	189199
2008/09	238157

Net profit	
Year	BNL
2004/05	37,141
2005/06	25,359
2006/07	21,565
2007/08	15,625
2008/09	-26,015

ANNEX-II

UNL					
year	sales (X)	Cash (Y)	X^2	Y^2	XY
2004/05	1236052.00	62335.00	1527824546704.00	3885652225.00	77049301420.00
2005/06	1244727.00	317404.00	1549345304529.00	100745299216.00	395081328708.00
2006/07	1524901.00	319532.00	2325323059801.00	102100699024.00	487254666332.00
2007/08	1481560.00	443311.00	2195020033600.00	196524642721.00	656791845160.00
2008/09	1469685.00	242672.00	2159973999225.00	58889699584.00	356651398320.00
∑x	6956925.00				
∑y	1385254.00				
∑xy	1972828539940.00				
$\sum x^2$	9757486943859.00				
$\sum y^2$	462145992770.00				
Top	227034515750.00				
bottom	390212068288.14				
r =	0.58				
r^2 =	0.34				
P.E =	0.20				
6 P.E =	1.20				

BNL					
year	sales (X)	Cash(Y)	X^2	Y^2	XY
2004/05	461490.00	46015.00	212973020100.00	2117380225.00	21235462350.00
2005/06	465439.00	22165.00	216633462721.00	491287225.00	10316455435.00

2006/07	424315.00	25190.00	180043219225.00	634536100.00	10688494850.00
2007/08	401320.00	14856.00	161057742400.00	220700736.00	5962009920.00
2008/09	354095.00	21474.00	125383269025.00	461132676.00	7603836030.00

∑x	2106659.00
∑y	129700.00
∑xy	55806258585.00
$\sum x^2$	896090713471.00
$\sum y^2$	3925036962.00
Top	5797620625.00
bottom	10907214967.81
r =	0.53
r^2 =	0.28
P.E =	0.22
6 P.E =	1.30

ANNEX-III

UNL					
year	Cash (X)	Total Assets (Y)	X^2	Y^2	XY
2004/05	62335.00	571335.00	3885652225.00	326423682225.00	35614167225.00
2005/06	317404.00	784480.00	100745299216.00	615408870400.00	248997089920.00
2006/07	319532.00	939720.00	102100699024.00	883073678400.00	300270611040.00
2007/08	443311.00	1098956.00	196524642721.00	1207704289936.00	487179283316.00
2008/09	242672.00	967147.00	58889699584.00	935373319609.00	234699496784.00
∑x	1385254.00				
∑y	4361638.00				
∑xy	1306760648285.00				
$∑x^2$	462145992770.00				
$∑y^2$	3967983840570.00				
Top	491826755373.00				
bottom	565440420055.27				
r =	0.87				
r^2 =	0.76				
P.E =	0.07				
6 P.E =	0.44				

BNL					
year	Cash (X)	Total Assets(Y)	X^2	Y^2	XY
2004/05	46015.00	687917.00	2117380225.00	473229798889.00	31654500755.00
2005/06	22165.00	667803.00	491287225.00	445960846809.00	14801853495.00
2006/07	25190.00	545055.00	634536100.00	297084953025.00	13729935450.00
2007/08	14856.00	619010.00	220700736.00	383173380100.00	9196012560.00
2008/09	21474.00	418772.00	461132676.00	175369987984.00	8992709928.00
∑x	129700.00				
∑y	2938557.00				
∑xy	78375012188.00				
$\sum x^2$	3925036962.00				
$\sum y^2$	1774818966807.00				
Top	10744218040.00				
bottom	25881979198.69				
r =	0.42				
r^2 =	0.17				
P.E =	0.25				
6 P.E =	1.50				

ANNEX-IV

UNL					
year	Cash (X)	Current Assets (Y)	X^2	Y^2	XY
2004/05	62335.00	399136.00	3885652225.00	159309546496.00	24880142560.00
2005/06	317404.00	589884.00	100745299216.00	347963133456.00	187231541136.00
2006/07	319532.00	724244.00	102100699024.00	524529371536.00	231419133808.00
2007/08	443311.00	891414.00	196524642721.00	794618919396.00	395173631754.00
2008/09	242672.00	761606.00	58889699584.00	580043699236.00	184820451232.00
∑x	1385254.00				
∑y	3366284.00				
∑xy	1023524900490.00				
$∑x^2$	462145992770.00				
$∑y^2$	2406464670120.00				
Top	454466126314.00				
bottom	523869585660.65				
r =	0.87				
r^2 =	0.75				
P.E =	0.07				
6 P.E =	0.45				

BNL					
year	Cash (X)	Current Assets(Y)	X^2	Y^2	XY
2004/05	46015.00	561489.00	2117380225.00	315269897121.00	25836916335.00
2005/06	22165.00	518661.00	491287225.00	269009232921.00	11496121065.00
2006/07	25190.00	435719.00	634536100.00	189851046961.00	10975761610.00

2007/08	14856.00	298685.00	220700736.00	89212729225.00	4437264360.00
2008/09	21474.00	225149.00	461132676.00	50692072201.00	4834849626.00

∑x	129700.00
∑y	2039703.00
∑xy	57580912996.00
$\sum x^2$	3925036962.00
$\sum y^2$	914034978429.00
Top	23355085880.00
bottom	33892043175.01
r =	0.69
r^2 =	0.47
P.E =	0.16
6 P.E =	0.95

ANNEX-V

UNL					
year	Cash (X)	Current Liabilities(Y)	X^2	Y^2	XY
2004/05	62335.00	223210.00	3885652225.00	49822704100.00	13913795350.00
2005/06	317404.00	426451.00	100745299216.00	181860455401.00	135357253204.00
2006/07	319532.00	543706.00	102100699024.00	295616214436.00	173731465592.00
2007/08	443311.00	882023.00	196524642721.00	777964572529.00	391010498153.00
2008/09	242672.00	742232.00	58889699584.00	550908341824.00	180118923904.00
∑x	1385254.00				
∑y	2817622.00				
∑xy	894131936203.00				
$∑x^2$	462145992770.00				
$∑y^2$	1856172288290.00				
Top	567537535027.00				
bottom	725083124754.84				
r =	0.78				
r^2 =	0.61				
P.E =	0.12				
6 P.E =	0.70				

BNL					
year	Cash (X)	Current Liabilities(Y)	X^2	Y^2	XY
2004/05	46015.00	305683.00	2117380225.00	93442096489.00	14066003245.00
2005/06	22165.00	272310.00	491287225.00	74152736100.00	6035751150.00

2006/07	25190.00	240800.00	634536100.00	57984640000.00	6065752000.00
2007/08	14856.00	236340.00	220700736.00	55856595600.00	3511067040.00
2008/09	21474.00	155988.00	461132676.00	24332256144.00	3349686312.00

∑x	129700.00
∑y	1211121.00
∑xy	33028259747.00
$\sum x^2$	3925036962.00
$\sum y^2$	305768324333.00
Top	8058905035.00
bottom	13185942876.18
r =	0.61
r^2 =	0.37
P.E =	0.19
6 P.E =	1.13

ANNEX-VI

UNL					
year	Cash (X)	Quick Assets(Y)	X^2	Y^2	XY
2004/05	62335.00	254689.00	3885652225.00	64866486721.00	15876038815.00
2005/06	317404.00	463778.00	100745299216.00	215090033284.00	147204992312.00
2006/07	319532.00	540029.00	102100699024.00	291631320841.00	172556546428.00
2007/08	443311.00	661651.00	196524642721.00	437782045801.00	293317166461.00
2008/09	242672.00	485438.00	58889699584.00	235650051844.00	117802210336.00
∑x	1385254.00				
∑y	2405585.00				
∑xy	746756954352.00				
$∑x^2$	462145992770.00				
$∑y^2$	1245019938491.00				
Top	401438528170.00				
bottom	414380311069.55				
r =	0.97				
r^2 =	0.94				
P.E =	0.02				
6 P.E =	0.11				

BNL					
year	Cash (X)	Quick Assets(Y)	X^2	Y^2	XY
2004/05	46015.00	383752.00	2117380225.00	147265597504.00	17658348280.00
2005/06	22165.00	384260.00	491287225.00	147655747600.00	8517122900.00
2006/07	25190.00	219584.00	634536100.00	48217133056.00	5531320960.00

2007/08	14856.00	179411.00	220700736.00	32188306921.00	2665329816.00
2008/09	21474.00	116734.00	461132676.00	13626826756.00	2506745916.00

∑x	129700.00
∑y	1283741.00
∑xy	36878867872.00
$\sum x^2$	3925036962.00
$\sum y^2$	388953611837.00
Top	17893131660.00
bottom	28842578945.73
r =	0.62
r^2 =	0.38
P.E =	0.19
6 P.E =	1.11

ANNEX-VII

UNL					
year	Cash (X)	Net Profit(Y)	X^2	Y^2	XY
2004/05	62335.00	42606.00	3885652225.00	1815271236.00	2655845010.00
2005/06	317404.00	93167.00	100745299216.00	8680089889.00	29571578468.00
2006/07	319532.00	140783.00	102100699024.00	19819853089.00	44984673556.00
2007/08	443311.00	189199.00	196524642721.00	35796261601.00	83873997889.00
2008/09	242672.00	238157.00	58889699584.00	56718756649.00	57794035504.00
∑x	1385254.00				
∑y	703912.00				
∑xy	218880130427.00				
$\sum x^2$	462145992770.00				
$\sum y^2$	122830232464.00				
Top	119303738487.00				
bottom	215617197136.52				
r =	0.55				
r^2 =	0.31				
P.E =	0.21				
6 P.E =	1.26				

BNL					
year	Cash (X)	Net Profit(Y)	X^2	Y^2	XY
2004/05	46015.00	37141.00	2117380225.00	1379453881.00	1709043115.00
2005/06	22165.00	25359.00	491287225.00	643078881.00	562082235.00

2006/07	25190.00	21565.00	634536100.00	465049225.00	543222350.00
2007/08	14856.00	15625.00	220700736.00	244140625.00	232125000.00
2008/09	21474.00	-26015.00	461132676.00	676780225.00	-558646110.00

∑x	129700.00
∑y	73675.00
∑xy	2487826590.00
$\sum x^2$	3925036962.00
$\sum y^2$	3408502837.00
Top	2883485450.00
bottom	5705836368.60
r =	0.51
r^2 =	0.26
P.E =	0.22
6 P.E =	1.35

ANNEX-VIII

UNL					
year	Current Assets (X)	Current Liabilities(Y)	X^2	Y^2	XY
2004/05	399136.00	223210.00	159309546496.00	49822704100.00	89091146560.00
2005/06	589884.00	426451.00	347963133456.00	181860455401.00	251556621684.00
2006/07	724244.00	543706.00	524529371536.00	295616214436.00	393775808264.00
2007/08	891414.00	882023.00	794618919396.00	777964572529.00	786247650522.00
2008/09	761606.00	742232.00	580043699236.00	550908341824.00	565288344592.00
∑x	3366284.00				
∑y	2817622.00				
∑xy	2085959571622.00				
$\sum x^2$	2406464670120.00				
$\sum y^2$	1856172288290.00				
Top	944882001462.00				
bottom	969493917939.15				
r =	0.97				
r^2 =	0.95				
P.E =	0.02				
6 P.E =	0.09				

BNL					
year	Current Assets (X)	Current Liabilities(Y)	X^2	Y^2	XY
2004/05	561489.00	305683.00	315269897121.00	93442096489.00	171637641987.00
2005/06	518661.00	272310.00	269009232921.00	74152736100.00	141236576910.00

2006/07	435719.00	240800.00	189851046961.00	57984640000.00	104921135200.00
2007/08	298685.00	236340.00	89212729225.00	55856595600.00	70591212900.00
2008/09	225149.00	155988.00	50692072201.00	24332256144.00	35120542212.00

∑x	2039703.00
∑y	1211121.00
∑xy	523507109209.00
$\sum x^2$	914034978429.00
$\sum y^2$	305768324333.00
Top	147208408982.00
bottom	159430406587.86
r =	0.92
r^2 =	0.85
P.E =	0.04
6 P.E =	0.27

ANNEX-IX

UNL					
year	Quick Assets (X)	Current Liabilities(Y)	X^2	Y^2	XY
2004/05	254689	223210	64866486721.00	49822704100.00	56849131690.00
2005/06	463778	426451	215090033284.00	181860455401.00	197778591878.00
2006/07	540029	543706	291631320841.00	295616214436.00	293617007474.00
2007/08	661651	882023	437782045801.00	777964572529.00	583591399973.00
2008/09	485438	742232	235650051844.00	550908341824.00	360307617616.00

∑x	2405585.00
∑y	2817622.00
∑xy	1492143748631.00
$\sum x^2$	1245019938491.00
$\sum y^2$	1856172288290.00
Top	682689524285.00
bottom	766868706052.15
r =	0.890229995
r^2 =	0.792509444
P.E =	0.062588607
6 P.E =	0.375531643

BNL					
year	Quick Assets (X)	Current Liabilities(Y)	X^2	Y^2	XY
2004/05	383,752	305,683	147265597504.00	93442096489.00	117306462616.00
2005/06	384,260	272,310	147655747600.00	74152736100.00	104637840600.00
2006/07	219,584	240,800	48217133056.00	57984640000.00	52875827200.00

2007/08	179,411	236,340	32188306921.00	55856595600.00	42401995740.00
2008/09	116,734	155,988	13626826756.00	24332256144.00	18209103192.00

∑x	1283741.00
∑y	1211121.00
∑xy	335431229348.00
$\sum x^2$	388953611837.00
$\sum y^2$	305768324333.00
Top	122390463079.00
bottom	135677393794.63
r =	0.90
r^2 =	0.81
P.E =	0.06
6 P.E =	0.34

ANNEX-X

UNL					
year	Current Ratio (X)	Net Profit Margin(Y)	X^2	Y^2	XY
2004/05	1.788163613	3.446942362	3.197529106	11.88141164	6.163696906
2005/06	1.383239809	7.484934447	1.913352371	56.02424368	10.3534593
2006/07	1.332050777	9.232271472	1.774359274	85.23483653	12.29785439
2007/08	1.010647115	12.77025568	1.02140759	163.07943	12.90622205
2008/09	1.026102351	16.20462888	1.052886034	262.5899972	16.62760779
∑x	6.540203665				
∑y	49.13903284				
∑xy	58.34884044				
$∑x^2$	8.959534375				
$∑y^2$	578.8099191				
Top	-29.63508048				
bottom	31.14533603				
r =	-0.951509416				
r^2 =	0.905370168				
P.E =	0.02854467				
6 P.E =	0.171268018				

BNL					
year	Current Ratio (X)	Net profit margin(Y)	X^2	Y^2	XY
2004/05	1.836834237	8.05	3.373960013	64.77129734	14.78295529
2005/06	1.904671147	5.45	3.627772178	29.68511295	10.37741908

2006/07	1.809464286	5.08	3.274161001	25.82986613	9.196256866
2007/08	1.263793687	3.89	1.597174483	15.15857737	4.920456583
2008/09	1.443373849	-7.35	2.083328069	53.97691656	-10.60432107

∑x	8.258137206
∑y	15.12527881
∑xy	28.67276676
$\sum x^2$	13.95639574
$\sum y^2$	189.4217704
Top	18.45720608
bottom	33.74414618
r =	0.546975051
r^2 =	0.299181706
P.E =	0.211398734
6 P.E =	1.268392403

Annex- XI

Level of Cash and Bank Balance is selected manufacturing

Companies

Year	BNL			UNL		
	CB (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	**CB (X)**	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	46,015	20,075	403005625	62,335	-214,716	46102874770
2005/06	22,165	-3,775	14250625	317,404	40,353	1628380750
2006/07	25,190	-750	562500	319,532	42,481	1804652353
2007/08	14,856	-11,084	122855056	443,311	166,260	27642454104
2008/09	21,474	-4,466	19945156	242,672	-34,379	1181901889
Total	129,700		560618962	1,385,254		78360263867
Average	25,940		140154740.5	277,051		19590065967
S.D	10588.852			223128.25		
C.V	40.820%			16.107%		

$$\pm \text{X}\sqrt{\frac{1}{n} \quad (X \text{ Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n} \quad (X \text{ Z}\overline{X})2}$$

$$\pm \text{X}\sqrt{\frac{1}{5} \mid 560618962} \qquad \pm \text{X}\sqrt{\frac{1}{5} \mid 78360263867}$$

= 10588.852 = 223128.25

C.V= $\frac{\sigma}{\bar{X}} \times 100\%$ C.V= $\frac{\sigma}{\bar{X}} \times 100\%$

C.V= $\frac{10588.852}{25940} \times 100\%$ C.V= $\frac{223128.25}{1385254} \times 100\%$

=40.820 =16.107

Annex -XII

Cash Turnover Ratio of selected Manufacturing Companies

Year	BNL			UNL		
	CTR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	CTR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	10.02912	-8.24608	67.99783909	19.82918	12.24491	149.9378168
2005/06	20.99883	2.723626	7.418137579	3.921586	-3.66269	13.41526483
2006/07	16.84458	-1.43062	2.046673532	4.772295	-2.81198	7.907209583
2007/08	27.014	8.7388	76.36662391	3.342033	-4.24224	17.99658483
2008/09	16.48948	-1.78573	3.188815632	6.056261	-1.52801	2.334814804
Total	91.37601		157.0180897	37.92136		191.5916908
Average	18.2752			7.584271		
S.D	5.603			6.190		
C.V	30.65%			81.619%		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{157.01}{5}} \qquad \text{x}\sqrt{\frac{191\ .591}{5}}$$

=5.603 =6.190

C.V= $\frac{\sigma}{\bar{X}} \times 100\%$ C.V= $\frac{\sigma}{\bar{X}} \times 100\%$

30.65% 81.619%

Annex-XIII

Cash to total assets ratio

BNL				UNL			
Year	CTAR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	CTAR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	0.06689	0.022575	0.000509647	2004/05	0.109104	-0.1925	0.037058174
2005/06	0.033191	-0.01112	0.000123745	2005/06	0.404604	0.102995	0.010608014
2006/07	0.046216	0.001901	3.61205E-06	2006/07	0.340029	0.03842	0.001476084
2007/08	0.024	-0.02032	0.000412714	2007/08	0.403393	0.101784	0.010359931
2008/09	0.051278	0.006964	4.84906E-05	2008/09	0.250915	-0.05069	0.00256986
Total	0.221575		0.001098208		1.508046		0.062072062
Average	0.044315				0.301609		
S.D	0.165				0.1245		
C.V	37.24%				41.30%		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{0.00109}{5}} \qquad \text{X}\sqrt{\frac{0.06207}{5}}$$

=0.0165 =0.1245

C.V= $\frac{\sigma}{\bar{x}} \times 100\%$ C.V= $\frac{\sigma}{\bar{x}} \times 100\%$

37.24% 41.30%

Annex- XIV

Cash to Current Assets Ratio of Selected Manufacturing Companies

BNL				UNL			
Year	CCAR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	CCAR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	0.081952	0.016429	0.000269909	2004/05	0.156175	-0.2341	0.054804426
2005/06	0.042735	-0.02279	0.000519283	2005/06	0.538079	0.1478	0.021844954
2006/07	0.057812	-0.00771	5.94493E-05	2006/07	0.441194	0.050916	0.002592395
2007/08	0.049738	-0.01578	0.00024916	2007/08	0.497312	0.107034	0.011456244
2008/09	0.095377	0.029854	0.000891262	2008/09	0.318632	-0.07165	0.005133199
Total	0.327614		0.001989064		1.951391		0.095831217
Average	0.065523				0.390278		
S.D	0.0222				0.15478		
C.V	34.03%				39.65%		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{0.0001989.}{5}} \qquad \text{x}\sqrt{\frac{1.09583}{5}}$$

=0.0222 =0.15478

C.V= $\frac{\sigma}{\bar{x}} \times 100\%$ C.V= $\frac{\sigma}{\bar{x}} \times 100\%$

34.03% 39.65%

Annex-XV

Cash to Current Liabilities Ratio

BNL				**UNL**			
Year	CCLR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	CCLR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	0.150532	0.04312	0.001859303	2004/05	0.279266	-0.2089	0.043637194
2005/06	0.081396	-0.02602	0.000676828	2005/06	0.744292	0.256131	0.065602836
2006/07	0.10461	-0.0028	7.85395E-06	2006/07	0.587693	0.099531	0.009906475
2007/08	0.062859	-0.04455	0.001985017	2007/08	0.502607	0.014446	0.000208679
2008/09	0.137664	0.030252	0.000915202	2008/09	0.326949	-0.16121	0.025989422
Total	0.537061		0.005444205		2.440807		0.145344606
Average	0.107412				0.488161		
S.D	0.0368				0.19062		
C.V	34.340%				39.04		

$\pm X\sqrt{\frac{1}{n} \quad (X Z\overline{X})2}$ $\pm X\sqrt{\frac{1}{n} \quad (X Z\overline{X})2}$

$X\sqrt{\frac{0.005444.}{5}}$ $X\sqrt{\frac{0.145344}{5}}$

=0.0368 =0.19062

C.V= $\frac{\sigma}{\overline{X}} \times 100\%$ C.V= $\frac{\sigma}{\overline{X}} \times 100\%$

34.340% 39.04%

Annex- XVI

Cash to Quick Assets Ratio

BNL				**UNL**			
Year	CQAR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	CQAR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	0.119908	0.008094	6.55209E-05	2004/05	0.244749	-0.2934	0.086082915
2005/06	0.057682	-0.05413	0.002930206	2005/06	0.684388	0.146239	0.021385965

2006/07	0.114717	0.002903	8.42884E-06	2006/07	0.591694	0.053546	0.00286715
2007/08	0.082804	-0.02901	0.000841544	2007/08	0.670007	0.131859	0.017386775
2008/09	0.183957	0.072143	0.005204615	2008/09	0.499903	-0.03825	0.001462695
	0.559068		0.009050314		2.690742		0.1291855
Average	0.111814				0.538148		
S.D	0.047566				0.1797		
C.V	42.54%				33.39%		

$\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$ $\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$

$X\sqrt{\frac{0.047566.}{5}}$ $X\sqrt{\frac{0.17971}{5}}$

=0.047566 =0.1797

C.V= $\frac{\sigma}{\overline{X}} \times 100\%$ C.V= $\frac{\sigma}{\overline{X}} \times 100\%$

42.54% 33.39%

Annex-XVII

Current Ratio of BNL and UNL

Current Ratio							
BNL				**UNL**			
year	CR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	CR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	1.836834	0.185207	0.034301557	2004/05	1.788164	0.480123	0.23051798
2005/06	1.904671	0.253044	0.064031117	2005/06	1.38324	0.075199	0.005654901
2006/07	1.809464	0.157837	0.02491247	2006/07	1.332051	0.02401	0.000576482
2007/08	1.263794	-0.38783	0.150415021	2007/08	1.010647	-0.29739	0.088442964
2008/09	1.443374	-0.20825	0.043369559	2008/09	1.026102	-0.28194	0.079489251
	8.258137		0.317029723		6.540204		0.404681579
Average	1.651627				1.308041		
S.D	0.281526963				0.318072939		
C.V	17.04%				24.31%		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{0.31702.}{5}} \qquad \text{X}\sqrt{\frac{0.404681}{5}}$$

=0.28152 =0.31807

C.V= $\frac{\sigma}{\bar{X}} \times 100\%$ C.V= $\frac{\sigma}{\bar{X}} \times 100\%$

=17.04% =24.31%

Annex -XVIII

Quick ratio of BNL and UNL

	BNL			UNL		
Year	QR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	QR (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	1.255392	0.238217	0.056747547	1.141029	0.215834	0.046584462
2005/06	1.411112	0.393938	0.15518695	1.087529	0.162335	0.026352689
2006/07	0.911894	-0.10528	0.011084068	0.993237	0.068043	0.004629832
2007/08	0.759122	-0.25805	0.066590905	0.750152	-0.17504	0.030639929
2008/09	0.748352	-0.26882	0.072265348	0.654025	-0.27117	0.07353299
Total	5.085873		0.361874818	4.625971		0.181739901
Average	1.017175			0.925194		
S.D	0.30078016			0.213154815		
C.V	29.57%			23.038%		

$\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$ $\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$

$X\sqrt{\frac{0.36187.}{5}}$ $X\sqrt{\frac{0.181739}{5}}$

=0.3007 =0.2131

C.V= $\frac{\sigma}{\bar{x}} \times 100\%$ C.V= $\frac{\sigma}{\bar{x}} \times 100\%$

29.57% 23.038%

Annex -XIX

Account receivable analysis of selected manufacturing companies

	BNL			UNL		
Year	Receivable (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Receivable (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	126,575	38537.6	1485146614	32163	-65845.2	4335590363
2005/06	141,228	53190.6	2829239928	64775	-33233.2	1104445582
2006/07	98,725	10687.6	114224793.8	97063	-945.2	893403.04
2007/08	57,246	-30791.4	948110314	157721	59712.8	3565618484
2008/09	16,413	-71624.4	5130054675	138319	40310.8	1624960597
Total	440,187		10506776327	490,041		10631508429
Average	88,037			98,008		
S.D	51251.2837			51554.60316		
C.V	0.582153536			0.526023365		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad(X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad(X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{10506776325.}{5}} \qquad \text{X}\sqrt{\frac{1063150842\quad 9}{5}}$$

=51251.283 =51554.6031

C.V= $\frac{\sigma}{\overline{X}} \times 100\%$ C.V= $\frac{\sigma}{\overline{X}} \times 100\%$

58.21% 52.60%

Annex- XX

Analysis of Receivable Conversion period

BNL				**UNL**			
Year	RCP (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	RCP (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	98.73887	26.78425	717.3961407	2004/05	9.36747	-15.2769	233.3839293
2005/06	109.2347	37.28006	1389.803147	2005/06	18.73423	-5.91015	34.92987155
2006/07	83.76089	11.80627	139.3879957	2006/07	22.91472	-1.72966	2.991716727
2007/08	51.35194	-20.6027	424.4703099	2007/08	38.32417	13.67979	187.1367495
2008/09	16.68671	-55.2679	3054.541598	2008/09	33.8813	9.236923	85.32074189
Total	360		5725.599191		123		543.7630089
Average	72				25		
S.D	37.83384461				11.65936329		
C.V	0.525801495				0.473104378		

$\pm$ X$\sqrt{\frac{1}{n} \quad (X\ \mathrm{Z}\overline{X})2}$ $\pm$ X$\sqrt{\frac{1}{n} \quad (X\ \mathrm{Z}\overline{X})2}$

$X\sqrt{\frac{5725.599}{5}}$ $X\sqrt{\frac{543\ .76300}{5}}$

=37.833 =11.6593

C.V= $\frac{\sigma}{\bar{x}} \times 100\%$ C.V= $\frac{\sigma}{\bar{x}} \times 100\%$

52.58% 47.31%

Annex- XXI

Analysis of inventory of BNL and UNL

BNL				**UNL**			
Year	**Inventory (X)**	$(X-\overline{X})$	$(X-\overline{X})^2$	**Year**	**Inventory (X)**	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	177,737	44855.4	2012006909	2004/05	144447	-43693.6	1909130681
2005/06	134,401	1519.4	2308576.36	2005/06	126107	-62033.6	3848167529
2006/07	124,581	-8300.6	68899960.36	2006/07	184216	-3924.6	15402485.16
2007/08	119,274	-13607.6	185166777.8	2007/08	229765	41624.4	1732590675
2008/09	108,415	-24466.6	598614515.6	2008/09	256168	68027.4	4627727151
Total	664,408		2866996739		940,703		12133018521
Average	132,882				188,141		
S.D	26772.17184				55074.99097		
C.V	0.201473882				0.292733153		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad(X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad(X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{2866996739}{5}} \qquad \text{X}\sqrt{\frac{1213301\quad.8521}{5}}$$

= 26772.17 = 55074.990

C.V= $\frac{\sigma}{\bar{x}} \times 100\%$ C.V= $\frac{\sigma}{\bar{x}} \times 100\%$

= 20.14% = 29.27%

Annex -XXII

Analysis of inventory conversion period

BNL				**UNL**			
Year	ICP(X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	ICP (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	269.8505	49.06215	2407.094124	2004/05	55.45381	-17.3486	300.9740661
2005/06	202.7929	-17.9954	323.8343426	2005/06	53.84445	-18.958	359.4041578
2006/07	199.6944	-21.0939	444.953929	2006/07	68.43168	-4.37073	19.10326116
2007/08	223.6865	2.89821	8.39962259	2007/08	88.19984	15.39743	237.0809039
2008/09	207.9173	-12.871	165.6633324	2008/09	98.08227	25.27986	639.0712115
	1,104		3349.94535		364		1555.6336
Average	221				73		
S.D	28.93935621				19.72076064		
C.V	0.131072867				0.270880599		

Source: Annex- XIX

$\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$ $\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$

$X\sqrt{\frac{3349.945}{5}}$ $X\sqrt{\frac{1555\ .633}{5}}$

=28.939 = 19.720

C.V= $\frac{\sigma}{\bar{x}} \times 100\%$ C.V= $\frac{\sigma}{\bar{x}} \times 100\%$

= 13.10% = 27.088%

Annex- XXIII

Analysis of Payable

BNL				UNL			
Year	**Payable (X)**	$(X-\overline{X})$	$(X-\overline{X})^2$	**Year**	**Payable (X)**	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	162,296	22897	524272609	2004/05	96,594	-183979	33848198849
2005/06	117,387	-22012	484528144	2005/06	247,008	-33564.8	1126595799
2006/07	157,452	18053	325910809	2006/07	335,716	55143.2	3040772506
2007/08	150,817	11418	130370724	2007/08	370,237	89664.2	8039668762
2008/09	109,043	-30356	921486736	2008/09	353,309	72736.2	5290554790
Total	696,995		2386569022		1,402,864		51345790707
Average	139,399				280,573		
S.D	24426.26159				113298.048		
C.V	0.175225515				0.403809806		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad(X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad(X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{2386569022}{5}} \qquad \text{X}\sqrt{\frac{5134579070\quad 7}{5}}$$

= 24426.261 = 113298.048

C.V= $\frac{\sigma}{\overline{X}} \times 100\%$ C.V= $\frac{\sigma}{\overline{X}} \times 100\%$

= 17.52% = 40.38%

Annex- XXIV

Analysis of payable deferred period

BNL				**UNL**			
Year	PDP (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	PDP (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	246.407	12.83179	164.6548097	2004/05	37.08284	-71.8487	5162.237608
2005/06	177.1211	-56.4542	3187.073231	2005/06	105.4661	-3.46548	12.00951964
2006/07	252.3842	18.80897	353.7772081	2006/07	124.7102	15.77863	248.9651262
2007/08	282.8423	49.26702	2427.239056	2007/08	142.1228	33.19125	1101.658843
2008/09	209.1217	-24.4536	597.97874	2008/09	135.2759	26.34431	694.0228512
Total	1,168		6730.723045		545		7218.893948
Average	234				109		
S.D	41.02049197				42.48203723		
C.V	0.175620024				0.389988354		

$\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$ $\pm X\sqrt{\frac{1}{n} \quad (X\ Z\overline{X})2}$

$X\sqrt{\frac{6730.72}{5}}$ $X\sqrt{\frac{7218\ .893}{5}}$

=41.020 = 42.482

C.V= $\frac{\sigma}{\overline{X}} \times 100\%$ C.V= $\frac{\sigma}{\overline{X}} \times 100\%$

= 17.56% =38.99%

Annex- XXV

Cash Conversion Cycle

BNL				**UNL**			
Year	CCC (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	CCC (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	122.1823	63.01461	3970.84085	2004/05	27.73844	39.2232	1538.459482
2005/06	134.9065	75.73884	5736.37115	2005/06	-32.8874	-21.4026	458.072662
2006/07	31.07104	-28.0966	789.4205004	2006/07	-33.3638	-21.879	478.6912764

2007/08	-7.80382	-66.9715	4485.179795	2007/08	-15.5988	-4.11402	16.92517113
2008/09	15.48234	-43.6853	1908.408102	2008/09	-3.3123	8.172467	66.78921885
Total	**296**		**16890.2204**		**-57**		**2558.93781**
Average	**59**			**Average**	**-11**		
S.D	**58.1200**			**S.D**	**22.6200**		
C.V	**1.098255084**			**C.V**	**-2.202306**		

$$\pm X\sqrt{\frac{1}{n}\quad (X\ Z\overline{X})2} \qquad \pm X\sqrt{\frac{1}{n}\quad (X\ Z\overline{X})2}$$

$$X\sqrt{\frac{16890.220}{5}} \qquad X\sqrt{\frac{2558\ .93}{5}}$$

= 58.12 = 22.62

C.V= $\frac{\sigma}{\bar{X}} \times 100\%$ C.V= $\frac{\sigma}{\bar{X}} \times 100\%$

= 1.098% = -2.2023%

Annex- XXVI

Net Profit of BNL and UNL

BNL				UNL			
Year	NP (X)	$(X-\overline{X})$	$(X-\overline{X})^2$	Year	NP (X)	$(X-\overline{X})$	$(X-\overline{X})^2$
2004/05	37,141	22406	502028836	2004/05	42606	-98176.4	9638605517
2005/06	25,359	10624	112869376	2005/06	93167	-47615.4	2267226317
2006/07	21,565	6830	46648900	2006/07	140783	0.6	0.36
2007/08	15,625	890	792100	2007/08	189199	48416.6	2344167156
2008/09	-26,015	-40750	1660562500	2008/09	238157	97374.6	9481812725
Total	73,675		2322901712		703,912		23731811715
Average	14,735				140,782		
S.D	24098.24533				77025.66409		
C.V	1.635442506				0.547125664		

$$\pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2} \qquad \pm \text{X}\sqrt{\frac{1}{n}\quad (X\ \text{Z}\overline{X})2}$$

$$\text{X}\sqrt{\frac{2322901712}{5}} \qquad \text{X}\sqrt{\frac{2373181171\quad 5}{5}}$$

= 24098.245 = 77025.66

C.V= $\frac{\sigma}{\bar{x}} \times 100\%$ C.V= $\frac{\sigma}{\bar{x}} \times 100\%$

= 1.6354 % = 0.5471 %