

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

Nepal is a small, least developed and landlocked country situated between two large countries India and China. It has lots of problem as well as prospectus too. Unemployment is said to be the biggest problem of the country. Nepal is an agricultural country. Most of the people of the nation are primarily engaged in agricultural sector and they are depended on agriculture to fulfill their basic needs.

A weak economy in one country may be offset by a strong economy of Nepal, it is very essential to develop the infrastructure and facilities for the establishment of manufacture and processing industries.

Industries have not been developing to the extent of expectation in Nepal. The reason for it is the lack of dashing entrepreneurs. We can trace the industrial development process in Nepal mainly after establishment of Biratnagar jute mill and Udhog Parishad in 1936. People hesitate to invest due to the lack of sufficient investing capital. Unstable political environment is another reason for it. States should effort to encourage people for investment and create new investment opportunities with the minimum required facilities. For a successful investment, first one should know his/her own financial condition. It is necessary to look in the factors, which influence the development of industries to assess those factors.

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).

Industrialization is the pre-requisite for economic development as the history of advanced country now. For development, the share of industrial sector rise and that agriculture sector decline. This is only positive through a policy deliberate industrialization (Jhingan, 2003).

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 on a performance of industrialization is to increase the national income (Baryle, 1969). The industrial sector has failed to contribute enough to the national income and to provide sufficient employment to the labour force (Jhingan, 2003).

The manufacturing sectors have to face Varian presets which have acted as constraint in growth of manufacturing industries. Such problems are raised due to land locked and underdevelopment situation of the county, 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, unawareness of the industrial potential, higher cost of production, low productivities of inputs, instabilities in government policies (Pradhan, 1994)

Industrialization is the process of manufacturing customer's goods, capital goods and of creating social overhead capital in order to provide goods and services to both individual and business (Jhingan, org 2003). It is an important factor for achieving the basic objective of a country's economic and social progress. Industrialization not only provides goods and services but also creates employment opportunities. It facilitates an effective mobilization of resource of capital, skills, which might otherwise remain unutilized. It also acts as a vehicle for fostering innovation and improvement. Industrial development thus, has a multiplier effect on economy. (Pant, 2002).

The pace of industrialization in Nepal is very slow. It is completely a new phenomenon. Biratnagar Jute Mills, 1936, marked up beginning of organized manufacturing industry in Nepal followed by Morang Cotton Mills, Raghupati Jute Mills and Juddha Match Factory which were established till 1946 in Biratnagar. During the period of Second World War, the promoter of these industries could reap windfall profit within a very short period because of extreme shortage of essential consumer'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 years (Pant, 2002). After the end of Second World War, Biratanagar Jute Mills and Juddha

Match Factory in Biratnagar continued operating successfully. Most of the modern industries either closed down or was declined (Agrawal, 2003).

During the third plan, (1965-70) an industrial promotion and productivity center, a joint project of NIDC and HMG/N was established to act as an agency for providing facilities for industry (Ministry of Industry and Commerce, 1976). The government attempted to establish some industries with an objective 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 new 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 is invested in all most areas of industries.

Development plans of Nepal have been emphasizing the development of both public and private sector industries. But there is also another view in this regard. It is mentioned that, that is not private sectors which has not come foreword to stabilizer industry, but it is the concerned authorities that didn't allow the private sector an appropriate types of clear policy and practicable programs, best in reality, would be realized. 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 for more listing of projects in the company's development plan (Pradhan,1994.)

The government has a good attention and to play a very careful role to develop industrialization. Economic liberalization and privatization, tax rebates, developing industries and other facilities in the main attraction for new establishment of industries. Many experts provide different policies and technique for appropriate cash management. Due to the lack of the adequacy knowledge, the policies and techniques have not been applied or adopted in Nepalese manufacturing companies effectively and efficiently.

## **1.2 Statement of the Problem**

Government of developing countries have generally felt a strong urge to develop and modernize their economies at faster pace and more importantly, on a rational and socially

desired footing. In most of the organization, the management of cash has been misunderstood and the managers are found over conscious about the burdening of money rather than its sufficient utilization. Nepalese financial companies are donated bulky portion of money in GDP. Many people are getting employment opportunity in this sector. Most of the banks of the worlds are suffering from economic crises. Nepal is being a least develop country and most of the financial institutions may not follow the proper system of managing the cash. Cash management in manufacturing companies of Nepal is primarily based on traditional approach, lacking in scientific approach. A more serious aspect of cash management has been the absence of any formalized system of planning and budgeting. Due to the lack of proper management system of cash, already established some public manufacturing companies are going to be closed. Managing cash in an organization is extremely important tasks for a financial manager because primary goal of financial manager is to maximize the value and is based on cash flows. Cash is most important and non earning assets for the operation of business. It is an idle and non earning assets. Therefore; the firm should keep sufficient cash neither more nor less. More cash balance reduces the rate of return on equity and hence the value of the firm. The idea of cash management has not come directly and independently in its separate entity. Before 1970s cash management was affiliated with the economics. Many more organization of the world was enjoying by making reasonable profit margin and many organizations before 1970s period survive without paper management in cash.” But the reason of inflation in 1970s the situation changed and many profitable enterprises were confronted with the problem of liquidity and even faced technical in solvency. Amount of cash need to keep in organization should appropriately decided. Some other scholars have been already studied about it. But position of public manufacturing companies clearly stated. So that the attempt has been made to identify the answer of the following questions as a major problem:

- ) What is the liquidity position of the company and are the companies able to maintain appropriate level of liquidity position?
- ) Are the companies able to trade off liquidity and profitability in order to increase profit?
- ) What is relationship between and among influencing variables of cash management?
- ) Are the companies able to collect and to make payment at a considerable time span?

### **1.3. Objectives of the Study**

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

1. To examine the cash management practices in listed manufacturing companies.
2. To identify the liquidity position of the companies.
3. To Study the relationship of cash with other influencing aspects of cash management whether it is significant or not.
4. To analyze cash conversion cycle of the companies.

### **1.4. Limitations of the Study**

The study is focused within the area of cash management. The limitations of the study are as follows:

- ) Only five companies have been chosen as a sample among listed manufacturing companies to fulfill the purpose of the study.
- ) Only six years data has been used because of constraints of time.
- ) Not more than secondary data i.e. B/S. and P/L A/C of the companies has been used so that the reality of the result may be actual or not.
- ) Only financial and statistical tools and techniques have been used for analyzing data.
- ) The yearly average data of the companies has been considered to identify the result of the research.

### **1.5 Signification of the Study :**

The signification of the study are as follows:

#### **1. Prevention from insolvency**

If the company enable to pay regular amount to supplier, worker and staff and other outsider company will go on liquidation in any time. But sufficient cash balance help the company from this emergency.

**2. Promptness in payment**

Sufficient cash balance help to pay supplier, worker and staff and other outsider in time, by this cause noone ask questions about liquidity of the company, it increase the goodwill.

**3. Advantage of cash discount**

Sufficient cash balance help to pay in time on credit purchase which help to get cash discount.

**4. Advantage of Fevorable Business Opportunities**

In the business of operation have various favourable opportunity in addition to cash discount i.e. purchase any property, organization and goods in low cost etc. this type of a opportunity doesn't get time to time. Sufficient cash balance of business utilise such a portunities .

**5. Strong Credit Rating**

Sufficient cash balance help the company to purchase, goods, on fevorable price. Bank doesn't reject the loan. Sufficient cash balance help to make payment which help the company on first renking.

**6. Helpful in Emergency**

In an emergency of business i.e. brakedown of main equipment, firing, accident, Straike, Lockon, help the cash balance to run business organization. Having this incident business organization loos goodwill and doesn't get resource from outside at that time business organization use own internal resources cash balance.

**1.5. Organization of the Study**

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

**Capter-1, Introduction:** This chapter includes background of the study, statement of the problem, objective and limitation of the study.

**Chapter-2, Review of literature:** The second chapter, review of literature deals with theoretical framework and review of related studies.

**Chapter-3, Research Methodology:** This chapter deals with introduction, research design, population and sample, nature and source of data and tool and techniques for analysis data i.e. statistical and financial tools.

**Chapter-4, Presentation and analysis of data:** The fourth chapter deals with presentation of related data collected from different sources then analysis them to reach closer to the actual result by using financial and statistical tools and techniques.

**Chapter-5, Summary of major findings, conclusion and recommendations:** The last chapter provides the summary of major findings, recommendation and conclusion of overall study.

An extensive bibliography and appendices are also included at the end of the part of thesis book.

## **CHAPTER TWO**

### **REVIEW OF LITERATURE**

#### **2.1. Conceptual Framework**

##### **2.1.1. Meaning of Cash Management**

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 tender money issued by a determinate authority. However, over concern of the meaning of cash is to look from a viewpoint 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 or 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 (Saksena, 1974). As such whatever cash a corporation has must be utilized efficiently to meet obligations of interest payment cash is obtained from borrowing, and it is received through issue of share. The corporation has responsibility to owners in assuring them to pay favorable rate of return. Since cash is no easy to obtain, the available cash must be prudently spent without incurring loss (Shrestha, 1980). Although it is impossible to formulate a set of assets management policies of universal applicability, one rule or policy that appears to be conserved (Kent, 1964). 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 it doesn't mater 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).

Cash is the most important current assets for the operations of the business. It is an idle and non-earning asset. Therefore, the firm should keep sufficient cash, neither more, nor less. More cash balances reduce the rate of return on equity and hence the value of the firm's stock.



The term cash includes coins, currency and cheques held by the firm and balances in its bank accounts. Sometimes near-cash items, such as marketable securities or bank deposits, are also included in cash.

Managing cash flows is an extremely important task for a financial manager, because the primary goal of a financial manager is to maximize a firm's value and is based on cash flows. The financial manager's task is determining how much cash a firm should have on hand at any time to ensure normal business operations continue without interruption. If a firm holds more cash than it needs, shareholders' returns will not be maximized.

Cash Management assumes more important than other current assets because cash is the most significant and the least productive asset that a firm holds. The aim of cash management should be to maintain adequate cash position to keep the firm sufficiently liquid and to use excess cash in some profitable way. Therefore, financial manager should try to maintain the optimum level of cash that maximizes the value of the firm. (Manandhar, Dhakal, Thapa, Koirala, Basnet: 2011)

### **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 balance (d) Use of most inexpensive source of financing for cash balances 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 losing potential customers by establishing a system of lock boxes, electronic fund transfer, pre-authorized checks, and deposit concentration.
- b) To delay payment as long as permitted without damaging firm's credit rating by

establishing controlled disbursement system.

- c) To minimize cash balance without adversely affecting the business operation by flowing the techniques of cash balance management such as Baumol and 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 money market instruments (Pradhan, 1992).

### 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 also includes near cash assets, such as marketable securities and time deposits in banks. The main characteristics of these are that they can be readily sold and converted into 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? As per Khan and Jain, there are four primary motives of cash balance, these are:

**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 a variety of transaction to accomplish its objectives, which have to be paid 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.

**Precautionary Motive:** The cash balance hold in reserves or random and unforeseen fluctuation in cash flows are called as precautionary balances. In other word, precautionary motive of holding cash implies the need to hold cash and to meet unpredictable obligation. Thus, precautionary cash balance serves to provide a cushion to meet unexpected

contingencies. 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-term credit. If a firm borrows at short term to pay for unforeseen obligation, it will need to maintain a relatively small balance and vice-versa.

**Speculative Motive:** It refers to the desires of a firm to take advantages of opportunities which presents themselves at unexpected moments and which are typically outside the normal course of business. While the precautionary motive is defensive in nature 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
- ) Delay purchase of raw materials on the anticipation of decline in prices and ,
- ) Make purchases at favorable prices.

**Compensating Motive:** It is to compensate 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 and return and such balance is compensating balance.

Compensating balance is also required by some loan arrangement between a bank and its customers. During periods when the supply of credit is restricted and interest rates are rising, banks require a borrower to maintain a minimum balance in this account as a condition precedent to 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. The requirement of precautionary balances can be met out of short-term borrowing.

#### **2.1.4. Objective of Cash Management**

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

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

**Minimizing Funds Committed to Cash Balance:** 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-earnings 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. However, if cash is kept idle it contributes directly nothing 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 payments of obligation. For improving the efficiency of cash management, effective method of collection and disbursement should be adopted (Shrestha, 1980).

The methods of efficiency of cash management are described as:

**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 special handling of the movement of fund (Shrestha, 1980).

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 wire transfer can be made automatically, according to instruction given by the firm the concentration bank reports available balances daily. So, the firm's treasurer can take maximum advantages of investing opportunities.

A second method of concentration banking employs a depository transfer cheque (DTC), which is non-negotiable demand deposit instrument used to transfer money from one bank account to another (Hampton, 1989).

Special handling of cash enables corporations to have sufficient funds that can be put to profitable use. It is often found that some corporations open too many accounts in a bank and thereby creating excessive idle fund in a bank. Such policy, no doubt, profitable in strengthening the degree of goodwill with bankers. Yet, they make little sense in the overall cash management of the corporations. Moreover, the corporations should give special attention to handling of large remittances with a view of get them quickly deposited in a bank and undertake measures to pick up their cheques personally on the use of air mail and special delivery (Shrestha, 1980).

**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). Quick collection and slow disbursement accomplish the corporation with adequate cash on hand for a longer period. Effective control of disbursement can result in a faster turnover of cash (Shrestha, 1980). The idea is to collect receivable as soon as possible, but pay account payable as late as it is consistent with maintaining the firm's credit standing with suppliers (Van Horne, 2002). In other words, most firms desire to maintain reputations and

good relation with suppliers by disbursing funds in timely and accurate fashion. At the same time, a disbursement system should have a low operating cost, provide a accurate management report and extend disbursement float where practical and reasonable (Hampton, 1989).

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 form the company's concentration of master account to the different operating account in order to return each operating account to zero balance (Hampton, 1989).

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

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

**Cash Velocity:** Efficiency in the use of cash depends upon the cash velocity i.e. level of cash over period. But the amount of sales is crucial factor that determines the cash velocity. The greater amount of sales the greater would be the additional cash necessary to conduct the higher scale of operation (Shrestha. 1980).

$$\text{Cash Velocity} \times \frac{\text{Annual Sales}}{\text{Average Cash Balance}}$$

**Minimum Cash Balance:** Corporations are required to keep a minimum cash balance requirement of bank either for services it renders or in consideration of lending arrangement. Every bank calculates the average collected balances and 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 corporations always find it safe to keep large funds with bank otherwise it may be misutilized or misappropriated if kept in hand (Shrestha, 1980).

### 2.1.6. Factors Determining Cash Needs

**Synchronization of Cash Flow:** With a perfect synchronization of cash inflows and outflows and higher degree of predictability, cash balances could be held to low levels. An example of synchronization demonstrates low cash flows can be improved through more frequently requisitioning of fund to divisional 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 or daily. 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 effect of changes in process of clarity. The first type of float is disbursement float. As we write check, it declares book balance but doesn't immediately change available balance. Similarly the collection float refers to the result of cheque available balance. The net float is the overall difference between the firm's available and its book balance (Pradhan, 2004).

**Short Cost:** Another general factor to be considered in determining cash need is the cost associated with a short fall in the cash needs. The cash forecast presented in the cash budget would reveal periods of cash shortages. In addition, there may be some unexpected short fall. Every shortage of cash whether expected or unexpected involves a coast 'depending' upon the severity, duration and frequency of the shortfall and how the shortage is covered. Expenses, incurred as a result of shortfall are called short costs. Included in the short cost are 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 near cash assets such as marketable securities
- ) Borrowing cost associated with borrowing to cover the shortage include items such as interest on loans, commitment large and other expenses relating to the loan.
- ) Loss of cash discount, that is, a substantial loss because of temporary shortage of cash.
- ) Cost associated with deterioration of the credit rating which reflected a higher

bank charges on loans, stoppages of suppliers, 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 balanced (Khan and Jain, 2003).

**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 (Khan and Jain, 2003).

**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 by salary, handling of securities and so on (Khan and Jain, 2003).

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

The impact of uncertainty on cash management can, however, is mitigated through (1) improved forecasting of tax payments, capital expenditure, and dividend and so on: and (2) increased ability to borrow through overdraft facility (Khan and Jain, 2003).

### **2.1.7. Techniques for Effective Cash Management**

**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 and outflows for a given period. Cash plans are very crucial in developing the overall operating flow of the firm (Pandey, 1999).



**Cash Forecasting and Budgeting:** Cash budget is the most significant device to plan for and control cash receipts and payment. A cash budget is a summary statement of the firms 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 or less are considered as short term forecast. The important functions of carefully developed as short term forecast are to: (a) determine operating cash requirement (b) anticipate short term financing and (c) 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 flows during predetermined period. In case of these companies where each items of income and expenses involve flows of cash; this method is favored to keep a close control over cash (Pandey, 1999).

This method of cash forecasting involves the tracing of working capital flows. It is same time called the sources and uses approach. There are two objectives of the adjusted net income method. They are to project company's need for cash at a future data 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. One popular used method of projecting working capital is to use ratios relating account receivable and inventory to sales (Pandey, 1999).

One useful method of getting insights about the variability of cash flow is sensitivity analysis. Cash budget can be prepared under three sales conditions they are optimistic, most probable and pessimistic. Knowledge of the outcome 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 (Pandey, 1999).

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 product development or plant 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 them.

- ) To improve corporate planning. Long-term cash forecast compel each division to plan for future and no formulated project carefully (Pandey, 1999).

**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 outflow should be declared.

**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.

**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 lending.

#### **2.1.8. Advantage of Adequate Cash**

The following are major advantage of adequate cash:

- ) To take trade discount
- ) To maintain credit worthiness
- ) To take advantage of favorable investment opportunities
- ) To meet emergencies
- ) To facilities smooth operation of business (Pradhan, 2000).

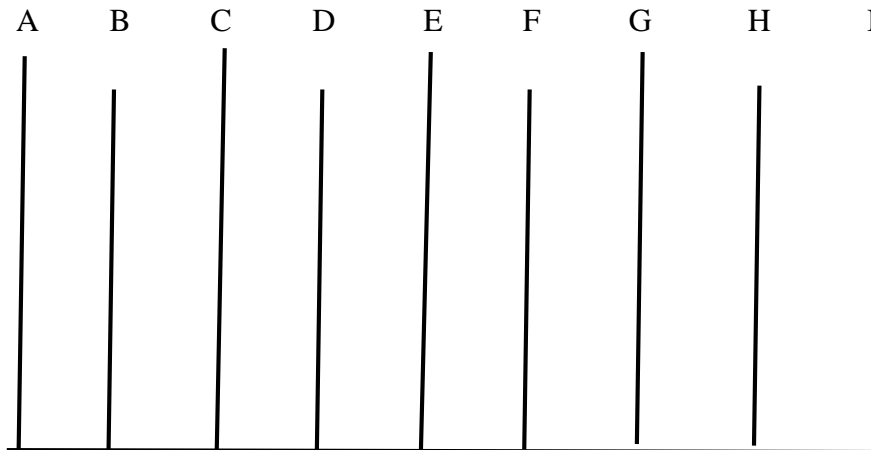
#### **2.1.9. Basic Strategies for Cash Management**

The cash 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.

**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 to best management of cash. The cash cycle of the corporate is as follows (Shrestha, 1980).

**Figure No. 2.1 Details of cash Cycle**



Source: M.K. Shrestha Financial Management, 1982.

- Where,
- A = Material ordered,
  - B = Material received
  - C = Payments,
  - D = Check clearance
  - E = Good sold,
  - F = Customer mails payment
  - G = Payment received
  - H = Check deposited
  - I = Funds collected

In addressing the issue of cash management strategies, we are concerned with time period involved in strategies ABCD & FGHI. A firm has no control over time involved between stage A & B. The lag between D & E is determined by the production process and inventory policy. The time period between stage E and F is determined by credit terms and payment policy of customers.

**Minimum Operating Cash:** The higher the cash turnover, the less is the cash a firm

requires. 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 cash is determined by dividing the total operating annual outlays 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:

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 advantage of cash discount available on prompt payments.

This strategy is to increase the inventory turnover ratio, avoiding a stock out that is shortage of stock. This can be done in following ways:

- ) Increasing the raw material turnover by using more efficient inventory control techniques.
- ) Decreasing production cycle through better production planning, scheduling and control techniques; it will lead to 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 requirement and, hence, a saving in cash operating cost.

We spell out the implication of these strategies to minimum cash balance and the associated cost with the underlying assumptions that a firm should adopt such cash management strategies as well lead to the minimizing of the operating cash requirement. In other words, efficient cash management implies minimum cash balance consistent with the need to pay bills when they become due (Khan and Jain, 2003).

#### **2.1.10. Cash Conversion Cycle**

The cash conversion cycle model diagrams the length of time between when the company

makes payments and when it receives 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 expenditures for productive resource and its own cash receipts from the sale of products. The cash conversion cycle equals the average length of time a dollar is tied up in current assets.

Symbolically,

$$\begin{array}{rcccccc}
 1 & + & 2 & - & 3 & = & 4 \\
 \text{Inventory} & & \text{Receivable} & & \text{Payable} & & \\
 \text{Conversion} & + & \text{Collection} & - & \text{Deferral} & = & \text{Cash} \\
 \text{Period} & & \text{Period} & & \text{Period} & & \text{Conversion} \\
 & & & & & & \text{Cycle}
 \end{array}$$

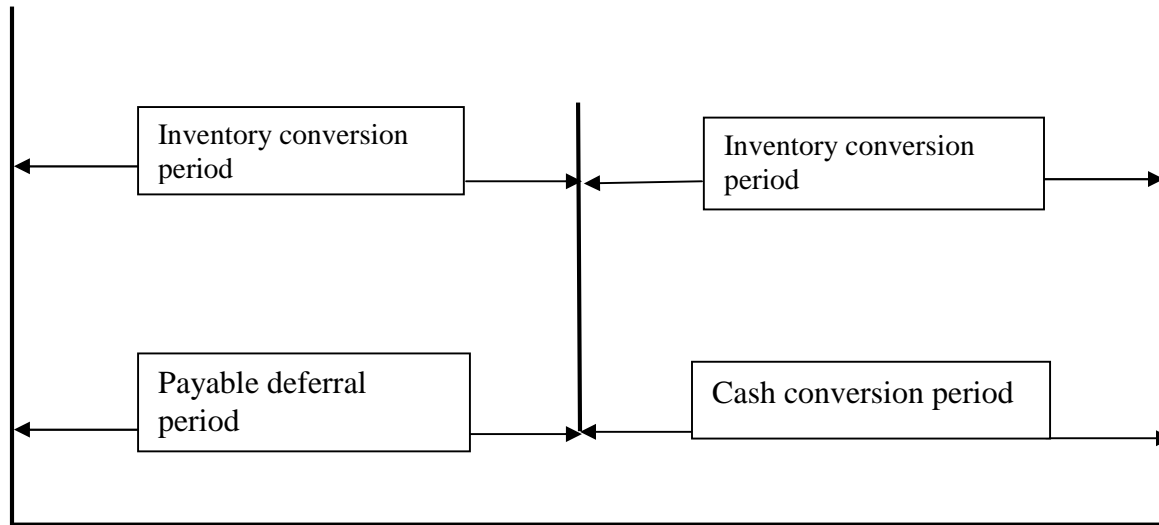
In another way,

Receipt delay - Payment delay = Net delay

Table of cash conversion cycle model

Finished goods and sell them

**Figure No. 2.2 Cash Management Cycle Model**



Receive raw	Pay cash for	Collect account
Material	Purchased Material	receivable

Source: Brigham, Gapenski, Eharhardt, 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 reduce the receivable collection or (3) if it can lengthen the payable deferral period by slowing down its own payment. To take extents that these actions can be taken without increasing cost or depressing sales, they should be carried out (Brigham and Friends, 2001).

### **2.1.11. 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. The test of liquidity is the availability of cash to meet the firm's obligation when they become due. In other words, firm require cash for various purpose, out of 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. Since cash inflows and outflows may not synchronize all the cash balance often fluctuates and as a result, the balance could be sometimes 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:

### ) **Baumol's Model (Baumol, 1952)**

This model, developed by William Baumol (1952) essentially applies a basis inventory model to cash management. The purpose of this model is not 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 this model, has two elements they are (i) cost of converting marketable securities in cash, and (ii) cost of opportunities cost. As such firm attempts to minimize the holding cash and cost of marketable securities to cash. The conversion costs are incurred each time marketable securities are converted into cash.

Symbolically total conversion for period =  $\frac{TB}{C}$

Where,

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

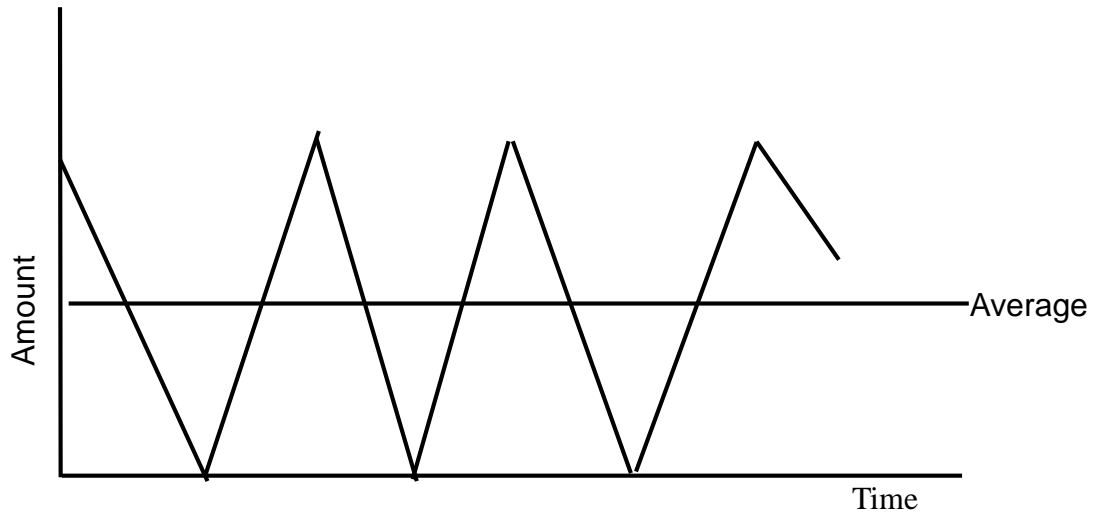
T = Total transaction cost needs for period

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 outflows. At the beginning of each period, the firm start with a cash balance which is gradually spends until at the end of the period. It has a zero cash balance and must replenish its each supply to the level of cash balance. It the beginning which is shown graphically as:

Figure No. 2.3 Baumol Models for Optimum Cash Balance



Source: I.M. Pandey, p.927.

Mathematically,

The opportunity cost of holding cost =  $i [C/2]$

Where,

$i$  = Interest rate that could have earned

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

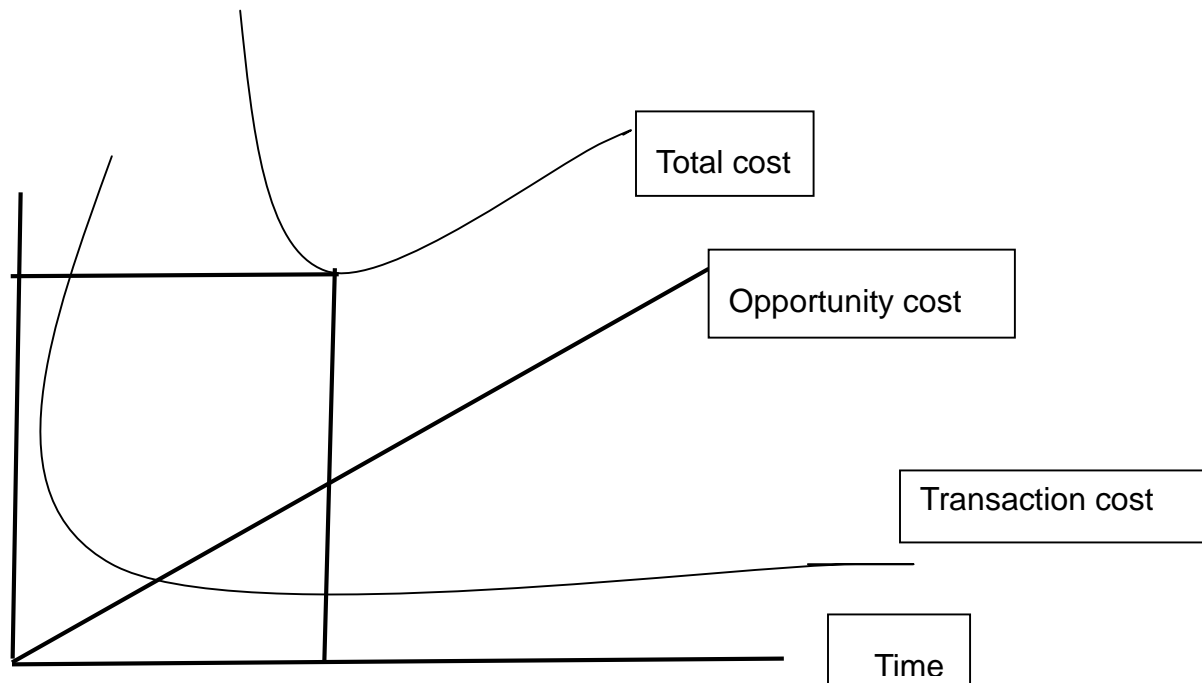
The total cost associated with cash management comprising total conversion cost plus opportunity cost of not investing cash until needed in interest bearing instruments can be

symbolically,  $c X \frac{2bt}{i}$



Graphically,

**Figure No. 2.4: Cost Trade off, Baumol's**



(Source: I. M. Pandey, F. M., P. 298.)

In sum, the Baumol model of cash management is very simplistic further; its assumptions of certainty and regularity of withdrawal of cash do not realistically reflect the actual situation in any firm. Also the model is concerned only with the transaction balance and not with precautionary balances. In addition, the assumed 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 undoubtedly major consideration in any financial manager's cash management strategy.

### ) **Miller-Orr Model (Miller and Orr, 1966)**

The objective of cash management, according to Miller Orr (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 flows fluctuate randomly and hit upper control limit, then 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 normal level.

Symbolically,

$$c \times \frac{bE(N)}{t} \Gamma iE(m)$$

Where, b = the fixed cost per conversion

E (M) = the expected average daily cash balance

E (N) = the expected number of conversion

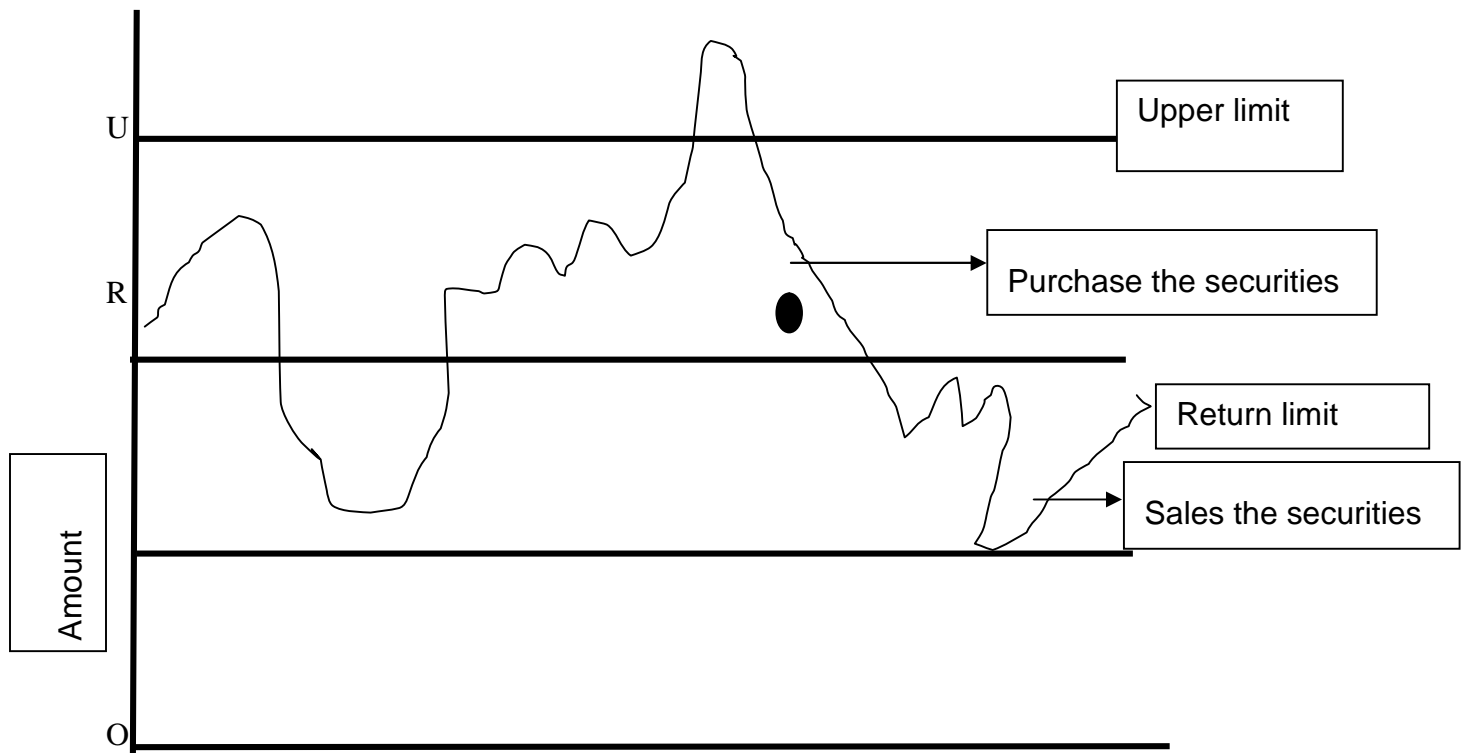
t = Number of days in the period

i = Cost opportunity cost

c = Total cash management cost

**Figure No. 2.5: Miller-Orr Model of Optimum Cash Management**

Graphically,



Source: IM Pandey, Financial Management.

According to Miller-Orr model the optimal cash balance (z) can be expressed symbolically

as: 
$$z = \sqrt{\frac{3br^2}{4i}}$$

Where,  $r^2$  = the variance of daily changes in cash balance. Miller-Orr model also specifies the optimum upper boundary (u) as:

$$U = \text{lower limit} + 3z$$

Similarly, return point,

$$R = \text{lower limit} + z$$

If lower limit is zero, Upper limit is three 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 in excess of "U".

### ) **Orgler's Model (Orgler', 1970)**

According to this model, an optimum cash balance management strategy can be determined though the use of multiple linear programming models the construction 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 on working capital balance.

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 generates cash inflows or outflows on adding or subtracting profit opportunities for the firm from its cash management operation. In the objection functions, decision variables which cause inflows, such payments on receivable, have positive coefficient while decision variables which generate cash inflows, such as interest and short tem borrowing have negative coefficient. The formulation of the model requires that the financial mangers

first specify an objective function and then specify a set of constraint.

The constraint of the model could be (i) institutional or (ii) policy constraint. The institutional constraints are those imposed by external factor, that is, bank required compensating balance. Policy constraints are imposed on cash management by the firm itself. For instance, the financial manager may be prohibited from selling securities before maturity either constraint can occur in the model during one monthly period or over several or all the month in one year planning horizon.

Examples of linear programming model are as follows:

Objective function;

Maximize profit =  $a_1 x_1 + a_2 x_2$

Subject to  $b_1 x_1$  production

$b_2 x_2$  constraint

$c_1 x_1 + c_2 x_2$  cash available constraint

$8 x_1 + 8 x_2 >$ current assets requirement constraints

$x_1 > 0; = 1, n$  non- negatively constraints

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

## ) **Monte Carlo Simulation**

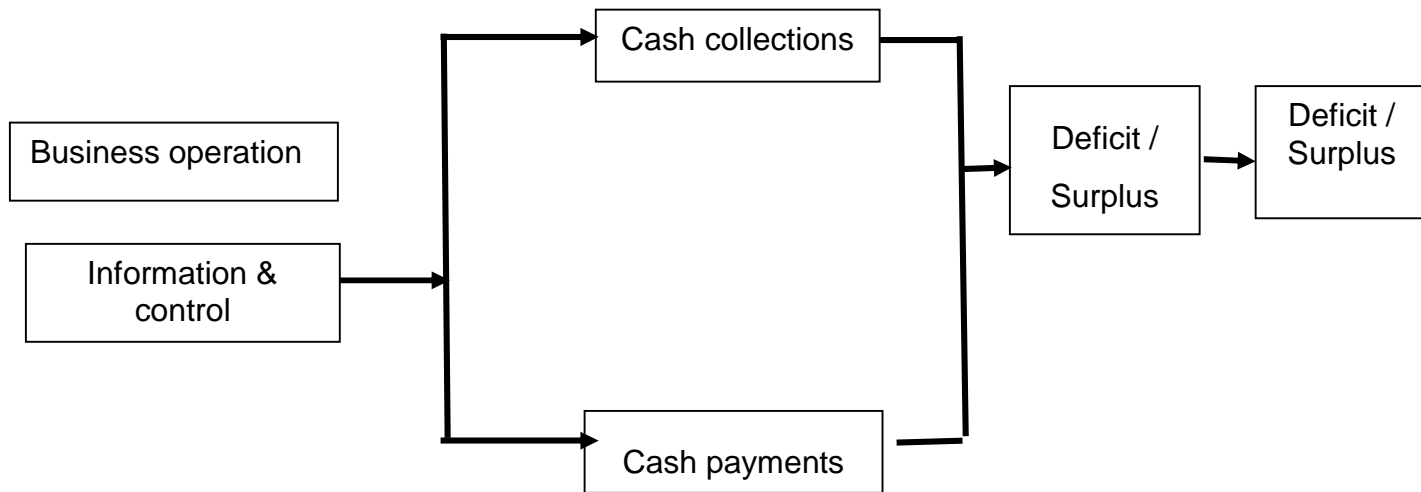
Although the Baumol model and other theoretical models provide insights into the optimum cash balance, they are generally not practical for use. Rather, firms generally set their target balances based as some 'safety stock' of cash that holds the risks of running out of money to some acceptability low level. One commonly used procedure is Monte Carlo Simulation. Sales and collection are the driving forces in cash budget and of course, are subject to uncertainty. 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 spreadsheet program with Monte Carlo adds in software, then the key uncertain variables specified as continuous probability distributions rather than point value.

## 2.2. Review of Books

Various scholars as well as authors have given different views about cash management some of them have to be taken as review of books for cash management. According to Batty (1972) cash is only one constituent of what is essentially a combination of a business resource. It is the part of working capital and as such provides the means of earning a profit investment of business. The objective should aim to obtain an optimum level for each component of current assets figure and a smooth and rapid conversion of these assets so cash both of these lead to improve earning power. He again suggested that if care is taken for cash programmed 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 further sales will probably suffer and, consequently, there will be further deterioration in cash flow. Further, he defined cash management as the process involved in the effective planning and control of cash requirement of a business.

Similarly, Pandey (1999) suggested that the firm should keep sufficient cash neither 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's concerned with the managing of , (i) cash flows into and out of the firm, (ii) cash flows within the firms, and (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. Sales generate cash which has to be disbursed out. The surplus cash has to be invested while deficit has to be borrowed cash same time, it also seeks to achieve liquidity and control. Cash management assumed 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 to pay the firm's obligation. However, cash is unproductive. Unlike, fixed assets or inventories, it doesn't 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 No.2.6. Cash Management Cycle**



(Source: IM Pandey, Financial Management, P.912).

The management of cash is also important because it is difficult to predict cash flows accurately, particularly the inflows, and there is no perfect coincidence between inflows and an outflow of cash. During some period cash outflows will exceed cash inflows because payment of taxes, dividend or seasonal inventory builds up. At other times, cash inflows will be 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 its techniques. An obvious aim of the firm now-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 and Narang (1993) have described about cash management. He said that cash is crucial component of working capital of a concern. Cash like blood stream of human body, gives strength to human body, gives strength to business unit. He explained that cash is ultimate resources for a business. So, management of each working capital cycle that what it had at the beginning of working capital cycle. Further, the important objective in managing cash should be trade 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 solvency is reduced. However, cash is non-earning assets, so unnecessary cash should not be kept as hand than the optimum required continuing 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 to importance of cash management in recognized by all segments of organization activities. If some of department are handled independently without considering their implications of cash management the conflicting interest of these departments are bound to create serious problems. The study of cash management is therefore considered as an integrated approach to management science.

Simons and 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 in terms for medium of exchange. In striking contrast, to activity of cash it is unproductive in nature. Since, measure of value, it cannot expand to grow unless it is converted into other properties. Excessive balances of cash on hand are often referred to as “Idle cash”. To be most useful to a business enterprise, cash must be kept moving.

Hampton (1990) has given more suggestion for effective management of cash. He explained that net working capital is the measure of liquidity, which is defined as the adequacy of near term cash to meet the firm’s obligation. The highly liquid firm had sufficient cash to pay its bills at all time. An illiquid firm is unable to pay its bill 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 will be cause an increase in receivable. 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 linkage with working capital management. He expressed that cash management is one part of the key areas of working

capital management. A part from the fact that is most liquid current asset, cash is the common demonstrator to which all current assets can be 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. motive for holding cash, objective of management, factors determining cash needs, cash management models, cash budgets, basic strategies for efficient management of cash, and specific techniques to manage cash subsequently. Shrestha (1980) has described some conceptual ingredients about cash management which are 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 corporation. He suggested that if cash holding is bad for inefficient corporation, cash shortage is dangerous for efficient corporations. As for inefficient corporations it does not matter whether cash inverses and devise 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 management. After their various studies on it. The bond conceptual finding of their studies provides sound knowledge and guidelines for the future studies in the field 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, compensation 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 ends when a check to pay the firm on its account receivable. The functions end when a supplier, an employee or government realizes collected fund from the firm as an amount payable or accruals. All activities between these two points fall within the reason 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 bill involves account payable and



accrual management. He again described an idea of effective collection and disbursement of cash, we should attempt to accelerate collection and handle disbursement so that maximum cash is available. Collection can be accelerated by means 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, being mid-full, however, of supplier relations. Methods of controlling disbursement that is electronic fund transfer each becoming increasingly important, and most corporations use such transfer in one way or another.

Brigham and Friends (2001) have described some conceptual insights which are based on various research studies. They believed that cash is often called 'non-earning assets'. It is needed to pay for labor and materials, to buy fixed assets, to pay taxes, to service debt, to pay dividend and so on. However, cash itself earns 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 (i) to take trade discount, (ii) to maintain its credit rating and (iii) to meet unexpected cash need.

Pradhan (2004) explained about cash and its management. He told that cash includes coins, currencies, cheques held by a firm, and balances in its bank account. This money is immediately useable to pay bills. Sometimes "Near cash items" are also included 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 be converted back to cash without delay if the need arises. 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 only called management of money position because cash includes not only the cash or currency in hand but also the readily convertible securities or other near 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 and 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 nature of cash management function. Financial manager have developed new techniques for optimizing cash balance and determining the appropriate relation between holding cash and holding investment is marketable securities.

### **2.3. Review of Related Study**

In this section an attempt has been made to review some thesis/dissertation and other related publications related to cash management. Only four dissertations have been found which are written on cash management in different categories in Nepal. No one 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 pubic enterprises. He has taken 18 enterprises as a sample. According to his study, he recommended that,

- I. Cash management in public enterprises of Nepal is primarily based on 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 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 and relevant banking arrangement in connection with collection receivables have been virtually ignored in many enterprises.
- III. Majority of the enterprises didn't face any serious liquidity problem. However, this was not because of effective of cash planning and budgeting. The problem of liquidity actually didn't rise 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 enterprises considered the implications of holding idle cash balance and few took in to account the potential benefit of investing surplus in marketable securities. These which failed to consider the cost of administering such investments.
- V. There had been wide variations over-time in the state of financial health of enterprises in terms of the composition of current assets to current liabilities as revealed by the relevant financial ratios.
- VI. Neither 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 to decelerate outflow. 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 (1997) for his cash study of cash management in STCL, have found that,

- I. STCL could not make the best use of available cash balance prudently.
- II. The cash collection efficiency in this corporation is very low.
- III. The collection of trade credit in this 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 respect to current assets has been fluctuating trend similar in the cash with respect to the total assets.

To improve such problem i.e. major critical findings, he had recommend the STCL, to

- I. Efficient management of cash
- II. Prepare monthly trial balance cash, fund statement and financial report
- III. Design the effective A/R management adopt efficient credit policy

- IV. Invest surplus cash in profitable opportunities
- V. prepare cash budget
- VI. Maintain optimum cash balance
- VII. Investment in marketable securities

Some types of study have been done by Gautam (1999). Approximately same conclusion and recommendation has been provided on this study. His study concerned with cash management in Gandaki Noodles Pvt. Ltd. as a cash study the research has not provide another informative findings and conclusion more than the research, has been undertaken by Pradhan (1997). Another research which currently submitted has been found to make the study easier. This study has concerned on cash management in public manufacturing enterprise of Nepal: cash study of Royal Drugs and studied by Sainju (2003). Overall, he concluded the poor cash management practices of Royal Drugs Limited. The uniqueness of this study was:

- a. analysis of profitability,
- b. analysis of liquidity position
- c. analysis of cash flow statement
- d. analysis of cash budget

At last he concluded that,

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

On this study payable deferral period, inventory conversion period and receivable collection period and their aggregate effect on cash management has not been identified i.e. cash conversion cycle of the company has not been identified. Which helps to analysis overall status of collection of net cash in organization. These studies were not able to represent overall status of the companies So that the effort has been made 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.

#### **2.4. Concluding Remarks**

The term cash with refers to cash management is used in two senses. In a narrow sense, it is used to cover cash (currency) and generally accepted equivalents of cash such as cheque, drafts and demand deposit in bank. The broader view of cash management also includes near cash assets. Such as, marketable securities and time deposit in bank. The main characteristics of these are that they can be readily converted into cash. They serve as a reserve of liquidity that provides cash quick when needed. They also provide a short term investment outlet for excess cash and are also useful for meeting planned outflows of funds. We employ the term cash management in the broader sense. Simply stating, management of near cash assets i.e. marketable securities, time deposits in bank, is called cash management. Broadly speaking the management of cash includes the management of cash receivables and inventory. In boarder sense, management of cash receivables and inventory is also called management of cash because receivables and inventory are also supposed to readily converting cash.

Cash is important current asset for the operation of the business. Cash is the basic input needed to keep the business running on a continuous basis; it is also the ultimate output expected to be realized by selling the service or product manufactured by the firm. The firm should keep the sufficient cash, neither more nor less cash shortage will disrupt the firm's manufacturing operation while excessive cash will simply remain idle, without contributing anything towards the firm's probability. Thus, a major function of the financial manager is to maintain a sound cash position.

Cash is the money which a firm can disburse immediately without any restriction. The term cash includes coins, currency and cheques held by the firm, and balances in its bank accounts. Sometimes near cash items, such as marketable securities or bank time- deposits, are also included in cash. The basic characteristics of near -cash asset is that they can readily be converted into cash. Generally, when a firm has excess cash, it invests it in marketable securities. This kind of investment contributes some profit to the firm.

The study of cash management in manufacturing companies has been done. So, that the researcher has chosen this topic (A cash management system in listed manufacturing companies). All researchers were concentrated on liquidity position of listed manufacturing companies in Nepal. But researcher wants to give more emphasis on other influencing factors for cash such as cash conversion, cash conversion cycle i.e. account receivable conversion period plus inventory conversion period minus account deferral period. So the researcher is going to fulfill the gap previous studies.

## **CHAPTER THREE**

### **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 sample, nature of sources of data and tools that have been 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 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 security board of Nepal, are 29, which different nature of production. Among them only five companies are selected as a sample for the study. The selection method is convenience sampling purely subjective. Purposive sampling technique has been adopted to determine samples from the population. The only criteria of samples section is data availability and objective achievement of the study. Brief introduction of sample firms have been presented as below:

##### **a. Uni Lever Nepal Ltd.**

Nepal Lever Limited has named as Unilever Nepal Ltd. It was established in 1994 as a joint

venture company with an object of establishing a factory to manufacture soap, detergents, cosmetics, toiletries, oleaginous, saponaceous, unguents and other chemicals products under the brand name of the products of Hindustan Lever Limited. Hindustan Lever Limited with 80 percent ownership has invested Rs.737 million in equity. General Public with 15 percent ownership has invested Rs. 138.1872 million and Ravi Vakta Shrestha with 5 percent ownership has invested Rs. 46.0625 million in equity. This is the first joint-venture of Hindustan Lever Limited outside India.

**b. Nepal Lube Oil Ltd.**

Nepal Lube Oil Ltd was established in 1984 as a public sector company under the company act 1964. The main objective of the company is to produce lubricating oil and process them for the use of automatic machineries and also to contribute for economic development of the country by reducing the import of various lubricating oils. The company was privatized in 1955 in accordance with privatization programme of His Majesty's Government. The company is managed by ABB Investment Pvt. Ltd. under the leadership of Mr. Arun K. Chaudhary as managing director.

**c. Bottlers Nepal Limited**

Bottlers Nepal Limited was established in 1986 under the company act, 1964 with the object of producing and bottling soft drinks under the brand of coke, fanta, sprite, etc. The company has launched various types of promotional activities with financial and technical support from the coca-cola company. The sales and marketing strategy of the company is being guided by the coco-cola Company and F and N Coca-Cola Pvt. Ltd.

**d. Nepal Banasapti Ghee Limited**

Nepal Banaspati Ghee Udhog Limited was established under the company and markets them all over the country. The main promoter of the company is Salt Trading Corporation Limited, which has largest Trading Net Work and will trading reputation throughout the country.



**e. Raghupati Jute Mill**

Raghupati Jute Mills Ltd. was set up in 1946 with plan to install looms numbering to 10000 with an authorized capital of Rs. 16 million and paid-up capital of Rs.13 million. Investors in the country were so much enthusiastic by the achievement of the first Jute Mills that the shares were over subscribed. But this enthusiast was short timed. It started production lately in 1956 A.D. Even then there were serious and repeated banging on the part of management and their successive.

**3.4 Nature and Sources of Data**

This study exclusively depends on secondary data. These data have been collected from the authentic sources of sample firms. Financial statements, such as, balance sheet and profit and loss account of the companies are major documents to generate these data. Other information related to this study have been collected from-

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

**3.5. Variables Specification**

To avoid ambiguity, confusion and misunderstand, the key term are used in these studies which are defined as follows:

**a. Sales**

Sales include only trading sales and ignore miscellaneous sales.

**b. Average collection period**

The average collection period/receivable collection period, which is the average length of time required to convert receivables in to cash that is, to collect cash following a sale, is calculated by dividing account receivable by the average credit sales per day (Brigham and Friends, 201). Symbolically,

$$\text{Average collection period} = \frac{\text{Receivables}}{\text{Sales}}$$

**c. Payable Deferral Period**

Payable deferral period concerns with the payment of cash of credit purchase. It can be calculated by dividing account payable by average cost of goods and per day.

Symbolically,

$$\text{Payable deferral period} = \frac{\text{Account Payable}}{\text{Cost of goods Sold}} \times 360$$

**Account receivables to cash balance**

It is an indicator of the liquidity of cash. It measures the relationship between cash and volume of account receivable period or time.

$$\text{Account receivables to cash balance} = \frac{\text{Cost } \Gamma \text{ Balance}}{\text{Account Receivables}}$$

**3.6 Methods of Data Analysis**

Only financial a statistics tools are used for the analysis data which is already stated in the limitation of the study. The procedures of analyzing data are described as follows:

### 3.6.1. 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 to obtain a better understanding the firm's position and performance.

Financial analysis is the process of selection, relation and evolution.

#### Ratio Analysis

##### ) **Liquidity Ratio**

Analysis of Current Ratio: The ratio examines the short-term solvency, i.e. liquidity position of the firm. The higher the of current ratio, the larger is the amount of rupee available per rupee of current liquidity 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:

$$\text{Current Ratio} \times \frac{\text{Current assets}}{\text{Current Liabilities}}$$

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 asset quickly into cash in order to meet current liabilities. The ideal quick ratio is 1:1.

$$\text{Quick Ratio} \times \frac{\text{Quick Ratio}}{\text{Current Liabilities}}$$

Where, Quick assets = current assets-Inventories

##### ) **Turnover Ratio**

Cash Turn-over Ratio: Cash turnover ratio explains how quickly the cash is received from the

sales or in other it measures the speed with cash more through a company's operation: cash turnover ratio is obtained by the following formula:

$$\text{Cash Turnover ratio} \times \frac{\text{Sales}}{\text{Cash in hand} \Gamma \text{ Bank balance}}$$

Inventory Turnover Ratio: This ratio indicates the number of times inventory is converted in sales during the year, mathematically,

$$\text{Inventory turnover ratio} \times \frac{\text{Sales}}{\text{Closing inventory}}$$

$$\text{Inventory Conversion Period} \times \frac{\text{Days in year}}{\text{Inventory turnover ratio}}$$

In 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 receivable or debtors are converted into cash. In other words, the receivable turnover ratio is the test of liquidity of debtors of a firm. Symbolically,

$$\text{Receivables Collection Period / Average Collection period} \times \frac{\text{Days in year}}{\text{Receivable turnover ratio}}$$

The higher turnover ration and shorter the receivable collection period, the better is 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 debtor. In general, therefore, short collection period is preferable.

**Cash and Bank Balance to Other Aspects:** 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 are 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,

$$\text{Cash to current liabilities} \times \frac{\text{Cash } \Gamma \text{ Bank Balance}}{\text{Current Liabilities}}$$

Cash and bank balance of A/C payable

$$\text{Cash to A/C payable} \times \frac{\text{Cash } \Gamma \text{ Bank balance}}{\text{A/C payable}}$$

**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.

**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,

$$\text{Cash conversion cycle} = \text{Inventory Conversion Period} + \text{Receivable Collection Period} - \text{Payable Deferral Period}$$

Payable deferral period is calculated by,

$$\frac{\text{A/C Payable}}{\text{Cost of goods sold}} \times \text{Days in Year}$$

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

### 3.6.2. Statistical Tools

**Correlation with Variable (s):** Correlation describes the degree to which one variable is linearly related to another. Cause is not identified by the study of correlation but it explains the relationship between two or more variables.

Symbolically,

$$\text{Correlation } (r) = \frac{uv}{\sqrt{u^2 v^2}}$$

**Where,**

$$u = x - \bar{x}$$

$$v = y - \bar{y}$$

x and y are variables

$$\text{Probable error} = 0.6745 \times \frac{1}{\sqrt{N}}$$

Where, N = No. of period, the sample is taken out

$r^2$  = Correlation of determination

If “r” is less than probable error, there is no evidence of correlation i.e. the value of “r” is not at all-significant.

If the value of “r” is more than six time of probable error from the coefficient of correlation we get respectively the upper and lower limits.

Within which coefficient of correlation in the population can be expressed to lic.

Symbolically,

$$P = r \pm PE$$

Where, P = Correlation in the population

**Standard Deviation:** The standard deviation measures the absolute variability of a distribution. The greater the amount of dispersion or variability, greater the standard deviation, for the greater will be magnitude of deviation of the value from the mean. A small standard deviation means a high degree of uniformity of the observation homogeneously of a series.

Symbolically,

$$\text{Standard deviation } X \sqrt{\frac{u^2}{N}} \text{ or } \sqrt{\frac{v^2}{N}}$$

**Regression analysis and Regression Line:** In regression analysis the nature of relationship between two variables is established and the unknown variable is established on the basis of other known variable. Thus the regression analysis is the statistical method for determining the nature of relationship that exists among two or more variables and then using that relationship between the two variables, the value is the more accurate. The unknown variable is called dependent variable and the known variable is called independent variable.

Symbolically,

Regression line of “x” variable (x) only “y” variable (y) is given

$$\text{by: } X - \bar{X} + r \frac{\sigma_x}{\sigma_y} (y - \bar{Y})$$

Where,  $\bar{x}$  = Mean of “x” variable  $x$

$\bar{Y}$  = Mean of “y” variable  $y$

$\sigma_x$  = Standard deviation of "x" variable

$\sigma_y$  = Standard deviation of "y" variable

$r$  = Karl Pearson's coefficient of correlation

We can say,  $r \frac{\sigma_x}{\sigma_y}$  regression coefficient of "x" on "y" in measures  $r$

The change on “x” corresponding to a unit change in “y”.

**Multiple Regression Analysis:** It is a statistical technique for investigating the relationship between one dependent variable and a set of two or more independent variables the multiple regression analysis represents the extension of two variable regression analyses. It is definitely to simple regression analysis as it is more close to reality the multiple regression equation in

Symbol is:

$$y = a + b_1 x_1 + b_2 x_2$$

Where,

y = dependent variable

x<sub>1</sub> and x<sub>2</sub> = Independent variable

a = Value of “y” when x<sub>1</sub> and x<sub>2</sub>=0

b<sub>1</sub> = partial regression coefficient of y<sub>1</sub> on x<sub>1</sub> when x<sub>2</sub> is constant (Amount change in y, per unit change in x<sub>1</sub>, holding x constant).

Coefficient of multiple determinations of multiple regressions.

Symbolically,

$$R^2_{y.x_1, x_2} = \frac{a + y \Gamma b_1 + y | 1 X b_2 + y x_2 Z N y^2}{y^2 Z N y^2}$$

The calculated value indicates that two independent variables x<sub>1</sub> and x<sub>2</sub> explain the total variation in dependent variable “y”. If we want to the accuracy of estimate still further, we may add more independent variable in regression model.



## CHAPTER FOUR

### PRESENTATION AND ANALYSIS OF DATA

The presentation and analysis of data section is the main text the study of cash management. In Nepalese listed manufacturing companies to gain insight into the predetermined objectives of the study. For the purpose of presentation of data, the published most recent financial statements of the listed companies which fall within the sample 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. Analysis of Cash 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. To following table represents the level of cash, in sampled manufacturing companies, and the average, during the study period.

**Table No. 4.1**  
**Level of Cash and Bank Balance in Selected Manufacturing Companies**

*(Rs. In million)*

<b>Name Of Company</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>AV</b>
B.N.	47.83	3.94	29.46	5.34	13.76	1.917	17.04
SRJM	0.15	0.58	3.86	0.81	1.09	1.16	1.275
UNL	99.11	6.27	62.33	317.40	391.54	443.32	219.5
NBG	6.13	2.77	1.75	2.06	1.1512	3.518	2.90
NLO	0.90	1.81	1.32	2.93	0.71	2.910	1.76
Average	30.82	3.07	19.74	65.71	81.65	90.57	48.60

*Source: A.R. of Company and FSLC*

The average cash balance held by Nepalese manufacturing companies (selected) has been observed to be 30.82 million in 2004/05, 3.07 million in 2005/06, 19.74 million in 2006/07, 65.71 million in 2007/08, 81.65 million in 2008/09, 90.7 million in 2009/10. The cash balance of companies varied widely in all year of study period. The holding of cash position was highest for Uni-Lever Ltd. In 2003/04 (99.11 million) and lowest for SRJM (0.58 million) in 2005/06. However, in 2006/07, the cash balance was highest for NBL by (62.33 million) and lowest for NLO (1.32 million). Likewise, it was highest for same UNL by (317.40 million). Likewise, it was highest for same UNL by (3176.40) and lowest for SRJM (0.81 million) in 2007/08. Highest for UNL by (391.54 million) and lowest for NLO by (0.70) in 2008/09, highest for Uni-Lever Limited by (44331 million) and lowest for SRJM by (1.16 million) in 2009/10. Above table present that, the average cash balance of individual companies over the study period were 19.04 million for B.N., 1.28 million for SRJM, 220 million for UNL, 2.90 million for NBJ, 1.76 million for NLO where as overall industry average during the period of study was 46.60 million. It was presented highest for Uni-Lever Ltd. (220 million) then lowest was presented for SRJM (1.28 million). Individual company's cash balance has been observed in a wide variation in different period of study. The cash balance was highest in 2008/09 (47.83 million) and lowest in 2009/10 (1.92 million) and for B.N., highest in (2009/10) (3.86 million) and lowest in 2001/01 (0.15 million) for SRJM, highest in 2008/09 (443.32 million) and lowest in 2007/08 (6.27 million) for UNL. Similarly, the observation was highest in 2006/07 (6.13 million) and lowest in 2008/09 (1.15 million) for NBG and it was highest in 2007/08 (2.93 million) and lowest in 2008/09 (0.70 million) for NLO. The main causes of fluctuation in cash balance re credit policies, sales strategies and collection procedures of concerned industries.

Effective management of cash is betterment for the company's point of view rather than its higher and lower fluctuation. Uni-liver limited was Bottlers Nepal limited has shown the upper level of cash balance in the majority of the study period. Sri Raghupati Jute Mills, NBG and, NLO have shown the lowest level of cash balance in the majority of the study period.

#### 4.1.1 Analysis of Changes in Cash Balance in Manufacturing Companies

**Table No. 4.2**

**Cash Balance of Manufacturing Companies during the Period of Study**

<b>Year</b>	<b>Cash Balance (In Million)</b>	<b>Change</b>
2004/05	30.82	-
2005/06	3.07	- 90.03%
2006/07	19.74	542.99%
2007/08	65.71	232.88%
2008/09	81.65	24.26%
2009/10	90.57	10.92%

*Source: Table 4.1* (Taking previous years as a base)

Above table shows the increasing and decreasing trend and average cash balance of selected manufacturing companies during the study. The holding of cash at first, has been seen in decreasing trend by –90.30 percent in 2008/09. It has been seen in increasing trend by 542.99 percent in 2008/09. Likewise it was observed by 232.88 percent in year 2007/08. Thereafter it was been observed in increasing trend by 24.26 percent and 10.92 percent in 2005/2006 and in 2009/10 respectively.

**Table No. 4.3**

**Cash Balance of Individual Companies during the Period of Study**

<b>Name of Company</b>	<b>In m. Cash (average)</b>	<b>% deviation with overall average</b>
B.N.	17.04	-64.945%
SRJM	1.28	-97.37%
UNL	220	352.68%
NBG	2.90	-94.03%
NLO	1.76	-96.38%

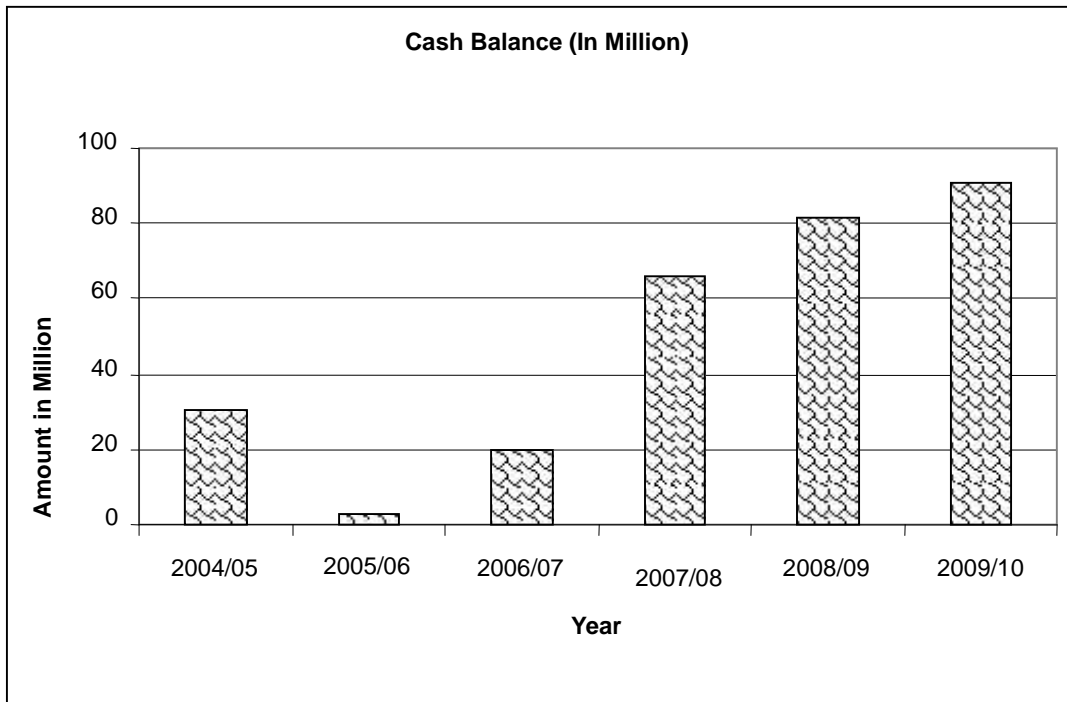
*Source: Table 4.1*

Above table shows the deviation of cash balance in individual companies over the study period. UNL has shown highest positive deviation i.e. 352.68 percent and SRJM has shown the highest negative deviation i.e. -97.37 percent which was compared by overall industry average i.e. 48.60 million. The observation explains that only UNL has contributed for increment and overall cash balance for companies in study period. A positive value of UNL means that positive relation between cash collection and disbursement of this company and in other hand negative deviation means negative relation between cash collection and disbursement among sample companies.

#### 4.1.2. Graphical presentation of Cash Balance in Manufacturing Companies

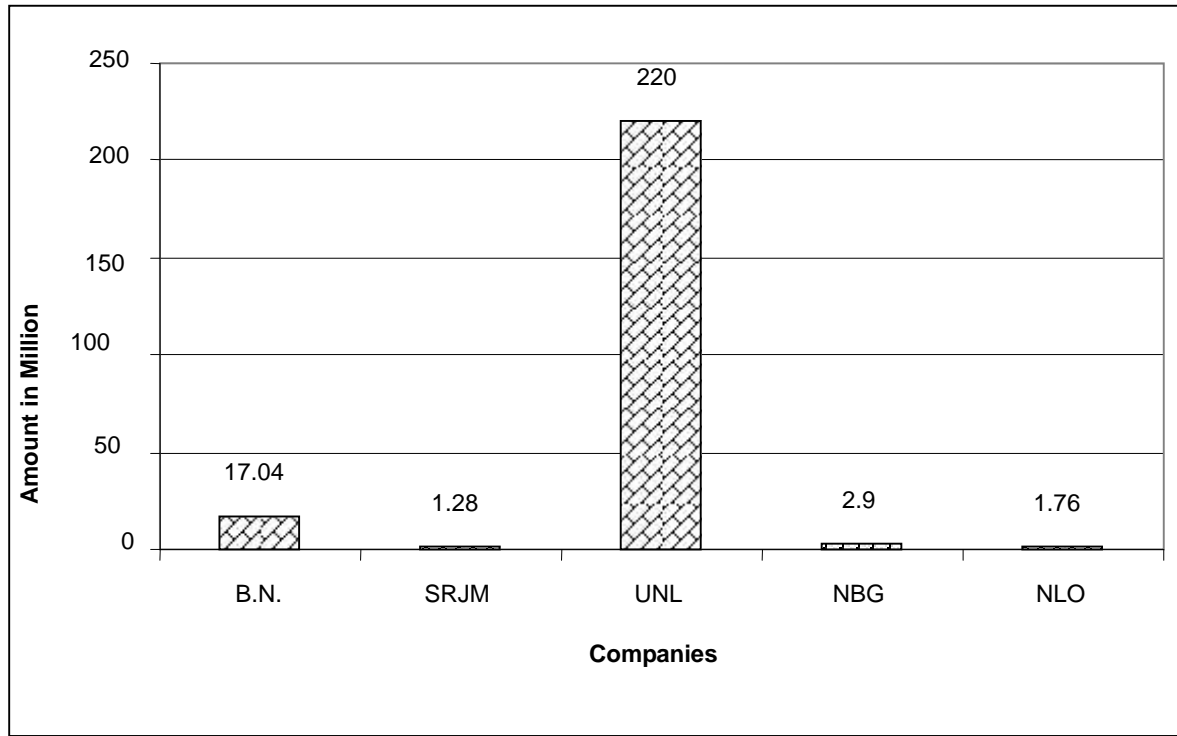
Figure No. 4.1

Bar Diagram for Cash Balance of Manufacturing Company's during Study Period



**Figure No. 4.2**

**Bar Diagram for Cash Balance of Individual Company's over the Period**



The strong position of cash has been observed in year 2008/09 and weak position has been observed in year 2007/08. Similarly, UNL has the strongest position of cash and SRJM has a lowest position of cash in overall study period. 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 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 ratios express sound liquidity and vice-versa. However, too high ratio indicates excess cash balance being help idle.

**Table No. 4.4**

**Cash Turnover Ratio of Selected Manufacturing Companies**

<b>Name Of Company</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>AV</b>
<b>B.N.</b>	7.79	105.22	18.18	114.17	45.96	320.68	102
<b>SRJM</b>	1741.93	508.72	109.42	452.68	375.61	417.20	600.92
<b>UNL</b>	17.44	245.77	19.83	33.92	3.90	3.34	49.03
<b>NBG</b>	22.84	89.11	241.44	109.80	97.24	2.20	93.77
<b>NLO</b>	119.140	39.90	109.03	40.67	120.44	40.54	77.28
<b>Average</b>	381.82	197.74	98.38	144.2	128.63	156.80	184.6

*Source: Cash and Sales, from AR and FSLC*

Erratic fluctuations have been observed in cash turnover ratio of manufacturing companies. The fluctuation of cash turnover is the indications of no definite policy on holding cash balance in relation to sales volume, is applied by listed manufacturing companies of Nepal. The average cash turnover ratio of manufacturing companies has been observed to be 381.82 in 2004/05, 197.74, in 2005/06, 98.38, in 2006/07, 144.25, in 2007/08, 128.63 in 2008/09, 156.80, in 2009/10. Whereas the overall industry average over the study period was 184.6. Cash turnover ratio varied widely across the study period. The ratio was highest for SRJM (1741.93) and lowest for Bottlers Nepal (7.79) in 2004/05, highest for SRJM (508.72) and lowest for NLO (39.90) in 2005/06 highest for a Nepal Banaspati Ghee (241.44) and lowest for B.N. (18.18), in 2006/07, highest for SRJM (252.668), and lowest for UNL (3.92) in 2007/08, highest for SRJM (375.61) and lowest for UNL (3.90) in 2007/08, highest for SRJM (4117.20) and lowest for NGB (2.20) in 2009/10.

Above table shows that same company's cash turnover ratio. In different period, has been observed in fluctuated trend. The average cash turnover ratio of individual company over the period of study has been observed by 102 for B.N, 600.92 for SRJM, 49.03 for UNL, 93.77 for NBG and 77.28 for NLO, where overall industry average was 184.60. The highest observation was 320.68 in 2009/10 and lowest was 7.79 in 2004/05 for Bottlers Nepal highest was 1741.93 in 2005/06 and lowest was 109.42 in 2006/07 for SRJM, highest was 245.77, in

2005/06 and lowest was 3.34, in 2009/10 for UNL, highest was 241.44, in 2006/07 and lowest was 2.20 in 2009/10 for NBG and highest was 120.44, in 2008/09 and lowest was 40.54 for Nepal Lube Oil Ltd.

As a fact the highest turnover ratio of cash indicates the sound liquidity position of the company and vice-versa. But too much ratio indicates the excess balance being held idle. The fluctuating of this ratio interprets that the cash management practices of the companies has not done by definite policy and any planned approach. The main causes of fluctuation of cash turnover ratio are sales policy and external and internal environment of the industry.

#### **4.2.2. Analysis of the Relation between Cash (y) and Sales (x)**

To analyze the relationship between cash (y) and sales (x) Karl Person's correlation coefficient has been determined. The calculated correlation between "x" and "y" has been observed to be 0.697.

Generally, it indicates the positive relationship between cash and sales. To make it confirm, whether it is real or not for overall listed manufacturing companies in Nepal, it is compared with probable error and  $6 \times PE$ ,  $r = 0.697 > PE = 0.1416$  and  $r = 0.697 < 6PE = 0.8496$  indicates that 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. The regression equation of sales (x) on cash (y) has been obtained to be  $x = 515.20 + 0.327y$ . The regression coefficient, 0.327, explains that occurs 0.327m. Change in sales if cash is changed by 1m. In same direction it confirms that cash is the significant denominator for sales.

Similarly, the regression equation of cash (y) on sales (x) has been obtained to be  $y = -740.66 + 1.486x$ . The regression coefficient 1.486, interprets that 1m. change in x may occur changes in y to be 1.486 m. which is less significant relationship of cash on sales (for detail calculations see Appendix "J").

### 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 No. 4.5**  
**Cash to Total Assets Ratio in Manufacturing Companies**

*Percentage*

Name Of Company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AV
<b>B.N.</b>	5.67	0.41	2.84	0.51	1.55	0.19	1.86
<b>SRJM</b>	0.05	0.19	1.23	0.27	0.35	0.36	0.40
<b>UNL</b>	15.73	0.82	10.91	40.44	41.67	40.34	24.99
<b>NBG</b>	3.30	1.18	0.80	1.07	0.95	3.00	1.71
<b>NLO</b>	0.71	154	1.18	2.04	0.52	2.01	1.33
<b>Average</b>	5.09	0.83	3.39	8.87	9.00	9.18	6.06

*Source: Cash and TA, from AR and FSLC.*

The average investment in cash by Nepalese manufacturing companies has been observed to be 5.09 percent in 2003/2004, 0.83 percent in 2004/2005, 3.39 percent in 2005/06, 8.87 percent in 2006/07, 9.00 percent in 2007/08, and 9.18 percent in 2008/09, whereas overall industrial average cash to total assets ratio was 6.06 percent. The ratio cash to total assets varied widely across the manufacturing companies in all year of study period. The ratio was highest for UNL (15.73%) and lowest for SRJM (0.05%) in 2000/2001, highest for NLO (1.54%) and lower for SRJM (0.19%) in 2007/08 highest for UNL (10.91%) and lowest for NBG in 2008/09 highest for UNL (40.44%) and lowest for SRJM (0.27%) in 2006/07). Highest of UNL (41.67%) and lowest for SRJM (0.35%) in 2007/08), highest for UNL (40.34%) and lowest for B.N. (0.19%) in 2008/09.

According to above table some individual company's cash to total assets ratio has been observed in widely fluctuation trend in different study period. The highest ratio was 5.67

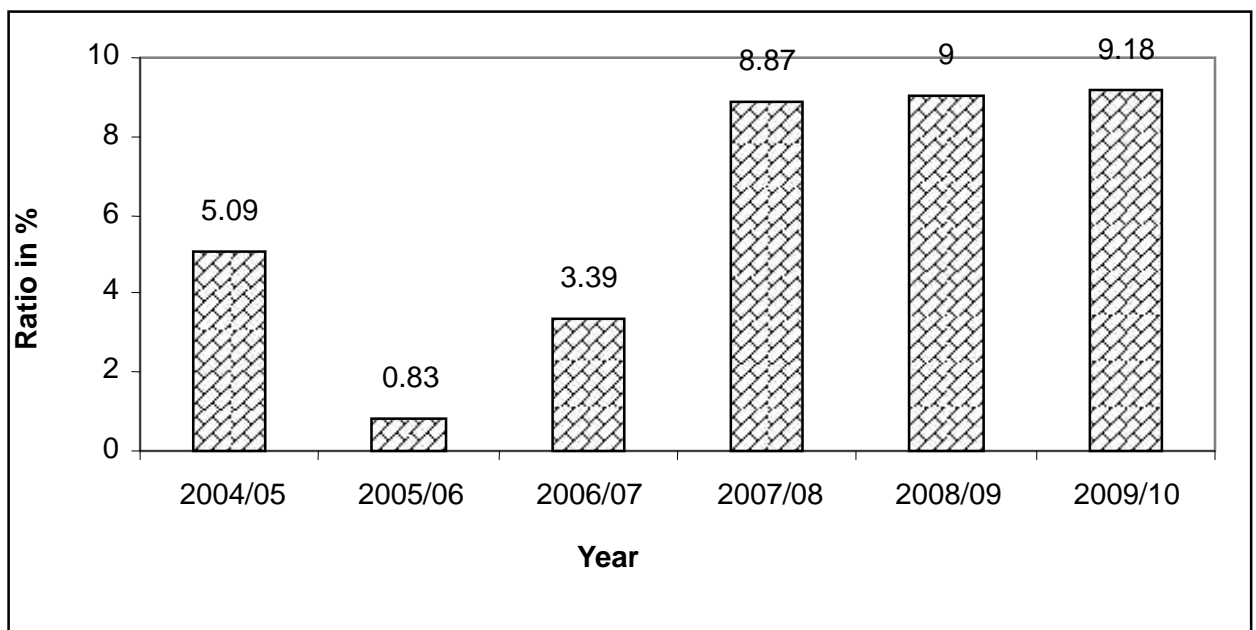


percent in 2006/07 and lowest was 0.19 percent in 2008/09 for B.N., highest was 1.33 percent in 2008/09 and lowest 0.05 percent in 2006/07 for SRJM, highest was 41.67 percent in 2007/08 and lowest was 0.82 percent in 2007/08 for UNL, highest was 3.30 percent in 2006/07 and lowest was 0.0 percent in 2008/09 for NBG, highest was 2.04 percent in 2006/07 and lowest was 0.52 percent in 2007/08 for NLO. The average cash to total assets ratio of the individual companies over the study period has been observed by 1.86 percent for B.N., 0.40 percent for SRJM, 24.99 percent for UNL, 1.71 percent for NBG and 1.33 percent for NLO whereas overall industry average cash to total assets ratio was 6.06 percent.

The strong variation in cash to total assets ratio explains that the company has not been adopted specific policy of investment of cash in total assets.

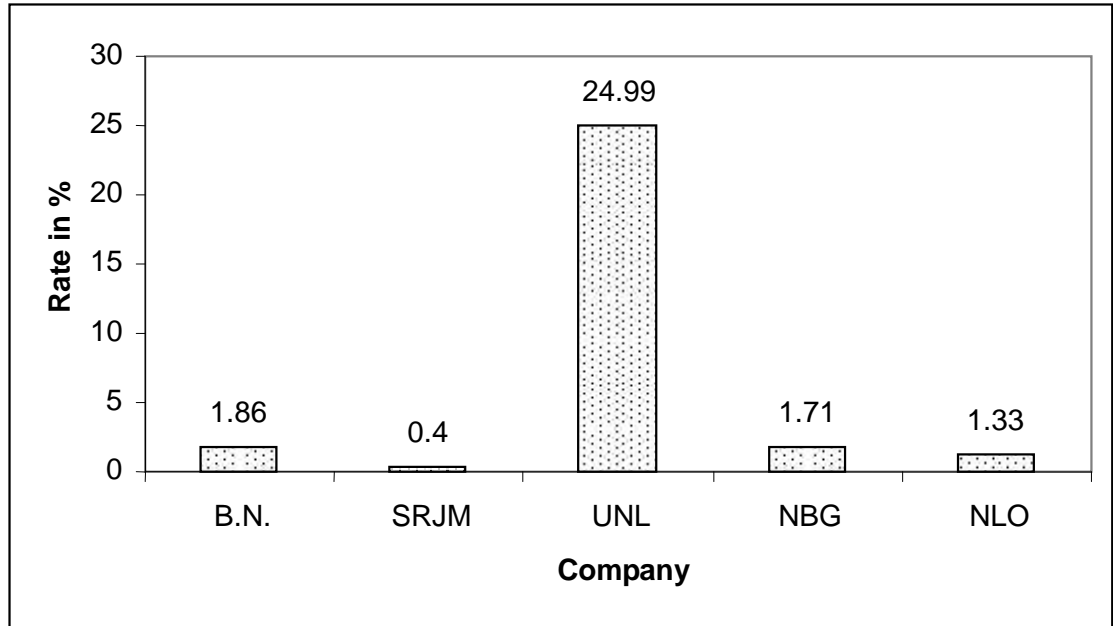
#### 4.3.1. Graphical Presentation of Cash to Total Assets Ratio

**Figure No. 4.3**  
**Cash to Total Assets Ratio of the Manufacturing Companies during Study Period**  
**(2007/08 means 1, likewise other)**



**Figure 4.4**

**Cash to Total Assets Ratio of Manufacturing Companies over the Study Period**



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

**Table No. 4.6**

**Cash to Current Assets of Selected Manufacturing Companies (In %)**

Name Of Company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AV
<b>B.N.</b>	12.95	1.00	5.82	1.00	3.07	0.35	4.03
<b>SRJM</b>	0.25	0.97	4.79	1.06	1.36	1.15	1.60
<b>UNL</b>	21.93	1.10	15.62	53.81	43.93	61.21	32.93
<b>NBG</b>	3.76	1.31	0.90	1.33	1.38	4.29	2.16
<b>NLO</b>	0.86	1.86	1.41	2.38	0.60	2.29	1.57
<b>Average</b>	7.95	1.25	5.71	11.92	10.06	13.86	8.46

*Source: Cash and CA from AR and FSIC*

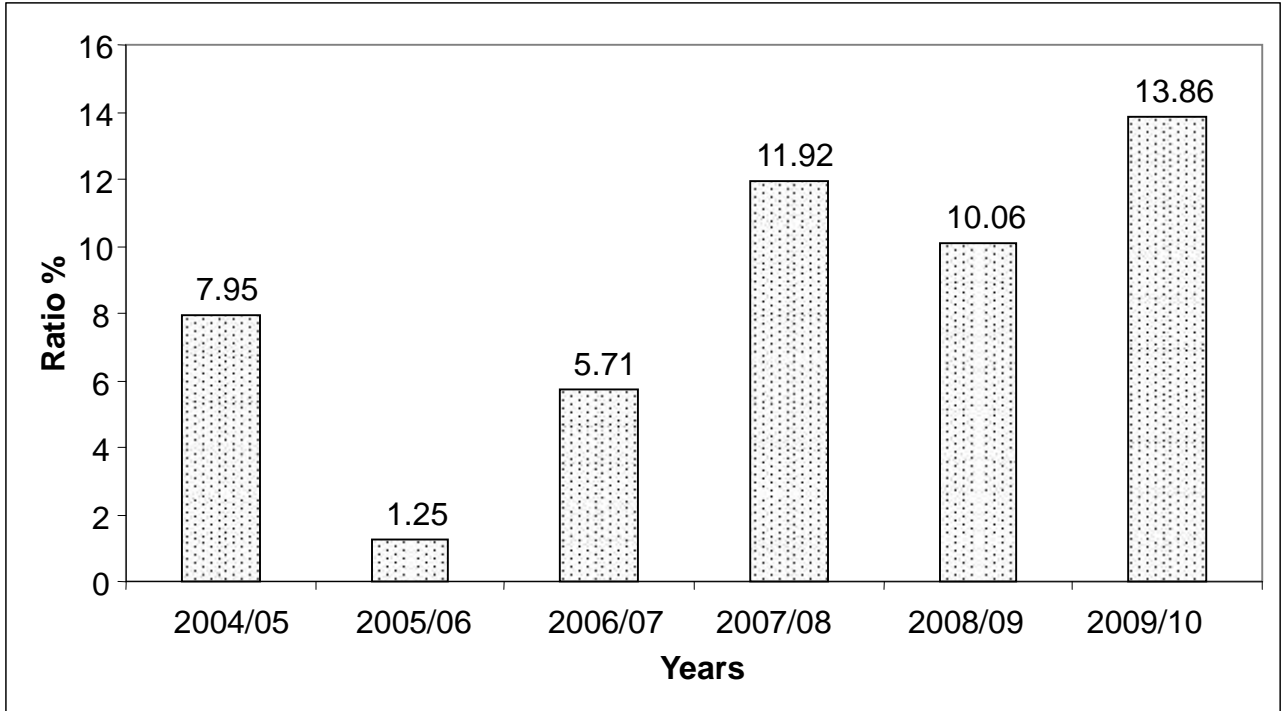
The average cash to current assets ratio has been observed in selected manufacturing companies in study period to be 7.95 percent in 2004/05, 1.25 percent in 2005/06, 5.71 percent in 2006/07, 11.92 percent in 2007/08, 10.06 percent in 2008/09, 13.86 percent in 2009/10, whereas, the total company average over the study period was 8.46 percent the ratio varied widely across the companies in all period of study. The highest ratio was 21.93 percent for UNL and lowest ratio was 0.25 percent for SRJM in 2007/08, highest ratio was 1.86 percent for NLO and lowest ratio was 0.97 percent for SRJM in lowest ratio was 0.90 percent for NBG in 2006/07, highest ratio was 53.81 percent for UNL and lowest ratio was 1.06 percent for SRJM in 2007/08, highest ratio was 43.92 percent for UNL and lowest ratio was 0.35 percent for BN in 2009/10. Similarly, the highest ratio was 61.21 percent for UNL and lowest ratio was 0.35 percent for BN in 2009/10.

As observing these ratios of individual companies over the period of study, the average cash to current assets ratio has been found to be 4.03 percent for BN, 1.60 percent for SRGM, 32.93 percent for UNL, 2.16 percent for NBG, 1.57 percent for NLO. The ratio varied widely across the year for all companies taken as the sample. The highest ratio was 12.95 percent in 2004/05 and lowest was 0.35 percent in 2005/06 for BN, highest ratio was 4.79 percent, in 2009/10 and lowest ratio was 0.25 percent in 2007/08 for SRGM, the highest ratio was 61.21 percent in 2009/10 and lowest ratio was 1.10 percent, in 2008/09 for UNL, highest ratio was 4.29 for 2009/10 for NBG, similarly, highest ratio was 2.38 percent in 2007/08 and lowest ratio was 0.60 percent in 2008/09 for NLO. The overall industry average ratio was 8.46 percent. The erratic fluctuation suggests that the companies haven't been following the definite policy regarding how much cash balance to hold at the end of fiscal year. The manufacturing companies have undergone cash scarcity to meet short term payments during the study period. However, BN and UNL have been showing the stronger capacity on making payment of short term obligation, being the ratios greater. Cash to current assets ratio of UNL which is higher and cash to current assets ratio of NLO which is lower. In simple higher ratio is better for industry. Higher than its limit is also worst. Ideal cash which is increasing the companies cost.

**Graphical Presentation of cash to current Assets Ratio**

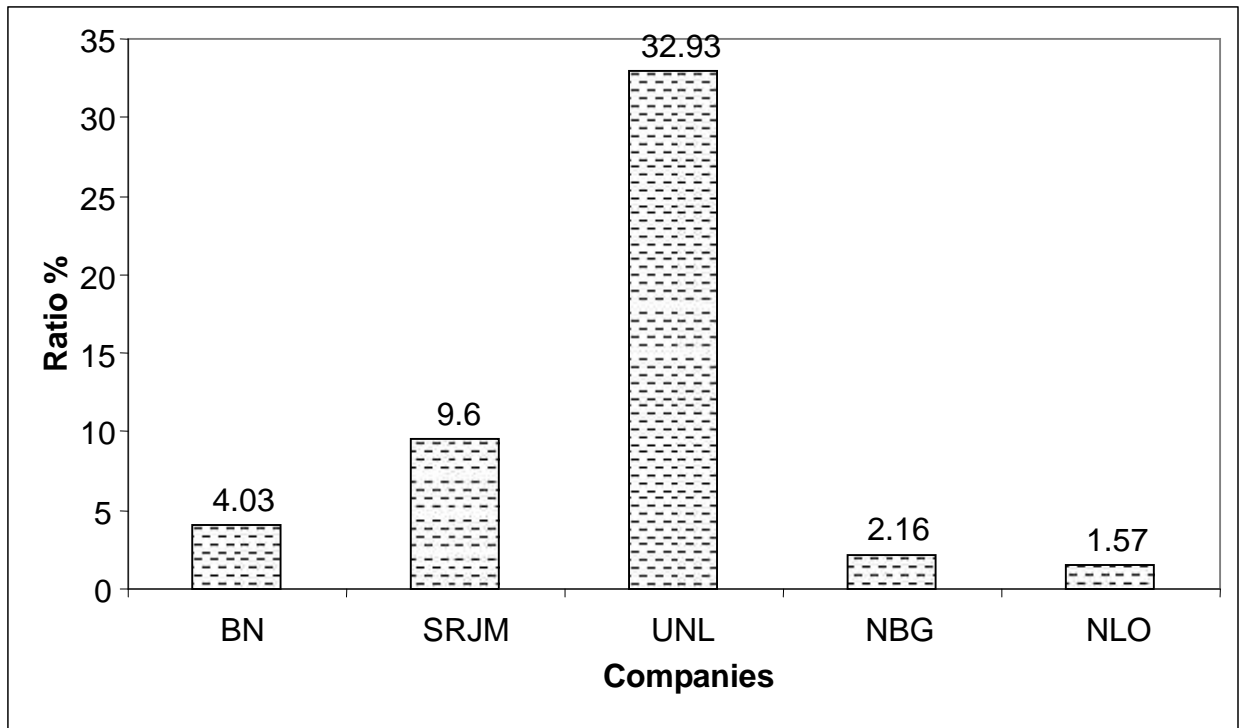
**Figure No. 4.5**

**Cash to Current Assets Ratio in companies during the study period**



**Figure: 4.6**

**Cash to Current asset ratio in individual companies during the study period**



#### **4.4.2. Relationship between Cash and Current Assets**

The correlation coefficient between cash (x) and current assets 'CAS' (y) has been obtained to be 0.81. It shows the positive relation between cash and current assets in sampled listed manufacturing companies. But it was found that is significant relationship of cash and current assets in other word there is evidence that cash and CA are correlated.  $PE = 0.095 < r = 0.81 > 6PE = 0.57$ . Explain that it is same that increase in cash results to increase in current assets and vice-versa. The regression equation of cash (x) and CA (y) has been obtained to be  $X = -121.51 + 0.617y$ , the regression coefficient of cash on CA, 0.61 explains that 1 million changes in current assets to be 0.61 in change in cash in same direction.

Similarly, the regression equation of CA (y) has been obtained to be  $(y) = 223.93 + 1.06x$ . The regression coefficient of CA, (y) on cash (x) 1.06, explains that 1 million change in cash may occur 1.06 million change in CA in same direction (for detail calculation see Appendix 'K').

## 4.5. Cash and Current Liabilities

Among the technique of measuring corporate liquidity the ratios of cash to current liabilities indicates the amount of cash (in Percentage) available to pay the current obligation of the firm. In general a low percentage of cash to current liabilities may be regarded as it may lead to corporate insolvency.

### 4.5.1. Analysis of Cash to Current Liabilities Ratio

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

**Table No. 4.7**  
**Cash to Current Liabilities Ratio of Selected Manufacturing Companies**

*(In %)*

Name of Company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AV
BN	26.94	1.47	9.23	1.72	7.90	0.84	8.01
SRJM	0.45	1.52	6.65	1.81	1.84	1.72	2.33
UNL	37.55	1.77	39.99	87.95	72.01	50.25	48.26
NBG	2.13	0.78	0.49	0.57	0.35	1.01	0.89
NLO	1.93	4.76	3.1	5.05	0.92	3.33	3.17
Average	13.80	2.06	11.87	19.42	16.60	11.43	12.53

The average cash to current liabilities has been observed to be 13.80 percent in 2004/05, 2.06 percent in 2005/06, 11.87 percent in 2006/07, 19.42 percent in 2007/08, 16.60 percent in 2008/09, and 11.43 percent in 2009/10. Whereas overall company average cash to current liabilities ratio 11.53 percent.

The ratio of cash to current liabilities varied widely across the company in all year of study period. The highest ratio was 37.55 percent for UNL and lowest ratio was 0.45 percent for SRJM in 2004/05, highest ratio was 4.76 percent for NLO and lowest ratio was 0.76 percent for NBG in 2005/06 highest ratio was 39.99 percent for UNL and lowest ratio was 0.49 percent for NBL in 2009/10, highest ratio was 87.95 percent for UNL and lowest ratio was

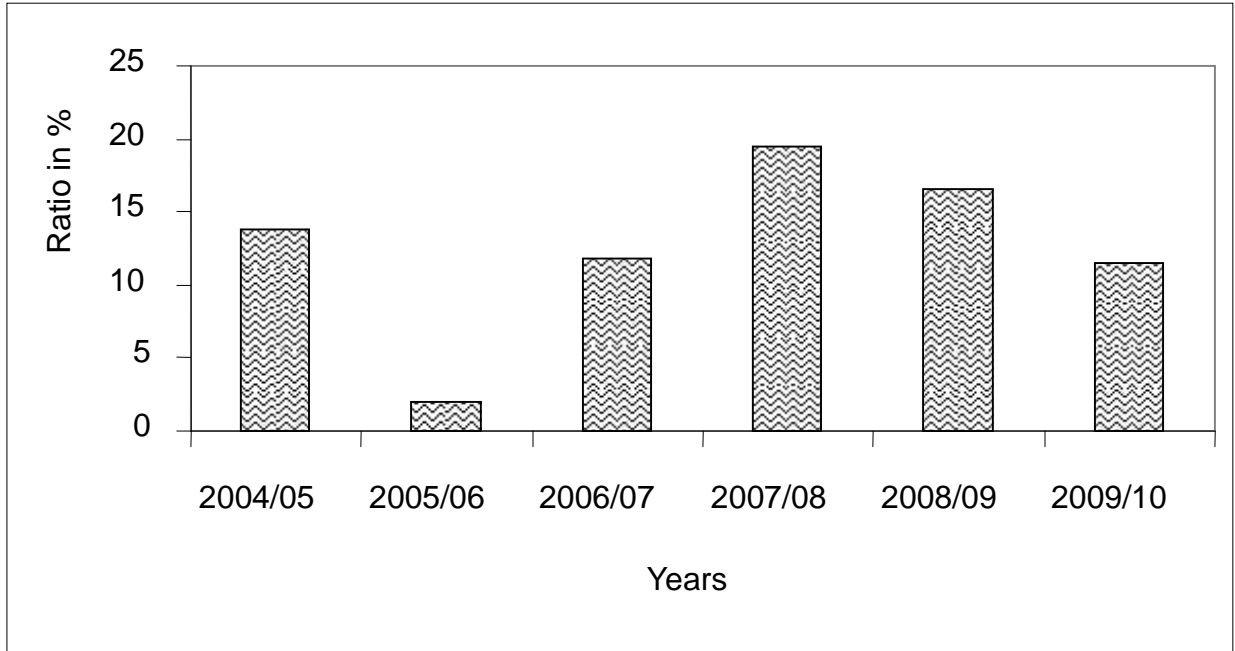
0.57 percent ratio NBG in 2007/08, highest ratio was 72.01 percent for UNL and lowest ratio was 0.35 percent for NBG in 2005/06, highest ratio was 50.26 percent for UNL and lowest ratio was 0.84 percent for BN in 2009/10. As observing the ratio of individual company in different period for study, the average ratio have been found to be 8.01 percent for BN, 2.13 percent, for SRJM, 48.216 percent for UNL, 0.890 percent for NBG, 3.17 percent for NLO. The study showed that there is not any occurrence of consistency in the ratios in different year same company also. It was found that, the highest ratio was 26.94 percent , 2004/05 and lowest ratio was 1.47 percent in 2005/06 for BN, highest ratio was 6.65 percent in 2006/07 and lowest ratio was 0.45 percent, in 2007/08 for SRJM highest ratio was 87.95 percent, in 2007/08 and lowest ratio was 37.55 percent in 2008/09 for UNL, highest ratio was 2.13 percent, in 2007/08 and lowest ratio was 0.35 percent in 2008/09 for NBG, highest ratio was 4.76 percent in 2008/09 and lowest ratio was 0.92 percent in 2008/09 for NLO. There is positive relationship between cash to current liabilities ratio. If current liabilities ratio increase current assets i.e. cash increase and vice versa. Increase in cash balance means firm has strong capacity to pay the current obligation of the firm.

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. The average cash to current liabilities ratio of the overall company has been observed by 12.53 percent over the study period.

**Graphical Presentation**

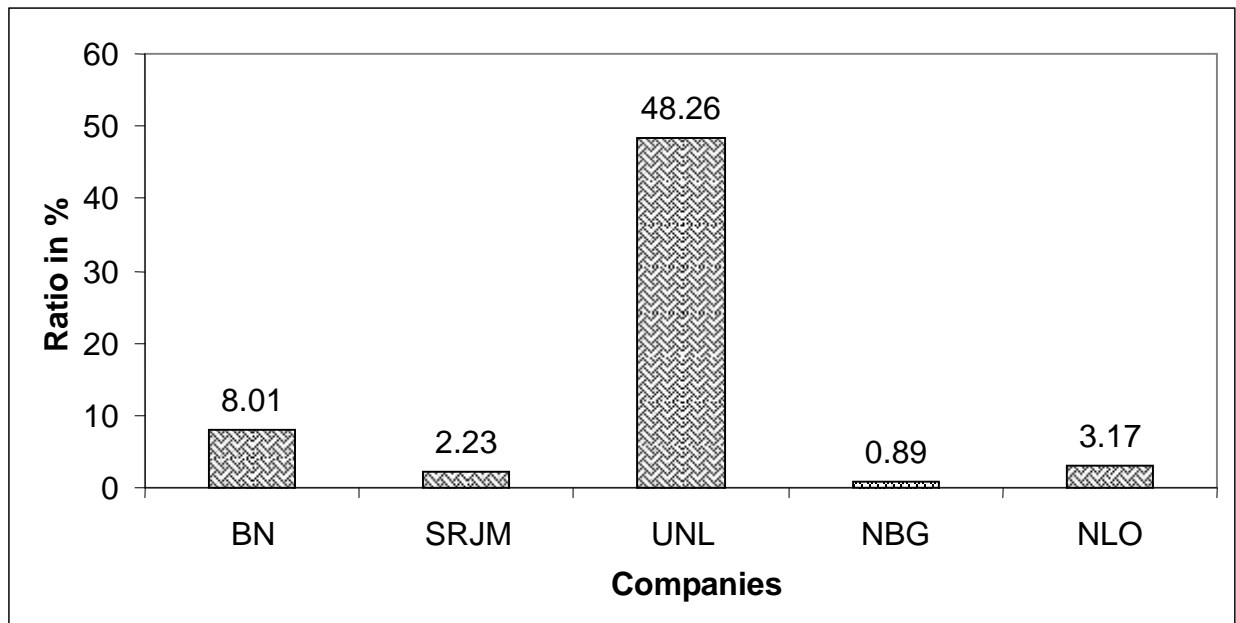
**Figure No. 4.7**

**Cash to Current Liabilities Ratio of Companies during the Study Period**



**Figure No. 4.8**

**Cash to Current Liabilities Ratio of Individual Companies over the Study Period**





#### 4.5.2. Relationship between Cash and Current Liabilities

The component of current ratio means current assets and current liabilities. The main objectives of this analysis is to measure the ability of the firm to meet its short term obligation, current assets in here i.e. (cash) which can be converted in cash within a short period of time i.e. normally not exceeding one year and current liabilities which means the obligation which are payable within a short period. The correlation coefficient between cash (x) and CL (y) has been derived to be 0.85. It shows the positive relationship between cash (x) and CL (y) in sampled listed manufacturing companies in Nepal. But it is significant result for overall in listed manufacturing companies because the result was seen to be  $PE = 0.076 < r = 0.81 > 6 PE = 0.456$ . So it is explained increase of one cause may increase in other. It is the evidence the adequate (consistent) proportion of cash with CL has been maintained by the manufacturing companies.

The regression line of cash “x” on CL “y) has been determined to be  $x = -69.66 + 0.53 y$ . The regression coefficient 0.53 explains that the position of cash will be changed by 0.53 m., if CL is changed by 1 m in same direction. Similarly, the regression line of CL “y” on cash “x” has been derived to be  $y = 156.90 + 1.36x$ . The regression coefficient 1.36 explain that the portion of CL will be changed by 1.36 m. if cash is changed by 1 m in same direction (for detail Appendix “L”).

#### 4.6. Cash and Quick Assets

##### 4.6.1. Analysis of Cash and Quick Assets

**Table No. 4.8**  
**Cash to Quick assets Ratio of Manufacturing Companies (in %)**

Name of Company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AV
BN	19.26	1.57	9.17	1.68	5.23	0.62	6.26
SRJM	0.53	2.71	11.87	3.69	4.26	2.76	4.30
UNL	31.03	2.29	24.47	67.56	72.50	67.00	44.14
NBG	6.37	3.94	2.51	2.63	1.80	5.56	3.80
NLO	1.10	2.65	1.78	3.17	0.84	3.20	2.12
Average	11.66	2.63	9.96	15.75	16.92	15.83	12.12

*Source: C.A. and from AR and FSL*

The average cash to quick assets ratio in the study period has been studied to be 11.66 percent in 2004/05, 2.63 percent in 2005/06, 9.96 percent in 2006/07, 15.75 percent in 2007/08 where the overall average was 12.12 percent the average cash to QA ratio varied in all year of study period. It was highest (16.92%) in 2008/09 and the lowest in 2005/06 (2.63%).

Similarly, the average cash to QA ratio has been observed to be 6.26 percent for BN, 4.30 percent for SRJM for 44.14 percent for UNL, 3.80 percent for NBG, 2.12 percent for NLO. The highest ratio was 44.14 percent for UNL and lowest was 2.12 percent for NLO.

#### 4.6.2 Graphical Presentation

Figure No. 4.9

Cash and Quick Assets Ratio of Company during the Study period

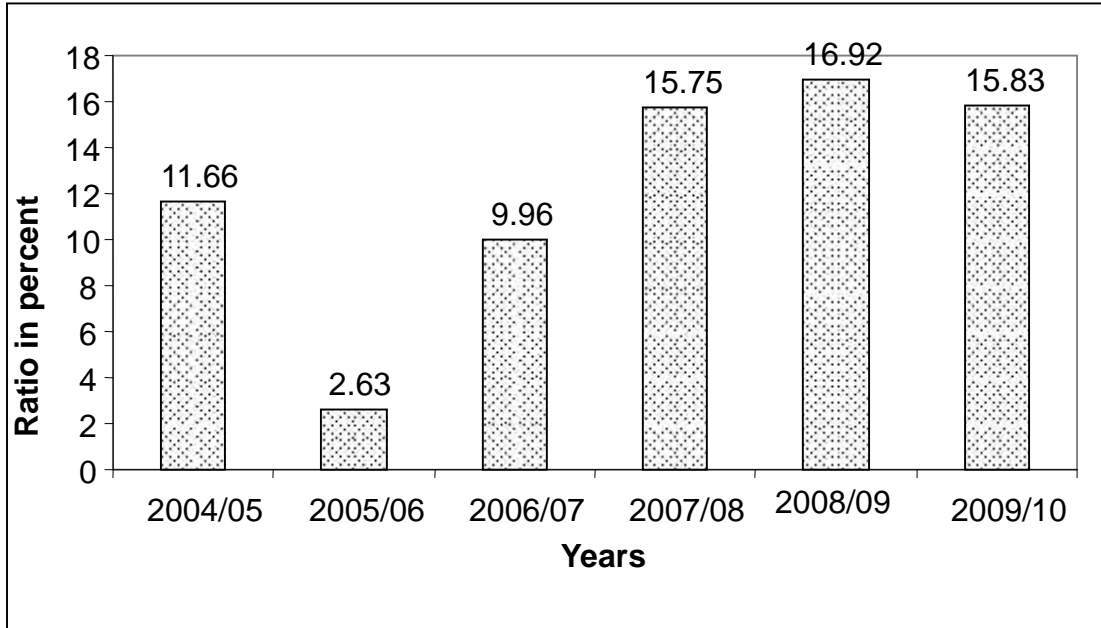
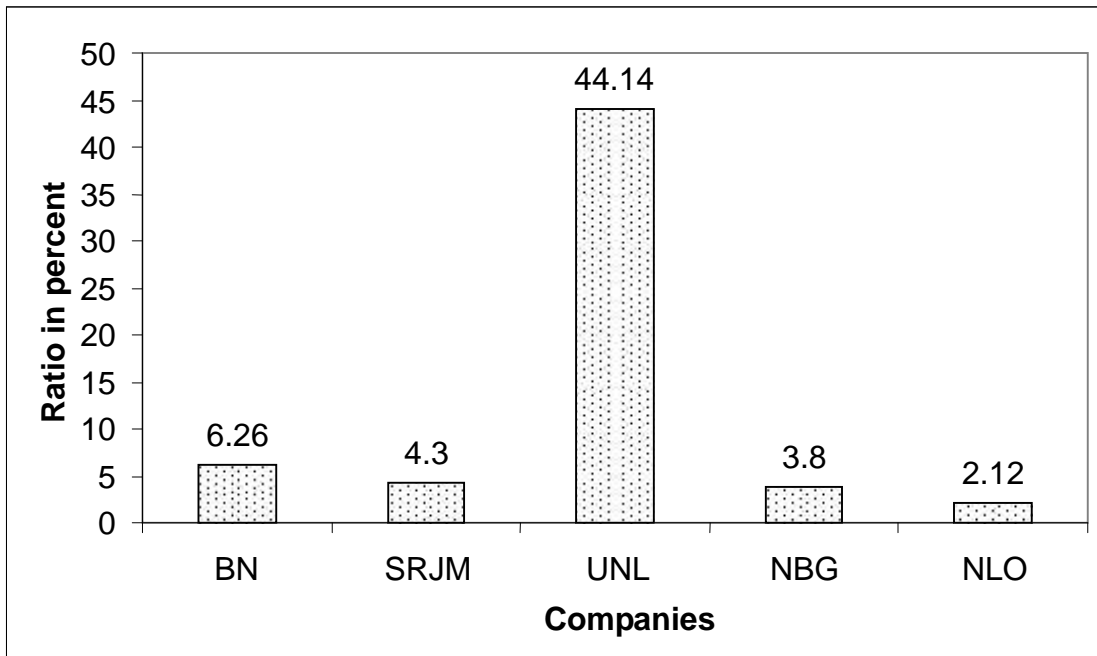


Figure No. 4.10

Cash and Quick Assets Ratio of Individual Company over the Study



### 4.6.3. Relationship between Cash and Quick Assets

The correlation coefficient between cash (x) and QA (y) has been derived to be  $0.96$   $PE = 0.021 < r = 0.96 > 6 PE = 0.126$ . It is the proof that it has significant relationship between cash and quick asset. It shows positive relationship between cash and QA which indicate that increase in current assets i.e. cash means increase in quick assets and vice versa.

The regression line of cash (x) on QA (y) has determined to be  $x = -116.65 + 0.93y$ . The regression coefficient of cash (x) on QA (y)  $0.93$  define that there occurs  $0.93$  m. changes in cash if QA is changed by 1 m in same direction.

Similarly, the regression equation of QA (y) on cash (x) has been derived to be  $y = 130.55 + 0.97x$ . The regression of QA (y) on cash (x),  $0.97$  explain that there occurs  $0.97$  m changes in QA if cash is changed by 1 m in same direction (detail calculation see Appendix "M").

The relationship of cash with CA and QA separately should quite different result in relation to the level of significantly. The relationship of cash and CA has been found to be less significant than cash and quick assets. But it was it was found more significant relationship between cash and QA, than cash and current assets. It is because the portion the portion of inventory shows the low turn over and high conversion period. It implies that is has occurred low rate of inventory, it makes conversed in sales then make receivables and cash is collected. It has direct impact on cash i.e. current assets.

So that poor inventory management system of company caused to reach as different result.

### 4.7. Relationship between Cash and Net Profit

The correlation coefficient cash (x) and profit (y) had been determined to be  $0.73$ . It shows the positive relationship between cash (x) and profit (y) for sampled manufacturing companies.  $PE = 0.13 < r = 0.73 < 6PE = 0.78$  indicates that there is not significant relationship between cash and profit.

The regression line of cash (x) on profit (y) has been derived to be,  $x = -4.65 + 2.33 y$ . The regression coefficient 2.23 indicates that increase in profit by 1m may occur the increase in cash by 2.23 m.

Similarly, the regression line of profit on cash has been obtained to be  $y = 12.21 + 0.24 x$ . The regression coefficient 0.24 explain that increase in cash by 1m. may occur the increase in profit by 0.24. (For detail appendix "N").

#### **4.8. Relationship between Cash and Receivable and Payables**

In general, it is said that the amount of cash will increase if amount of receivable is decreased. Because decrease of receivable means the cash is already collected. Similarly, the amount of cash will increase if the amount of payable is increased. The multiple regression line of cash (y) on receivable (x1) and payable (x2) has obtained to be  $y = -29.08 + (-0.408) b_1 + 1.54 b_2$ .

The regression coefficient of cash (y) on receivable (x1) – 0.408 means that the amount of cash will decrease by 0.48 times if receivable is increased by one times (Keeping payable constant). Similarly, the regression coefficient of cash (y) on payable x2 1.54 means that the amount of cash will increase by 1.54 times if payable is increased to be 1 times (keeping receivable constant).

The multiple correlation coefficient of cash receivable and payable has been obtained to be  $R_{y.x_1.x_2} = 0.970$ . The coefficient of multiple determination  $R^2_{y.x_1.x_2} = 0.94$  which means that total change in the level of cash (x) has been explained by the effect of two independent variables i.e. receivable and payable. And remaining 6 percent is due to the other factor. It can be said that receivable and payable have contributed as a major source for generating cash in current trend of manufacturing companies. So that companies should manage properly the receivable and payable. In other word, company should make specific policy for effective management of receivable and account payable (For details see Appendix "O").

## 4.9 Analysis of Liquidity Position of Listed Manufacturing Companies

Liquidity of a firm indicates the position to meet its current/short term obligation when it became due for payment. Thus, in cash management, the study liquidity positions of the companies constitute an important role. If a firm adequately liquid or solvent, the short-term creditors are interested in such firms: and therefore such firms get their short-term requirements readily. However, too much liquidity or in other words, holding or keeping more than enough cash balance to meet its current payments 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.

### 4.9.1. CA and CL

**Analysis of Current Ratio:** One of the reliable methods to examine liquidity position of 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, 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 No. 4.9**  
**Current Ratio of Manufacturing Companies**

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AV
BN	2.08	1.47	1.59	1.76	2.58	2.41	1.98
SRJM	1.79	1.58	1.39	1.71	1.36	1.50	1.65
UNL	1.71	1.60	2.56	1.63	1.64	0.80	1.66
NBG	0.64	0.60	0.55	0.43	0.25	0.23	0.45
NLO	2.26	2.56	2.14	1.64	1.51	1.46	1.93
Average	1.70	1.56	1.65	1.43	1.45	1.29	1.51

Source: C.A. and CL from AR and FSLC.

The average current ratio during period has been studied by 1.70: in 2004/05, 1.56: 1 in 2005/06, 1.65:1 in 2006/07, 1.43:1 in 2007/08, 1.45:1 in 2008/09 and 1.29:1 in 2009/10. Whereas overall company average current ratio was 1.51. There was no wide variance in current ratio. However, the result (observation) was not satisfactory in each period of study.

Similarly, the average current ratio of individual company over the study period has been observed to be 1.98:1 for BN, 1.56: for SRJM, 1.66:1 for UNL, 0.45:1 for NBG, and 1.93:1 for NLO. The highest ratio was 2.58:1 for BN in 2008/09 and lowest was 0.23:1 for NBG in 2009/10.

The study showed that BN and NLO had the capability to meet current obligation. Even SRJM and UNL average ratio was closer to the standard ratio, but NBG was operating with a weak liquidity position.

The result of each period of study showed that listed manufacturing companies were not able to meet their current obligation due to weakened liquidity position because the overall average current ratio has been studied by 1.51:1.

**Relationship between CA and CL:** The correlation coefficient of CA (x) and CL (y) has been identified to be 0.81. It shows the significant relationship between CA and CL because it has observed  $PE = 0.081 <r = 0.84> 6PE 0.416$ . It is certain that change in CA may occur change in CL in listed Manufacturing companies. The regression line of CA (x) on CL (y) has been derived to be  $x = 158.80 + 0.55 y$ . The regression coefficient, 0.55 explains that if CL is changed by 1 million, CA will be increased by 0.55 m in same direction.

Similarly, the regression equation of CL (y) on CA (x) has been derived to be  $y = -138.48 + 1.29x$ . The regression coefficient 1.29 explained that, if CA is increased by 1 m the CL will be increased by 1.29 m and vice-versa (for detail appendix "P").

#### **4.9.2. Relationship between QA and CL**

The correlation coefficient between QA and CL has been identified to be 0.86.  $PE = 0.0717$   
< $r = 0.86$ >  $PE = 0.43$ . It shows that change there is significant relationship between QA and CL.

The regression line of QA (x) on CL (y) has been obtained to be  $x = 54.79 + 0.55 y$ . The regression coefficient, 0.55 explains that if CL is changed by 1 million, QA will be changed to be 0.55m in same direction.

Similarly, the regression line of CL (y) on QA (x) has been derived to be  $y = -16.20 + 1.35x$ . The regression coefficient 1.35 explained that, if QA is changed by 1 m the CL will be increased by 1.5 m (For detail appendix "Q").

Above explain suggests that firm should try to increase quick assets so that at a time the company will able to reach to the favorable liquidity position.

#### **4.10. Analysis of Account Receivable of the Companies**

The company sells goods on credit and cash basis. When the company extends credit to its customers, book debts are credited. Debtors/account receivables are credited. Debtors/account receivables are to be converted into cash over a short period and therefore are included in current assets. The liquidity position of the company depends upon the quality of debtors to a great extent. The increment of account receivable means the decrease the cash position of the company and vice-versa.



**Table No. 4.10**

**Account Receivable Companies in Different Period**

Year	AR (x) (in m.)	X-A = d	d <sup>2</sup>
2004/05	45.32	-12.88	165.90
2005/06	42.02	-16.16	261.14
2006/07	53.69	-4.51	20.34
2007/08	55.54	-2.66	7.08
2008/09	64.88	6.68	44.62
2009/10	87.75	29.55	873.20
Total	$\bar{X}=58.20$	0.02	1372.28

Source: AR and FSLC.

$$\text{Standard deviation } (\dagger) X \sqrt{\frac{1}{N} \sum d^2 \frac{f}{N}}$$

$$X \sqrt{\frac{1}{6} \cdot 1372.28}$$

$$X \sqrt{\frac{1}{6} \cdot 228.71}$$

$$X \sqrt{228.71}$$

$$= 15.12 \text{ m.}$$

$$\text{Co-variance coefficient (CV)} = \frac{\dagger}{x} | 100\%$$

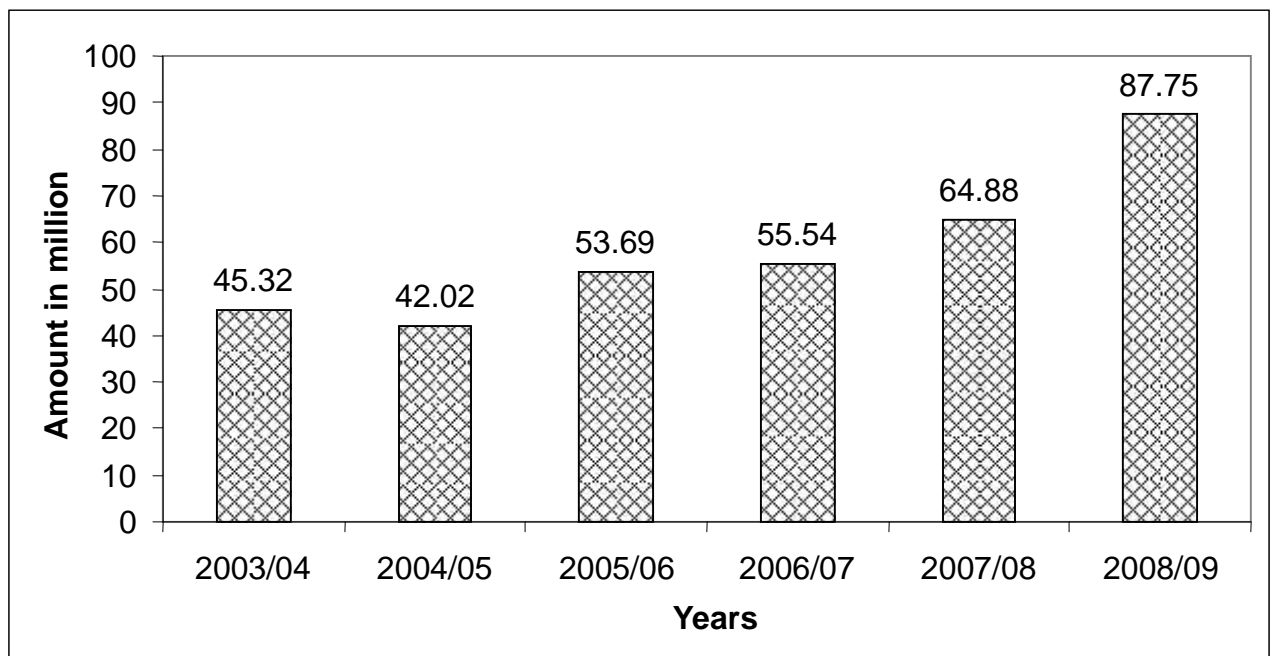
$$X \frac{15.12}{58.20} | 100\%$$

$$= 25.98\%$$

Above table and calculations shows that the industrial average account receivable of the companies during the period of study was 58.20. the lowest receivable has been observed to be 42.04 in 2004/05 and it was highest 87.75 m. in 2008/09. Highest receivable explains the inadequate capacity for credit collection. It means the position of cash collection has been decreased. Similarly, the lower position of A/C shows the positive situation for credit collection.

The standard deviation i.e. 15.12 m and its covariance coefficient 25.98 percent explain that there occurred high level of fluctuation in receivable so that the policy of the company about to receivable have not been seen in the consistent level. The increasing trend of A/R 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 weakened. However, 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.

**Figure No. 4.11**  
**Graphical Presentation of A/C Receivable during the Study Period**



### Account Receivable of Individual Companies over the Study Period

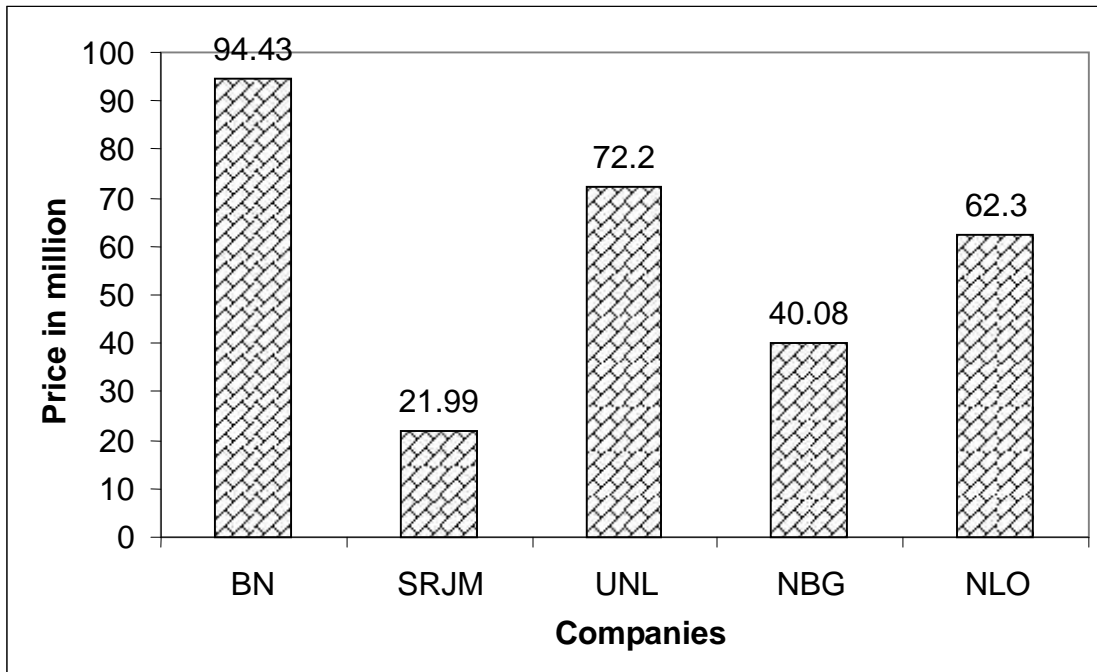
Company	AR (in million)	$d = \frac{X - \bar{X}}{\bar{X}} \times 100$
BN	94.43	62.25
SRJM	21.99	-62.21
UNL	72.20	24.05
NBG	40.08	31.13
NLO	62.30	7.04
Average	58.20	

Source: Appendix V, AR and FSLC.

The above table shows that the overall average of account receivable of the companies was 58.20 m. The receivable was varied widely across the company in over the study period. The lowest amount of receivable was 21.99 m. which was observed -62.21 percent lesser than industry average for SRJM. The highest account receivable was 94.43 which were greater by 62.25 percent than industry average.

**Figure No. 4.12**

#### Graphical Presentation of Account Receivable of the Individual



#### 4.10.1. Analysis of Receivable Collection Period

Receivable collection period is the length of time required to convert the firm's receivable into 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 No. 4.12**  
**Receivable Collection Period**

<b>Name of company</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>AV</b>
BN	0.07	70.87	77.44	51.99	70.72	92.87	60.66
SRJM	37.60	22.90	19.71	11.96	16.69	24.55	22.23
UNL	10.27	7.52	9.37	18.74	22.01	38.32	17.86
NBG	214.77	43.87	25.59	59.19	90.46	13567.80	2334.95
NLO	222.97	242.66	179.84	228.09	231.09	184.48	215.16
Average	97.14	77.39	62.33	73.99	88.33	2781.60	530.13

Source: Sales and receivable from AR and FSLC.

Above table shows the receivable collection period of listed manufacturing companies during the study period. The average RCP in listed manufacturing companies has been observed to be 97.14 days in 2004/05, 78 days in 2005/06, 63 days in 2006/07, 74 days in 2007/08, 89 days in 2008/09, 2781.60 days in 2009/10, whereas overall industry average. RLP was 530.13 days. The receivable collection period varied widely across the companies in all year of study period.

Above table shows that there was a wide variation on RCP for individual companies over the study period, The average RCP over the period of study, or individual companies has been

observed to be 60.66 days for B.N, 22.33 days for SRJM, 17.86 days for UNL, 2334.95 days for NBG, 215 days for NLO. The highest observation was 93 days in 2009/10 and the lowest was 0.077 days in 2004/05 for BN. The highest observation was 38.32 days in 2009/10 and the lowest was 7.52 days in 2005/06 for UNL, the highest was 13,567.80 days in 2009/10 and lowest was 43.87 days in 2005/06 for NBG, the highest was 232.89 days in 2008/09 and lowest was 184.48 days in 2009/10 for NLO. The minimum days show that the firm is efficient on collecting cash from debtors and it also reduce the chance of bad debts, a higher average collection period of NBG shows the excessive blockage of funds with debtors which increase the chance of bad debts and lowest RCP of UNL reduce the chance of bad debts.

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 ACP 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 may have an adverse affect on volume of sales of the firm.

#### **4.11. Analysis Inventory**

A company requires an optimum level of inventory for efficient management, the incremental trend of inventory would be the direct impact for lowering the cash in for the company and vice-versa. So that level of inventory and its trend must be analyzed for efficiency of cash management.

**Table No. 4.13**

**Inventory of Manufacturing Companies in Study Period**

Years	Amount in million	$x - \bar{X} = (d)$	$d^2$
2004/05	75.06	-28.79	828.87
2005/06	129.14	25.29	639.59
2006/07	104.23	0.38	0.1444
2007/08	101.64	-2.21	4.89
2008/09	95.05	-8.8	77.44
2009/10	117.97	14.12	199.38
Total	103.85	-0.01	1750.32

Source: Appendix 'B', inventory from AR and FILC.

$$\begin{aligned} \text{Standard deviation } (\sigma) &= \sqrt{\frac{1}{N} \sum d^2} \\ &= \sqrt{\frac{1}{6} \times 1750.32} \\ &= \sqrt{291.72} \\ &= 17.08\text{m.} \end{aligned}$$

$$\begin{aligned} \text{Co- variance coefficient (CV)} &= \frac{\sigma}{\bar{x}} \times 100\% \\ &= \frac{17.08}{103.85} \times 100\% \\ &= 16.45\% \end{aligned}$$

The average inventory of manufacturing companies during the study period has been observed to be 75.06m in 2004/05, 129.14 in 2005/06, 104.23 m in 2006/07 and 101.66m in 2007/08, 95.05 m. in 2008/09, 117.79m in 2009/10. Where overall yearly average inventory

was 103.85 the standard deviation was 17.08m and its covariance coefficient was 16.45 percent indicates that the company didn't adopt specific policy toward inventory management. In other word, there was no uniformity of inventory in each period of study.

**Table No. 4.14**

**Inventory of Individual Company over the Study Period**

<b>Companies</b>	<b>Inv.(m)</b>	<b>Deviation from mean in%</b>
BN	184.61	77.77
SRJM	47.66	-54.10
UNL	184.16	77.33
NBG	54.47	-28.29
NLO	28.35	-72.70
	$\bar{X} = 103.85$	

Source: Appendix 'B' from AR and FSLC.

The calculation shows the average inventory level of the companies over the study period it has been observed by 184.61m. for BN, 47.66 m for SRJM, 184.61m for UNL, 74.47m for NBG, 28.35m for NLO. Whereas, overall average level of inventory has been observed to be 103.85 m over study period.

**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 ratio, where inventory is turning into receivable and cash through sales.

**Table No. 4.15**

**Inventory Conversion Period of Manufacturing Collection in Days**

<b>Name of Companies</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>AV</b>
BN	118.51	125.86	126.30	136.19	106.81	146.22	126.65
SRJM	44.35	47.71	41.52	54.18	52.08	44.31	47.35
UNL	27.97	69.66	42.64	35.23	44.10	56.60	46.03
NBG	173.81	209.77	107.04	122.48	69.95	9821.17	1600.70
NLO	79.18	146.59	51.70	93.59	136.16	111.93	103.19
Average	88.77	119.98	73.84	88.33	81.82	1856.04	384.79

Source: Inventory and sales form AR and FSLC.

The table shows the ICP of selected manufacturing companies. The ICP was widely varied within and among the companies. The ICP table shows that the highest ICP was 8921.17 days for NGB in 2009/10, lowest was 28 days for UNL is 2004/05. The trend of ICP was fluctuating during the study period.

The average ICP during the study period has been observed by 89 days in 2004/05, 120 days in 2005/06, 74 days in 2006/07, 89 days in 2007/08, 82 days in 2008/09 and 1856 days in 2008/10, where overall industry average ICP was 385 days.

Each period of study is not showing satisfactory result. The research identified that Nepalese manufacturing companies are suffering from mismanagement of inventory system. In other word, there would be occurrence of over investment in inventory in each period of study.

The overall average ICP was 385 days in overall study period which is the non-satisfied result. There would be occurrence of either mismanagement inventory system or over investment in inventories in fact, Nepalese manufacturing companies are running without adopting a policy of effective inventory management system.



#### 4.12. Analysis of Payable Deferral Period

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

**Table No. 4.16**  
**Payable Deferral Period of Manufacturing Collection**

Name of Companies	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AV
BN	33.73	66.52	72.40	27.10	38.26	73.88	51.98
SRJM	42.80	46.78	47.31	38.28	53.99	49.90	46.51
UNL	36.04	31.26	33.36	104.08	124.04	141.77	78.42
NBG	60.70	24.37	16.86	25.40	24.33	872.33	170.67
NLO	0	0	120.12	172.5	246.22	0	89.90
Average	34.65	33.79	58.01	73.47	97.39	227.58	87.48

Source: Payable cost of goods sold form AR and FSLC.

The average PDP of listed manufacturing companies during the study period has been observed to be 35 days in 2004/05, 34 days in 2005/06, 58.01 days in 2006/07, 73.47 days in 2007/08 98 days in 2008/09, 228 days in 2009/10, whereas the overall average PDP was 87.48 days.

Similarly, the average PDP of individual companies within the study period has been observed to be 52 days for BN, 47 days for SRJM, 75 days for UNL, 171 days for NBG, 90 days for NLO. Out of these companies, BN, UNL, NBG, and NLO have higher PDP. The PDP indicates that the firm takes long time to pay its obligation. The overall average PDP, 87.48 days, is the satisfactory average for listed manufacturing companies in Nepal.

### 4.13 Cash Conversion Cycle

The CC is the length of time between when the company makes payments and when it receives cash. The CC net out three periods i.e. ICP, RCP and PDP, thus equal the length of time between the firms' actual expenditure 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 product 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 determines the average number of days which makes the receivable collected. Payable deferral period measures the days each period of conversion the payable of cash is made for labor and suppliers. Hence, CCC is determined by differentiating the operation 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.

**Table No. 4.17**  
**Cash Conversion Cycle (Period) of Manufacturing Companies**

<b>Name of Companies</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>AV</b>
BN	84.85	130.21	132.39	162.14	139.27	165.21	135.68
SRJM	39.69	24.14	14.19	27.99	14.78	18.96	23.29
UNL	2.34	46.02	18.54	-50	-74.76	-46.85	-17.45
NBG	330.37	229.86	116.12	157.11	144.08	216.64	3765.70
NLO	305.89	393.21	114.08	144.33	122.83	296.41	229.46
Average	152.63	164.68	79.06	88.32	69.24	4410.07	827.33

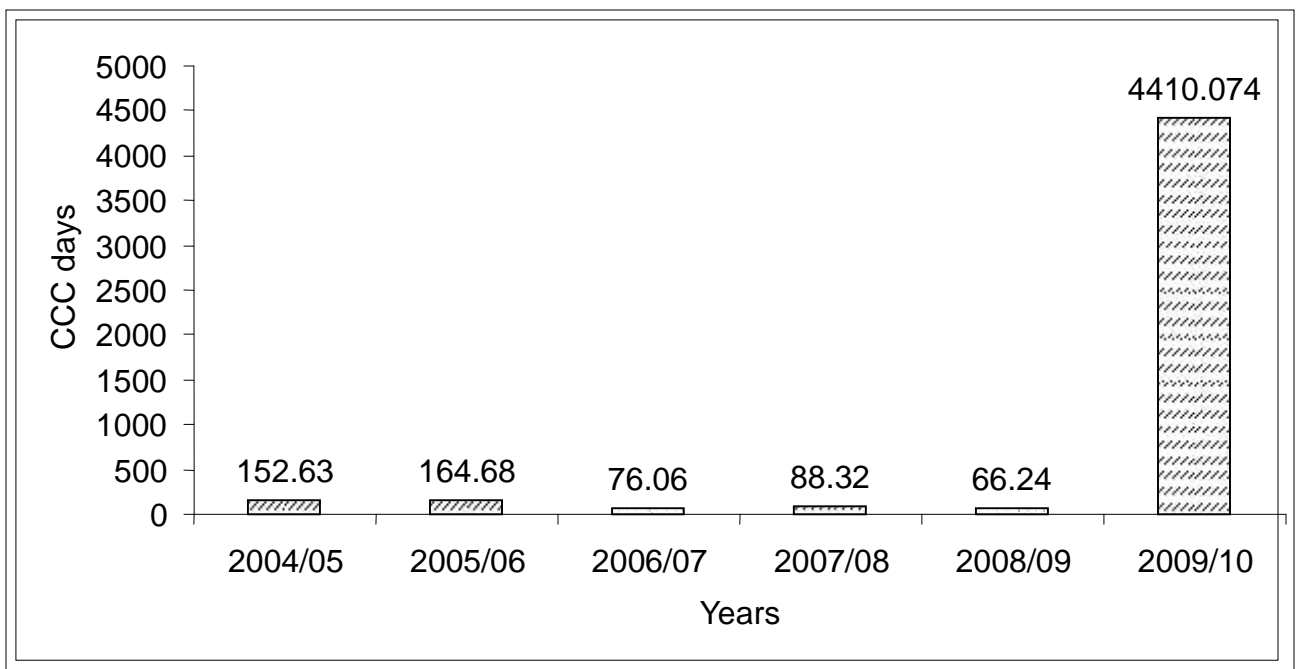
Source: Table 4.13, 4.16, 4.16, 4.17: RCP + ICP – PDP

The above table shows that the average CCC of the selected manufacturing during the study period. It has been observed to be 152.63 days in 2004/05, 164.68 days in 2005/06, 79.06 days in 2006/07, 88.32 days in 2007/08, 69.24 days in 2008/09 and 4410.074 days in 2009/10. Whereas the overall average CCC over the study period was 828 days. In fiscal year 2009/10, CCC has been observed greater than overall average. In other period, it was less than overall average. Similarly, the average CCC of individual companies over (within) the study period has been observed to be 136 days for B.N., 24 days for SRJM, -17.45 days for UNL, 3765.70 days for NBG and 230 days for NLO.

The overall CCC, 828 days in too large period of convention that inventory and receivable is made in form of cash. It is unsatisfactory result for manufacturing companies. Because long CCC affects the firm's liquidity position. Over the study period SRJM and UNL were showing lower cash conversion cycle in other word, they had the satisfactory liquidity position. The lower CCC of SRJM is better and higher CCC of NBG is not so good on behalf of the study propose of the company point of view.

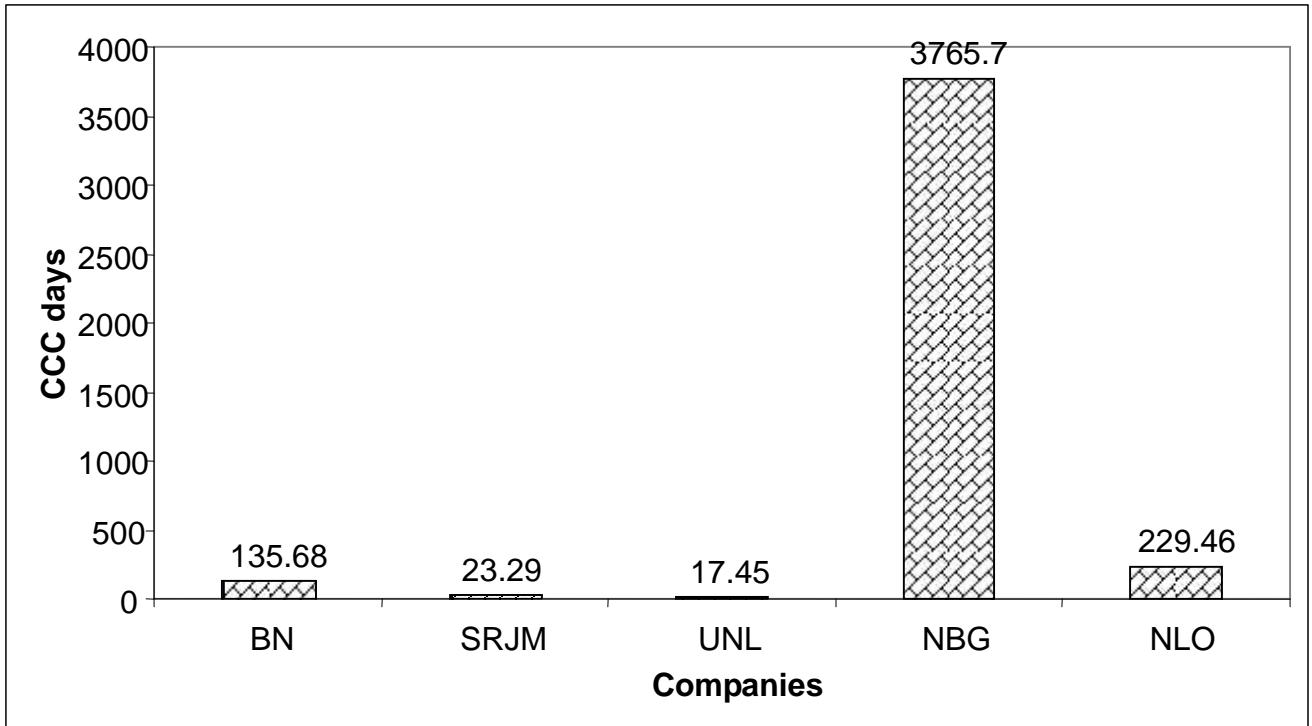
**Figure No.: 4.13**

**Cash Conversion Cycle of Manufacturing Company during the study period**



**Figure No.: 4.14**

**Cash Conversion Cycle of individual Company with in the study period**



#### **4.14 Profitability Analysis**

Maximization of profit is the main objectives of each and every business concern. It is very necessary to earn maximum profit for the successful running of the business concern. According to Lord Keynes, profit is the engine that drives the business enterprises. The profit is also important to preserve the existence of business as well as strengthen and expand it.

#### 4.14.1 Analysis of Net Profit

**Table No. 4.18**

**Net Profit of Manufacturing Companies during Study Period**

<b>Name of Companies</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>AV</b>
BN	55.91	35.89	48.61	19.37	37.80	34.73	38.72
SRJM	0.60	0.94	5.33	4.74	7.17	5.01	3.97
UNL	120.59	68.04	42.61	93.17	140.79	189.20	109.07
NBG	-46.46	-45.03	-13.39	-42.22	-41.51	-16.26	-34.14
NLO	5.08	-2.21	4.24	0.30	6.30	3.06	1.78
Average	27.14	11.53	17.48	15.03	28.91	43.15	23.88

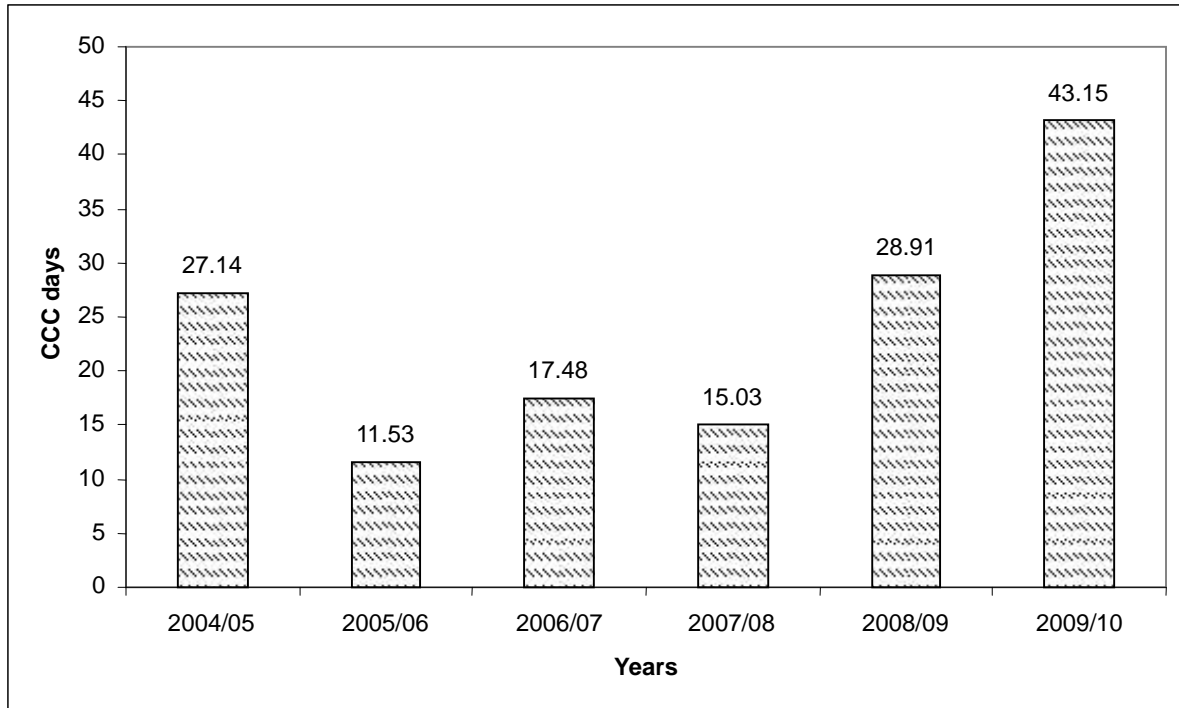
Source: NP from AR and FSLC.

The above table shows that the manufacturing companies were running with profitable condition. The industry average profit was 23.88m. The average profit of manufacturing companies during study period has been observed to be 27.14m in 2004/05, 11.53m in 2005/06 17.48m in 2006/07, 15.03m in 2007/08, 28.91m in 2008/09, 43.15m in 2009/10. The profit widely varied during the study period.

Similarly, the average profit for individual companies within the study period has been observed to be 38.72m for B.N., 3.97m for SRJM, 109.07m for UNL, (34.14) loss for NBG and 1.78 for NLO. BN, SRJM, UNL and NLO are showing profitable position. But the profit has observed to be more than average only for BN and UNL. It explains that there were major contributions of UNL and BN for maintaining profitable position of selected companies in their overall average. Net profit of UNL is higher which is better and net loss of NBG which is worse for company point of view.

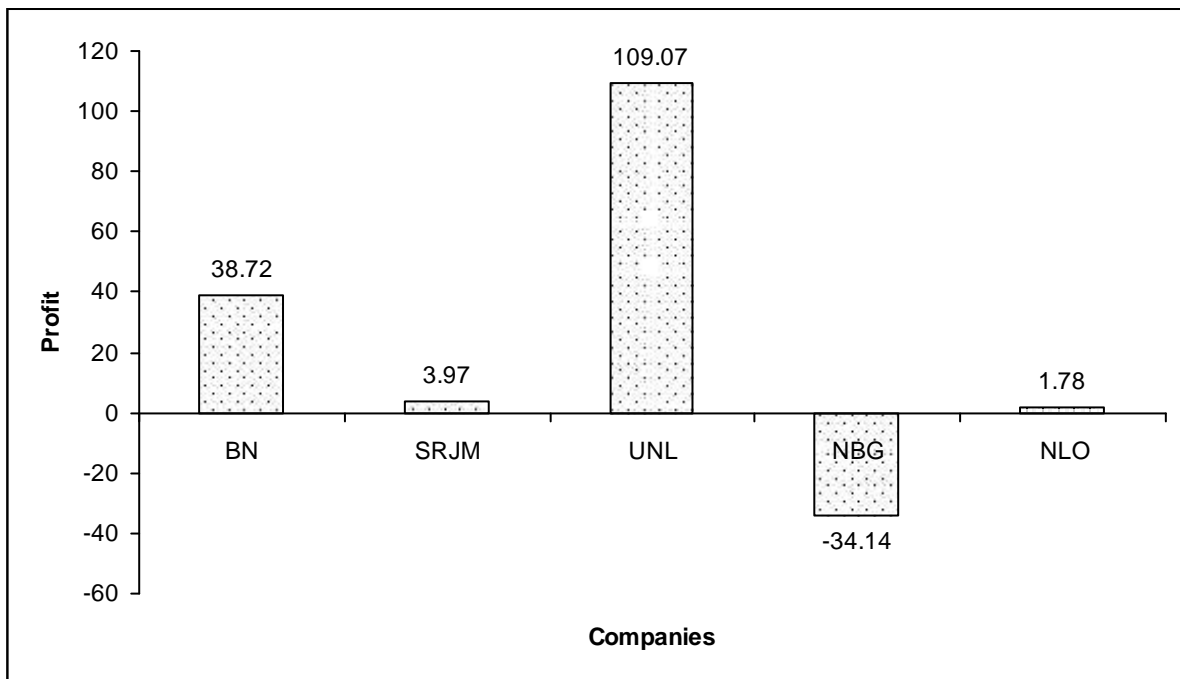
**Figure No 4.15**

**Net Profit of Manufacturing Companies during Study Period**



**Figure No. 4.16**

**Profit of Individual Company over the Study Period**



#### 4.14.2. Analysis Net Profit Margin

Net profit margin is also known as net margin. It measures the relationship between net profit and sales of a firm.

**Table No. 4.19**  
**Net Profit Margin of Manufacturing Companies (in %)**

Name of Companies	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AV
BN	15.00	8.65	9.07	3.17	5.98	5.65	7.92
SRJM	0.23	0.32	1.26	1.29	1.88	1.04	1.00
UNL	6.96	4.41	3.45	7.48	9.23	12.77	7.39
NBG	-33.17	-18.24	-3.17	-18.66	-37.08	-2111.69	-370.33
NLO	4.74	-3.06	3.11	0.17	0.35	2.59	1.31
Average	-1.25	-1.58	2.74	-1.31	-3.93	-4.17	-70.54

Source: NP and sales form AR and FSLC.

The average NPM of the companies during the study period has been observed to be (1.25) in 2004/05, (1.58) in 2005/06, 2.74 percent in 2006/07, (1.31) in 2007/08, (-3.93) percent in 2008/09, (417.93) in 2009/10, where the average NPM was (-70.54).

Similarly, the average NPM for individual companies over the study period has been observed to be 7.92 percent for B.N., 100 percent for SRJM. 7.39 percent for UNL, (370.33%) for NBG and 1.31 percent for NLO. Only NBG was showing negative NPM, remaining other manufacturing companies have positive NPM. A higher ratio is an indication of the overall efficiency of the business better utilization of total resources. Poor financial planning and low efficiency is the indication of lower ratio net profit margin of BN is better and net profit margin of NBG which is bad among the sample manufacturing companies.

#### 4.15. 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 as 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 such current assets, in earning profit conversely, if a firm doesn't keep enough current assets and invests its large portion in earning profit, the consequence is that the firm fails to meet its current obligation i.e. becomes illiquid and invite the risk of bankruptcy.

The conflicting nature of these two is that when liquidity is being maintained, profitability trend to fall down, and vice-versa.

##### 4.15.1. Relationship between Liquidity and Profitability

**Relationship between CR and NPM:** correlation coefficient between CR (x) and NPM (y) has been observed to be  $-0.53$ . It shows the negative relationship between CR (x) and NPM (Y)  $PE = 0.20 > r = 0.53 < 6 P.E. = 1.20$  indicates that there is no evidence of correlation between CR and NPM.

The regression line of CR (x) on NPM (y) has been found to be  $x = 1.68 - 0.007y$ . It shows there is no significant relationship of CR on NPM (y) the regression coefficient,  $-0.007$  explains that if the NPM is changed by 1m CR will be decreased by  $-0.007$  in same direction.

Similarly, the regression equation of NPM (y) on CR (x) has been derived to be  $y = 84.70 - 40.28x$ . The regression coefficient  $40.28$  explains that 1 time increasing on CR may occurs  $-40.28$  percent decreased in NPM (For detail Appendix R).



**Relationship between Quick Ratio and NPM:** The correlation coefficient of QR (x) and NPM (y) has been obtained to be – 0.28. It shows the negative relationship between QR and NPM.  $PE = 0.25 < r = -0.28 < 6PE 1.50$  indicates that is no evidence of correlation between QR and NPM. The regression equation of QR (x) on NPM (y) has been obtained by  $x = 0.99164 - 0.003y$ . The regression coefficient of QR on NPM, 0.003 indicates that 1 percent in NPM may occur 0.003 time decrease in QR.

Similarly, the regression equation of NPM(y) on QR(x) has been to be  $y = 47.92 - 26.13 x$ . The regression coefficient of NPM on QR 26.1 indicates that 1 time increase in QR may occur 26.13 percent decrease in NPM and vice-versa (see appendix S).

#### 4.16 Comparative Study of Cash Management Variables

The following comparative study on cash management variables shows that the cash, bank balance, cash turnover, proportionate value of cash to other items, cash calculation and disbursement cycle are important aspects. Rank has been given to the company from I to V as per their relevancy as presented in the following table:

**Table No. 4.20**  
**Comparative Study of Cash Management Variable**

Companies	Cash balance	Cash turn over ratio	Cash to TA	Cash to CA	Cash to DA	CR ratio	RCP	ICP	PDP	CCC	Net profit	NP Margin
BN	II	II	II	II	II	I	III	IV	IV	III	II	I
UNL	I	V	I	I	I	III	I	I	III	I	I	II
NBG	III	III	III	III	IV	V	V	V	I	V	V	V
NLO	IV	IV	IV	V	V	II	IV	III	II	IV	IV	III
SRJM	V	I	V	IV	III	IV	II	II	IV	II	III	IV

The above table exhibits the relevancy rank on cash management considerations for each every company. Individually, cash and bank balance is high with UNL in comparison to others. The company has 2nd in higher at net profit as well. In general, the table shows higher the cash and bank balance higher the net profit of the Nepalese listed manufacturing companies. It is because companies can acquire sufficient and cheaper resources with enough cash balance by speed cash conversion cycle.

# **CHAPTER -FIVE**

## **SUMMARY OF MAJOR FINDINGS, RECOMMENDATIONS AND CONCLUSIONS**

### **5.1 Summary**

The study has focused on the cash management of listed manufacturing companies. As stated 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 conclusion, explanation of the tools and techniques has been concerned in chapter third then implemented in chapter four.

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

### **5.2 Summary of Major Findings**

Cash is most important and non earning assets for the operation of business. It is an idle and non earning assests. Therefore; the firm should keep sufficient cash neither more nor less. More cash balance reduces the rate of return on equity and hence the value of the firm. The idea of cash management has not come directly and independently in its separate entity. Before 1970s cash management was affiliated with the economics. Many more organization of the world was enjoying by making reasonable profit margin and many organizations

before 1970s period survive without proper management in cash. But the reason of inflation in 1970s the situation changed and many profitable enterprises were confronted with the problem of liquidity and even faced technical insolvency. Amount of cash need to keep in organization should appropriately decided. Management of cash in manufacturing companies of Nepal is studied in this report to inform to the concern authority about the management of cash is essential to get success in the business world.

Cash management in public enterprises of Nepal is primarily based on 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 of some enterprises do have the practices of forecasting cash requirements on a formal basis. Modern practices with respect to debt collection, monitoring the payment behavior of customers and relevant banking arrangement in connection and relevant banking arrangement in connection with collection receivables have been virtually ignored in many enterprises. Majority of the enterprises didn't face any serious liquidity problem. However, this was not because of effective of cash planning and budgeting. The problem of liquidity actually didn't rise due to the coincidence of delay in payment to creditors. By and large most enterprises have periodic accumulation of surplus cash and corresponding cash shortage from time to time. However, none of enterprises considered the implications of holding idle cash balance and few took in to account the potential benefit of investing surplus in marketable securities. These which failed to consider the cost of administering such investments. There had been wide variations over-time in the state of financial health of enterprises in terms of the composition of current assets to current liabilities as revealed by the relevant financial ratios. Neither 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. The major findings in this study of the manufacturing companies of Nepal are pointed below:

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 sample, nature of sources of data and

tools that have been used to analyze data. The total numbers/population of the companies, which are listed in security board of Nepal, are 29, which different nature of production. Among them only five companies are selected as a sample for the study. The selection method is purely subjective. This study exclusively depends on secondary data. These data have been collected from the authentic sources of sample firms. Financial statements, such as, balance sheet and profit and loss account of the companies are major documents to generate these data. Only financial a statistics tools are used for the analysis data which is already stated in the limitation of the study.

- a. Listed 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 bank 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. Average cash balance of manufacturing companies over the study period was 48.6m.
- b. Cash turnover ratio: As a fact the higher cash turnover ratio of cash indicates the sound liquidity position of company and vice-versa. The average cash turnover ratio was found to be 184.60. However, the cash turnover ratio has found to be highly fluctuated the correlation between cash and sales being positive 0.697 and the relation  $PE < r < 6PE$  suggested that there is not significant relation. The companies have not planned to hold cash specific proportion of sales .volume in any year of study. The lower average cash turnover ratio of UNL is better and higher of SRJM is worse from the company's study point of view. Higher fluctuation is also worse.
- c. Listed manufacturing companies have failed to maintain adequate proportion of cash on its current assets. The average cash to current ratio has been observed to be 7.95 percent, 1.25 percent, 5.71 percent, 11.92 percent, 10.06 percent, 13.86 percent, in 2003/04 to 2006 respectively. The average cash to current assets ratio has found to be 8.46 percent. Only UNL has been able to maintain adequate properties of cash to current assets 32.93 percent. The correlation coefficient between cash and CA being 0.81 and  $PE < r > 6PE$  suggested that there is significant relationship between cash and CA.

- d. Companies have not been precisely meeting their current liabilities payment. The proportion and cash to current liabilities, in overall average is low 12.53 percent. Cash and bank balance held compared to current liabilities indicates that for same year it was high whereas for some other year was very low. This shows mismanagement of cash. However UNL (48.26%) has shown sound liquidity position.
- e. Companies are found to maintain adequate proportion of cash as its quick assets. But there is significant correlation between cash and QA. The overall proportion of cash as QA i.e. 12.12 percent was very small. However, correlation coefficient 0.96 seems to be significant. But the regression coefficient of cash on quick assets, 0.93. So that the proportion of cash on QA will be maintain at appropriate level if QA is increased.
- f. Listed companies seem not able to maintain the adequate proportion of cash in total assets. The average investment in cash by listed manufacturing companies is just 6.06 percent which is very low.
- g. relationship of cash on receivable and payable has found to be a significant level. The multiple correlation coefficients of cash on receivable and payable have been obtained to be 0.97. Its coefficient of multiple determinations has been obtained to be 0.945. It means that 94 percent of total changes in the values of cash have been explained by the effect of receivable and account payable. The regression coefficient of cash on receivable -0.408 means 0.408 time decrease in cash if one time increases in receivable, holding payable constant. Similarly, the regression coefficient of cash as account payable 1.54 means 1.54 times change in cash of 1 time change in payable, holding receivable constant.
- h. The average collection period and payable deferral period have been found to be 531 days and 88 days. Ti has found the gap of 443 days. So the listed manufacturing companies are in the position of worst condition.
- i. Liquidity position of listed manufacturing companies has not been satisfactory. The companies overall average of CR and QR have been obtained to be 1.51:1 and 0.92:1. The QR has not so bad. The standard ratios are CR = 2:1 and QR =:1. As a whole it is seemed that the companies are not able to meet their current obligation within the stated time.

- j. Current assets are not being maintained according to current liabilities. The significant positive correlation coefficient 0.84 has been found between CA and L. But the regression coefficient of CA on CL, 0.55, implies that current assets are not maintained in accepted level (pattern) increase in current liabilities. Similarly, the regression coefficient of CL on CA has been found 1.29. Which shows the level of increment in current liabilities is not satisfactory. So that CA should be increased to make proper level of CR.
- k. Companies have not been able to trade off liquidity and profitability. The CR and NPM are found with insignificant correlation. There is no proof that CR and NPM are positively correlation. Similarly, correlation between QR and NPM is negative i.e. - 0.53.m.
- l. Companies are much more unable to collect cash in considerable time span. The average cash conversion cycle of manufacturing companies have been obtained to be 828 days. Due to high account receivable conversion period and high inventory conversion period so that calculated result was more than expected and being unsatisfactory.

### **5.3. Conclusion**

At conclusion, it can be stated that cash management system in listed manufacturing companies has been found very poor. Cash management practices are on the basis of traditional way whereas no any specified plan and policy has been made for efficiency of cash management. The negative profitability evens a small amount of net profit of the companies. Add much, for worsening the financial position. The weak practices of management system has been studied i.e. listed manufacturing companies didn't have definite policies regarding how much cash balance should be held for the period. They didn't forecast the need cash balance taking into consideration of influencing variables. The proportion of cash has been found to very low (even negligible) with CA, CL, QA, TA and so on. The companies have low liquidity position. The cash conversion cycle has been studied in very longer period. The collection and disbursement policy has been found to be adverse direction of principle of cash management, the over investment in inventors, has been found. The

companies have not been able to trade of liquidity and profitability so that the profit has been found to be low position. Cash management is being taken one of the important elements in financial function. It is said that main function of financial manager is to apply better technique to improve cash management system in each companies. There are any other numerous aspects of finance involved in overall financial performance in addition to this, the overall performance of the firm counts for other managerial aspects i.e. marketing management, human resource management, organization structure and so on. However, all down falling trend of financial position is an indication of the fact that listed manufacturing companies should immediately seek for dramatic change for their managerial structure. So far cash management is concerned the recommendation above suggested that could perform to a greater extent and uplifts the listed manufacturing companies' cash management situation. These above stated recommendation might be fruitful in helping for better cash management with respect of listed manufacturing companies

#### **5.4. Recommendations**

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

- a. Maintaining optimum cash balance every year. The study has identified that manufacturing companies have not been maintaining optimum cash balance. The balances being held are at time too high and too low in other time, without any definite propose 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.
- b. Try to reduce cash conversion cycle: Cash conversion cycle of the companies has been found to be higher. RCP, PDP and inventory conversion period have been found to unexpected period. These periods has affected for cash conversion cycle. It is



- recommended that companies should improve their i.e. account receivable, account payable and inventory in accordance with variables i.e. sales and cash.
- c. Try to trade off liquidity and profitability in order to increase profit. The main objective of managing cash is 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.
  - d. 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 and other variables on cash management.
  - e. Surplus cash be invested in such a way that 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 increase opportunities cost and profit will be decreased.
  - f. One of the shortcomings of Nepalese listed manufacturing companies is that the cash held are a haphazard guess working without any consideration on to its impact on sales and profit of the organization. Hence, the suggestion is to plan cash balance with a respect to change in sales and profit.
  - g. The manufacturer company overall average of CR and QR does not maintain standard level. So, it suggested that companies should increase level of CA and QA to make proper level of CR and QR.
  - h. Company should try to maintain considerable liquidity position. So that company may be able to meet current obligation.

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# APPENDICES

## Appendix – A

### Record of sales in listed manufacturing companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	372.78	414.58	535.60	609.65	632.12	614.74	529.92
SRJM	261.29	295.06	422.38	366.67	382.39	482.44	368.37
UNL	1728.63	1540.99	1236.05	1244.73	1524.90	1481.56	1459.58
NBG	140.03	246.83	422.52	226.19	111.95	0.77	191.38
NLO	107.19	72.22	136.00	119.15	84.71	1181.10	106.23
Average	521.98	513.94	550.51	513.28	547.21	539.52	531.07

## Appendix – B

### Record of inventory in listed manufacturing companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	121.11	142.73	185.34	227.22	184.98	246.28	184.51
SRJM	37.76	38.56	48.06	54.43	54.56	58.57	47.56
UNL	132.46	293.93	144.46	120.11	184.21	229.77	184.16
NBG	66.69	141.48	124.03	75.86	19.92	18.82	74.47
NLO	23.26	28.98	19.27	30.57	31.60	36.40	28.35
Average	45.06	129.14	104.23	101.64	95.05	117.97	116.85s

### Appendix – C

#### Record of total assets in listed manufacturing companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	842.65	951.86	1036.05	1038.41	886.56	975.264	955.13
SRJM	287.03	292.37	311.93	301.04	307.13	325.05	304.09
UNL	629.75	760.42	571.34	784.87	939.72	1098.96	797.51
NBG	185.51	233.90	218.40	193.24	121.38	117.21	178.27
NLO	126.05	117.18	111.83	143.33	133.72	144.23	129.39
Average	414.20	471.15	449.91	492.18	477.70	523.14	472.88

### Appendix – D

#### Record of net profit in listed manufacturing companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	55.91	35.89	48.61	19.37	37.80	34.73	38.72
SRJM	0.60	0.94	5.33	4.74	7.17	5.01	3.97
UNL	120.59	68.04	42.61	93.17	93.17	189.20	109.07
NBG	-46.46	-45.03	-13.99	-42.22	-42.22	-16.26	-34.14
NLO	5.08	-2.21	4.24	0.21	0.21	3.06	1.78
Average	27.14	11.53	17.48	15.03	28.91	43.15	23.88

### Appendix – E

#### Record of Current Assets in Listed Manufacturing Companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	369.41	93.84	506.43	544.18	447.83	5315	469.14
SRJM	60.25	59.95	803.56	76.40	80.12	100.55	76.30
UNL	451.88	567.58	399.14	589.88	891.41	724.24	604.02
NBG	162.98	311.74	193.54	154.14	83.63	82.09	148.02
NLO	104.79	97.37	93.49	123.08	115.10	127.19	110.17
Average	229.86	266.09	254.63	297.54	323.61	317.44	281.53

### Appendix – F

#### Record of Current Liabilities in Listed Manufacturing Companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	117.53	268.08	319.14	309.56	174.02	228.98	246.21
SRJM	33.59	38.05	58.04	44.74	59.08	67.36	50.14
UNL	263.93	354.32	155.85	360.88	543.70	882.02	426.79
NBG	255.09	355.37	353.27	361.58	332.14	347.91	334.22
NLO	46.46	38.01	43.74	58.03	76.09	87.40	59.29
Average	155.32	210.77	186.01	226.96	237.00	322.73	223.13



### Appendix – G

#### Record of Quick Assets in Listed Manufacturing Companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	248.30	251.11	321.09	316.96	262.85	306.88	284.53
SRJM	28.49	21.39	32.50	21.97	25.56	41.99	28.65
UNL	319.42	273.65	254.68	469.77	540.02	661.65	419.87
NBG	96.29	70.26	69.51	78.28	63.71	63.27	73.55
NLO	81.53	68.39	74.22	92.51	83.50	90.80	81.825
Average	154.81	136.96	150.40	195.90	195.13	232.91	177.69

### Appendix – H

#### Record of Cost of Good Sold in Listed Manufacturing Companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	206.80	227.01	306.48	376.26	358.38	357.35	305.38
SRJM	220.77	253.57	384.52	315.17	331.40	428.98	322.40
UNL	1424.66	199.54	937.73	843.13	969.10	937.81	1052
NBG	156.17	245.88	401.07	232.22	117.72	2.59	192.62
NLO	82.65	59.76	96.51	94.03	55.13	82.98	78.51
Average	418.21	397.15	425.26	372.185	366.35	361.94	390.18

### Appendix – I

#### Record of Account Payable in Listed Manufacturing Companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	19.00	41.37	60.79	27.94	37.57	72.33	43.19
SRJM	28.89	32.50	49.85	33.03	49.02	58.65	41.49
UNL	140.69	102.72	85.70	240.47	329.34	364.25	210.52
NBG	25.97	16.42	18.53	16.17	7.85	6.19	151.09
NLO	0.00	0.00	31.76	44.44	37.29	0.00	18.90
Average	42.33	38.60	49.32	72.40	92.20	100.28	65.858

### Appendix – J

#### Record of Current Liabilities in Listed Manufacturing Companies

In million

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	0.07	80.48	124.18	88.04	124.18	158.59	94.43
SRJM	27.29	18.77	17.72	12.18	17.72	32.91	21.99
UNL	49.31	32.18	97.06	64.78	97.06	157.72	72.20
NBG	83.54	30.08	30.62	37.19	30.62	29.02	40.08
NLO	66.39	49.68	54.80	75.49	54.80	60.52	62.30

Average	45.32	42.04	64.88	55.54	64.88	87.75	58.20
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**Appendix – K**  
**Correlation Coefficient between Cash (x) and Current Assets (y) and**  
**Regression Line**

Name of co.	x	y	$X - \bar{x} = u$	$Y - \bar{y} = v$	$u^2$	$v^2$	uv
2004/05	30.82	229.60	-17.78	-63.03	316.13	316.78	1120.68
2005/06	3.07	254.63	-45.53	-38	2072.98	144	1730.14
2006/07	19.74	229.86	-28.86	-62.77	832.90	3940.07	1811.54
2007/08	65.71	297.54	17.11	4.91	292.75	24.10	84.01
2008/09	81.65	323.61	33.05	30.98	1092.30	959.76	1023.89
2009/10	90.57	317.47	41.97	24.84	1761.48	617.02	1042.53
Total	$\bar{X} = 48.60$	$\bar{Y} = 275.45$	-	-	6368.54	10957.73	6812.79

Standard deviation of cash ( x ) =  $\sqrt{1061.42} = 32.58$

Standard deviation of CA ( y ) =  $\sqrt{1826.29} = 42.73$

$$\text{Correlation coefficient (r)} = \frac{uv}{\sqrt{u^2 v^2}}$$

$$X \frac{6812.79}{\sqrt{6368.54 \mid 10957.33}}$$

$$\begin{aligned} & X \frac{6812.79}{8353.58} \\ & = 0.81 \end{aligned}$$

$$\begin{aligned} \text{Probable error} &= 0.6745 \times \frac{1Zr^2}{\sqrt{6}} \\ &= 0.6745 \times \frac{0.3439}{2.45} \\ &= 0.095 \\ 6\text{PE} &= 0.57 \end{aligned}$$

Regression equation of cash on CA:

$$x - \bar{X} = r \frac{\sum xy}{\sum y^2} (y - \bar{Y})$$

$$\text{or, } x - 48.60 = 0.81 \times \frac{32.58}{42.73} (y - 275.45)$$

$$\text{or, } x - 48.60 = 0.617 (y - 275.45)$$

$$\text{or, } x - 48.60 = 0.617y - 170.11$$

$$\text{or, } x = -121.51 + 0.617y$$

Regression equation of CA on cash:

$$y - \bar{Y} = r \frac{\sum xy}{\sum x^2} (x - \bar{X})$$

$$\text{or, } y - 275.45 = 0.81 \times \frac{42.73}{32.56} (x - 48.60)$$

$$\text{or, } y - 275.45 = 1.06 (x - 48.60)$$

$$\text{or, } y - 275.45 = -51.516 + 1.06x$$

$$\text{or, } y = 223.93 + 1.06x$$

### Appendix – L

#### Correlation Coefficient between Cash (x) and Current Liabilities (y) and

### Regression Line

Name of co.	x	y	$X - \bar{x} = u$	$Y - \bar{y} = v$	$u^2$	$v^2$	uv
2004/05	30.82	155.32	-17.78	-67.81	316.13	4598.20	1205.66
2005/06	3.07	210.77	-45.53	-12.36	2072.98	152.77	562.75
2006/07	19.74	186.01	-28.86	-37.12	832.90	1377.90	1071.29
2007/08	65.71	2265.9 6	17.11	3.83	292.75	14.67	65.53
2008/09	81.65	237.00	33.05	13.87	1092.30	192.38	458.40
2009/10	90.57	322.73	41.97	99.60	1761.48	9920.16	4180.21
Total	$\bar{X} =$ 48.60	$\bar{Y} =$ 233. 13	-	-	6368.54	16256.0 8	7543.84

$$\text{Correlation coefficient (r)} = \frac{uv}{\sqrt{u^2 \cdot v^2}}$$

$$= \frac{7543.84}{\sqrt{6368.54 \times 12256.08}}$$

$$= \frac{6812.79}{8353.58}$$

$$= 0.85$$

$$\text{Probable error} = 0.6745 \times \frac{1Zr^2}{\sqrt{6}}$$

$$= 0.6745 \times \frac{0.1871}{2.45}$$

$$= 0.076$$

$$6PE = 0.456$$

Standard deviation of cash ( x ) = 32.58

v2

$$\text{Standard deviation of CL ( } y) = \sqrt{\frac{v^2}{t}}$$

$$= \sqrt{\frac{16256.08}{6}}$$

$$= 52.05$$

Regression equation of cash on CL:

$$x - 48.60 = 0.85 \times \frac{32.58}{52.05} (y - 223.13)$$

$$\text{or, } x - 48.60 = 0.53 (y - 223.13)$$

$$\text{or, } x - 48.60 = 0.53y - 118.26$$

$$\text{or, } x = -69.66 + 0.53y$$

Regression equation of CL on cash:

$$y - 223.13 = 0.85 \times \frac{52.05}{32.56} (x - 48.60)$$

$$\text{or, } y - 223.13 = 1.36 (x - 48.60)$$

$$\text{or, } y - 223.13 = 1.36x - 66.10$$

$$\text{or, } y = 156.90 + 1.36x$$

### Appendix – M

#### Correlation Coefficient between Cash (x) and Quick Assets (y) and Regression Line

Name of co.	x	y	$X - \bar{x} = u$	$Y - \bar{y} = v$	$u^2$	$v^2$	uv
2004/05	30.82	154.81	-17.78	-22.88	316.13	523.50	406.80

2005/06	3.07	136.96	-45.53	-40.73	2072.98	1658.93	1854.43
2006/07	19.74	150.40	-28.86	-27.29	832.90	744.74	787.59
2007/08	65.71	195.90	17.11	18.21	292.75	331.60	311.58
2008/09	81.65	195.13	33.05	17.44	1092.30	304.26	576.39
2009/10	90.57	232.91	41.97	55.22	1761.48	3049.25	2317.59
Total	$\bar{X} = 48.60$	$\bar{Y} = 177.69$	-	-	6368.54	6612.28	6254.38

$$\begin{aligned} \text{Karl Person Correlation coefficient (r)} &= \frac{uv}{\sqrt{u^2 v^2}} \\ &= \frac{6254.38}{\sqrt{6368.54 \mid 6612.28}} \\ &= \frac{6254.38}{6489.27} \\ &= 0.96 \end{aligned}$$

$$\text{Probable error} = 0.6745 \times \frac{1Zr^2}{\sqrt{6}}$$

$$= 0.6745 \times \frac{0.96^2}{\sqrt{6}}$$

$$= 0.021$$

$$6PE = 0.126$$

Standard deviation of cash ( x ) = 32.58

$$\text{Standard deviation of CL ( y )} = \sqrt{\frac{v^2}{t}}$$

$$= 1162.046$$

$$= 33.20$$

Regression line of cash on QA:

$$x - \bar{X} = r \frac{\sum xy}{\sum y^2} (y - \bar{Y})$$

$$\text{or, } x - 48.60 = 0.95 \times \frac{32.58}{33.20} (y - 177.69)$$

$$\text{or, } x - 48.60 = 0.53 (y - 177.69)$$

$$\text{or, } x - 48.60 = 0.93y - 165.25$$

$$\text{or, } x = -116.65 + 0.93y$$

Regression line of QA on cash:

$$y - \bar{Y} = r \frac{\sum xy}{\sum x^2} (x - \bar{X})$$

$$\text{or, } y - 177.69 = 0.95 \times \frac{33.20}{32.58} (x - 48.60)$$

$$\text{or, } y - 177.69 = 0.97 (x - 48.60)$$

$$\text{or, } y - 177.69 = 0.97x - 47.14$$

$$\text{or, } y = 130.55 + 0.97x$$

### Appendix – N

#### Carl Pearson's Correlation Coefficient between Cash (x) and Net Profit (y) and Regression Equation

Name of co.	x	y	$X - \bar{X} = u$	$Y - \bar{Y} = v$	$u^2$	$v^2$	uv
2004/05	30.82	27.14	-17.78	3.26	316.13	10.62	-56.00
2005/06	3.07	11.53	-45.53	-12.35	2072.98	152.52	562.30



2006/07	19.74	17.48	-28.86	-6.4	832.90	40.96	184.70
2007/08	65.71	15.03	17.11	-8.85	292.75	78.32	-151.42
2008/09	81.65	28.91	33.05	5.03	1092.30	25.30	166.24
2009/10	90.57	43.15	41.97	19.27	1761.48	371.33	808.76
Total	$\bar{X}$ 48.60	$\bar{Y}$ 23.88	-	-	6368.54	679.05	1514.58

$$\text{Karl Person Correlation coefficient (r)} = \frac{uv}{\sqrt{u^2 v^2}}$$

$$= \frac{1514.58}{\sqrt{6368.54 \mid 679.05}}$$

$$= \frac{1514.58}{2079.56}$$

$$= 0.73$$

$$1 - r^2$$

$$\text{Probable error} = 0.6745 \times \frac{1Zr^2}{\sqrt{6}}$$

$$= 0.6745 \times \frac{0.732}{\sqrt{6}}$$

$$= 0.13$$

$$6PE = 0.78$$

Standard deviation of cash ( x ) = 32.58

$$\text{Standard deviation of net profit ( y )} = \sqrt{\frac{v^2}{S}}$$

$$= \sqrt{\frac{679.05}{6}}$$

$$= 113.18$$

$$= 10.64$$

Regression line of cash on Profit:

$$x \bar{Z} \bar{X} \text{ or } \frac{\uparrow x}{\uparrow y} (y \bar{Z} \bar{Y})$$

$$\text{or, } x - 48.60 = 0.73 \times \frac{32.58}{10.64} (y - 23.88)$$

$$\text{or, } x - 48.60 = 0.53 (y - 177.69)$$

$$\text{or, } x - 48.60 = 2.23(y - 23.88)$$

$$\text{or, } x - 48.60 = 2.23y - 53.2524$$

$$\text{or, } x = -4.65 + 2.23y$$

Regression equation of CL on cash:

$$y \bar{Z} \bar{Y} \text{ or } \frac{\uparrow y}{\uparrow x} (x \bar{Z} \bar{X})$$

$$\text{or, } y - 23.88 = 0.73 \times \frac{10.64}{32.58} (x - 48.60)$$

$$\text{or, } y - 23.88 = 0.73 (x - 48.60)$$

$$\text{or, } y - 23.88 = 0.24 x - 11.67$$

$$\text{or, } y = 12.21 + 0.24x$$

### Appendix – O

**Coefficient of Multiple Determination and Regression Line of Cash (y) and Receivables**

**(x1) and Payable (x2)**

Name	y	X <sub>1</sub>	X <sub>2</sub>	Y <sub>2</sub>	X <sub>1</sub> <sup>2</sup>	X <sub>2</sub> <sup>2</sup>	YX <sub>1</sub>	YX <sub>2</sub>	X <sub>1</sub> X <sub>2</sub>
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of co.									
2004/05	30.82	45.32	42.33	949.87	2053.90	1791.83	1396.76	1304.61	1918.40
2005/06	3.07	42.04	38.60	9.42	1797.36	1489.96	126.06	118.50	1622.75
2006/07	19.74	53.69	49.32	389.67	2882.61	2432.46	1059.84	973.58	2647.99
2007/08	65.71	55.54	72.40	4317.80	3084.70	5241.76	3649.53	4757.40	4021.09
2008/09	81.65	64.88	92.20	6666.72	4209.41	8500.84	5297.45	7528.13	5981.93
2009/10	90.57	87.75	100.28	8202.92	7700.06	10056.08	7947.51	9082.36	8799.57
Total	X=291.56	349.22	395.13	20536.4	21698.0	29512.93	19480.15	23764.5	24991.7

Multiple regression equation of cash (y) on receivables (x1) and payables (x2)

$$y = a + b_1x_1 + b_2x_2$$

$$y = Na + b_1 x_1 + b_2 x_2 \dots\dots\dots(i)$$

$$yx_1 = a x_1 + b x_1^2 + b_2 x_1 x_2 \dots\dots\dots(ii)$$

$$yx_2 = a x_2 + b x_1 x_2 + b_2 x_2^2 \dots\dots\dots(iii)$$

Adding values:

$$291.56 = 6a + 349.22b_1 + 395.13b_2 \dots\dots\dots(i)$$

$$19480.15 = 349.22a + 21698.04 b_1 + 2499.73 b_2 \dots\dots\dots(ii)$$

$$23764.58 = 3905.13a + 24991.73 b_1 + 29512.93 b_2 \dots\dots\dots(iii)$$

$$a = -29.08$$

$$b_1 = -0.408$$

$$b_2 = 1.54$$

Regression equation of y on x1 and x2

$$y = -29.08 + (-0.408) b_1 + 1.54 b_2$$

Solution:

Equation (i) multiplied by 349.22 and equation (ii) multiplied by 6:

$$2094.32a + 11945.60 b_1 + 137987.29 b_2 = 101818.59$$

$$\underline{2095.32a + 130188.24 b_1 + 149950.38 b_2 = 116880.90}$$

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$$-8233.64b_1 - 11963.09b_2 = -1562.31$$

$$8233.64b_1 - 11963.09b_2 = -1562.31 \dots \dots \dots (iv)$$

Equation (i) multiplied by 395.13 and equation (iii) multiplied by 6:

$$2370.78a + 137987.30 b_1 + 156127.71 b_2 = 115204.10$$

$$\underline{-2370.78a \pm 149950.38 b_1 \pm 177077.58 b_2 = \underline{-142587.48}}$$

$$-11963.08b_1 - 20950.58b_2 = -27383.38$$

$$-11963.08b_1 - 20950.58b_2 = -27383.38 \dots \dots \dots (v)$$

Equation (iv) multiplied by 11963.08 and equation (v) multiplied by 8233.64:

$$98499694.01 b_1 + 143115402.70 b_2 = 180191619.50$$

$$\underline{-98499694.01 b_1 \pm 172499533.50b_2 = \underline{-22546489.90}}$$

$$-29384130.80b_2 = -14273273.39$$

$$b_2 = 1.54$$

Putting the value of  $b_2$  in equation (iv)

$$8233.64b_1 + 11963.09b_2 = 15062.31$$

$$\text{Or, } 8233.64b_1 + 11963.09 \times 1.54 = 15062.31$$

$$\text{Or, } 8233.64b_1 = -3360.85$$

$$b_1 = -0.408$$

Putting the value of  $b_1$  and the value of  $b_2$  in equation (i)

$$6a + 349.22b_1 + 395.13b_2 = 291.56$$

$$\text{or, } 6a + 349.22 \times (-0.408) + 395.13 \times 1.54 = 291.56$$

$$\text{or, } 6a + 466.018 = 291.56$$

$$\text{or, } 6a = 291.56 - 466.018$$

$$\text{or, } 6a = -174.46$$

$$\text{or, } a = -29.08$$

Coefficient of multiple determinations

$$R^2_{y.x_1x_2} = \frac{a_{y \Gamma b_1} \quad yx_1 \Gamma b_2 \quad yx_2 \quad ZN^2 y}{y^2 \quad ZN^2 y}$$

$$= \frac{Z29.18 \mid 291.56 \Gamma (Z0.408) \mid 19480.154 \Gamma 1.54 \mid 23764.58 \quad Z6(48.60)^2}{20536.40 \quad Z6(48.60)^2}$$

$$= - 0.94$$

Coefficient of multiple correlation

$$R_{yx_1x_2} = \sqrt{0.94}$$

$$= 0.9$$

### Appendix – P

#### Correlation between CA (x) and CL (y); and Regression Line

Name of Companies	x	y	X $\bar{X}$ x= u	Y $\bar{Y}$ y= v	u <sup>2</sup>	v <sup>2</sup>	uv
2004/05	229.86	155.32	- 51.67	- 67.81	2669.79	4598.20	3503.74
2005/06	266.09	210.77	- 15.44	- 12.36	238.3936	152.77	190.84
2006/07	254.63	186.01	- 26.90	- 37.12	723.651	1377.90	998.53
2007/08	297.63	226.96	16.10	3.83	259.21	14.657	61.66
2008/09	323.61	237.00	42.08	13.87	1777.072	192.38	583.65
2009/10	317.44	322.73	35.91	99.60	1289.52	9920.16	3576.63
Total	X=281.53	Y=223.13	-	-	6981.24	16256.08	8915.05

$$\text{Karl Person Correlation coefficient (r)} = \frac{uv}{\sqrt{u^2 v^2}}$$

$$= \frac{8915.05}{\sqrt{6951.24 \mid 16256.08}}$$

$$= \frac{8915.05}{\sqrt{10630.14}}$$

$$= 0.84$$

$$\text{Probable error} = 0.6745 \times \frac{1Zr^2}{\sqrt{6}}$$

$$= 0.6745 \times \frac{0.842}{\sqrt{6}}$$

$$= 0.081$$

$$6\text{PE} = 0.486$$

Standard deviation of CA (x) on CL (y):

$$\text{or, } x - 281.53 = 0.84 \times \frac{34.04}{52.051} (y - 223.13)$$

$$\text{or, } x - 281.53 = 0.55 (y - 223.13)$$

$$\text{or, } x = 0.55y - 122.7215 + 281.53$$

$$\text{or, } x = 158.80 + 0.55y$$

Regression equation of CL (y) on CA (x)

$$\text{or, } x - 223.13 = 0.84 \times \frac{52.051}{34.04} (y - 281.53)$$

$$\text{or, } y - 223.13 = 1.29 (x - 281.53)$$

$$\text{or, } y - 223.13 = 1.29x - 361.61$$

$$\text{or, } y = -138.48 + 1.29x$$

**Appendix – Q**  
**Correlation between QA (x) and CL (y); and Regression Equation**

Name of co.	x	y	$X - \bar{x} = u$	$Y - \bar{y} = v$	$u^2$	$v^2$	uv
2004/05	154.81	155.32	-22.70	-67.81	515.29	4598.20	1539.30
2005/06	136.96	210.77	-40.55	-12.36	1644.30	152.77	501.20
2006/07	150.40	186.01	-27.11	-37.12	734.95	1377.90	1006.32
2007/08	195.90	226.96	18.39	3.83	338.19	14.657	70.43
2008/09	195.13	237.00	17.62	13.87	310.47	192.38	244.39
2009/10	232.91	322.73	55.40	99.60	3069.16	9920.16	5517.84
Total	X=117.51	Y=223.13	-	-	6612.36	16256.08	8879.48

$$\text{Karl Person Correlation coefficient (r)} = \frac{uv}{\sqrt{u^2 v^2}}$$

$$= \frac{8879.48}{\sqrt{6612.36 \mid 16256.08}}$$

$$= \frac{8879.48}{10367.79}$$

$$= 0.86$$

$$\text{Probable error} = 0.6745 \times \frac{1Zr^2}{\sqrt{6}}$$

$$= 0.6745 \times \frac{0.862}{\sqrt{6}}$$

$$= 0.0717$$

$$6PE = 0.43$$

Standard deviation of cash (  $x$  ) = 1102.06 = 33.20

Standard deviation of net profit (  $y$  ) = 2709.35 = 52.05

Regression line of QA (x) on CL (y):

$$\text{or, } x - 0.17751 = 0.86 \times \frac{33.20}{52.05} (y - 223.13)$$

$$\text{or, } x - 177.51 = 0.55 y - 122.72$$

$$\text{or, } x = 54.79 + 0.55y$$

Regression equation of CL(y) on QA (x):

$$y - \bar{y} = r \frac{\sigma_y}{\sigma_x} (x - \bar{x})$$

$$\text{or, } y - 223.13 = 0.86 \times \frac{52.05}{33.20} (x - 177.51)$$

$$\text{or, } y - 223.13 = 1.35 (x - 177.51)$$

$$\text{or, } y - 223.13 = 1.35 x - 239.33$$

$$\text{or, } y = -16.20 + 1.35x$$

## Appendix – R

### Correlation between CR (x) and NPM (y); and Regression Equation

Name of co.	x	y	$X - \bar{x} = u$	$Y - \bar{y} = v$	$u^2$	$v^2$	uv
2004/05	1.70	27.14	0.19	3.26	0.0361	10.6276	0.6194



2005/06	1.56	11.53	0.05	-12.35	0.0025	152.52	-0.6175
2006/07	1.65	17.48	0.14	-6.4	0.0196	40.96	-0.896
2007/08	1.43	15.03	-0.08	-8.85	0.0064	78.32	0.708
2008/09	1.45	28.51	-0.06	5.03	0.0036	25.3009	-0.3018
2009/10	1.29	43.15	-0.22	19.27	0.0484	371.33	-4.2394
Total	X=117.51	y=23.88	-	-	0.1166	679.06	-4.7273

Standard deviation of cash (  $\sigma_x$  ) =  $\sqrt{0.102} = 0.14m$

Standard deviation of net profit (  $\sigma_y$  ) =  $\sqrt{113.18} = 10.64m$

Karl Pearson Correlation coefficient (r) =  $\frac{uv}{\sqrt{u^2 v^2}}$

$$= \frac{Z4.7273}{\sqrt{0.1166 \mid 679.06}}$$

$$= \frac{Z4.7273}{8.90}$$

$$= -0.53$$

$$\text{Probable error} = 0.6745 \times \frac{1 Z r^2}{\sqrt{6}}$$

$$= 0.6745 \times \frac{1 Z 0.2809}{\sqrt{6}}$$

$$= 0.20$$

$$6PE = 1.20$$

Regression line of CR on NPM:

$$x - \bar{X} = r \frac{\sum x}{\sum x} (y - \bar{Y})$$

$$\text{or, } x - 01.51 = -0.53 \times \frac{0.14}{10.64} (y - 23.8813)$$

$$\text{or, } x - 1.51 = -0.007(y - 23.88)$$

or,  $x = 1.68 + 0.007y$

Regression equation of NPM on CR:

$$y - \bar{y} = r_{yx} \frac{\sigma_y}{\sigma_x} (x - \bar{x})$$

or,  $y - 23.88 = 0.53 \times \frac{10.64}{0.14} (x - 1.51)$

or,  $y - 23.88 = -40.28(x - 1.51)$

or,  $y - 23.88 = -40.28x + 60.82$

or,  $y = 84.70 - 40.28x$

### Appendix – S

#### Correlation between QR (x) and NPM (y); and Regression Equation

Name of Company	x	y	$u = X - \bar{x}$	$v = Y - \bar{y}$	$u^2$	$v^2$	uv
2004/05	1.12	27.14	0.2	3.26	0.04	10.6276	0.652
2005/06	0.85	11.53	-0.07	-12.35	0.0049	152.52	0.8645
2006/07	1.02	17.48	0.10	-6.4	0.01	40.96	-0.64
2007/08	0.92	15.03	0	-8.85	0	78.32	0
2008/09	0.84	28.51	-0.08	5.03	0.0064	25.3009	-0.4024
2009/10	.079	43.15	-0.13	19.27	0.0169	371.33	-2.5051
Total	$\bar{X} = 117.15$	$\bar{Y} = 223.13$	-	-	0.0782	679.06	-2.031

Standard deviation of cash ( x ) =  $\sqrt{0.13} = 0.114m$

Standard deviation of net profit ( y ) = 10.64m

$$\text{Karl Person Correlation coefficient (r)} = \frac{uv}{\sqrt{u^2 v^2}}$$

$$= \frac{2.031}{\sqrt{53.10}}$$

$$= \frac{2.031}{7.29}$$

$$= -0.28$$

$$\text{Probable error} = 0.6745 \times \frac{1 Z r^2}{\sqrt{6}}$$

$$= 0.6745 \times \frac{1 Z 0.9216}{\sqrt{2.45}}$$

$$= 0.25$$

$$6PE = 1.50$$

Regression line of CR on NPM:

$$x - \bar{X} = r \frac{\sum (x - \bar{X})(y - \bar{Y})}{\sum (x - \bar{X})^2} (y - \bar{Y})$$

$$\text{or, } x - 0.92 = -0.28 \times \frac{0.114}{10.64} (y - 23.88)$$

$$\text{or, } x - 0.92 = -0.003(y - 23.88)$$

$$\text{or, } x = 0.99164 - 0.003y$$

Regression equation of NPM on CR:

$$y - \bar{Y} = r \frac{\sum (x - \bar{X})(y - \bar{Y})}{\sum (y - \bar{Y})^2} (x - \bar{X})$$

$$\text{or, } y - 23.88 = 0.28 \times \frac{10.64}{0.114} (x - 0.92)$$

$$\text{or, } y - 23.88 = 26.13(x - 0.92)$$

or,  $y - 23.88 = -26.13x + 24.04$

or,  $y = 47.92 - 26.13x$

**Appendix – T**  
**Record of Receivable in Listed Manufacturing Companies**

**In**  
**million**

Name of company	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Average
BN	0.07	115.21	88.04	124.18	124.18	158.59	94.43
SRJM	27.28	23.12	12.18	17.72	17.72	32.91	21.99
UNL	49.31	32.16	64.78	97.06	97.06	157.72	72.20
NBG	83.54	30.04	37.19	30.62	30.62	29.02	40.08
NLO	66.39	67.94	75.49	54.80	54.80	60.52	62.30
Average	45.32	53.69	55.54	64.88	64.88	87.75	58.20