CHAPTER- I
INTRODUCTION

1.1 Background of the Study

Nepal is one of the least developed countries in the world. It is predominantly an agricultural, mountainous and landlocked kingdom, surrounding by two large, fast developing nations, China and India. About 80% of the total population is engaged on subsistence farming.

Despite its large share in labor market, it paradoxically, contributes 40% of the total GDP. During the last decade the average growth in the GDP was around 5%. However, the current year's (FY 2066/67) GDP growth is expected to retain at 4 percent *(Monetary Policy, 2066/67).* The overall growth rate depends primarily on the growth rate of agriculture sector. The growth in other sectors of the economy is constrained by the small domestic market, poor physical infrastructure, inadequate human and financial resources, land-locked ness, the political instability and the topography of the country. It is said that in later years the insecurity caused by Maoist insurgency though currently resolved has also become a major factor to limit the overall economic development of the country.

Poverty is one of the most pressing problems in Nepal. Gross national income per capita is 250 US dollars per annum. Over 50 per cent of adults are illiterate, infant and maternal mortality rates are high. According to the Human Development Index (HDI); Nepal ranks 138th out of 177 countries. Political conflict of more than a decade has created an adverse effect on economy. Economic growth was between 2 to 5 per cent in recent years and even today, this is not sufficient to reduce the poverty level (*NRB; The Economic Indicator – 2009/10).*

The economic development of Nepal is still in the initial stage. Since the domestic Nepalese market is small and purchasing power is low, it is difficult to attract foreign investors. Nepal's export-based sectors are weak, with only carpets and textiles being internationally competitive. As most of the labor forces are unemployed it is necessary to transform the huge labor force into industrialized sector.

Besides India, Nepalese migrant workers are to be found above all in the Gulf States, Malaysia, and Hong Kong. Nepalese economy now-a-day is very much dependent through the inward remittance from the migrant workers through out the world and becoming increasingly important for the economic development. The inward remittance contributes 22% of the total GDP *(Monetary Policy; 2066/67).*

For the economic growth and development, government has now initiated various economic policies such as industrial policy, foreign investment policy, privatization policy and trade & transit policy, Public-Private Partnership Policy etc.

Nepal has adopted mixed and liberal economic policy with the implicit objective to help the state and the private sector. Especially after restoration of the democracy, the concept of the liberalization policies has been incorporated as directive principal and state policies. This has helped in establishing many companies, banks, finance companies and manufacturing industries; and basically developing large Public Enterprises which are subsidized by the state with the aim of economical development.

The development of economy depends upon the infrastructural development of Public Enterprises in the nation and its utilization. These sectors help and contribute in turn providing capital to develop trade, industry and business. They are the major backbone for the economic development of a country.

The study is concentrated in analyzing the cash management system in Nepal Electricity Authority. Cash/Fund Management concentration if done properly, investment opportunity will be high and which results in overall development of the economy. Therefore, I have chosen the topic and the study is concentrated on the "Cash Management", and Nepal Electricity Authority is taken for the purpose of the research work.

1.2 Introduction of Nepal Electricity Authority (NEA)

Nepal Electricity Authority (NEA) was established under the NEA Act 2041. NEA started its operations on 17th August 1985. It is responsible to generate and supply electricity securely, efficiently, economically, and legally at reasonable price for the development of the nation.

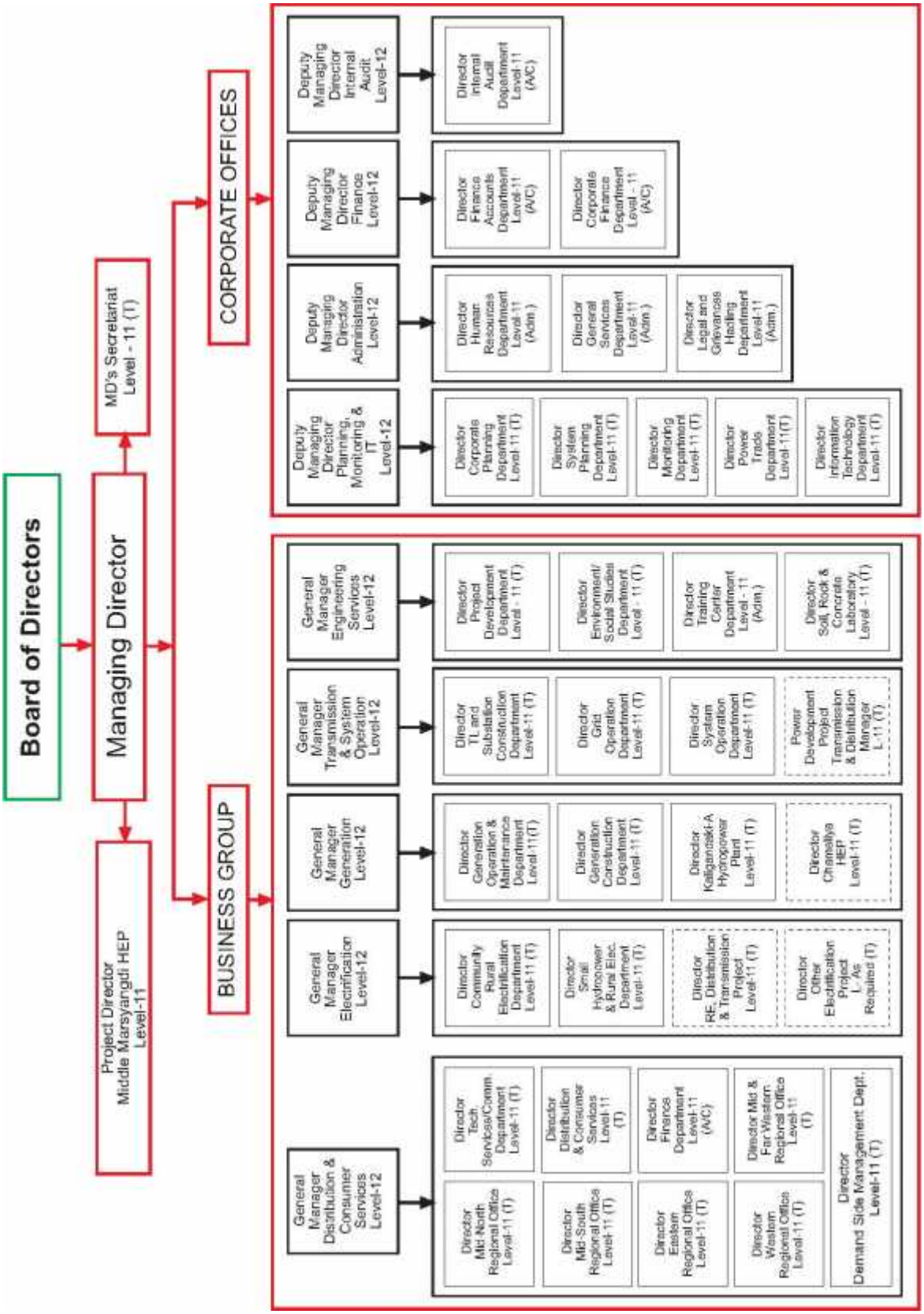
The Objectives of NEA are:

- Planning
- Constructing
- Operating and
- Maintaining the electric power sub sector

The corporate structure of NEA has been figured out below:

Figure 1.1

Corporate Structure of NEA



Source: NEA's Annual Report – 2008/09

1.3 Development of Electricity in Nepal

Electricity delivers the basic services to the people. As a pre-dominant player in the power sector, NEA has an important role to play in the provision of electricity in Nepal.

Following the enactment of the Electricity Act 1992, there was an initial surge in the development of hydropower by the private sector but the momentum was short lived. In successive years, despite government's plan to bring in more private investment in this sector, not much have happened. Unstable political climate, poor security situation are but a few reasons often cited for the lack of adequate private participation in this sector. With the political and security situation improving, more private sector investment is expected to be channelized in this sector.

The FY 2008/09 was a challenging year for NEA and can be noted historic because for the first time in a century long history of electricity generation and consumption, government declared National Electricity Crisis. Significant drop in water level in the rivers together with damage of principal transmission link for import of power from India resulted in a severe supply-demand gap in the system causing NEA to resort to an unprecedented load shedding up to sixteen hours a day. This situation has severely impacted its financial condition. In addition, there are other challenges facing NEA such as those resulting from high system losses, transmission capacity constraints, lack of necessary investment capital and so on.

Amidst these challenges, NEA has begun to take a long term perspective in adding its generation and transmission capacity. Among the generation projects that NEA has initiated implementation include Upper Tamakoshi, Trishuli 3A and 3B, Upper Seti and Rahughat. NEA is also implementing various transmission projects to enhance power evacuation capacity within the country, as well as cross-border transmission lines to exchange power with India. These are commendable efforts to meet the long term demand growth as well as to encourage private sector investment in this sector.

To address the immediate challenge of load shedding, NEA is working towards rehabilitation/ overhauling of the existing generation plants. The Multi Fuel Power

Plant, Hetauda Diesel Plant, and Kali Gandaki A., Marsyangdi and Gandak Hydropower stations are being rehabilitated. Similarly, imports of electricity from India and demand side management are some of the other measures taken by NEA to reduce the gap between demand and supply. With the completion of these activities, we can hope that there will be some relief from load shedding.

Another area where NEA needs to focus its efforts is in the loss reduction. The poor security situation in the past not only impacted the loss reduction efforts but also the billing and collection. While further efforts to address this situation on NEA's part is necessary, support from the local administration and various political parties on the ground is also equally necessary.

1.4 Statement of the Problem

It is found that most of the business failures in the world are due to shrinkage in the cash value and the poor liquidity management policies implemented by the organization. So, organizations should continue its efforts to focus on affective cash management to improve the overall liquidity condition.

Even if, cash management is the system that helps to manage liquidity position effectively, then also, most of the Nepalese Public Enterprises are facing problems due to weak liquidity management.

In this regard, the performance of NEA is to be analyzed in terms of their cash investment, net liquidity position and opportunity costs occurred. Thus, the specific research questions and problems faced by NEA regarding the cash management are identified as follows:

- NEA’s cash management is based on the traditional approach. Although the executive of some enterprises have the practices of forecasting cash requirements on a formal basis, they lack a specific cash management technique.
- The cash collection efficiency in this corporation is comparatively low.

- NEA is not successful in making the best use of available cash balance prudently.
- The collection of trade credit was very low during the study period.
- No optimum cash balance was found to be maintained
- The ever-increasing operating costs were due to hike in price as well as fluctuation of foreign currency exchange rates.
- NEA is deprived of performing effectively in meter reading and it impacts in cash collection and results in poor cash management.

1.5 Objectives of the Study

The general objective of the present study is to explore the cash efficiency and the liquidity management in Nepalese Public Enterprises. For this study, NEA has been taken as the sample organization. This study focuses on the investment decision of the enterprise, particularly the cash management in the short run business operation of the firm, i.e., management of the individual current assets like; cash and bank balance, receivable and inventory in the short-run. Moreover, the study has specified the following objectives:

- To see the cash management practices adapted by NEA.
- To examine and analyze the liquidity position of Nepal Electricity Authority.
- To analyze the profitability position of NEA
- To see the relationship between total income in net profit.
- To recommend for the improvement based on findings of the study.

1.6 Limitation of the Study

In today's dynamic environment, nothing is free from limitations. This study has also no exceptions. The scope of the study is limited to only one PE because of time and resource constraints. Most of the analyses are descriptive in present study and is very basic attempt to address the research issues. Although, the effort has been made to minimize the confines to the best possible extent; yet it suffers from the below listed limitations:

a. Due to the limitation of time and resources, only one Public Enterprise (Nepal Electricity Authority) has taken as sample. Nevertheless, this study has tried to show the true picture and situation of cash management of the sector.
b. The presentation and interpretation is based on secondary data only and dealt with data provided by NEA's personnel and administration department. Even though, the secondary data are not easily available.
c. Only the selected financial and statistical tools are used to know financial condition of the enterprise. However, the study is successful in finding out the cash position and its management in the sample organization.
d. The study assumes that the impact of political factors of the country such as; change in government, any sort of political involvement in the in the firm, if prevalent, has insignificant or no effect upon the financial decisions.
e. The study is limited only to cash management and its analysis i.e. Concerns only with managerial, financial and accounting aspects.
f. The evaluation is made through the analysis of financial statement published and presented by the enterprise. Therefore, generalization of the whole industry cannot be made.

1.7 Organization of the Study

The structure of the thesis report comprises a total of five chapters which have been organized as follows:

Chapter I Introduction

This section describes the basic concept and background of the study. It has served orientation for readers to know about the basic information of the research area, various problems of the study, objectives and the limitations of the study. This chapter also attempts to provide the perspective to understand the detailed information about the coming chapter.

Chapter II Review of Literature

This chapter includes review of previous thesis, published and unpublished reports, available articles, journals, books to acquire proper information on data presentation and interpretation for the research study.

Chapter III Research Methodology

This chapter includes research design, sample selection, source of data, data collection procedure, method of data analysis and financial tools used for the study.

Chapter IV Data Presentation and Analysis

The main part of the study, this chapter is the most important and core of the thesis. Since, it consists of systematic presentation and analysis of financial statements employing financial and statistical tools, this presentation and analysis help to come to the ultimate conclusion of the study.

Chapter V Summary, Conclusion and Recommendation

The last chapter summaries the entire research and further describes the major findings of the study. Conclusions of the cram have also been included in this chapter including the viable suggestions and recommendations for the betterment of the concerned organizations and thereby enhancing the national economy.

CHAPTER-II
REVIEW OF LITERATURE

This chapter deals with review of different types of sources of information on the subject. This part of the thesis compiles review of reports, journals, magazine, articles, previous thesis, published and un-published publications, research papers etc. related to the study; done by different authors and/or researcher with their own objectives that will be helpful in visualizing concept and developing a research design as a whole to come up with an informative presentation. It is also a way to avoid duplication of the research works already conducted by the past researchers.

The purpose of literature review is to find out what research studies have been conducted and what remains to be done. Thus, the previous studies have proved as a foundation to the present study.

This part has been divided into three headings:

- Conceptual Review
- Review of Previous Studies

2.1 Conceptual Review

2.1.1 Concept of Cash Management

"Cash is the common purchasing power or medium of exchange. As such, it forms the most important component of working capital. Not only that it largely upholds, under given condition, the quantum of other ingredients of working capital viz. inventories & debtors, that may be needed for a given scale and type of operation" (*Banarjee; 1985:1).*

Cash is the highly liquid form of current assets, which is important for the regular operation of the business firm. Cash serves as an input, which ensures that all business activities are carried out without any obstruction. Every business works begin with the provision of sufficient cash to perform the desired task.

Besides cash, some other items such as, Treasury bills, commercial papers and other marketable securities are readily convertible into cash and liquid in nature. The financial manager must ensure that there is optimum cash (neither bulk nor too squat) balance in an organization. If there is excessive cash, organization may suffer from opportunity loss and therefore, the financial manager must seek a safe investment in current assets (that can be converted into cash within a short period of time).

On the other hand, if there is inadequate cash, the financial manager must arrange the fund to avoid the future payment/settlement problems.

Therefore, for its smooth operation of any business organization, and to earn adequate profit, effective cash management should be done and is of paramount importance. So, the management of current assets and current liabilities is necessary for day to day operation. It is concerned with the decision regarding the short-term funds influencing overall profitability and risk involvement in the firm. Thus, management of cash has been regarded as one of the conditioning factors in the decision-making.

The basic issue in cash management is to maintain the investment in cash as low as possible while still keeping the firm operating efficiently and effectively.

2.1.2 Significance of Cash Management

Cash is considered as the backbone of a firm. Cash management is concerned with management of cash in such a way as to achieve maximum profit consistent with maximum liquidity of the firm. It is the management's ability to recognize cash problems before they arise.

"Cash management is one of key areas of 'working capital management'. Apart from the fact that it is the most liquid current assets, cash is the common denominated to which all current assets, can be reduced because the other major liquid assets i.e., receivables and inventory get eventually converted in cash.*"(Khan & Jain; 2005:12)* This underlines the significance of cash management.

Cash Management Involves three Major Decision Areas

- Determining appropriate cash balance.
- Investing idle money
- Managing collections & disbursement

The study emphasizes and shows that the average holding of cash by firm differs significantly. A notable study conducted on Nepalese non-finance sectors enterprises emphasizes that cash management is of great significance in the size of investment of the form of canuy by Nepalese enterprises is not negligible. Average cash holding of Nepalese non-finance sector's firm constitute 4 to 6 percent of total assets investment. With such a high quantum of cash investment, it is proved that the Nepalese enterprises should be educated about the significance role of cash management.

An Effective and Efficient Cash Management is Considered to be Significant for the following Reasons

- It ensures that the firm has sufficient cash during peak times for purchases and for other purpose.
- It helps to meet obligatory cash out flows when they fall due.
- It assists in planning capital expenditure projects.
- It helps to arrange for outside financing at favorable conditions, if necessary.
- It helps to allow the firm to take advantage of discounts, special purchases and business opportunities.
- It helps to invest surplus cash for short or long term periods to keep the idle funds fully employed.

2.1.3 Objective of Cash Management

There are basically two major objectives of cash management, which are conflicting and mutually contradictory with each other. But the task of cash management is to reconcile them together. They are *(Khan & Jain; 2005:15)*.

a) Meeting Payment Schedule
b) Minimizing funds committed to cash balances

a) Meeting Payment Schedule

In normal course of business, firms have to make payment of cash on a continuous and a regular basis to suppliers, employees and so on. At the same time, there is a constant inflow of cash through collections from debtors. To meet the payment schedules, a firm should maintain an adequate amount of cash balance. The advantages of maintaining adequate cash balances are:

- It helps to take trade and cash discount.
- It helps the firm maintaining its credit rating by maintaining its current and acid test ratio.
- It is useful for taking advantages of favorable business opportunities
- It helps to meet fund demands in emergencies such as, strikes, fires or competitors marketing campaigns.

b) Minimizing Funds Committed to Cash Balances

The second objective of cash management is to minimize cash balances to the possible extend. In minimizing the cash balances, two conflicting aspects have to be reconciled. First is, a high level of cash balances (as shown above) will ensure prompt payment together with all the advantages; but large fund amount will remain idle, as cash is a non-earning asset and the firm will have to forego profits. On the other hand, a low level of cash balances may mean failure to meet the payment schedule. The aim of cash management, therefore, is to have an optimal amount of cash balances.

2.1.4 Cash Management Techniques

There are different approaches / Techniques applied by different organization. These techniques differ from one organization to another. Brief descriptions of some of the methods are explained hereunder *(Pandey; 1999:843).*

1. Cash Budget

The cash budget shows the firm's projected cash inflows and outflows over some specified period. It is the most significant device to plan for and control cash receipt and payment. It provides much more detailed information concerning a firm' future cash flows and is the most important tools for cash management. It is useful in

determining when cash surpluses or shortages will occur. Upon its forecasting, plans can be made to borrow / invest to cover shortages or surpluses.

2. Cash Planning

Cash planning is useful to anticipate future cash flows needs of an organization. It helps to reduce the opportunity costs and lowered the possibility of idle cash. Planning is a technique to plan and control for the uses of cash. The forecasting may be based on the present operation and / or anticipated future operation. Cash plan are very crucial in developing the overall operation plans of the firm. Cash planning may be done on daily, weekly or monthly basis (depending upon the nature and job requirement). It depends upon the size of the firm and philosophy of management.

3. Long-Term Cash Forecasting

Long-term cash forecasting are prepared to generate an idea regarding the company's financial requirement in distant future. The long-term cash forecasting can be used to evaluate the impact of new product development on financials condition in future. The major uses of the long-term cash forecasting is to trace company's future financial needs (especially for its working capital requirements), to evaluate proposed capital projects and to improve corporate planning. Long-term cash forecasting not only reflects accuracy but also foreshadows financing problems.

4. Short-Term Cash Forecasting

Two most commonly used methods of short-term cash forecasting are as follows *(Pandey; 1999:843).*

a. Receipt and Disbursement Forecasting

The prime aim of receipt and disbursement forecasts is to summarize cash flows during a predetermined period. In case of those companies where cash items of income and expenses involve flow of cash; this method is favored to keep a close control.

b. Adjusted Net Income Method

This method of cash forecasting involves tracing of working capital flows. It is also called the sources and uses approach. Two objectives of this method are; either to

project the company's need for cash at some future date or to show whether the company can generate this money internally or not and the balance needed for borrowing or to rise from the capital market.

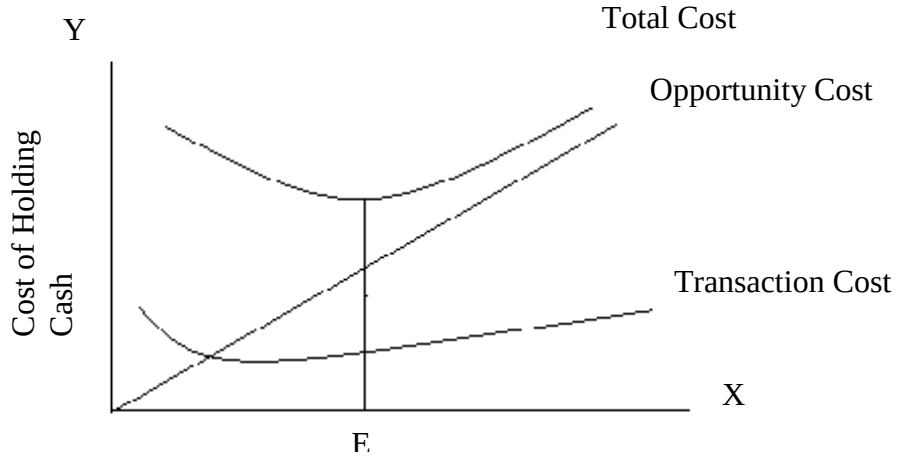
2.1.5 Determining the Optimum Cash Balance

Financial managers are responsible to maintain a sound liquidity position of the firm so that dues may be settled in time. Any organization needs cash not only to purchase raw materials and to pay ways, but also for payment of dividend, interest, taxes and other countless purposes. The test of liquidity is done to evaluate the availability of cash to meet the firm obligations. Thus, the cash balance is maintained for transaction purpose and an additional amount may be maintained as a safety stock. The financial manager should determine the appropriate amounts of cash balance, but a trade-off between risk and return influences such a decision. If the firm maintains a small cash balance, its liquidity position become weak and suffers from a 'liquidity crisis' situation. However, investing released funds in some returnable opportunities can attain a higher profit. On the other hand, if the firm maintains a high level of cash balance, it will have a sound liquidity position but have to forego the opportunity to earn interests. Thus, the firm should maintain an optimum cash balance. To find out the optimum cash balance, the transaction costs and risk should be matched with the opportunity costs.

This can also be made clear from the figure below:

Figure: 2.1

Determination of Optimum Cash Balance



(Source: Banerjee; 2005:215)

2.1.6 Scholar's Cash Management Model

To manage the cash effectively, some finance scholars have devised some of the models. The most popular of them are:

- Boumel's Model (Inventory Model)
- Miller-Orr Model (Stochastic Model)

2.1.6.1 Optimum Cash Balance Under Certainty – Baumol's Model

Under this model, a firm predicts or estimates the total cash requirement for a period. This cash is not set idle, but is further invested in marketable securities so that, it can earn a certain percentage of return. As such, whenever a firm requires liquid cash, it can sell marketable securities, periodically (not at once).

In view of minimizing the opportunity cost of holding cash and maximizing the return on the available funds, the cash balance should be maintained at an optimum level and excess funds (not required immediately) should be invested in the marketable securities.

Baumol's Model is Based on the Assumptions that

1) The cash is used at a constant rate,
2) The periodic cash requirements not remains constant, and
3) There are some costs incurred such as, opportunity costs that increase and other costs such as transaction costs that decrease as cash balance increases *(Baumol, extract from Khan and Jain;1986: 136).*

Now an issue arises, how much marketable securities are to be sold so that the total cost of maintaining cash balance (holding cost and transaction cost) can be minimized. This optimum level at which total cost is minimized is called "Optimum Transfer Size (C*)".

According to Boumol's Model,

Optimum Tranfer Size (C*) = $\sqrt{2bT/i}$ OR, $\sqrt{2FT/i}$

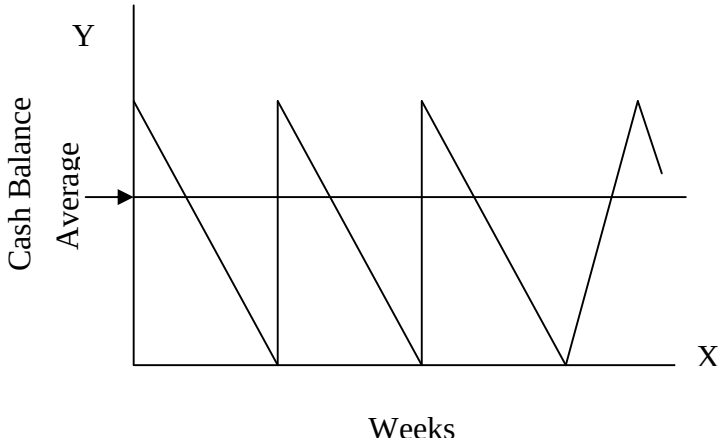
Where,

b = F = Transaction cost per transaction
T = Total cash requirement for the period
i = Rate of return on the fund invested in marketable securities or Opportunity cost.

Here, if C* is 50,000, this impleies that if the firm sells marketable securities and generates the cash of Rs. 50,000 at a time, there will be the least total cost of maintaining cash balance.
Because of the above assumption (1) and (2) the graphical representation of cash position come across as follows:

Figure: 2.2

Cash Balance Under the Baumol Cash Management Model



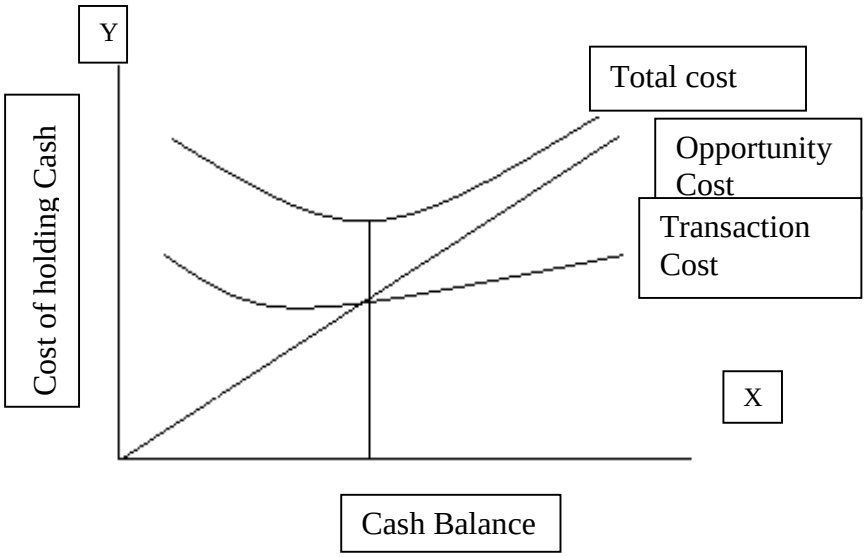
(Source: Baker & Powell; 2005:166)

Along with its assumptions, the model prescribes an optimal size of cash balance and the optimal size of borrowing. What matter for a firm is the total of opportunity cost and the transaction cost. Therefore, the objective of this model is to minimize the total cost incurred.

The figure below shows the relationship between the average size of cash balance and various costs associated with the cash maintenance

Figure: 2.3

Relationship between Average Cash Balance and Cash Maintain



(Source: Baker & Powell; 2005: 167)

Under this method, only selling of marketable securities is possible. Whenever the optimal cash balance becomes zero, the company can sell the marketable securities of economic conversion size; 'xx' times for next month and company make conversion every 'xx' days in month.

2.1.6.2 Optimum Cash Balance Under Uncertainty – The Miller-Orr Model

The limitation of the Baumol Model is that it does not allow the cash flows to fluctuate. Firms in practice do not use their cash balance uniformly nor are they able to predict daily cash inflows and outflows. To overcome this limitation, the Miller-Orr Model came into existence. The Miller-Orr model has cash flow variation.

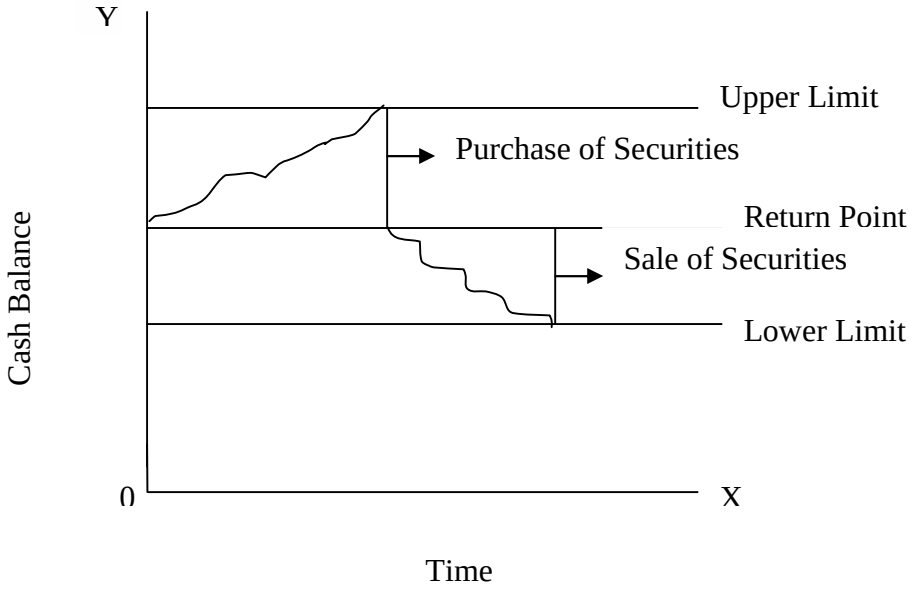
Therefore, whenever the cash outflow in a firm is fluctuating, then the Boumol's Model or the Inventory Model does not work since this model considers that the cash requirement for a period is fixed. Nevertheless, in reality, a firm rarely has the fixed cash outflows.

This model assumes that net cash flows are normally distributed with a zero value of mean and a standard deviation. As shown in figure below, the Miller-Orr model

provides for two control limits - the upper control limit as well as lower control limit and the return point. If the firm's cash flows fluctuate randomly and hit the upper limit, then it should buy sufficient marketable securities to come back to a normal level of cash balance (the return point). Similarly, when the firm's cash flows wander and hit the lower limit, it should sell sufficient marketable securities to bring the cash balance back to the normal level (the return point). *(Miller M.H &Orr; 1966:413)*

Figure: 2.4

The Miller-Orr Cash Management Model



(Source: Miller M.H &Orr D.LXY; 1966: 413-35)

According to this model, Target Cash Balance = Lower Limit + $\frac{3b\acute{o}}{4iperiodic}$

Where,

b = Transaction cost per transaction

σ = Variance of periodic cash requirement

i = Periodic interest rate.

Upper Limit (U*) = 3C*- 2 lower limit

- **Purchase Strategy**

  If cash level reaches to an upper limit (U*), then the difference of U* and C* (i.e., U*-C*), will be used to buy the marketable securities. This is called the buying/Purchase Strategy.

- **Selling Strategy**

  If cash level reaches to a lower limit (L), then the additional cash of C*-L is generated by selling marketable securities.

  Therefore, at any case, the firm maintains the target cash balance. In other words, it returns to C* level. Therefore, it is called "Return Point".

2.1.7 Motives for Holding Cash

There are various advantages for holding cash. They are specifically towards advantages, synchronization of cash flows, expending collection and cheque clearing, using float, determining cost of cash holding and the minimum cash balance, compensating balances, managing overdraft system, account receivables and overall credit policies. There are basically, three possible motives for holding cash and they are:

1) Transaction Motives

"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 obligations whose timing is not perfectly synchronized with cash receipts"(*Khan & Jain; 2002:12).*

Firms need cash to meet their transactions needs. The principle motive for holding cash is to conduct day to day operations. A cash balance associated with routine payments and collections like purchase of raw material, payment of wages, salaries, interest, dividend, taxes etc.

2) Precautionary Motives

"The cash balance held in reserve for such random & unforeseen fluctuations in cash flows are called as precautionary motives" (*Khan & Jain; 2002:12).*

There may be some uncertainty about the magnitude and timing of cash inflows from sales of goods and services, sales of assets, and issuance of securities. Likewise, there may be uncertainty about cash outflows on account of purchase and other obligation. To protect it against such uncertainties, a firm may require holding some cash balance.

3) Speculative Motives

"It refers to the desire of a firm to take advantage of opportunities which present themselves at unexpected moments and which are typically outside the normal course of business"(*Khan & Jain; 2002:12).*

This motive is related to the holding of cash for investing in profit making opportunities as and when they arise. Firms would like to tap profit making opportunities arising from fluctuations in commodity prices, security prices, interest rate and foreign exchange rates.

4) Compensating Balance / Compensative Motives

A minimum amount of cash balance a firm must maintain in a bank to compensate for services rendered or for granting a loan is known as compensating balance. Bank provides various services to the firm like; payment of check information of credit, loan etc.

Out of the four motives for holding cash, the most important factors are transaction motive and compensation motive. This is because, precautionary balance can be met by short-term borrowings and business firms normally do not speculate and thus doesn't require speculative balances.

2.2 Review of Previous Studies

Present section deals about the concept or findings of earlier scholars on the concerned or the related field of study. Many thesis/dissertations written on cash/liquidity management has been reviewed and consulted during preparation of the research report. Nevertheless, there are plenty of dissertations, which were closely related to the subject matter. For instance, working capital management, inventory

management and profit planning are the topics, which are some way related to cash management.

Extraction of Thesis Relevant for the Study has been Presented Below:

Bajacharya (1990), has conducted his Master's thesis on "*A Study of Cash Management in Nepalese Public Enterprise*", with the following objectives:

- To critically review the cash management techniques implemented by Nepalese public enterprises.
- To examine the cash demand in Nepalese public enterprise.
- To suggest appropriate cash management policy in the future.

The Major Findings of the Study were Follows:

- Cash management in public enterprises is based on the traditional approach. Although the executive of some enterprises have the practices of forecasting cash requirements on a formal basis, they lack a specific cash management technique.
- A modern practice with respect to debt collection, monitoring payments, behavior of customers and relevant banking arrangement in connection with collection of receivables has been virtually ignored in many enterprises.
- Majority of the enterprises didn't face any serious liquidity problem. However, this was not because of the effectiveness of cash planning and budgeting. The problem of liquidity actually didn't arise due to the coincidence of delay in payment to creditors.
- Most of the large enterprises have periodic accumulation of surplus cash and corresponding cash shortage from time to time. However, one of the enterprises considered the implication of holding idle cash balance and few took on to account the potential benefit of investing surplus in marketable securities. These enterprises 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 (revealed by the relevant financial ratios).

- Neither interest rate nor the rate of inflation had any effect on the cash balance. Further, there was little evidence of effect on the cash balance holding in most of the cases.

Pradhan (1997), has conducted his Master's thesis on "*A Study of Cash Management of Salt Ttrading Corporation Ltd*" with the following objectives:

- To analyze the average collection period of trade credit of the sample organization.
- To examine the liquidity position of Salt Trading Corporation Ltd.
- To analyze the cash allocation and expenditure.
- To recommend viable suggestion to cope up with cash management's short coming in Salt Trading Corporation Ltd

The Major Finding of his Study is Presented as Under:

a. Salt Trading Corporation Ltd. was not successful in making the best use of available cash balance prudently.
b. The cash collection efficiency in this corporation was very low.
c. The collection of trade credit in the corporation was very low during the three-year study period.
d. Management has taken liberal credit policy for the sales. Hence, the cash and bank balance was very low in comparison to the account receivables.
e. No optimum cash balance was maintained.

Acharya (2003), has conducted his Master's thesis on "*Cash Management Practices of Manufacturing Companies in Nepal"* with the following objectives:

- Determining the structure and utilization of cash.
- Estimation of cash demand from regression method.
- Reviewing the cash management practiced by manufacturing companies.
- Determining the average level of cash holding of the manufacturing companies.

The Major Finding of his Study has been Presented as Under:

- The average size of cash is higher in government enterprises than non-governmental manufacturing enterprises.
- From the result of structure and position of cash, non-government sector has more efficient practice on cash management than government manufacturing enterprises.
- Lower ratios on cash to quick assets, cash to current liabilities on non-government sectors refers efficient cash management.
- Average collection period is lower for government sectors than in non-government-manufacturing enterprises.
- Cash conversion cycle is favorable for non-government manufacturing enterprises because of lower time incur in cash cycle.

Sainju (2003), has conducted his Master's thesis on "*Cash Management in Nepalese Public Enterprises, A case study of Royal Drugs Limited,"* with the following objectives:

- To examine and critically analyze the cash estimation practice in Rural Drugs Limited.
- To examine the liquidity position of Rural Drugs Limited.

Major Findings of his Research Work were:

a. Company does not have any definite policy regarding how much cash balance is required to hold in every fiscal year.
b. This company has not been forecasting cash balance, considering the sales volume.
c. Royal Drugs Limited fails to maintain an adequate proportion of cash in its current assets.
d. Cross analyses revealed that company fails to collect receivables from its sundry debtors timely.
e. Company has not been precisely meeting its current liabilities payment.

Bhandari (2004), has conducted his Master's thesis on "*Profit Planning in Royal Drugs Limited - RDL"* with the following objectives:

- To Measure the Profitability of the RDL.
- To measure the Liquidity position of the RDL.
- To examine the cash flow statement of the RDL

The findings of the Study are as follows:

- The management of RDL is incapable of controlling its overflowing expenses. As a result, the expenses are increasing every year.
- RDL has been suffering from operating loss. The main cause of loss is low contribution margin ratio, burden of high fixed costs and under capacity utilization.
- RDL has improper cash position. The cash flow statement shows the negative cash flow operation due to increase in operating expenses and poor cash management.
- The balance sheet of RDL shows that the financial structure is not satisfactory. The total assets of RDL were financed by the equity capital and long-term debts were not taken. So, RDL has no financial leverage and insolvency risk. Some current assets were financed by current liabilities.
- Liquidity position of RDL was poor. One major cause of poor operation and under utilization of capacity is its inadequate liquidity.

Joshi (2004), has conducted his Master's thesis on "*Revenue Planning and Cash Management of Nepal Electricity Authority*" with the following objectives:

a. To examine revenue planning, policies and practice of NEA.
b. To analyze the relationship between sales and production.
c. To evaluate and to analyze the financial performance.
d. To review cash flow from operating, financing and investing activities.

The Major Findings of his Study are:

- NEA has not succeed in expansion of the sales unit in internal and external market, due to in-actual forecast of demand and lack of capital.

- Target sales revenue was increased by small figure but the actual sales revenue was highly increased than budgeted FY 2056/57.
- Profitability ratio indicates that the higher operating expense, as a result of operating profit and Net profit was not sufficient.
- Cash position of NEA shows that the cash from operating activities is in decreasing trend. The cash from investing activities highly increased in 2057/58 and then decreased, but its return was very poor.

Banarjee (2005), has conducted his Master's thesis on "*Inventory Management of Manufacturing Public Enterprises in Nepal*" with the following objectives:

- To calculate inventory values and to compare it with the actual inventory of the firm.
- To calculate the Economic Order Quantity (EOQ) of the firm.
- To calculate the Reorder Level of the Firm.
- To calculate the profitability position of the firm.

The findings were carried out based on inventory management formula such as Economic Order Quantity and Re-order Level. Mr. Banarjee had computed inventory values theoretically and compared it with actual inventory quantity of the firm in relation with other factors such as time, working days, etc. The deviations from the theory suggested the condition of actual inventory management practice of the firm. The analytical approach being different from the general tools of analysis, only a portion of cash management, i.e. only the inventory management aspect has been analyzed. The analysis was based only on three types of raw materials purchased.

Koirala (2006), has conducted his Master's thesis on, "*Cash Management of Nepal Telecom*" with the following objectives:

- To examine the liquidity position of Nepal Telecom.
- To examine the profitability of Nepal Telecom.
- To analyze the allocation and expenditure of cash of Nepal Telecom.

The major findings are that the company was able to collect more cash from different sources than it targeted in the budget. It shows good position of actual cash collection of the company. However, company did not spend cash as targeted. Due to these

facts, every year, there was enough surplus cash in hand; but Nepal Telecom could not manage the surplus in the productive sector. The study shows that the company has high liquidity situation; which adversely affects profitability of the company. The company has also taken external loan from foreign institution, which was not required to borrow because it was able to meet its expenses of budget by its own source. There are strict provisions regarding cash control practices like procedure of running bank account, central collection policy, authority and responsibility for expenses, etc. NTC's strict and lengthy procedure of business activities hamper in decision making which may lead opportunity loss.

Dhungana (2009), has conducted her Master's thesis on "*A study of Cash Management in Nepalese Public Enterprises, a Case Study of Nepal Electricity Authority*" with the following objectives:

- To examine the cash management practices in Nepal Electricity Authority through ratio analysis.
- To examine and analyze the liquidity position of Nepal Electricity Authority.
- To analyze the profitability position of NEA.
- To examine the cash flow statement of Nepal Electricity Authority.
- To recommend viable suggestions to cope up with cash management's shortcomings in Nepal Electricity Authority.

The major findings of the study were that NEA's cash management is very poor. Liquidity position is dissatisfactory, Negative profitability of the company adds much to the worsening financial position of the company. The accumulated amount of ever-increasing account receivable denotes the inefficiency of the authority to collect its revenue in time. There is the absence of effective utilization of capital employed and liquidity position. Because of the absence of the competitors, authority has become monopolistic and, hence, it is not alert towards its possible threats and opportunities. Different statistical tools show the positives relationship with two variables like cash and sales, cash and account receivable, current assets and cash, current liabilities and cash.

Shrestha (2009), has conducted her Master's thesis on "*A study of fund Management in Nepal Doorsanchar Company Limited"* with the following objectives:

- Investment decisions of the organization, particularly on the short run fund placements.
- To evaluate the management of individual current assets like; cash and bank balance, receivables, marketable securities and inventories in the short-run.
- To examine the cash management practice of NDCL through different financial tools.
- To examine and analyze the liquidity position and profitability position of NDCL.
- To examine the cash flow of the sample organization.
- To recommend for the improvement based on findings of the study.

Some of the Major Findings of the Study are:

- NDCL has the monopoly market in Nepalese industry. Due to this reason, consumers are compelled to purchase electricity at higher rate (basically for PSTN).
- There is high cost of production, which creates higher tariff.
- The ever-increasing accumulated account receivable shows the poor organizational performance.

CHAPTER - III
RESEARCH METHODOLOGY

3.1 Introduction

"Research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view" *(Kothari CR: Research Methodology, Methods & Techniques; 1989).* This chapter deals with the research design, nature and source of data, data collection procedure and tools & technique of analysis.

To fulfill the objectives of the study, the appropriate methodology has been followed. Therefore, this chapter connected with the research methodology applied in this report. This covers research design, sources of date, fieldwork procedure and method of presentation and analysis.

It thereby helps to highlight and recommend the useful and meaningful points so that, the concerned can achieve some knowledge from this study. The research methodology used in the present study has been briefly mentioned below.

3.2 Research Design

"A research design is the arrangement of conditions for collection and analysis of data in manner that aims to combine relevance to the research purpose with economy in procedure" *(Kothari; 1992).*

To achieve the objectives of this study, descriptive and analytical research designs have been used. Some accounting and statistical tools have also been applied to examine facts and descriptive techniques have been adopted to explore necessary suggestion for the basic problems encountered by the enterprise.

A well settled research design is necessary to fulfill the objective of the study. This study is mainly concerned with the cash management factors of Nepal Electricity Authority. For this purpose**,** past historical data are used. The relevant and needed data has been collected from various publications such as annual report of Nepal

Electricity authority, website of National Planning Commission and Ministry of Finance.

3.3 Data Collection Procedure

Collecting data is the connecting link to the world of reality for the researcher. The data collection activity consists of taking ordered information from reality and transferring it into some recording system, so that; it can later be examined and analyzed in patterns for further study. Research as a media can be interpreted as having a content of data and process of methodology.

3.4 Sources of Data and Collection Procedure

This study is conducted based on secondary data. According to the needs and objectives, all the secondary data are compiled processed and tabulated in time series. In order to judge the reliability of the data provided the enterprise & other sources, they were compiled with the annual report of auditor, formal & informal talks to concerned head of the department and other employees were also helpful to obtain the additional information about the related problem.

Major secondary data are collected from published sources like annual report, prospectus, balance sheet, newspaper, journal, Internet and other sources of NEA.

3.5 Data Analysis Tools

The following financial and statistical tools have been used for the analysis of the research study.

3.5.1 Financial Analysis

Financial analysis is the process of identifying the financial strengths and weakness of the firm by properly establishing relationship between the items of balance sheet and profit and loss account. Some of the financial tools used under this research are:

I. Ratio Analysis

Ratio analysis is one of the strongest tools to measure to financial health of an organization. Ratio analysis is the process of determining and interpreting numerical

relationships based on financial statements. A ratio is a statistical yardstick that provides a measure of the relationship between two variable and figures. The following ratios have been used in this research:

a. Analysis of Cash Turnover

The cash turnover Ratio explains how quickly the cash is received from the sales; or in words, it measures the speed with which cash move through out an enterprise's operation.

Cash turnover ratio can be obtained by the following formula:

$$\text{Cash turnover ratio} = \frac{\text{Sales}}{\text{Cash in hand and bank}}$$

b. Analysis of Current Ratio or Current Assets to Current Liabilities

This ratio tests the liquidity of an organization. It evaluates short-term debt paying ability of the firm. It measures the availability of current assets for meeting current liabilities. The ideal current ratio is 2:1; however for a public enterprises, the ratio tend to be little lower than 2:1; because these enterprises generally require very little amount of current assets. However, any company should maintain this ratio above 1:1, since ratio lower than this definitely indicates poor liquidity position.

This ratio computed as follows:

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

c. Analysis of Quick Ratio or Acid Test Ratio

This ratio measures the short-term liquidity status of the firm. This ratio is superior to Current ratio, for it excludes inventory (which is the least liquid current asset) from the net current assets and compares it with current liabilities. Comparing this ratio with current ratio gives a clear idea of whether if current assets have been tied-up inventory or not. If current ratio of a firm is satisfactory but if quick ratio is not convincing, the situation suggest current assets being tied-up in unassailable inventory.

The ideal Quick ratio is 1.1 Formula for computing quick ratio is given by:

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

(Quick Assets = Current Assets- Inventory)

d. Receivables/ Debtors Turnover Ratio

Receivables turnover ratio gives an idea as to how quickly receivables are converted into sales. The ratio can be computed as follows:

$$\text{Receivable Turnover in Time} = \frac{\text{Total Sales}}{\text{Receivable}}$$

With computation of this ratio, one can find out the average collection period of a firm. Shorter average collection period suggests that the company has a very rigid credit policy and thus sales curtail would be the consequence.

Average collection period is calculated to know the average number of days/month for which a firm has to wait before trade debtors are converted into cash. The average collection period can be calculated as follows:

$$\text{Average collection Period} = \frac{\text{Days in a year}}{\text{Receivable Turnover in times}}$$

e. Inventory (or Stock) Turnover Ratio

Every business organization has to maintain a certain level of stock for fulfillment of business requirement. Inventory turnover ratio indicates whether the investment in inventory is efficiently used or not. It checks the efficiency of inventory management. The ratio is calculated as:

$$\text{Inventory Turnover Ratio or Stock Turn Over Ratio} = \frac{\text{Sales}}{\text{Inventory}}$$

f. Cash and Bank Balance to Account Receivable

This ratio measures the cash and Bank balance in relation with Accounts receivables (or sundry debtors) of the firm. Higher ratio refers to sound liquidity position and vice versa. However, too high ratio indicates that the business dealings are restricted to only those parties making quick payments there by, limiting its scope of sales volume. It can be computed by:

$$\text{Cash Balance to Account Receivable} = \frac{\text{Cash and Bankbalances}}{\text{Account Receivable}}$$

g. Cash and Bank Balance to Current Assets

This ratio is also supportive to analysis the liquidity position of the firm. It measures the proportion of cash and bank balance as the most liquid current asset in the total current assets. Higher ratio implies sound liquidity position and vice versa. It is complies as follows:

$$\text{Cash and Bank Balance to Current Assets} = \frac{\text{Cash and bank balances}}{\text{Current Assets}}$$

h. Cash and Bank Balance to Current Liabilities

It calculates the cash balance available with the firm in meeting payments of current liabilities. Moderately higher ratio indicates good liquidity, too high and too low ratio are unfavorable for the firm. This is because too high indicates excess cash balance held idle and too low ratio means the firm unable to meet current liabilities. It is calculated as follows:

$$\text{Cash and Bank Balances to Current Liabilities} = \frac{\text{Cash and Bank balances}}{\text{Current Liabilities}}$$

i. Net Profit Margin Ratio

This ratio establishes a relationship between net profits and net sales and shows the efficiency of management to earn net profit through sales. This ratio helps to determine the operational efficiency of the management. Higher Net Profit ratio

shows higher efficiency of the management and vice-versa. The formula of net profit ratio is:

$$\text{Net Profit Margin Ratio} = \frac{\text{Net Profit After Tax}}{\text{Sales}}$$

j. Return on Working Capital Ratio

This is yet another ratio to examine profitability of a firm. The ratio is aimed at analyzing the proportion of current assets employed to earn the profit amount. Higher ratio is favorable and vice versa. This ratio is calculated through the formula below:

$$\text{Return on Working Capital Ratio} = \frac{\text{Net Profit After Tax}}{\text{Current Assets}}$$

k. Return on Working After Tax Quick Assets Ratio

This ratio also examines profitability of a firm; analyses proportion of Quick assets (i.e. current Assets- Inventory) in earning the profit amount. It is calculated by using the formula below:

$$\text{Net profit After Tax to Quick Assets} = \frac{\text{Net Profit After Tax}}{\text{Quick Assets}}$$

Standard of Comparison

The ratio analysis involves comparison for a useful interpretation of financial statement. A single ration in itself doesn't indicate favorable or unfavorable condition. It should be compared with some standard. Standard of comparison may consist of:

- Past Ratios – Ratios calculated from the past financial statement of the same firm.
- Projected Ratio – Ratio developed using the projected or financial statement of the same firm.
- Competitor's Ratio - Ratio of some selected firms, especially the most progressive and successful competitor at the same point of time.
- Industry Ratio - Ratios of the whole industry to which the firm belongs.

3.5.2 Statistical Tools for Data Analysis

The statistical tools used for the purpose of data analysis has described as under:

A. The least Square Method, Straight Line Trend

$$y_c = a+bx$$

This is one of the time series analyses, which forecasts future events of variables over a regular interval of time based on the past trend of the variables. In this method, a trend line, $y_c = a+bx$ is fitted to the given data such that:

$$(y-y_c)=0 \text{ and } (y-y_c)^2 \text{ is least.}$$

Where,

y = Actual values of Y

y_c = Computed values of Y

a = Constant which is the computed Y- value when

b = Constant which is the change in Y

X= 0 corresponding to the change in X by one unit.

X = Time in case of time series analysis

The value of 'a' and 'b' can be found out by solving the following normal equation:

$$Y = Na+b \quad x$$

$$Y = a \quad X+b \quad X^2$$

Where,

N is the number of years or any period for which the data are given.

The normal equations are obtained by using above two conditions and some mathematical manipulations. To simplify the calculation, the mid point in time is taken as origin, so that X= 0.Then the above two normal equations will be reduce to:

$$Y = Na$$

$$\ldots a = \frac{\Sigma Y}{N}$$

$$\ldots b = \frac{\Sigma XY}{\Sigma X^2}$$

B. Karl Pearson's Coefficient of Correlation:

$$(r) = \frac{\frac{1}{n}\phi(X - \bar{X})(Y - \bar{Y})}{\pm_X \pm_Y}$$

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

$$= \frac{\frac{1}{n}\phi UV}{\sqrt{\frac{1}{n}\phi U^2}.\sqrt{\frac{1}{n}\phi V^2}}$$

$$= \frac{\phi UV}{\sqrt{\phi U^2}.\sqrt{\phi V^2}}$$

Where,

U = $X - \bar{X}$

V = $Y - \bar{Y}$

If two variables (say X and Y) have such an inter-relation that change in one accompanies the change in other, then these two variables are said to be correlated. Such correlations are said to be positively correlated if increase in X results increase in Y and decrease in X follows decrease in Y. Likewise, such correlations are said to be negatively correlated if increase in Y results decrease in X and decrease in X follows increase in Y.

Correlation analysis refers to the statistical technique, which measures the degree of relationship or association between the variables. To put it differently, it helps in analyzing the co-variation of two or more variables.

It is to be noted that a high degree of correlation between two variables doesn't always necessary imply that change in one variation cause change in the other, i.e. correlation doesn't necessarily imply causation while causation always implies correlation. Out of several methods of computing correlation, Karl Pearson's Coefficient of Correlation is one of the best and popular methods. Karl Pearson's

coefficient of correlation (r) measures the degree of association between the variable supposes X and Y, given by:

$$r = \frac{\phi UV}{\sqrt{\phi U^2}.\sqrt{\phi V^2}}$$

Where,

r = Karl Pearson's Coefficient of Correlation between X and Y

U = $X \; Z\overline{X}$

V = $Y \; Z\overline{Y}$

and,

$$X = \frac{\Sigma X}{N}$$

$$Y = \frac{\Sigma Y}{N}$$

Where,

N = No, of years/time period.

However, in this thesis work, while computing correlation coefficient, only the manual use of above formula has been done. For rest of the computations, Microsoft excel worksheet tool has been employed directly from the computer.

The value of r lies between +1.00 to -1.00.

Value of +1.00 refers highly positive correlation between the variables, i.e. one variable is directly proportional to another. In other words, increase in one variable leads to same effect in another and vice-versa. Value of –1.00 refers to highly negative correlation between the variables; i.e. one variable is indirectly proportional to another. In other words, inverse in one variable leads to decrease in another variable and vice- versa. Likewise, value nearing to zero "0" refers to existence of no correlation between the variables, i.e. inverse or decrease in one variable result no impact on another variable and vice-versa .Together with Karl Person's Coefficient of Correlation, probable error (P.E.) of the correlation coefficient should also be

computed. This probable error of the correlation coefficient is the basis for the interpretation of its value. It is given by:

$$P.E = 0.6745 \times \frac{1 Z r^2}{\sqrt{N}}$$

Where,

P.E = Probable error of correlation coefficient

N = Number of pair of observations.

And,

r = correlation Coefficient

- When r < P.E, the value of r is not statistically significant at all; i.e. there is no evidence of correlation.
- When r > 6(P.E), the value of r is significant; i.e. practically the correlation is certain.
- When P.E. <r < 6(P.E), the value of r is inconclusive as to statistically significant/ insignificant correlation.
- By adding and subtracting the value of probable error from the coefficient of correlation, we get the upper and lower limits respectively within which correlation in the population can be expected to lie.

Symbolically, the limit of the population correlation coefficient = r±P.E.

Where,

Upper limit population correlation coefficient = r + P.E.

Lower limit population correlation coefficient = r - P.E.

For instance, if r is calculated as r = -0.5, then

/r/ = 0.5

This positive value of r is compared with P.E and 6(P.E.) to derive to a conclusion of practically significant/insignificant correlation.

C. Standard Deviation (S.D)

$$\text{S.D.} = \sqrt{\frac{1}{n}\phi(X - \bar{X})^2}$$

Or,

$$\text{S. D} = \sqrt{\frac{1}{n}\phi f(X - \bar{X})^2} \quad \text{Incase of frequency Distribution}$$

Standard Deviation (S.D) measures scatter, spread, or variation, and provides idea of homogeneity (compactness) or heterogeneity (scatter) of the distribution. Out of various methods of studying dispersion such as Range, inter-quartile range, Quartile deviation, Mean deviation, Standard deviation and Variance, Lorenz curve, the most popular method is the standard deviation and variance method.

Standard deviation is represented by the symbol sign 'σ' and given by,

$$\text{S.D. } (\sigma) = \frac{\Sigma x^2}{N}$$

Where,

x = X-X

N= Number of years/observations/time periods.

It can be also be computed as follows:

$$\text{S.D. } (\sigma) = \sqrt{\frac{\phi d^2}{N} - \left(\frac{\phi d}{N}\right)^2}$$

Where,

d = X-A

and, A = Assumed means

In this thesis work, however, while computing standard deviations, the above formula has been employed manually. For rest of the computations, Microsoft excels worksheet tools have been employed directly from computer.

In conjunction with standard deviation, coefficient of variation (C.V) is also computed which is the relative measure based on standard deviation and is defined as

the ratio of the standard deviation to the mean expressed in percent. Coefficient of Variation (C.V) is given by:

$$C.V = \frac{\pm}{\bar{x}} \mid 100\%$$

The ratio $\frac{\pm}{\bar{x}}$ is called the coefficient of Standard deviation, C.V has no units.

Distribution with lower C.V. is said to be less variable (or more consistent and/or uniform) and the distribution with higher C.V is indicative of more variable (or less consistent and/or uniform). The limitation of using C.V. is that, when the distribution being compared have negative observation, it provides unreliable way to compare variability across data sets.

D. Regression Analysis and Regression Line

In correlation analysis, the closeness of relationship between two variables is established. In regression analysis, the established nature of relationship between two variables and the unknown variable is established based on other known variable. Thus, regression analysis is the statistical method for determining the nature of relationship that exists among two or more variables and then using that relationship to make estimates or predictions. The closer the relationship between the two variables, the more accurate the estimated value will be; that is the unknown variable and the variables that is to be estimated is called dependent variable (or explained variable) and the known variable is called independent variable (or explanatory variable).

Noteworthy, the correlation analysis indicates to what degree the variable are related and regression analysis indicates how the variables are related.

Regression line of X variable (X) on Y variable (Y) given by:

$$X\ Z\overline{X} = r\frac{\sigma x}{\sigma y}\ X\ Z\overline{Y}$$

Where,

X = Mean of X variable

Y = Mean of Y variable

σx =Standard Deviation of X variable

σy = Standard Deviation of Y variable

r = Karl Pearson's Coefficient of Correlation

Likewise, the regression line of Y variable (y) on X variable (X) is given by,

$$Y\ Z\overline{Y} = r.\frac{\sigma y}{\sigma x}\ X\ Z\overline{X}$$

E. Diagrams

Diagrams are the effective way of presenting and analyzing data. Diagram can be of various types such as bar diagram, trend line etc. The bar diagram will be used extensively to analyze the data. The bar diagram represent the data by bars of equal width. The length of the bar represents the given figures and width may be of any size.

In this thesis report, mainly Bar Diagram has been used to present the figure and showing the trend, graphically.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

Data included in this section are processed and grouped into several items or headings for their analysis. Different financial and monetary techniques are used in the presentation of data and the statistical analysis is applied for the analysis of “Cash Management”. Since the subject is related with Public Enterprises, indicators are included for distinct analysis. Wherever necessary statistical tools are also used, especially, bar diagram, pie charts, tables etc. in reference, correlation are analyzed for better interpretation. Pictures related to topics are also included herein.

This is the section where, the filtered data are presented and analyzed. In this chapter, the relevant data and information necessary for the study are presented and analyzed keeping the objectives set in mind. To make our study effective and precise as well as easily understandable, this chapter is categorized in three parts; presentation, analysis and interpretation. In presentation section data are presented in terms of table, graph chart of figures, according to need. The presented data are then analyzed using different statistical tools mentioned and at last, the results of analysis are interpreted. Similarly, it is also noted that almost all data used for analysis are of secondary type.

4.1 Analysis of the Data by Financial Tools

4.1.1 Analysis of Cash and Bank Balance

Holding of optimum cash and bank balance is the rational cash management practice of a business firm. “Cash Management” plays a significant role in overall organization efficiency of NEA. Total cash balance refers to the cash in hand; cash at bank, and cash in transit, liquid cash assets such as; marketable securities and time deposit in bank etc.

The amount of cash and bank balance of NEA during the period under study is shown in the below Table 4.1.

Table: 4.1

Analysis of Cash and Bank Balance

(Rs. in million)

Fiscal Year	Cash and Bank	Increase (decrease)%
2001/2002	1,039.30	-
2002/2003	664.60	(36.05)
2003/2004	1,076.15	61.92
2004/2005	1,036.42	(3.70)
2005/2006	1,322.60	27.61
2006/2007	1,258.60	(4.84)
2007/2008	1,447.58	15.01
2008/2009	820.34	(43.33)
Total	8,665.59	16.62

Source: Appendix I

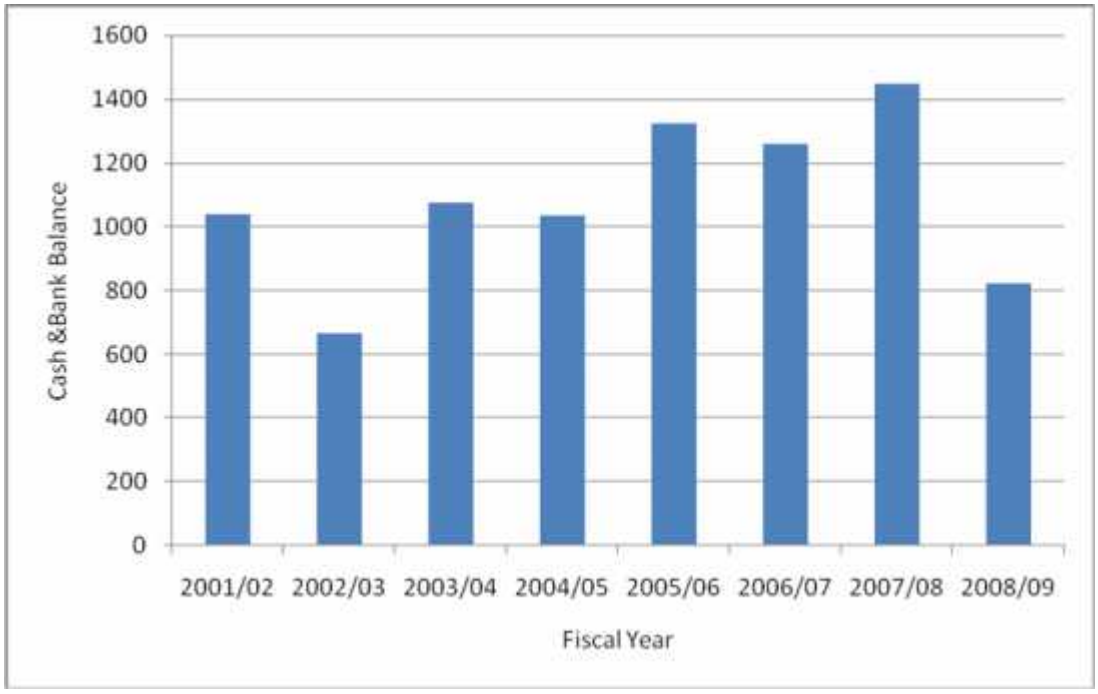
In fiscal year 2001/02, the cash balance of the company was Rs 1,039.3 million, which decreased by 36.05% to Rs. 664.6 million, in the following year. However, NEA manages to sharply increase its cash balance by 61.92% in fiscal year 2003/04. Like wise, it again declined by 3.70% in the fiscal year 2004/05 and increases to 27.61% in the FY 2005/06. In the fiscal year 2006/07 and 2007/08, the cash balance of the company was Rs. 1,258.6 and Rs 1,447.58 million, which decreased by 4.84% and again increase by 15.01%. In the last in the fiscal year 2008/2009, the cash balance was Rs 820.34 which decreased by 43.33% as compared to previous year.

However, sharpest deviation in increments of cash balance occurred in fiscal year 2003/2004 when the company held cash balance of Rs. 1, 076.15 million compared to Rs. 664.6 million only in the previous year.

It can be presented with the help of graph to show the variation in cash balance held at the end of each fiscal year.

Figure: 4.1

Cash and Bank Balance (FY 2001/02 – 2008/09)



The figure suggested that the cash balance held is quite consistent in nature except in FY 2002/03, which has drastically decreased from Rs. 1,039.3 million to 664.6 million.

The major finding of analysis of cash and bank balance is that, the company has to some extent been following a definite policy regarding the amount of cash to hold in each fiscal year end.

4.1.2. Analysis of Cash Turnover Ratio

The cash balance of the company should be optimum to meet its current obligations in course of daily business transaction. The cash turnover ratio is used to find out how quickly payments received from the sale. Higher turnover is the signal of good liquidity and vice-versa. However, too high ratio indicates excess cash balance being held idle.

Table: 4.2
Analysis of Cash Turnover Ratio

(Rs. in Million)

Fiscal year	Sales	Cash and Bank	(Times)Ratio	Cash conversion days
2001/02	8,160.80	1,039.30	7.85	46.48
2002/03	9,476.20	664.60	14.26	25.60
2003/04	11,012.60	1,076.15	10.23	35.67
2004/05	11,874.70	1,036.42	11.46	31.86
2005/06	12,605.20	1,322.60	9.53	38.30
2006/07	13,331.90	1,258.60	10.59	34.46
2007/08	14,449.73	1,447.58	9.98	36.57
2008/09	15,405.03	820.34	18.78	19.44
Total	96,316.16	8,665.59	11.11	32.85
Average	12,039.52	1,083.20	1.39	4.11

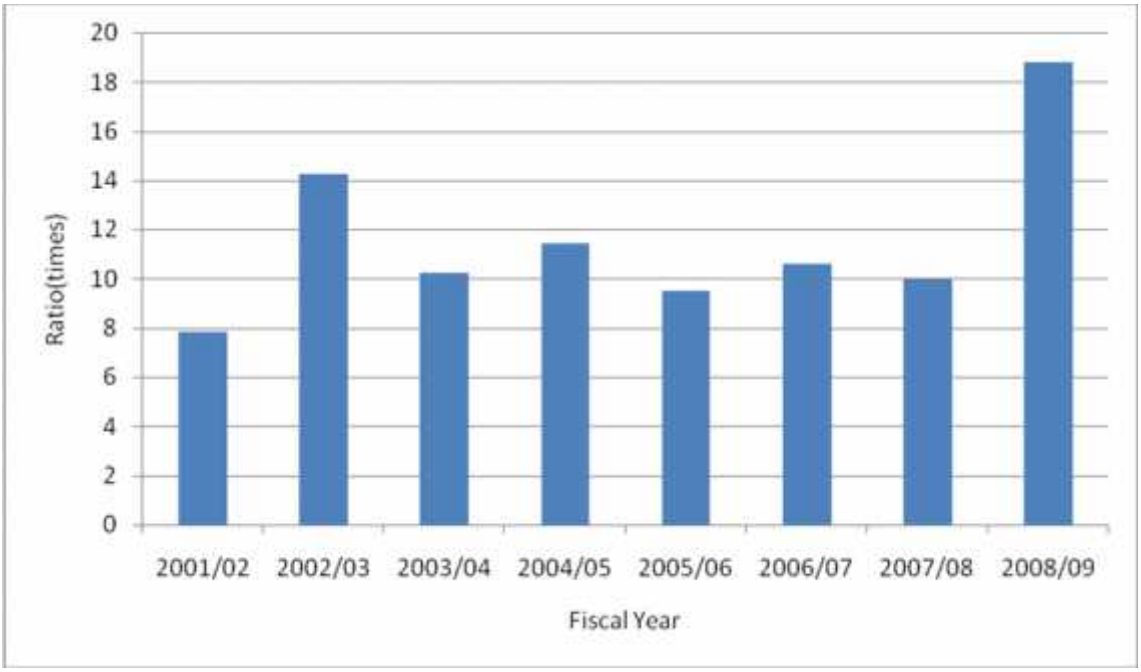
Source: Appendix I & II

From the above table medium fluctuations have been observed while analyzing the cash turnover. The table shows that the highest ratio of 18.78 times has been observed in FY 2008/09. Likewise, the lowest ratio of 7.85 has been observed in FY 2001/02. Overall, average ratio has been calculated 1.39 times and the average cash turnover cycle has been found 4.11 days. However, due to the unavailability of information regarding credit policy of the company, the average collection period was not known. So, no peruse analysis could be carried out for cash turnover cycle.

It can also be presented with the help of graph to show the cash turnover ratio in relation with sales and cash balance.

Figure: 4.2

Cash Turnover Ratio (FY 2001/02 to 2008/09)



From the above figure, we can conclude that the lowest cash turnover ratio is in 2001/02 and the highest cash turnover ratio is in last year i.e. 2008/09.

4.1.3 Analysis of Current Ratio

One of the reliable methods to examine liquidity position of an enterprise is by means of current ratio. The standard current ratio that the company should maintain is 2:1. However, depending upon the nature of the company, the development of capital market and availability of long-term funds to finance current assets; the satisfactory ratio varies. Therefore, satisfactory ratio for NEA, a public enterprise is therefore between 2:1 and higher than 1.5:1. In general, ratio less than 1:1 is certainly undesirable for any enterprise.

Table: 4.3

Analysis of Current Ratio

(Rs in Million)

Fiscal year	Current Assets	Current Liabilities	Ratio (times)
2001/02	6,313.60	5,070.8	1.25
2002/03	7,322.00	4,703.9	1.56
2003/04	7,690.48	7,444.8	1.03
2004/05	7,883.41	9,707.7	0.81
2005/06	8,491.60	12,619.8	0.67
2006/07	8,995.30	14,995.5	0.60
2007/08	10,322.97	17,970.11	0.57
2008/09	11,391.46	21,468.82	0.53
Total	68,410.82	93,981.43	7.02
Average	8,012.6	11,747.68	0.88

Source: Appendix I

The above figure shows that the current ratio varies from 1.56:1 in the FY 2002/03 to 0.53:1 in the FY 2008 indicating low fluctuations. Observing the figure, the ratios in FY 2001/02, 2002/03 and 2003/04 are near about 2:1 which are satisfactory and in 2004/05, 2005/06, 2006/07, and 2007/08 all of the ratios are below 1:1 which indicates that the NEA does not have a sound or satisfactory liquidity position. The most favorable current ratio was observed in FY 2002/03 when the when the ratio is 1.56:1.

The finding of analysis of current ratio is that, NEA has not been able to maintain satisfactory current ratio in most of the FYs.

4.1.4 Analysis of Quick Ratio

The quick ratio conveys the most precise information on liquidity position of a firm. It excludes the inventory, the least liquid asset from the current assets and compares it with current liabilities. Inventories are not highly liquid in nature because it cannot be converted into cash in case of immediate requirement. When inventory is excluded from current assets, it is known as quick assets. Current assets are composed of cash and bank

balance, Short- time marketable securities, receivable and inventory. However, inventory is not capable of readily converting into cash and therefore it is the less liquid compared to other composition of the current assets. Thus, this quick ratio is more reliable measure of liquidity than current ratio. Quick ratio is so called because it measures the capacity of a firm to convert its current assets quickly into cash in order to meet its current liabilities.

Table: 4.4

Analysis of Quick Ratio

(Rs. in Million)

Fiscal year	Quick Assets	Current Liabilities	Ratio (times)
2001/02	5,352.7	5,070.8	1.06
2002/03	6,263.9	4,703.9	1.33
2003/04	6,673.26	7,444.8	0.90
2004/05	6,835.4	9,707.7	0.70
2005/06	7,118.9	12,619.8	0.56
2006/07	7,640.5	14,995.5	0.51
2007/08	8,824.52	17,970.11	0.49
2008/09	9,873.01	21,468.82	0.46
Total	58,582.19	93,981.43	6.01
Average	7,322.77	11,747.68	0.75

Source: Appendix I

The standard quick ratio to be maintained by the company is 1:1. From the above table, in FY 2001/02 and 2002/03 the ratios obtained are 1.06:1 and 1.33:1 respectively which are satisfactory but, in FY 2003/04, 2004/05, 2005/06, 2006/07, 2007/08 and 2008/09, the ratios are 0.90:1, 0.70:1, 0.56:1, 0.51:1, 0.49:1 and 0.46:1 respectively which are below the standard ratio and unsatisfactory for the company.

4.1.5 Analysis of Receivables Turnover Ratio

This ratio shows how quickly receivables are converted into cash. The ratio shows how well the debtors have been handled by the company in terms of cash collection. In connection with this ratio, average collection period is also calculated. Higher ratio and shorter average collection period indicates better trade credit management and better

liquidity of debtors, and consequently better liquidity of the enterprise. Likewise, lower ratio and longer average collection period signals delayed payments by the debtor.

Table: 4.5

Analysis of Receivables Turnover Ratio

(Rs. in Million)

Fiscal year	Sales	Receivables	Ratio (times)	Average Collection Days
2001/02	8,160.80	1,678.50	4.86	75
2002/03	9,476.20	2,284.90	4.15	88
2003/04	11,012.60	3,380.20	3.26	112
2004/05	11,874.70	3,735.71	3.18	115
2005/06	12,605.20	3,697.70	3.41	107
2006/07	13,331.90	4,088.00	3.26	112
2007/08	14,449.73	5,151.41	2.81	130
2008/09	15,405.03	6,776.70	2.27	161
Total	96,316.16	30,793.12	27.2	900
Average	12,039.52	3,849.14	3.4	113

Source: Appendix I & II

The above table shows that the ratios are fluctuating and vary from the lowest of 2.27 times to the highest of 4.86 times and the average collection days vary far from 75 days to 161 days. Overall, the average ratio is 3.4 and the average collection period is 113 days. Here, the lowest ratio is 2.27 but the average collection days are 113. It shows that the credit management of NEA is not satisfactory. However, it also depends upon with the nature of debtors.

However, it should be noted that too short average collection days does not necessarily imply that the firm is functioning well. It indicates a very restrictive credit and collection policy thereby restricting its sales only to those debtors whose financial conditions are sound and who make their payments readily. Such restrictive policy would definitely avoid bad debts but the sales volume is likely to be curtailed by large proportion. Consequently, the overall profitability of the firm goes down.

4.1.6. Analysis of Inventory Turnover Ratio

This ratio is yet another way of analyzing the liquidity of an enterprise. This ratio shows how effectively a firm is managing its assets and whether the level of those assets is properly related to the level of operations as measured by sales or not. High inventory turnover ratio signals better inventory management and vice-verse. However, very high inventory turnover ratio is indicative of under-investment and very low level of inventory implies that the firm has not been meeting customer demand. Therefore, a firm should go for an optimum inventory turnover ratio, which signifies sound inventory management.

Table: 4.6

Analysis of Inventory Turnover Ratio

(Rs in Million)

Fiscal Year	Sales	Inventory	Ratio (times)
2001/02	8160.80	960.9	8.49
2002/03	9476.20	1058.1	8.96
2003/04	11012.60	1017.22	10.83
2004/05	11874.70	1048.01	11.33
2005/06	12605.20	1372.7	9.18
2006/07	13331.90	1354.8	9.84
2007/08	14449.73	1498.45	9.64
2008/09	15405.03	1518.45	10.14
Total	96316.16	9828.63	9.80
Average	12039.52	1228.58	1.22

Source: Appendix I & II

The ratio 11.33 for the fiscal year 2004/05 is highest of all ratios. This has definitely suggested that during the period, either the company should have undergone under-investment or the inventory held was comparatively lower. The inventory ratio is 8.49 in FY 2001/02; and in FY 2002/03, the ratio is 8.96, which has increased. In FY 2003/04 and 2004/05 the ratios are 10.83 and 11.33 which increased compared to previous year but in FY 2005/06, it has decreased by 9.18. In FY 2006/07 it has further increased to 9.84 and in FY 2007/08 9.64 again decrease it and in the last FY 2008/09 it increases to 10.14.

4.1.7. Analysis of Cash and Bank Balance to Account Receivable

This ratio measures the relationship between the cash balance on hand to account receivable. The higher ratio indicates better liquidity position and vice-versa. However, too high ratio indicates excessive cash balances are held idle and that the transactions are limited only to parties making prompt payments.

Table: 4.7

Analysis of Cash & Bank Balance to Account Receivable

(Rs in Million)

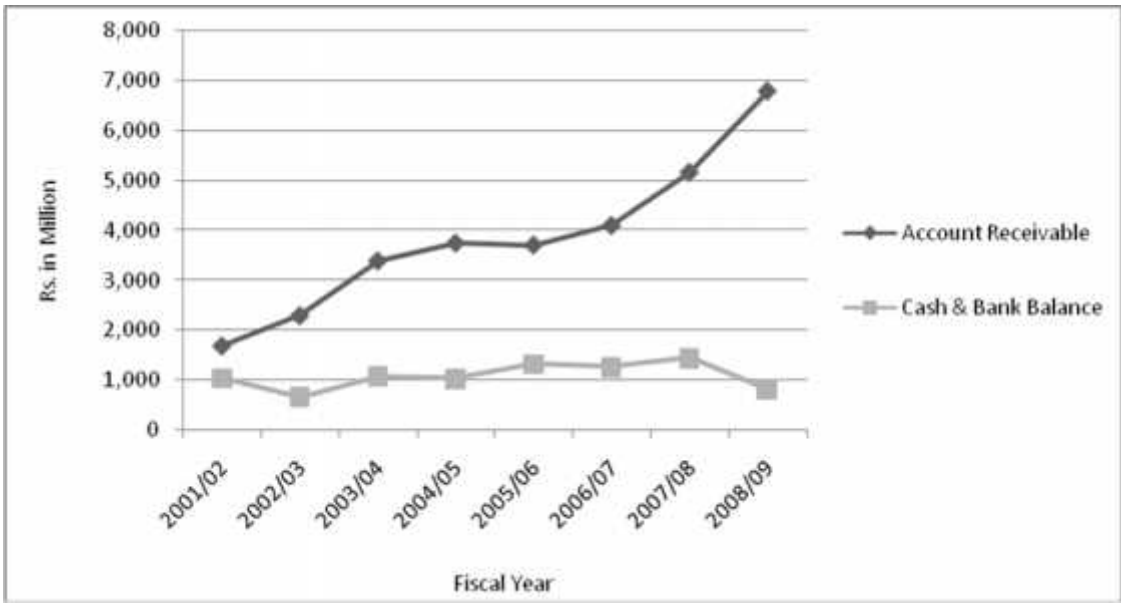
Fiscal Year	Cash & Bank	Account Receivable (AR)	% of A.R.
2001/02	1,039.30	1,678.50	61.92
2002/03	664.60	2,284.90	29.09
2003/04	1,076.15	3,380.20	31.84
2004/05	1,036.42	3,735.71	27.74
2005/06	1,322.60	3,697.70	35.77
2006/07	1,258.60	4,088.00	30.79
2007/08	1,447.58	5,151.41	28.10
2008/09	820.34	6,776.70	12.10
Total	8,665.59	30,793.12	257.35
Average	1,083.20	3,849.14	32.17

Source: Appendix I

Above table shows that the percentage of account receivable fluctuates from 12.10% to 61.92 %. The percentage of account receivable is highest in FY 2001/02 (61.92%).This shows that the liquidity position is good in FY 2001/02. However, the percentage of A/C receivable in 2008/09 is 12.10, which is lowest percent; this shows the liquidity position is not good for FY 2008/09 in comparison to other FYs.

It can be presented with the help of graph to show the relationship between cash and bank balance and account receivable.

Figure: 4.3
Cash & Bank Balance to Account Receivable



4.1.8. Analysis of Cash and Bank Balance to Current Assets

The ratio of cash and Bank to current assets indicate the proportion of cash balance in the current assets. Stable pattern of ratio for different fiscal years indicate that the company has been following a systematic policy regarding how much cash balances to hold at the fiscal year end.

Table: 4.8
Analysis of Cash & Bank Balance to Current Assets

(Rs. in million)

Fiscal year	Cash & Bank	Current Assets	Ratio of cash and bank to current Assets	Difference Ratio
2001/02	1,039.30	6,313.60	16.46	-
2002/03	664.60	7,322.00	9.08	(7.38)
2003/04	1,076.15	7,690.48	13.99	4.92
2004/05	1,036.42	7,883.41	13.15	(0.85)
2005/06	1,322.60	8,491.60	15.58	2.43
2006/07	1,258.60	8,995.30	13.99	(1.58)
2007/08	1,447.58	10,322.97	14.02	0.03
2008/09	820.34	11,391.46	7.20	(6.82)
Total	8,665.59	68,410.82	12.67	0.69
Average	1,083.20	8,551.35	1.58	0.00

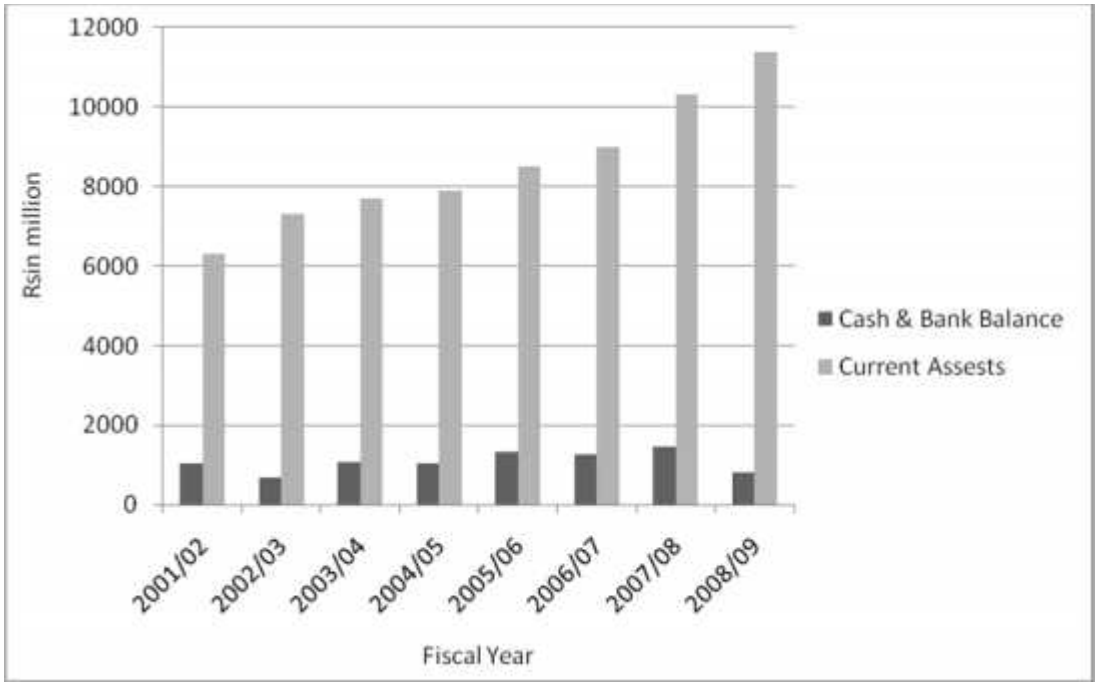
Source: Appendix I

Above table indicates that the cash and bank balance with respect to Current Assets has a fluctuating trend. During the study period, the percentage of cash and bank balance to Current Assets range from the lowest of 7.20 to the highest of 16.46 in the FY 2008/09 and 2001/02. In FY 2001/02, the ratio is 16.46, which has decreased to 9.08 in FY 2002/03. However, in FY 2003/04 it has increased to 13.99. In FY 2004/05, it has decreased to 13.15 and again in FY 2005/06, it increases to 15.58. On an average, the projection of cash and Bank Balance to Current Assets for the study period is 1.58.

It can be presented with the help of graph to show the relationship between cash and bank balance and C.A.

Table: 4.4

Cash & Bank Balance to Current Assets



4.1.9 Analysis of Cash and Bank Balance to Current Liabilities

Among the technique of measuring corporate liquidity, the ratio of cash and Bank Balance to current liabilities may also be used as index of cash management. This ratio indicates the amount of cash (in percentage) available to pay the current obligation of the firm. A moderate ratio is considered satisfactory, too high ratio indicates excess cash

balance held idle and too low ratio is indicative of company being unable to meet its payment of current liabilities in time.

Table: 4.9

Analysis of Cash & Bank Balance to Current Liabilities

(Rs in million)

Fiscal Year	Cash & Bank	Current Liabilities	Ratio (%)
2001/02	1,039.30	5,070.8	20.50
2002/03	664.60	4,703.9	14.13
2003/04	1,076.15	7,444.8	14.46
2004/05	1,036.42	9,707.7	10.68
2005/06	1,322.60	12,619.8	10.48
2006/07	1,258.60	14,995.5	8.39
2007/08	1,447.58	17,970.11	8.05
2008/09	820.34	21,468.82	3.82
Total	8,665.59	93,981.43	90..51
Average	1,083.20	11,747.68	11.31

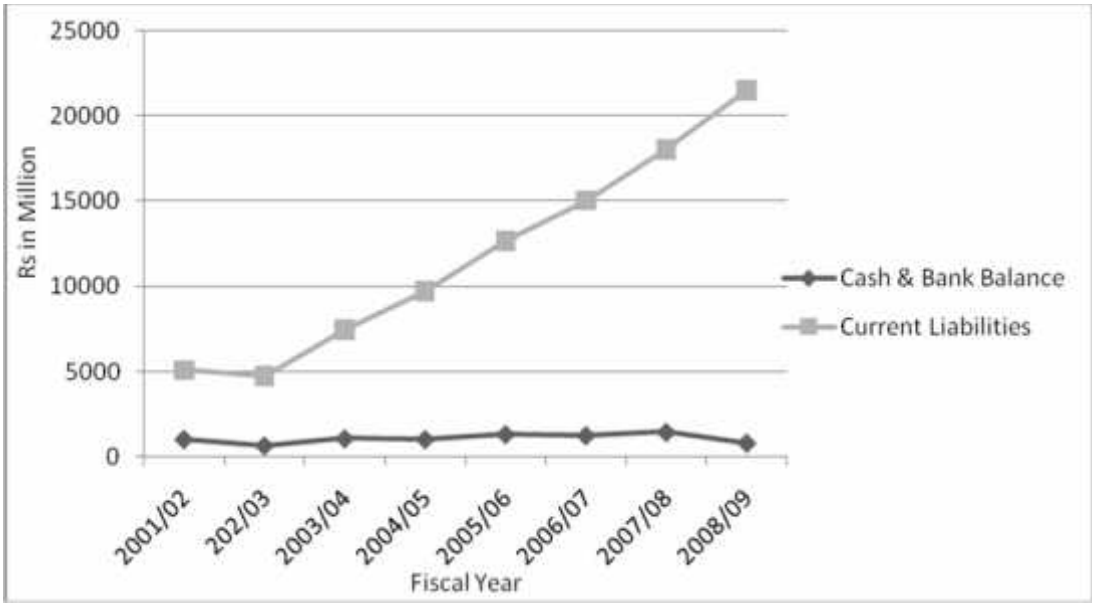
Source: Appendix I

The above table shows that the ratios fluctuate from the lowest of 3.82 % to the highest of 20.50 % in FY 2007/08 and 2008/09. The ratio in FY 2001 is 20.50% and the rest are in decreasing trend i.e. 14.13%, 14.16%, 10.68%, 10.48%, 8.39%, 8.05% in 2002/03, 2003/04, 2004/05, 2005/06, 2006/07 and 2007/08 respectively. The above table has clearly indicated that the company has not been following a systematic cash management practice. It shows that NEA has been unable to meet its payment of current liabilities in time. The average ratio has been found calculated 11.31. It can also be presented with the help of graph to show the relationship between cash and Bank Balance and Current Liabilities.

It can also be presented with the help of graph to show the relationship between cash and Bank Balance and current liabilities.

Figure: 4.5

Cash & Bank Balance to Current Liabilities



4.1.10. Analysis of Net Profit Margin Ratio

Net profit Margin ratio measures the relationship between net profits and sales of an organization. A high profit margin indicates adequate return to the firm and thus enables in with standing in adverse economic situations when sales price is declining, cost of production is rising and demand for the product is falling.

Table: 4.10

Analysis of Net Profit Margin Ratio

(Rs in million)

Fiscal Year	Net Profit After Tax (loss)	Sales	Ratio (%)
2001/02	(51)	8160.80	(0.62)
2002/03	(860.7)	9476.20	(9.08)
2003/04	(1953.7)	11012.60	(17.74)
2004/05	(1760.3)	11874.70	(14.82)
2005/06	(1312.8)	12605.20	(10.41)
2006/07	(1267.8)	13331.90	(9.51)
2007/08	314.9	14449.73	2.18
2008/09	(1312.16)	15405.03	(8.52)
Total	**(8203.56)**	**96316.16**	**(68.52)**
Average	**(1025.45)**	**12039.52**	**(8.56)**

Source: Appendix I

The above table shows that the company has been operating under loss in all of the FYs, except in FY 2008. The net profit margin ratio observed in FY 2001 to 2008 is -0.62, -9.08, -17.74, -14.82, -10.41, -9.51, 2.18 and -8.52 respectively. Overall, the company has been operating under loss. The average net profitability margin has been calculated (8.56).The sales amount are in increasing trend but the company bearing loss in all FY.

4.1.11 Analysis of Return on Working Capital

This is yet another ratio to examine profitability of a firm. The ratio is aimed at analyzing the proportion of current assets employed to earn the profit amount. Higher ratio is favorable and vice-versa.

Table: 4.11

Analysis of Return on Working Capital

(Rs in million)

Fiscal year	Net Profit After Tax (loss)	Current Assets	Ratio (%)
2001/02	(51)	6313.60	(0.8077)
2002/03	(860.7)	7322	(11.75)
2003/04	(1953.7)	7690.48	(25.40)
2004/05	(1760.3)	7883.41	(22.32)
2005/06	(1312.8)	8491.60	(15.45)
2006/07	(1267.8)	8995.30	(14.09)
2007/08	314.9	10322.97	3.05
2008/09	(1312.16)	11391.46	(11.52)
Total	(8203.56)	68410.82	(98.29)
Average	(1025.45)	8551.35	(12.29)

Source: Appendix I & II

The above table shows that NEA has not been utilizing its Current Assets effectively in earning profit. Besides the overall ratio is also dissatisfying indicating loss in 2001 to 2008. Overall, the return on working capital is disappointing indicating down fall of the company. The average return of working capital has calculated as (12.29).

4.1.12. Analysis of Net Profit After Tax to Quick Assets

This ratio also examines profitability of a firm; analyses proportion of quick assets in earning the profit amount. Higher ratio indicates higher utilization of quick assets in earning profit and vice-versa.

Table: 4.12

Analysis of Net Profit After Tax to Quick Assets

(Rs. in million)

Fiscal year	Net Profit After Tax (loss)	Quick Assets	Ratio (%)
2001/02	(51)	5,352.7	(0.95)
2002/03	(860.7)	6,263.9	(13.74)
2003/04	(1,953.7)	6,673.26	(29.28)
2004/05	(1,760.3)	6,835.4	(25.75)
2005/06	(1,312.8)	7,118.9	(18.44)
2006/07	(1,267.8)	7,640.5	(16.59)
2007/08	314.9	8,824.52	3.57
2008/09	(1,312.16)	9,873.01	(13.29)
Total	(8,203.56)	58,582.19	(114.47)
Average	(1,025.45)	7,322.77	(14.31)

Source: Appendix I & II

Above table shows that the ratio has been found dissatisfactory. The figures clearly indicate that utilized quick assets have not been earning profit in average rather incurring average loss of 1025.45 million.

All FYs ratio is of negative value except in 2008 ranging from the lowest of 0.95 to the highest of 29.28.

4.2 Analysis of the Data by "Statistical Tools"

4.2.1. Analysis of Dispersion in Cash and Bank Balance

In the below table 4.13 the dispersion in the cash balances at the year-ends under study is shown. ‘Standard deviation’ is the measures of dispersion used for the analysis.

Table: 4.13

Analysis of Dispersion in Cash & Bank Balance

(Rs in million)

Fiscal Year	Cash and Bank (X)	$(X - \bar{X})$	$(X - \bar{X})^2$
2001/02	1,039.30	(43.9)	1,927.21
2002/03	664.60	(418.6)	175,225.96
2003/04	1,076.15	(7.05)	49.70
2004/05	1,036.42	(46.78)	2,188.37
2005/06	1,322.60	239.4	57,312.36
2006/07	1,258.60	175.4	40,332.69
2007/08	1,447.58	364.38	30,765.16
2008/09	820.34	(262.86)	69,095.38
Total	8,665.59		376,896.83
N=8	1,083.20		

Source: Appendix I

Mean $(\bar{X}) = \frac{X}{N} = \frac{8665.59}{8} = 1083.20$

Standard Deviation $= \sqrt{\frac{1}{N} (X - \bar{X})^2}$

$= \sqrt{\frac{376896.83}{8}}$ = Rs. 217.05 million

Interpretation

Computed standard deviation has been found Rs 217.05 million, which indicates high degree of uniformity in holding cash balance in the fiscal year end.

Calculation of coefficient of variation (C.V) further shows that the uniformity of cash balances held is high.

Coefficient of variation (C.V.) $= \frac{\pm}{\bar{X}}$

$= \frac{217.05}{1083.20} \times 100 = 20.04\%$

Interpretation

Lower C.V. indicates higher consistency or highly stable cash balance and vice-versa. C.V. of 20.04% definitely signifies that holding cash balance is highly consistence and stable.

4.2.2. Fitting the Straight-line Trend by Least Square Method for Variations in Cash and Bank Balance

This is one of the time series analyses, where future events of a variable (s) are forecasted over a regular interval of time based on the past events of the variables (s). Here, an effort has been made to forecast cash balance of NEA in future fiscal years, based on its past trend.

Table: 4.14

Fitting the Straight Line Trend by Least Square Method for Variation in Cash Balance

(Rs in million)

Fiscal year	(Y) Cash & Bank	Deviation (X) = 2(Year-2005)	XY	X^2	Yc
2001/02	1,039.30	-7	(7,275.1)	49	949.22
2002/03	664.60	-5	(3,323.0)	25	987.50
2003/04	1,076.15	-3	(3,228.45)	9	1025.06
2004/05	1,036.42	-1	(1,036.42)	1	1064.06
2005/06	1,322.60	1	1,322.60	1	1102.62
2006/07	1,258.60	3	3,775.8	9	1140.62
2007/08	1,447.58	5	7,237.90	25	1178.90
2008/09	820.34	7	5,742.38	49	1217.18
Total	8,665.59	0	3,215.71	168	8,665.60

Source: Appendix I

The equation of straight line trend is given by:

$$Y_c = a + bx$$

$$\text{Here, } a = \frac{Y}{N} = \frac{8665.59}{8} = 1083.20$$

$$b = \frac{XY}{X^2} = \frac{3{,}215.71}{168}$$

$$= 19.14$$

Therefore,

$$Y_C = a + bx$$

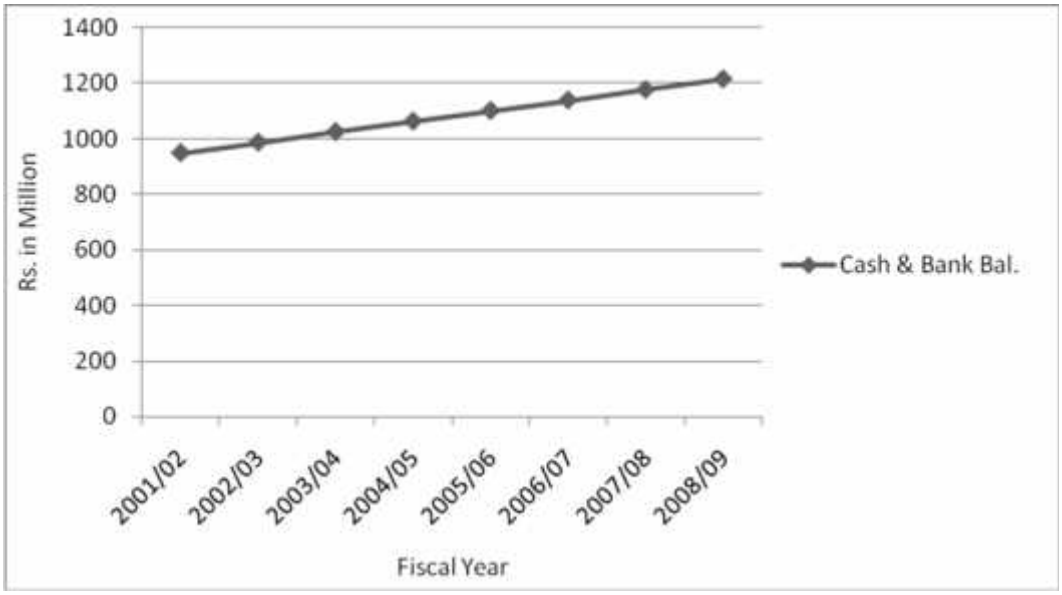
$$= 1083.20 + 19.14\ X$$

Interpretation

The trend line shows positive figure of cash balance in future. The annual growth rate of cash balance has been calculated Rs 19.14 Million.

Figure: 4.6

Trend Line for the Variation in Cash Balance



Interpretation

The trend line shows a positive variation (increment) in cash and bank balances maintained by NEA through out FYs 2001/02 to 2008/09. However, the figure shows that the cash and bank balance has been decreased from 1178.90 to 1217.18 in the last FY 2008/09; which implies NEA has become little conservative in maintaining the cash position for that subsequent year.

4.2.3 (A) Analysis of Karl Pearson's Coefficient of Correlation (r) Between Sales and Cash Balance

To find correlation between sales and cash balance, Karl Pearson's coefficient of correlation(r) is determined. For this purpose, sales (x) are assumed dependence variables and cash balance (Y) is assumed to be independent variables. At first, it is assumed that actual sales will increase as cash balance will increase and vice-versa. It means there should be positive correlation between cash balance and sales. The significance of correlation 'r' is rested with probable error (P.E.).

Table: 4.15

Analysis of Karl Pearson's Coefficient of Correlation (r) Between Sales and Cash Balance

(Rs in Million)

Fiscal Year	Sales (x)	Cash Balance (Y)	(x- $\bar{X}$) (μ)	(y- $\bar{Y}$) (v)	μv	μ^2	v^2
2001/02	8160.80	1039.30	(3878.72)	(43.9)	170275.81	15044468.8	1927.21
2002/03	9476.20	664.60	(2563.32)	(418.6)	1073005.75	6570609.42	175225.96
2003/04	11012.60	1076.15	(1026.92)	(7.05)	7239.79	1054564.69	49.70
2004/05	11874.70	1036.42	(164.82)	(46.78)	7710.28	27165.63	2188.37
2005/06	12605.20	1322.60	565.68	239.4	135423.79	319993.86	57312.36
2006/07	13331.90	1258.60	1292.38	175.4	226683.45	1670246.06	30765.16
2007/08	14449.73	1447.58	2410.21	364.38	878232.32	5809112.24	132772.78
2008/09	15405.03	820.34	3365.51	(262.86)	(884657.96)	11326657.6	69095.38
Total	96316.16	8665.59	0	(0.01)	1613913.23	41822818.3	469336.9

$$\text{Mean}(\bar{X}) = \frac{X}{N} = \frac{96316.16}{8} = 12039.52$$

$$\text{Mean}(\bar{Y}) = \frac{Y}{N} = \frac{8665.59}{8} = 1083.20$$

$$\text{Karl Pearson's Correlation (r)} = \frac{«¬}{\sqrt{«^2 . \ v^2}}$$

$$= \frac{1613913.23}{\sqrt{(41822818.30)(469336.92)}} = 0.3643$$

This shows that there exists positive correlation between sales volume and cash balance. For this purpose, probable error has been calculated as follows:

$$\text{Probable Error (P.E)} = \frac{0.6745(1 - r^2)}{\sqrt{N}}$$

$$= \frac{0.6745(1 - 0.3643^2)}{\sqrt{8}} = 0.2068$$

6 x (P.E.) = 6 x 0.2068 = 1.2408

Since r < 6 | P.E.; this implies, though there exists positive correlation between the two variables and nothing can be concluded. This shows that the company has not been practically following the general rule of higher sales volume, higher cash balance and vice-versa.

The upper and lower limits within which the correlation coefficient is expected to lie are given by;

r+ P.E. = 0.3643 + 0.2068 = 0.5711 (upper limit)

r- P.E. = 0.3643- 0.2068 = 0.1574 (lower limit)

So, the coefficient of correlation is expected to lie between 0.1574 and 0.5711 of sales and cash balance.

4.2.3. (B) Regression Analysis

A regression line can also be fitted to show the degree of relationship value of sales. For this purpose, cash balance and sales have been assumed interrelated economic variables.

The regression line of sales (X) on cash balance (Y) is given by,

$$(X - \overline{X}) = r.\frac{\pm X}{\pm Y}(Y - \overline{Y})$$

The related figures of sales and cash balances are taken out from the Income Statement of NEA from FY 2001/2002 to 2008/2009 *(Appendix II).*

Table: 4.16

Derivation of Regression line of Sales and Cash Balance

(Rs in Million)

FY	Sales (x)	Cash Bal. (Y)	$(X-\overline{X})^2$	$(Y-\overline{Y})^2$	XY	X^2	Y^2
2001/02	8160.8	1039.30	15044468.8	1927.21	8,481,519.4	66,598,656.6	1080144.5
2002/03	9476.2	664.60	6570609.42	175225.1	6,297,882.5	89,798,366.4	441693.2
2003/04	11012.6	1076.15	1054564.68	49.7025	11851,209.5	121,277,358.8	1158098.8
2004/05	11874.7	1036.42	27165.63	2188.37	12,307176.6	141,008,500.1	1074166.4
2005/06	12605.2	1322.60	319993.90	57312.36	16,671637.5	158,891,067.4	1749270.8
2006/07	13331.9	1258.60	1670246.06	30765.16	16,779529.3	177,739,557.6	1584073.1
2007/08	14449.73	1447.58	5809112.22	132772.8	20,917140.2	208,794,697.1	2095487.9
2008/09	15405.03	820.84	11326657.6	68832.77	12,645064.8	237,314,949.3	673778.31
Total	96316.16	8666.09	41822818.3	469074.3	105951159.1	1201423152.1	9856713.8

$$\text{Mean}(\overline{X})\ \text{X}\frac{\text{X}}{\text{N}}\ \text{X}\frac{96316.16}{8}\ \text{X}12039.52$$

$$\text{Mean}(\overline{Y})\ \text{X}\frac{\text{Y}}{\text{N}}\ \text{X}\frac{8665.59}{8}\ \text{X}1083.20$$

And,

$$\pm x\ \text{X}\sqrt{\frac{\phi(X\ \text{Z}\overline{X})^2}{N}}$$

$$\pm x\ \text{X}\sqrt{\frac{41,822,818.31}{8}} = 2,286.45$$

Again,

$$\pm y\ \text{X}\sqrt{\frac{\phi(X\ \text{Z}\overline{Y})^2}{N}}$$

$$\pm y\ \text{X}\sqrt{\frac{469,074.31}{8}} = 242.15$$

So,

Karl Pearson's Correlation (r) = 0.37 (Table 4.15)

$\overline{X}$ = Mean sales = 12,039.52

$\overline{Y}$ = Mean cash balance = 1,083.20

6x = standard deviation of sales = 2,285.45

6y = Standard deviation of cash. = 242.15

Therefore,

The regression line of sales (X) on cash balance (Y) is given by,

$$(X - \overline{X}) = r.\frac{\pm X}{\pm Y}(Y - \overline{Y})$$

Where,

$$\text{or,} \quad (X-12039.52) = 0.3643\frac{2286.45}{242.21}(Y - 1083.20)$$

$$X-12039.52 = 3.4390(Y-1053.20)$$

$$X-12039.52 = 3.4390Y - 3621.95$$

$$X = 12039.52-3621.95+ 3.4390Y$$

$$X= 8417.57 + 3.4390Y$$

This equation shows that sales are estimated to increase by 3.4390 per unit increase in cash balance.

Likewise, the regression line of cash balance (Y) on sales (X) can be computed as follows.

$$(Y - \overline{Y}) = r.\frac{\pm Y}{\pm X}(X - \overline{X})$$

$$\text{or,} \quad (Y -1083.20) = 0.3643 \mid \frac{242.21}{2286.45}(X - 12039.52)$$

$$Y - 1083.20 = 0.038 (X -12039.52)$$

$$Y -1083.20 = 0.038X - 457.50$$

$$Y = 1083.20 - 457.50 + 0.038X$$

$$Y = 625.7 + 0.038X$$

This shows that cash balance is estimated to increase by 0.038 units per increase in sales.

4.2.4. (A) Analysis of Karl Pearson's Coefficient of Correlation (r) Between Account Receivables and Cash Balance

To find out the correlation between account receivables and cash balance, Karl Pearson's coefficient of correlation (r) is determined. For this purpose account receivables and cash balance are assumed interrelated economic variables. Let us assume receivables as 'X' are dependent variables and cash balance 'Y' are independent variables.

Table: 4.17

Analysis of Karl Pearson's Coefficient of Correlation Between Account Receivables and Cash Balance

(Rs in million)

Fiscal Year	Receivables (X)	Cash Balance (Y)	$(x-\overline{X})$ (u)	$(y-\overline{Y})$ (v)	uv	u^2	v^2
2001/02	1678.50	1039.30	(2170.64)	(43.9)	95291.10	4711678.01	1927.21
2002/03	2284.90	664.60	(1564.24)	(418.6)	654790.86	2446846.78	175226
2003/04	3380.20	1076.15	(468.94)	(7.05)	3306.03	219904.72	49.70
2004/05	3735.71	1036.42	(113.43)	(46.78)	5306.25	12866.36	2188.37
2005/06	3697.70	1322.60	(151.44)	239.4	(36254.74)	22934.07	57312.36
2006/07	4088	1258.60	238.86	175.4	41896.04	57054.10	30765.16
2007/08	5151.41	1447.58	1302.27	364.38	474521.14	1695907.15	132772.78
2008/09	6776.70	820.34	2927.56	(262.86)	(769538.42)	8570607.55	69095.38
Total	30793.12	8665.59	0	(0.01)	469318.27	17737798.7	469336.96

$$\text{Mean } (\overline{X}) = \frac{X}{N} = \frac{30793.12}{8} = 3849.14$$

$$\text{Mean } (\overline{Y}) = \frac{Y}{N} = \frac{8665.59}{8} = 1083.20$$

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

= $\frac{469318.27}{\sqrt{(17737798.74)(469336.96)}}$ = 0.163

This shows that there exists positive correlation between account receivable and cash balance.

Since, correlation 'r' is positive in order to compare it with probable error r has been calculated as follows:

r = 0.163

Now,

Calculation of probable error (P.E.

P.E. = $\frac{0.6745(1 Z r^2)}{\sqrt{N}}$

= $\frac{0.6745(1 Z 0.163^2)}{\sqrt{8}}$ = 0.232

6(P.E.) = 6 | 0.232

= 1.392

Now, if r> 6 (P.E), it is indicative of statistically significant positive correlation. Likewise, if r< (P.E), it is indicative of statistically insignificant positive correlation.
Here, r < (P.E), so there is a statistically insignificant of the calculated value of 'r'.

The upper and lower limits within which the correlation coefficient is expected to lie are given by;

r + P.E = 0.163+ 0.232 = 0.395 (Upper Limit)

r – P.E = 0.163- 0.232 = -0.069 (Lower Limit)

So, the correlation coefficient is expected to lie between -0 .69 to 0.395.

4.2.4. (B) Regression Analysis

A regression line can also be fitted to show the degree relationship between account receivables and cash balance.

The regression line of receivable (X) on cash balance (Y) is given by,

$$(X - \overline{X}) = r. \frac{\pm X}{\pm Y}(Y - \overline{Y})$$

(Figures are derived from Table 4.16)

Where,

$\overline{X}$ = Mean receivables = 3,849.14

$\overline{Y}$ = Mean Cash balance = 1,083.20

r = Karl Pearson's coefficient of correlation = 0.163

$\pm x$ = standard deviation of receivables

$$= \frac{\sqrt{(X - \overline{X})^2}}{N}$$

$$= \sqrt{\frac{17737798.74}{8}} = \text{Rs. } 1489.03 \text{ million}$$

And,

$\pm y$ = Standard deviation of cash balance

$$= \sqrt{\frac{(Y - \overline{Y})^2}{N}}$$

$$= \sqrt{\frac{469336.96}{8}}$$

= Rs.242.21 million

Therefore,

The regression line of receivable (X) on cash balance (Y) is given by,

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

or, $(X-3849.14) = 0.163\frac{1489.03}{242.21}(Y-1083.20)$

or, $(X-3849.14) = 1.002\ (Y-1083.20)$

or, $X - 3849.14 = 1.002Y-1085.37$

or, $X= 3849.14+1.002Y-1085.37$

$\therefore X = 2763.77 + 1.002Y$

This equation shows that receivables are estimated to increase by 1.002 per unit as per increment in cash balance.

Likewise, the regression line of cash balance (Y) on receivables (X) can be computed as follows.

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

or, $(Y-1083.20) = 0.163 \times \frac{242.21}{1489.03}\ (X-3849.14)$

or, $(Y-1083.20) = 0.0265(X-3849.14)$

or $Y-1083.20 = 0.0265X-102.00$

or, $Y = 1083.20+0.0265X-102.00$

$\therefore Y= 0.0265X+981.2$

This shows that cash balance is estimated to increase by 0.0265 per unit increase in accounts receivables.

4.2.5 Analysis of Karl Pearson's Coefficient of Correlation (r) Between "Current Assets and Cash Balance"

To find out the correlation between current assets and cash balance, Karl Pearson's coefficient of correlation (r) is determined. For this purpose current assets and cash balance are assumed to be interrelated economic variables. Let us assume current assets as 'X' are dependent variables and cash balance 'Y' are independent variables.

Table 4.18

Analysis of Karl Pearson's Coefficient of Correlation (r) between Current Assets and Cash Balance

(Rs in million)

Fiscal Year	Current assets(X)	Cash Balance (Y)	$(x-\bar{X})$ (u)	$(y-\bar{Y})$ (v)	uv	u^2	v^2
2001/02	6313.60	1039.30	(2237.75)	(43.9)	98237.22	5007525.06	1927.21
2002/03	7322	664.60	(1229.35)	(418.6)	514605.91	1511301.42	175225.96
2003/04	7690.48	1076.15	(860.87)	(7.05)	6069.13	741097.16	49.70
2004/05	7883.41	1036.42	(667.94)	(46.78)	31246.23	446143.84	2188.37
2005/06	8491.60	1322.60	(59.75)	239.4	(14304.15)	3570.06	57312.36
2006/07	8995.30	1258.60	443.95	175.4	77868.83	197091.60	30765.16
2007/08	10322.97	1447.58	1771.62	364.38	645542.90	3138637.42	132772.78
2008/09	11391.46	820.34	2840.11	(262.86)	(746551.31)	8066224.81	69095.38
Total	68410.82	8665.59	0.02	(0.01)	612714.76	19111591.37	469336.92

Here,

$$\text{Mean } (\bar{X}) = \frac{X}{N} \text{ X} \frac{68410.82}{8} \text{ X} 8551.35$$

$$\text{Mean } (\bar{Y}) = \frac{Y}{N} \text{ X} \frac{8665.59}{8} \text{ X} 1083.20$$

$$\text{Karl Pearson's Correlation (r)} = \frac{uv}{\sqrt{u^2 . \quad v^2}}$$

$$= \frac{612714.76}{\sqrt{(19111591.37) \mid (469336.92)}} = 0.2046$$

This shows that there exists positive correlation between current assets and cash balance. However, according to the theory increase in current asset should be followed by a decrease in cash balance and vice –versa. Therefore, the above calculation of NEA is not applicable according to the theory. The correlation should be statistically significant to ascertain that there practically exists correlation between the two variables. For this purpose, probable error has been calculated as follows.

$$\text{Probable Error (P.E)} = \frac{0.6745(1 - r^2)}{\sqrt{N}}$$

$$= \frac{0.6745(1 - 0.2046^2)}{\sqrt{8}} = 0.2285$$

Now, If r> 6 (P.E), it is indicative of statistically significant positive correlation.

Likewise, If r< (P.E), it is indicative of statistically insignificant positive correlation.
Here, r < (P.E), which shows that there exist an insignificant positive correlation between current assets and cash & bank balance.

The upper and lower limits within which the correlation coefficient is expected to lie are given by,

r + P. E = 0.2046 + 0.2285 = 0.4331 (Upper Limit)

r – P. E = 0.2046 – 0.2285= -0.0239 (Lower Limit)

So, the coefficient of correlation is expected to lie between 0.4331 and -0.0239.

4.2.6 Analysis of Karl Pearson's Coefficient of Correlation (r) Between "Current Liabilities and Cash Balance"

To find-out the correlation between current liabilities and cash balance, Karl Pearson's coefficient of correlation (r) is determined. For this purpose, current liabilities and cash balance are assumed interrelated economic variables. Let us assumed current liabilities as 'X' are dependent variables and cash balance 'Y' are independent variables.

Table: 4.19

Analysis of Karl Pearson's Coefficient of Correlation (r) between Current Liabilities and Cash Balance

(Rs in Million)

Fiscal year	Current Liabilities (X)	Cash (Y)	$(x-\overline{X})$ (u)	$(y-\overline{Y})$ (v)	uv	u^2	v^2
2001/02	5070.8	1039.30	(6676.88)	(43.9)	293115.03	44580726.53	1927.21
2002/03	4703.9	664.60	(7043.78)	(418.6)	2948526.31	49614836.69	175225.96
2003/04	7444.8	1076.15	(4302.88)	(7.05)	30335.30	18514776.29	49.70
2004/05	9707.7	1036.42	(2039.98)	(46.78)	95430.26	4161518.4	2188.37
2005/06	12619.8	1322.60	872.12	239.4	208785.53	760593.29	57312.36
2006/07	14995.5	1258.60	3247.82	175.4	569667.63	10548334.75	30765.16
2007/08	17970.11	1447.58	6222.43	364.38	2267329.04	38718635.1	132772.78
2008/09	21468.82	820.34	9721.14	(262.9)	(2555298.9)	94500562.9	69095.38
Total	93981.43	8665.59	(0.01)	(0.01)	3857890.24	261399984	469336.92

Here,

$$\text{Mean } (\overline{X}) = \frac{X}{N} \text{X} \frac{93981.43}{8} \text{X} 11747.68$$

$$\text{Mean } (\overline{Y}) = \frac{Y}{N} \text{X} \frac{8665.59}{8} \text{X} 1083.20$$

$$\text{Karl Pearson's Correlation (r)} = \frac{\text{«}v}{\sqrt{\text{«}^2 . \quad v^2}}$$

$$= \frac{3857890.24}{\sqrt{(261399984 \mid 469336.92)}} = 0.3483$$

Since, correlation coefficient is positive, it indicates that there exists positive correlation between current liabilities and cash balance.

As correlation r is positive, in order to compare it with probable error (P.E), r has been calculated as follows:

r= 0.3483

Calculation of probable error (P.E)

$$\text{Probable Error (P.E)} = \frac{0.6745(1 Z r^2)}{\sqrt{N}}$$

$$= \frac{0.6745(1 Z 0.3483^2)}{\sqrt{8}} \qquad = 0.2095$$

6 x (P.E) = 6 * 0.2095 = 1.257

Now, if r>6(P.E), it is indicative of statistically significant positive correlation. Likewise, if r< (P.E), it is indicative of statistically insignificant positive correlation.

In this case, P.E <r<6(P.E) i.e. 0.2095<0.3483<1.257. This implies, though there exists positive correlation between the two, no conclusion could be derived as to statistically significant/insignificant.

Upper and lower limit within which the correlation coefficient is expected to lie is given by:

r + P.E = 0.3483+ 0.2095 = 0.5578 (Upper Limit)

r – P.E = 0.3483 – 0.2095 = - 0.1388 (Lower Limit)

Hence, the correlation coefficient is expected to lie between 0.5578 and 0.1388.

4.2.7. Analysis of Karl Pearson's Coefficient of Correlation (r) Between "Net Profit After Tax and Cash Balance"

To find-out the correlation between net profit after tax and cash balance, Karl Pearson's coefficient of correlation (r) is determined. For this purpose, Net profits after tax and cash

balance are assumed interrelated economic variables. Let us assumed Net profit after tax as 'X' are dependent variables and cash balance 'Y' are independent variables.

Table 4.20

Analysis of Karl Pearson's Coefficient of Correlation (r) Between Net Profit After Tax and Cash Balance

(Rs in million)

Fiscal Year	Net Profit After Tax(X)	Cash Balance (Y)	(X-X) (u)	(y-Y) (v)	uv	u^2	v^2
2001/02	(51)	1039.30	974.44	(43.9)	(42777.92)	949533.31	1927.21
2002/03	(860.7)	664.60	164.745	(418.6)	(68962.26)	27140.91	175225.96
2003/04	(1953.7)	1076.15	(928.25)	(7.05)	6544.16	861648.06	49.70
2004/05	(1760.3)	1036.42	(734.85)	(46.78)	34376.28	540004.52	2188.37
2005/06	(1312.8)	1322.60	(287.35)	239.4	(68791.59)	82570.02	57312.36
2006/07	(1267.8)	1258.60	(242.35)	175.4	(42508.19)	58733.52	30765.16
2007/08	314.9	1447.58	1340.35	364.38	488396.73	1796538.12	132772.78
2008/09	(1312.16)	820.34	(286.71)	(262.86)	75364.59	82202.62	69095.38
Total	(8203.56)	8665.59	0.025	(0.01)	(211226.32)	4398371.08	469336.92

Here,

$$\text{Mean } (\overline{X}) = \frac{X}{N} \text{X} \frac{(8203.56)}{8} \text{X}(1025.45)$$

$$\text{Mean } (\overline{Y}) = \frac{Y}{N} \text{X} \frac{8665.59}{8} \text{X}1083.20$$

$$\text{Karl Pearson's Correlation (r)} = \frac{uv}{\sqrt{u^2 . \quad v^2}}$$

$$= \frac{(211226.32)}{\sqrt{4398371.08 \mid 469336.92}} = -0.1470$$

Since, correlation coefficient is negative, it indicates that there exists negative correlation between net profit after tax and cash balance.

As correlation (r) is negative, in order to compare it with probable error (P.E), |r| has been calculated as follows:

|r| = | -0.1470| = 0.1470

Probable Error (P.E) = $\frac{0.6745(1 Z r^2)}{\sqrt{N}}$

= $\frac{0.6745(1 Z 0.1470^2)}{\sqrt{8}}$ = 0.2333

6 x (P.E) = 6x 0.2333 = 1.400

Since, |r| = 0.1470, which is lower than probable error (P.E) = 0.2333, i.e. |r| <P.E, it indicates that negative correlation between these two variables is not practically significant. In other words, when cash balances held decrease, the net profit after tax increase, and vice- versa.

The upper and lower limits within which the correlation coefficient is expected to lie are given by:

r + P.E = -0.1470+ 0.2333 = 0.0863 (Upper Limit)

r – P. E = -0.1470 – 0.2333 = -0.3803 (Lower Limit)

So, the coefficient of correlation is expected to lie between 0.0863 and -0.3

4.3 Major Finding of the Study

In this research work; basically, all data has been obtained from secondary sources. Those obtained data from secondary sources has further been analyzed by using financial & statistical tools.

This study mainly focuses on two objectives: First one is to determine the cash and liquidity position of NEA and the other is to determine the profitability. The major

finding of the study derived from the analysis of financial and statistical tools are listed below:

1. Liquidity Position of NEA

- The cash and bank balance shows greater fluctuation in FY 2001/02, 2002/03 and 2003/04; but after FY 2003/04, comparatively, the fluctuation was quite low. But in the last year i.e., in FY 2008/09, there is a greater cash fluctuation. This indicates holding of optimum cash and bank balance is the rational cash management practice of a business firm. There is lower coefficient of variation of NEA which signifies that holding cash balance is highly consistence and stable. The trend line shows positive figure of cash balance in future.
- In case of cash turnover ratio; due to the unavailability of adequate information regarding company's credit policy, the credit days allowed to debtors was not known. So, no peruse analysis could be carried out for cash turnover cycle.
- Karl Pearson's Correlation shows that there exists positive correlation between the two variable i.e. cash and sales. But according to PE, no conclusion could be derived whether they are statistically significant or insignificant.
- In case of current ratio, the ratios in FY 2001/02, 2002/03 and 2003/04 are near about 2:1 which is satisfactory. But in FY 2004/05, 2005/06, 2006/07, 2007/08 and 2008/09, all the ratios are below 1:1 - which indicates that the NEA does not have a sound or satisfactory liquidity position.
- However, the Quick ratio, in FY 2001/02 and 2002/03 are satisfactory for NEA. But in FY 2003/04, 2004/05, 2005/06, 2006/07, 2007/08 and 2008/09, the ratios are below the standard; and thus reflects the unsatisfactory situation for the company.
- Since the information regarding credit days extended to customers are not available, and moreover, such credit days are likely to vary depending upon the nature and relationship with debtors, there is no absolute means of comparison available to compare the average collection days.
- In case of inventory turnover ratio, the highest ratio is in FY 2004/05; which indicates better inventory management and better liquidity position. Similarly, in FY 2003/04 and 2008/09 the ratios are high even higher. There is the lowest

inventory turnover ratio in FY 2001/02, which indicates NEA is still poor in inventory and liquidity management.

- While analyzing the cash and bank balance to account receivable ratio, it is traced that the percentage of account receivable is highest in FY 2001/02 (61.92%). This shows that the liquidity position is good in FY 2001/02. But the percentage of A/C receivable in FY 2008/09 is 12.10 which is in the lowest side, that shows the liquidity position has goes worst. As per the analysis through Karl Pearson's, there is a positive relation in coefficient of correlation between Account receivables and cash balance. But according to PE, no conclusion could be derived as to statistically significant/ insignificant.
- While analyzing cash and bank balance to current assets, the company has undergone cash scarcity to meet short-term payments during the all Fiscal Years. Analysis of Karl Pearson's coefficient of correlation (r) between current Assets and cash balance shows positive correlation. But according to PE, no conclusion could be derived as to statistically significant/ insignificant. This shows that the company has not been practically following the general rule of maintaining current-assets, higher cash balance and vice-versa.
- In case of analysis of cash and bank balance to current liabilities, the company is unable to meet its payment of current liabilities in time. Analysis of Karl Pearson's coefficient of correlation (r) between current liabilities and cash balance shows the positive correlation. But according to PE, no conclusion could be derived as to statistically significant/insignificant.

2. Profitability Position of NEA

- Analysis of net profit margin which shows the relation between net profit and sales. The ratios are all negative except in FY 2007/08, which indicates that the company has been operating under loss in all of the FYs. Analysis of Karl Pearson's coefficient of correlation (r) between Net profit of tax and cash balance shows positive correlation. But according to PE, no conclusion could be derived as to statistically significant / insignificant.

- Analysis of return on working capital shows all ratios are in negative figure in every FY except in one FY i.e. in 2007/08. The company has not been utilizing its current assets effectively in earning profit. Overall, the return on working capital is disappointing indicating down fall of the company.
- Analysis of net profit after tax to quick assets, from FY 2001/02 to 2008/09 shows that all ratios are negative except in FY 2008/09. The figures clearly indicate that utilized quick assets have not been earning profit in average rather incurring average loss.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATION

This is the final chapter that involves summary, conclusion and recommendation of the research work. The fact and findings from secondary data analysis are presented in this chapter. Beside summarizing and concluding research work, recommendations are made to the concerned persons and organization.

5.1 Summary

The perception of the government and its role in public welfare has helped to establish public enterprises engaged in public utilities. Role of the government owned enterprises is supposed to be undermined in the present context of worldwide privatization, liberation and globalization. But in developing country like Nepal where private sector is not strong and in sound position to provide public utilities to the people, public utility concern's role can not be undermined.

Though Nepal is rich in water resources, we Nepalese people are in the condition of "shadow under light". There is consensus that development of its abundant water resources could largely benefit the nation. Though hydro-electric potentiality of Nepal is 83000 M.W, only about 544 M electricity is generated including from diesel and multifuel plant. Many changes are taking place in the power sector in the concept of competition, choice in the process of commercialization and management are being changed. In such situation, the proper utilization and management of our available water resources is essential for the all round development of the nation. In this regard, Nepal electricity authority is only an institution engaged for the development of power sector of our country. Sound and effective management of NEA is essential for the better utilization of available water resources of the country.

NEA has a challenge to operate in a manner that improves the key business processes, maximizes the revenue generation and profitability of the organization. The commercial

goals of NEA should also be financially viable, fully autonomous, and accountable and majority owned government business entity. In this sense, this study is conducted to identify whether some of the theories of cash management are applicable or not in the Nepalese public enterprise. For this reason brief introduction about public enterprises, public enterprises in Nepal, role and objectives of PEs, historical background of NEA, cash management which is the most important part of company, statement of problem, objectives , scope and limitation of the study, plan of study and so on are made in first chapter.

In second chapter, theoretical review as well as review of previous research has been made. And so on are reviewed on that chapter .Different views about cash management, function of cash management, efficiency, different techniques, of cash management And so on are reviewed on that chapter. Determining the optimum cash balance, motives for holding cash where precautionary motives, transaction motives, speculative motives are reviewed. And lastly Government publications are also reviewed.

In third chapter, there is research methodology which will be helpful for the fourth chapter in data presentation and analysis. Out of the total financial system one service Enterprise is chosen for a research purpose, mainly financial tools & statistical tools are set for the analysis.

Lastly on fourth chapter, collected data are presented in tabular and graphic form and analyzed using various financial tools like Cash & Bank Balance, Cash Turnover Ratio, Current Ratio, Quick Ratio, Receivable Turnover Ratio, Cash & Bank Balance to Account Receivable, Cash & Bank Balance to Current Assets and Current Liabilities, Inventory Turnover Ratio, Return on Working Capital Ratio, Net Profit Margin Ratio, Net profit after Tax to Quick Assets and statistical tools like Mean ,Standard Deviation, Correlation Coefficient, Covariance, Probable Error. These all are analyzed whether or not the relationship between variables matches with the theories that have been studied on literature review part.

5.2 Conclusion

Based on the above summary and findings of the research, following conclusion can be point out after detail analysis of cash management. In conclusion, it can be said that cash management is an important part of the financial decision making variable. Many factors or determinants such as nature of business, level of sales, credit terms, quality of customers, economic condition etc have to be considered in cash management. Apart from the level of purchase, method of creating cash management, establish of credit terms, types of credit policy, motives for holding cash, efficiency of cash management, different technique of cash management etc. are to be considered.

- The cash and bank balance shows greater fluctuation in FY 2001, 2002, 2003 and 2008 but in other remaining FY, fluctuation was quite low in comparison to the previous FYs. Holding of optimum cash and bank balance is the rational cash management practice of a business firm. There is lower coefficient of variation of NEA which signifies that holding cash balance is highly consistence and stable. The trend line shows positive figure of cash balance in future.
- In case of cash turnover ratio, the highest cash turnover ratio is 18.78 where the cash conversion period is 19.44 days. And the lowest cash turnover ratio is 7.85 where the cash conversion day is 46.48. Due to the unavailability of information regarding credit policy of the company the credit days allowed its debtors was not known. So, no peruse analysis could be carried out for cash turnover cycle. Analysis of Karl Pearson's Correlation shows that there exists positive correlation between the two i.e. cash or sales. But according to PE, no conclusion could be derived as to statistically significant/ insignificant. Correlation coefficient between cash and bank balance and sales being positive of 0.3643 and the relation P.E <r <6 (P.E), suggested statistically inconclusive positive correlation as to significant/ insignificant, showing little complicity of cash and bank balance with sales variable.
- In case of current ratio, the ratios in FY 2001, 2002 and 2003 are near about 2:1 which are satisfactory and in 2004, 2005, 2006, 2007 and 2008 all of the ratios are below 1:1 which indicates that the NEA does not have a sound or satisfactory liquidity position.

- In case of analysis of cash and bank balance to account receivable ratio .The percentage of account receivable is highest in FY 2001 (61.92%).This shows that the liquidity position is good in FY 2001. But the % of A/C receivable in 2008 is 12.10 which is lowest percent, this shows the liquidity position is not good. Analysis of Karl Pearson's coefficient of correlation between Account receivables and cash balance shows there is positive relation i.e. 0.163 which suggests increase in Cash and Bank balance follows increase in Account receivable and vice versa which is theoretically not match . It proves that in practical theory in not apply. But according to PE, no conclusion could be derived as to statistically significant/ insignificant.
- Proportion of Cash and Bank balance in its current assets is very small and the cash balance held shown positive relation to the amount of current assets of RDL. Average ratio of Cash and Bank to Current Assets is 1.58%, which is very small portion of cash in current assets. Correlation coefficient between the two is 0.2046.
- NEA has not been precisely meeting its current liabilities payment: In case of analysis of cash and bank balance to current liabilities, The company being unable to meet its payment of current liabilities in time. This is yet another indication of mismanagement of cash. The highest ratio of cash and bank to current liabilities is 20.50% excess cash and bank balance compared to current liabilities in FY 2001 and the lowest ratio 3.82 in FY 2008. Analysis of Karl Pearson's coefficient of correlation (r) between current liabilities and cash balance is 0.3483 shows the positive correlation. But according to PE i.e. 0.2095 and 6PE is 1.257 which indicate PE < r < 6 PE, no conclusion could be derived as to statistically significant/insignificant.
- A large portion of NEA's current assets has been tied-up in the most illiquid asset; i.e. inventory:
- The cross examination of the liquidity position suggested that current assets have been tied-up in slow moving and unsalable inventories. Analyses show that the average current ratio was found to be dissatisfying and calculated to be 0.88:1, which is lower than the conventionally accepted current ratio of 2:1. The average quick ratio was also found to be dissatisfying and calculated to be 0.75:1, which is

lower than the conventionally accepted quick ratio of 1:1. This indicated the possibility of current assets being tied-up in slow moving and unsalable inventories.

- Current assets and Quick assets are not being maintained accordance with current liabilities: Current assets are not maintained in the accepted pattern of i.e. increase in current assets following increase in current liabilities and vice-versa. Likewise, neither the quick assets has been maintained in the accepted pattern of i.e., increase in quick assets followed by increase in current liabilities and vice-versa.
- Profitability of NEA being in worsening trend, liquidity does not practically increase with increase in profitability and vice-versa: Average Net profit Margin Ratio i.e. average ratio of Net profit after tax to sales in – 8.56%; Average ratio of Net profit after tax to current assets is -12.29%; and Average ratio of Net profit after tax to Quick assets is – 14.31%. These analyses indicate that profitability position of NEA is worsening in an alarming rate

Conclusively, it can be stated that NEA's cash management is very poor. Liquidity position is dissatisfactory, Negative profitability of the company adds much to the worsening financial position of the company. The accumulated amount of account receivable which is increasing year by year denotes the inefficiency of the authority to collect its revenue in time. There is the absence of effective utilization of capital employed and liquidity position is also not satisfactory. The authority fails to analyze its strength and weaknesses in depth. Because of the absence of the competitors, authority has become monopolistic and, hence, it is not alert towards its possible threats and opportunities. Different statistical tools show the positives relationship with two variables like cash and sales, cash and account receivable, current assets and cash, current liabilities and cash. The authority is not able to maintain a proper co-ordination among various directorates in regards of the goals, objectives and strategies of the organization. The authority has been facing some problems in cash management. Management has the lack of adequate knowledge about the following facts nature and content of cash management. So, there is the necessity of change in the management system of the authority. Besides, cash management being one of the important elements in financial function, there are other numerous aspects of finance involved in the overall financial

performance of the company. In addition to this, the overall performance of the company counts for other managerial aspects such as; human resource management, organizational structure, markets management etc. However, above all disappointing down-falling trend of the financial position is indicative of the fact that NEA should immediately seek for drastic change in its managerial structure. So far cash management is concerned, the recommendations suggested above could, to a greater extent, uplift NEA's cash management situation.

5.3 Recommendation

Suggestion is the output of the whole study. It helps to take corrective action in their activities in future. Different analysis were done till arrive this step. On the basis of above analysis, findings of the study, summary and conclusion, following suggestions may be referred to overcome weakness, inefficiency. The following suggestions are recommended to improve the formulation and implementation of cash management system of NEA.

- NEA must follow the definite policy regarding the amount of cash to hold each fiscal year.
- The liquidity position is not satisfactory. So it should be corrected.
- NEA should develop efficient system of revenue collection. It should make well defined rules and regulations in regard of revenue collection and if the customer of any category delays or denies, it should be charged penalty. In revenue collection, any kind of pressure and biases should strictly be undermined. Huge amount of account receivable especially of Municipality, metropolis, sub-metropolis consumed in street lights should be managed and receivable can be collected by imposing its expenditures to the neighboring community people.
- The enterprise should be well familiar with its strengths and weaknesses and it should not be indifferent about its competitors. Because of the liberalized economic policy of the government. That's why the enterprise should be aware of effective corporate planning system and strategic management. Hence, a systematic approach should be developed towards comprehensive cash management. This can considerable contribute to increase the profitability of the NEA

- The company should have suitable credit policy to handle the cash management effectively. It should adopt liberal credit policy to increase the sales. Next, it should adopt strength credit policy especially for its staffs and workers for effective credit and collection performance as low total receivable. One of the reasons of lower turnover and high collection period arise due to more advances to company's employees.
- NEA should try to maximize its operating profit. For this, cost control program can be launched in one respect and the alternative for the replacement of long term loans should be searched.
- The installed capacity of NEA should be utilized fully. If it utilizes its full capacity, the operating expenses will down.
- Highly qualified, dynamic, energetic and skilled manpower inventory should be made available by the authority and staffs should be property and unwisely trained and motivated.
- There is inadequate electricity in the time of peak demand which creates the problem of load shedding and there is surplus of electricity in the rainy season due to the sufficient flow of water which helps to generate more. It is due to the lack of proper management and planning. This problem can be solved timely.
- Tariff rate for internal sales and external sales should be made equal so that all types of consumer can be benefited.
- There should be timely evaluation of strengths and weaknesses. Different aspects such as managerial involvement, organizational adoption, responsibility accounting, full communication, realistic expectations, time dimensions, flexible application, behavioral point of view and follow up programs should be made more effective, productive and result oriented for the successful operation of the organization.

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APPENDICES

Appendix I

Balance Sheet as on FY 2008/2009

(NRS in Million)

Particulars	2008/09*	2007/08	2006/07	2005/06	2004/05	2003/04	2002/03	2001/02
Capital & Liabilities								
Capital & Reserve								
Share Capital	28414.99	26382.18	23113.10	20161.80	18215.85	16976.87	16601.30	15360.30
Reserve & Accumulated profit	(6114.88)	(4802.72)	(5545.32)	(4294.14)	(2997.69)	(1269.87)	696.51	1626.96
Secured long term loan	52762.18	47616.15	46487.91	44537.51	41103.14	39637.11	37325.61	36707.50
Grand Total	**75062.29**	**69195.61**	**64055.69**	**60405.17**	**56321.30**	**55344.11**	**54623.42**	**53694.76**
Assets								
Property, Plant & Equipment	52294.10	51781.76	51743.38	52166.56	51415.14	50094.75	51080.91	28238.26
capital Work in Progress	35930.74	29145.19	21991.50	16060.40	10619.55	8655.48	4837.80	23640
Investment	1602.05	882.05	819.90	777	731.01	613.01	553	517.10
Sub Total	**89826.89**	**81809**	**74554.78**	**69003.96**	**62747.70**	**59363.24**	**56471.71**	**52395.36**
Current Assets								
Inventories	1518.45	1498.45	1354.80	1372.70	1048.01	1017.22	1058.10	960.90
Sundry Debtors & Other Receivables	6776.70	5151.41	4088	3697.70	3735.71	3380.20	2284.90	1678.50
Cash & Bank Balance	820.84	1447.58	1258.60	1322.60	1036.42	1076.15	664.60	1039.30
Prepaid, Advances, Loan & Deposits	2275.47	2225.53	2293.90	2098.60	2063.27	2216.91	3314.40	2634.90
Total Current Assets	**11391.46**	**10322.97**	**8995.30**	**8491.60**	**7883.41**	**7690.48**	**7322**	**6363.60**
Less: Current Liabilities & Provision								
Sundry Creditors & Payables	25617.71	2219	19144.39	16768.69	13856.61	11593.69	8852.79	5070.80
Provision	813.13	693.13	709.80	697.70	681.48	753.31	1244.20	1042.90
Total Current Liabilities & Provision	**26430.84**	**22812.13**	**19854.19**	**17466.39**	**14538.09**	**1247**	**10096.99**	**6113.70**
Net Current Assets	**(15039.38)**	**(12489.16)**	**(10858.89)**	**(8974.79)**	**(6654.68)**	**(4656.52)**	**(2774.99)**	**199.90**
Deferred Expenditure To be Written Off	60	130.94	32.40	126.70	250.01	506.82	916.50	978.60
Per Unit Balance(Net)	214.78	(255.17)	327.40	249.30	(21.73)	130.57	10.20	120.90
Total Def. Exp& Income	**274.78**	**(124.23)**	**359.80**	**376**	**228.28**	**637.39**	**926.70**	**1099.50**
Grand Total	**75062.29**	**69195.61**	**64055.69**	**60405.17**	**56321.30**	**55344.11**	**54623.42**	**53694.76**

*Provisional

Notes: (1) NEA has dropped the practice of revaluation of property, plant & equipment and entire assets are presented at historical cost.

(2) Interest during the Construction (IDC) period amounting to NRs 4,146.80 million has been adjusted from long term loan to current liabilities.

Appendix - II
Income Statement for the FY 2008/09

(NRS in million)

Particulars	2008/09*	2007/08	2006/07	2005/06	2004/05	2003/04	2002/03	2
	15405.03	14449.73	13331.90	12605.20	11874.70	11012.60	9476.20	8
Sales	9929.85	9034.56	8332.70	7462.40	6765.40	5348	5886.70	4
ion (inc power)	9625.57	8793.68	8100.60	7246.50	6565.90	5169.40	5728.70	4
ission	304.28	240.88	232.10	215.90	199.50	178.60	158	
Profit	**5475.18**	**5415.17**	**4999.20**	**5142.80**	**5109.30**	**5664.60**	**3589.50**	3
ncome	655.24	1016.61	639.90	617.50	671.40	512.60	459.60	
tion Expenses	1947.42	1834.39	1703.70	1484.20	1376.10	1308.60	1174.40	
strative expenses	576.14	479.59	419.50	622.40	489.10	536.10	447.40	
From operation	**3606.86**	**4117.80**	**3515.90**	**3653.70**	**3915.50**	**4332.40**	**2427.30**	**2**
	2368.41	2385.41	3050.90	3079.80	2991.50	2973.40	1395.50	1
ation	1920	1856.47	1816.90	1733.50	1686	1656.70	1420.10	1
loss on Foreign Exchange	480.61	(493.39)	42.70	(230)	59.10	-	271.60	
on for Losses or Property plant & ent	30	60	65	40	-	191.50	37	
d revenue expenditure written off	70	42.56	105.40	123.30	320.10	411.10	512.50	
tal	**4869.02**	**3851.05**	**5080.90**	**4746.60**	**5056.70**	**5232.70**	**3636.70**	**2**
Loss) from Operation in the year	**(1262.16)**	**266.75**	**(1565)**	**(1092.90)**	**(1141.20)**	**(900.30)**	**(1209.40)**	**(**
ars(Income) Expenses	50	(47.44)	(297.20)	219.90	344.90	444.40	492	
fit(Loss) before Tax	**(1312.16)**	**314.19**	**(1267.80)**	**(1312.80)**	**(1486.10)**	**(455.90)**	**(717.40)**	
on for Tax	-	-	-	-	(274.20)	1497.80	43.30	
fit(loss) after Tax	**(1312.16)**	**314.19**	**(1267.80)**	**(1312.80)**	**(1760.30)**	**(1953.70)**	**(860.70)**	
of profit as per last account	5801.61	(6095.80)	(4808)	(3475.20)	(1694.90)	278.90	1159.60	1
rofit available for appropriation	(7113.77)	(5781.61)	(6075.80)	(4788)	(3455.20)	(1674.90)	298.90	1
ce Fund	20	20	20	20	20	20	20	
oss) transferred to balance sheet	(7133.77)	(5801.61)	(6095.80)	(4808)	(3475.20)	(1674.90)	278.90	1

Note: *Provisional