CHAPTER - I

1 Introduction

1.1 General Background

Nepal, an underdeveloped and landlocked Himalayan country, forms a crescent on the north of India and lies between the northern latitude 26° 22" and 30° 27" and in the eastern hemisphere between 80° 4" and 88° 12". Its shape is like distorted rectangle, about 885 km long east to west and 193 km broad north to south, covering an area of 1,47,181 sq. km. and is situated at a distance of about 500 km from the nearest sea. The country is bordered by China in the north and India in the south, west and east. The land mass is divided into three geographical zones. The snow capped high Himalayas, the mountainous region with long terraced slopes leading to fertile valleys and the flat sub-tropical Terai Region.

Nepal is an economical paradox in the sense that it is a rich country where poor people live. It's full of natural & a cultural beauty with very poor infrastructure which is reflected by it's far behind economic condition. Her economy is predominantly based on agriculture. Large portions of population who live under the line of poverty are in village area. Population of Nepal was recorded 24.2 million in 2001, having annual growth rate of 2.2%. [The World Bank, Country Assistance Strategy, 2004-2007.]

The United Nations (UN) classifies Nepal as one of the least developed countries in the world. The countries gross domestic product (GDP) was $6.7 billion in 2004, with an estimated per capita GDP of $250. Agriculture remains Nepal's principal economic activity, employing 80% of the population and providing 37% of GDP. Only about 20% of the total area is cultivable; another 33% is forested; most of the rest is mountainous. Rice and wheat are the main food crops. The lowland Terai region produces an agricultural surplus, part of which supplies the food-deficient hill areas.The contribution of agriculture sector is 39.59% and non-agriculture sector is 60.41% during the year. [Microsoft Encarta Reference Library, Nepal in Encarta, 2006]

Marked variation exists in the distribution of income throughout the country. The hills & Terai have 1.6 times higher per capita income than the mountains, the urban area has 2.5 times higher per capita income than the rural area; and Kathmandu has nearly 4 times higher per capita income than the western hills.

The Nepalese economic scenario reveals a predominance of the primary sector slow growth and mass deprivation with virtually no modern physical infrastructure in a highly congested and difficult terrain, limited exploitable natural resources, a small skilled labor force, and a landlocked situation, options for rapid development have been very limited and the choices are uncertain too. Wide spread poverty, rapid population growth, low income level, extreme disparity in the distribution of wealth and income, heavy dependence on agriculture, lack of adequate industries, lack of needed saving and capital, dependence on foreign aid, unemployment, unexploited resources, lack of infrastructure, adverse balance are the main characteristics of Nepalese economy. [District Demographic Profile of Nepal Informal Sector Research and Study Centre, Kathmandu, 2006]

Several factors have contributed to Nepalese underdevelopment, including its landlocked geography, rugged terrain, lack of natural resources, and poor infrastructure. China, India, Japan, the United States, and several European nations have made large investments in Nepalese economy through foreign aid since 1952. Still, the Nepalese economic growth has been slow. Nepalese economy is characterized by heavy dependence on foreign aid, a narrow range of exports, increasing economic disparity between the mountain areas and the more developed Terai region, excessive governmental control and regulation, and inefficient public enterprises and administration. In addition, the economy has not kept pace with the countries high population growth. In particular, the slow growth of agriculture has resulted in food shortages and malnutrition for some of Nepalese people.

For the economy to progress the government, the private sector and the society at large should be working together. For this to happen there should be national consensus on the country's economic policies. We see supremacy of economics over politics all over the developed world, but in Nepal it is the politics, which runs the show. Politicians are busy in politicizing rather than giving serious thought to national economic well-being. Politicians are not aware that political freedom would be worthless if there is no economic freedom in the country.

Peace is prerequisite to accelerated economic development, and judicious and equitable economic structure is necessary to flourish the peace. The social unrest in the past few years has taken heavy toll of human lives and caused considerable damage to public properties and developed infrastructure together with the loss for no reason and lots of lives and properties worth billions of rupees has already been hammered with a painful fact known to all. Increased regular expenditure and lower revenue growth rate have further

caused a situation worsen where the government is in an isolation with no choice but to reduce development expenditure. As a result, economic development has slowed down, causing the rugged poverty and widening of social disparity. In this context, this is peak time to seek reliable and sustainable solutions for the problems faced by the people by utilizing the opportunities. The efforts of government should wholeheartedly commit toward restoring peace through dialogue and consensus.

The responsibility for the development of the country primarily lies in the government. In this endeavor, the government has to play a lead role while creating necessary environment for the other sectors to obtain their cooperation. As people are the focal point of development, their voluntary participation is dispensable. In the development endeavor of the country, it is not possible to fulfill all the aspirations and needs only from the resources of the government. For this purpose, the government and nongovernmental, private sector, political parties, professional association/organization, educational organizations and local bodies have their own roles. [I bit]

1.2   General Background of Public Enterprises

There is hardly any country in the world today in which the government is not involved actively and directly setting up and management of economic and industrial enterprise. It is widely accepted now that the economic development of a country is directly related with its industrial growth. Expansion of industries leads to greater utilization of natural resources, production of goods and services, creation of employment opportunities and improvement of in general standard of living. The doctrine of public sector emphasis upon the principle of welfare state, where each and every activity of the government is expected to safeguard and promote manages the national resources in public interest. This objective can be achieved either through intervention and/or an entrepreneurship. Intervention affects the existing system of private sector while public sector is the outcome of state entrepreneurship. There can be several motives that influence the growth of state enterprises, political ideology, state of economy development and defense prominent among the factor concerned.

Public sector and private sector are generally taken as to mutually exclusive sectors of economy. But both are in reality, indispensable basis for growth and development. In fact, these are two wheels of the economy where in the public sector provides the base for development of private sector. Public sector and private sector both form integral parts of

the national economy. The economy of Nepal is basically a mixed economy, where the public and the private sector both operate freely in business except in case of defense. Public sector denotes a part of the government setup. Its budget gets incorporated with the government budget there by allowing it to get funds the government and hence it is required to deposit all its income in government treasury. The objectives of PEs in Nepal have greatly facilitated economic growth, inside of the problems of capital investment, log gestation period, low profitability and high risk. The government use PEs for implementing their policies, tools for short term political benefits, creation of employment opportunities, economic and social developments, to fill the gap in private capital, take over gain projects, price control, public welfare and national self-preservation etc. In this way public enterprises have contributed through various means in the development process of the country.

1.3   Current Economic Analysis of Public Enterprise   in Nepal

Analysis of the overall economic situation of the entire 36 Public Enterprises owned entirely or partially by the Government of Nepal shows that 19 PEs have earned profit whereas 17 PEs are in loss in FY 2004/05. Among the profit earning PEs also, the economic situation, capacity utilization and employees' productivity of most of them is not found to have been satisfactory. By the end of FY 2004/05, equity investment of the Government of Nepal in all 36 PEs amounted to Rs. 59.68 billion and loan investment has amounted to Rs. 64.55 billion and during the same period Rs. 3.35 billion has been received as dividend. The dividend accounts for 5.62 percent of the share investment.

1.3.1 Industrial Sector

Of the total 9 PEs existing under Industrial Sector by the end of FY 2003/04, 1 PE was privatized and 1 PE was liquidated subsequently thus leaving a total of 7 PEs at the end of FY 2005/06. By the end of FY 2004/05, the equity investment and loan investment of the Government of Nepal on these 7 PEs accounted for Rs. 5.63 billion and Rs. 3.78 billion respectively. Looking at the current financial situation of the 7 PEs, it is found that their aggregate net worth has limited to Rs. 87.0 million only. The net worth of Nepal Orind Magnesite alone is found to be negative totaling to Rs. 2.83billion whereas the net worth of Udayapur Cement Factory is found to be positive totaling to Rs. 2.57 billion. Looking at the status of operating profit and loss account of the PEs under this sector in FY 2004/05, Herbs Production and Processing Company, Hetauda Cement

Industry Ltd. and Janakpur Cigarette Factory have earned operating profit whereas Dairy Development Corporation, Nepal Drugs Ltd., Udayapur Cement Industry Ltd. and Nepal Orind Magnesite Pvt. Ltd. are found to have been in operating loss. The total Net Capital Investment of 7 PEs remains at Rs. Rs. 3.95 billion in FY 2004/05. No dividend has been accrued to the Government of Nepal in FY 2004/05 from this sector.

The Government of Nepal has recognized privatization of PEs as an integral component of her economic liberalization and open market economic policy. This program in Nepal has mainly concentrated on fulfilling the goals of creasing productivity of industries and academies through the enhancement of business efficiency, minimizing the financial and administrative liabilities of the government, and increasing extensive participation of private sector in economic development of the country. In this process, the program of privatization is being executed with priority for last one and half decades, appealing the participation of private sector in the management and ownership of public enterprises. Commercially, economically, and financially feasible PEs have been handed over to the private sector. Similarly, the PEs, whose social and economic justifications are found to have been no more viable in present time to correspond to the initial goals of their establishment, has been liquidated.

There is a need to adjust the role of public enterprise in the economic development of the country in a manner to suit a liberal, open and competitive economic system and, therefore, in such a context, the aggregate achievement of the PEs goals/targets is not found to be satisfactory one. The main reasons for unsatisfactory performance standard of PEs are inability to operate commercially, excessive employees, obsolete plants and machineries, inability to operate in a competitive environment and gradual minimization of the objectives and justifications for which the PEs are established. Therefore, failure to arrange additional capital and technological sources in order to solve such problems has been one of the major challenges.

1.3.2 Regarding Financial Performance of Public Enterprises

The present condition of Nepalese public enterprises is piteous. Most of the PEs have been consolidated, Liquidated or privatized because of their poor financial performance. To get acquainted with the general idea on the performance manufacturing public enterprises of the country the following figures have been extracted from economic survey 2063/2064, Ministry of Finance.

Table No. 1

Performance of Public Enterprises of Nepal

Comparative Net Profit/Loss

(In Rs. Million)

S.N.	Name of government sector	2061/62	2062/63	2063/64
1	Industrial sector	(2824.00)	(3294.00)	(2824.00)
2	Traditional sector	(288905.00)	(3467.00)	(288905.00)
3	Service sector	(112.00)	2783.00	(112.00)
4	Social sector	102.00	(27.00)	102.00
5	Public utility sector	5995.00	16867.00	5995.00
6	Financial sector	(8073.00)	(63981.00)	(8073.00)
7	Total Profit	28971.00	34052.00	28971.00
8	Total loss	(57788.00)	(90737.00)	(57788.00)
9	Net profit/loss	(28817.00)	(56685.00)	(28817.00)

Source: Economic Survey 2063/64, Ministry of Finance Nepal

Needless to say, the figure indicates disappointing situation of manufacturing PEs. It shows loss in all the fiscal year with no profit.

With an objective to accelerate the momentum of economic and social development of the country, HMG operated various public enterprises (PEs) by investing huge amount of resources. Those PEs were established when private sector was not forthcoming to cater to the basis need and delivering the services to the people in the past several PEs were established under the foreign assistance also. However, weak financial position and unsatisfactory financial performance have made the huge government investment unproductive and the return investment is in diminishing trend." (HMG Economic Survey, FY2063/064). The latest HMG economic survey, FY 2064/65 states that these enterprises have failed to perform a sound in a business manner. As a result, their financial position continues to become weaker and returns to government investment also diminish."

These bitter facts urged this researcher to find out the reality behind down falling trend of financial performance of these public manufacturing enterprises, what could be the underlying deficiency, which is hindering the financial success of public enterprises? Can not a public enterprises privatized, shortcoming gradually with draws. Obviously there a number of problem for this poor situation of the public enterprise's. Corrupt attitudes of the authorities in the PEs, interference of politically infected bureaucracy are no doubt the major causes; and poor financial performance is no doubt the effect. The current upsetting situation is obviously because of weak financial performance, or rather a haphazard financial decision of the public enterprises. However, such poor performances are to be verified on the grounds of globally accepted financial and statistical tools.

1.4 Cash Management (A Challenging Task)

The task of cash management is one of the contradictory functions in financial literature. As stated by MY Khan and PK Jain (1986) the basic objectives of a business firm being: (a) to meet the cash payment schedule, and (b) to minimize funds committed to cash balances; these two aspects are mutually contradictory and the task of cash management is to reconcile them. So, a balance between the two has to be sought where a firm has optimum level of cash balance. And thus the very nature of cash management is challenging and problematic.

1.5 Inefficient Cash Management Practice in PEs

Cash management has been the most intricate and challenging area of modern corporate finance as much as the management always face a trade off between the liquidity and profitability of the firm. Though most of the enterprises in Nepal have been well recognized the importance of proper cash management, they are still facing the problem of cash management in the public enterprises of Nepal is primarily based on the traditional practices, lacking in a scientific approach. By and large most enterprises had periodic accumulation of surplus cash and corresponding cash shortage from time to time. Hewer more of the enterprises considered the implications of holding idle cash balance and few took in the account the potential benefit of investing surplus in marketable securities. A Nepalese public enterprise never thought of the sources of current assets i.e. cash and usually depends on HMG for it. In Nepalese firm's context, the theory of cash management has not been much effectively applied in practice. Term such as cash flow analysis, cash budget, forecasting of cash requirements, credit discount policy, cash discount policy, etc. have never seriously

considered. Traditional approaches are still dominant in Nepalese public enterprises and are reluctant to adopt modern techniques. One of the major causes involved in the down falling trend of public and private companies in Nepal is obviously the mismanagement of cash balances. So the cash management or the determination of optimum level of cash for day to day use or for the use in the short run has been one of the sophisticated forecasting techniques is not the basic requirement of cash budgeting. The inherent quality of a cash budget depends on its treatment as a formal document. The cash budget prepared at the beginning of a fiscal year, if untouched thereafter can be of no use, even if it was prepared with very sophisticated forecasting tools (Bajracharya, 1990:112-114).

In order to remedy the current problem of cash management in public enterprises, studies and researches are to be conducted to find out the reality. So this study would be one of those efforts and thus it will examine the cash management practices being employed in Dairy Development Corporation, one of the leading public enterprises in Nepal.

1.6 Introduction of Dairy Development Corporation

A first year plan, stressed upon the need of developing modern dairy industry in public sector. The dairy development commission was formed in 1955 A.D. The dairy development section was established in the year 2010/011. As the demand of milk and milk products were gradually increasing. It was left necessary improvement of dairy development center. As a result of dairy development center was at Bhotahity on the same year 2010/011. This center started to distribute the collected milk with processed to the urban people in Kathmandu. The demand of milk and milk product have been increasing day by day, the dairy plant become necessary. Due to the inadequacy of space this center was shifted to Lainchour in the space this center dairy development commission was constituted to guide the dairy development commission was constituted to guide the dairy development section. At that time dairy expert were provided by Seiss association for technical assistance. The dairy development commission had been converted into dairy development board in 2009. Ultimately in Act 2021.

The main objectives of the corporation are to provide guaranteed market and fair price to the rural milk producers and to supply hygienic pasteurized milk and there standard dairy products to the urban consumers. Prior to the establishment of the corporation a separate dairy development board was constituted to carry out the task of dairy development in wider scale. The dairy development activities in Nepal started in Tusal village of Kavre

District in B.S. 2009 (1952) on experimental basis with a small scale milk processing plant under the department of agriculture. In the year B.S. 2010/2011 at the initiative of dairy development board, the central dairy plant was established and starts milk collection processing and marketing activities from the year B.S. 2014 (1957).

DDC is totally owned by government. It is also financing supported by the foreign grants and loans at a rate of interest. World food program (WFP) has been supporting DDC since 2030/31 (1973/074). Newzealand and Danish Government had contributed towards the establishment or milk processing plants. At present USAID and Danish government are the major donors.

Dairy Development Corporation provides qualitative milk and milk product to the consumer at National level. The demand of milk is increasing day by day because of high quality and hygiene. DDC buys milk at a reasonable price. Regular basis and supplies milk with safe market for their milk. Before established dairy development corporation, there is no potential market to the farmer. To provide reasonable price to the milk producers of rural side an also availability of pasteurized milk the consumers to fulfill these objectives the DDC has been working from it's set up. The condition of farmers will improve if the gate adequate price of milk at one side of the DDC will continues is efforts to supply increasing demand of milk to the consumers of urban area. The demand of milk to the consumers of urban area. The demand of milk is increasing order because of rapid increase in population, the DDC is trying to collect milk occupation attractive the DDC has expended its branch offices indifferent parts of the country such as Kathmandu, Hetauda, Pokhara, Lumbini and so on.

The objectives of extended branch offices and projects are to provide suitable price of milk producers of the people of rural area and also make then easier to sell milk. There should be co-ordination between milk production and the demand of milk due to backward economy. Because of the continue efforts of DDC has easier to bring increase in milk production in rural.

Milk Collection Program

DDC has been collecting cow, buffalo and chauri milk from 29 districts. Milk is collected through the farmers owned, Milk producers Cooperative Societies (MPCS). Its present milk collection network has spread from Panchthar in the East to Surkhet in the West. Hetauda Milk Supply Scheme also supports KMSS & BMSS by supplying excess milk

above their local requirement. Biratnagar Milk Supply Scheme manufactures skimmed milk powder from its excess milk and milk excess from other supply schemes. DDC has been playing a special role in contributing to uplift the economic status of rural farmers. Thus dairy has been recognized as an effective tool for poverty alleviation. In the Fiscal Year 2062/2063 (2005/2006) DDC purchased about (approx.) 1,50,000 liters of milk per day from the farmers.

Products of DDC

Dairy Development Corporation, a leading manufacturer of standardized pasteurized milk, full cream milk, sterilized flavoured milk (DDC Fresh), cream, yoghurt, ice-cream, yak cheese, cheese spread, kanchan cheese, mozzarella (pizza) cheese, processed cheese, paneer, ghee, yak ghee, butter, lalmohan, rasbari, peda, gudpak and Jeera butter milk.

Production

DDC produce Milk and Milk Related products.

The total production of milk and milk products in the Fiscal Year 2062/2063 and 2063/2064 is as under:

Particulars	Quantity (In M. Tons) 2062/2063	Quantity (In M. Tons) 2063/2064
Milk Collection	54120	53684
Milk Production	67614	62663
Butter Production	1232	1125
Dairy Ghee/Yak Ghee	665	803.35
Yoghurt	1286	1712
Cheese	169	166
Ice-cream	38	54.58
Paneer	61	78
Skimmed Milk Powder	548	505
Raswari (Sweets) in Can	-	89
Lalmohan(Sweets) in Can	-	82
DDC Fresh	-	90

Source: http://www.kmss.com.np/production.html

1.7 Existing Cash Management Practices in DDC

DDC does not prepare actual typical name of cash budget separately but the fundamental concept of cash budget has been undertaken only inside the annual budget informally. This is used to prepare in annual basis under annual budget as per the views of those respondents. In this way because of the absence of actual cash budget, it is quite complex to know about the actual amount of cash inflow and outflow during the certain period. Perhaps DDC does not follow the appropriate method to forecast the cash requirement in DDC. This is not effective. Similarly cash planning also plays the vital role in the organization for proper cash management. Thus, for making such planning, outside experienced agencies are not appointed since its establishment. In addition to this accountants are employed in DDC have been helping for cash planning that entirely depends upon their speculation for the future.

The sales trend of DDC is only in cash, in other words, besides cash sales there is a very few amount of credit sales, which is the lowest amount in comparison to the huge amount of cash sales. However, DDC has no definite policy about credit sales. So, very few amounts of credit sales have been found that indicates better signal of DDC. It has an uniform terms of credit for all customers and the period of credit allowed to all those customer is net 30 days. That is also in favor of DDC. Next thing is that it has no system of advance payment from customer for credit sales but in place of this system, perhaps securities are being deposited in the DDC for 1/1 month taken from customers for credit. In addition to this, it has no policy of charging interest on delayed payments from customers. The time taken in collecting over due accounts beyond the period of credit allowed within 7 days. Similarly, it does not offer cash discount to the customer for early payments. Mostly, DDC has not strict policy to undertake an analysis of outstanding debtors in terms of age of outstanding. The actions i.e. only remembering method in place of other strong action is only taken by this corporation to minimize delayed payments of account receivables.

Mostly DDC rarely takes any advantage of cash discount offered by the supplier and supplier provides 15 days with respect to delay in payments to the DDC. One thing is better which is in favor o DDC that, this corporation is really capable to discharge all short-term liabilities and loans on due dates and next this is than perhaps DDC does not face any shortage of cash unto now. In spite of there is rare chances of incurring costs and

losses which DDC associates with cash shortage but the proper cash management practices in DDC is not so effective due to incurring losses since many years.

DDC has some extent of further practices of holding excess cash and bank balance in current accounts in excess of requirement and having a little practice of checking the adequacy of cash balance as per the requirement of DDC, but there is not found of investing excess cash on profitable opportunity for short term period. Similarly determining the minimum level of cash balance is the important part of efficient cash management. There are different techniques to determine certain minimum level of cash balance. From which DDC take a little bit helps by means of cash budget as a nominal approach for determining minimum level of cash balance. The next thing regarding cash management is that DDC has never got any advice from banker/outside agencies with regards to the opportunity so investing its excess cash. Similarly DDC uses specially mail transfer for moving funds and it has no exercised "Zero-balance" account system with it's bank account. The strongest point of DDC concerning efficient cash management system id that DDC prepares financial performance report timely. And at last, DDC utilizes its excess cash by depositing only in bank accounts with obtaining few interests and does not pay attention towards investing excess cash on profitable sector.

In this way, this is the actual existing figure of cash management practices being found inside DDC, according to the information provided by the authorized officer of DDC concerning to financial activities

1.8 Present Situation of DDC

DDC was established in 1969 under the corporate act 2021 B.S. and has been providing its services all over the country. However the service provided by DDC could not fulfill the actual supply of the demand of dairy product in the market. A few investors need that there is need of similar type of organization in the private sector, which helps to fulfill the need of dairy product.

The main objective of DDC is to provide guaranteed market and fair price to the rural milk producer and supply hygienic pasteurized milk and other dairy product to the urban consumers. Due to public enterprise, its main object is to fulfill the social responsibility & benefits rather than earning profit.

Through, DDC was established about 35 years ago, is still in adolescence, with respect to it's financial standing, milk collection perverting and in all work performance, because of it's continuous unsuccessfulness to generate profit for many years. From fiscal year 2057/58 DDC is reducing its losses. In fiscal year 20559/60 DDC has generated profit. It shows a positive trend and we can expect the betterment of DDC in future too.

Main Objectives of DDC

1. To provide a guarantees market for milk to the rural farmers with fair price.

2. Supply pasteurized milk and milk products to urban consumers.

3. Development and organized milk collection system to meet increasing demand for pasteurized milk and milk products.

4. Development an organized marketing system for milk products in urban area.

5. Bring improvement in production; collection, processing, preserving sales and distribution of milk and milk production in modern and scientific way, while keeping in view the goals of promoting national welfare maintaining production incentive to farmers and preserving consumers health.

For the fulfillment of this objective of DDC has implemented various programs to develop numerous milk collection centers, milk producer organization and billing in the various rural areas.

2. Statement of the Problem

DDC, one of the oldest public enterprises is not the exception. Despite of government support, sufficient foreign loan and almost monopoly in market could not do better. They are having the problem of liquidity and lack of capital fund for expansion.

Keeping in view of the above and other related problem, proposed study will concentrate as following points.

1. Liquidity problem faced by DDC.

2. Practicality of cash management of DDC.

3. Other problem related with profitability of DDC.

3. Focus of the Study

As stated in the tenth plan the financial situation of the government corporation as a matter of fact are in a very poor shape. Apart from other measures required to improve their performance, public enterprises may be expected to have better prospects with effective cash management.

The ultimate goal of developing countries like Nepal is the rapid economic development for the various problems created by our population. Being a developing country, sources of public revenue are very limited in Nepal. Revenue structure of Nepal mostly depends on the foreign assistance and loan but it is unfavorable to the country. Domestic recourses must be made reliable sources to keep the economic balance. It is considered as the most effective and reliable instrument for balanced economic development and maintain economic stability. The public enterprises so are expected to play the crucial role in the Nepalese economy with effective cash management.

The focus of the study has been made on a critical examination of cash management technique of Dairy Development Corporation. The period covered by the study is ten year from 2054/55 to 2063/64. The study of cash management in Dairy Development Corporation Ltd. is the first of its kind.

4. Objective of the Study

The present study has been conducted to examine cash management of DDC.
Besides cash management of DDC will try to highlight other liquidity or current assets rather than cost following are the secondary objectives of the study.

1. To study the overall scenario of DDC.
2. To examine the liquidity position of DDC.
3. To examine the existing cash management practices in DDC.
4. To recommend viable suggestion on the basis of above analysis to improve the existing cash management for coming future.

5. Significance of the Study

Inventory management is one of the important any manufacturing companies without effective and efficient inventory management system no manufacturing company can achieve their goal. Proper inventory management helps to maximize the profitability and

do not the inventories. A company should maintain adequate raw materials, finished goods. If slightly changes in the cost of materials it affects the profitability. So the company should keep adequate stock of the company by keeping adequate inventory the company able to supply whatever the demand.

Nepal, an under industrialized country is still using traditional technique in purchasing of inventory. To have sound achievement the company should apply modern tools and techniques.

The study is needed for effective inventory management in DDC and to see the impact in the profitability and find out how much money should be invested in inventory. What is the present situation of inventory management and so on? I hope it will play the beneficial role to both company and the general public.

6. Limitation of the Study

The scope of the study is subject to various limitations, which are as follows:

1   DDC has been chosen as sample from among various manufacturing public enterprises. Hence, the finding couldn't be extensively generalized to all the existing public enterprises of the country.

2   Time constraints together with unavailability of secondary data on time could limit the details and depth of the study.

3   The study is mainly dependent on secondary data covering data of past ten years only, however and wherever applicable, data have been gathered prior to last ten years.

4   This study is limited to cash management of DDC.

5   Unavailability of secondary data is the other limitation, which could limit the scope of the study. Noteworthy fact is that DDC audited financial statements for FY 2059/60 only at the end of 2061/62. The company does not maintain trial balances, neither it prepare cash flow statements.

6   The study assumes that the impact of political factors of the country such as change in government, any sort of political involvement (direct or indirect) in the firm if prevalent, has insignificant or no effect upon the financial decisions.

7   Financial ration analysis and statistical tools have been used to analyze quantitatively.

7. Organization of the Study

This study has been broadly divided into 5 chapters which are as follows:

Chapter 1 : The introduction chapter covers background of the study, statement of problem, focus and need of the study, objectives of the study and limitations of the study.

Chapter 2 : The second chapter deals with the review of literature relating to cash management, which includes the reviews of relating previous writing and studies to find the existing gap, so past studies in the cash management function as well as the public enterprises has been reviewed to find out what new can be publication and newspaper have been included.

Chapter 3 : It deals with the "research Methodology". This chapter gives the information about the statistical tools that are used to analyze the research. And it also reveals about primary and secondary data.

Chapter 4 : Data presentation and analysis' where secondary and primary data are analyzed and major findings of the study are also included. It consists of testing of hypothesis, analysis of questionnaire and presents the data in graph and table.

Chapter 5 : It covers the summary, conclusion and suitable recommendation.

CHAPTER - II

REVIEW OF LITERATURE

2.1 Conceptual Framework

2.1.1 General Concept of Profit Planning

Profit planning is the key point of management. Without proper planning profit will not just happen. So every enterprise should systematically plan for profits in a proper way. Various functional budgets are the basic tools for proper planning of profit and control over them.

R.M. Srivastava,and Mohan, Radhey, "**Budgeting PPC**.", Page No. 170, Profit planning is a systemic and formalized approach of determining the effect of management's plans upon the company's profitability. In order to undertake planning for profit the financial manager makes projections of outflows and inflows of an enterprise are people, capital and materials and they are generally cost incurring factors. On the other hand, the planned outflows are products, services and social contributions that the enterprise generates. Having projected inflows and outflows, the management manipulates the combinations of inflows and planned outflows so that the ultimate goal of the enterprise is reached.

Dr S.P. Gupta "*Management Accounting*" (Agra Sahitya Bhawan 1992) P. 521 "Profit planning in fact is a managerial technique and a profit plan is such a written plan, in which all aspects of business operations with respect to a definite future period are included. It is a formal statement of policy, plan, objective and goal established by the top management in respect of gone future period. It is a predetermined detailed plan of action developed and distributed as a guide to current operations and as a partial basis for the subsequent evaluations of performance. Thus, we can say that profit planning is a tool which may be used the management in planning the future course of actions and in controlling the actual performance." Profit planning is a decisional tool involves establishment of specific goals for the enterprise, development of long range profit plans and short range annual profit plans which are prepared after integrating sales plan, production plan administrative expenses budget, etc. Profit planning concepts are:-

a) Profit planning enquires major planning decisions by management.

b) Profit planning entails pervasive management controls activities, and

c) Profit planning recognizes many of the critical behavioral implication throughout the organization.

Welch, Glenn A, Hilton, Ranald W. Gordon Paul N, "*Budgeting PPC*" (5th edition) page 30-31. Profit planning is one of the more important approaches that have been developed to facilitative effective performance of the management process. The concepts and techniques of profit planning have wide application in individual business enterprises, government units, charitable organizations, and virtually all group endeavors. Profit planning is a comprehensive statement of intentions expressed in financial terms, for the operation of a firm of both short and long term period. It is a plan of a firm's expectation and is used basis for measuring the actual performance of managers and their units.

Some complementary plans for the purpose of profit planning and control are described detail in below.

I. Operating Budget

Operating budget relates to the physical activities/ operation of a firm such as sales, production, purchasing, debtors' collection and creditors payment schedules. In specific term an operating budget has the following term.

i. Sales Budget

A sales budget is a detailed schedule of expected sales for coming period. It is usually expressed in both amounts and units. Once the sales budget has been set, a decision can be made on the level of production that will be needed to support sales and the production budget can be set well. The sales budget is the starting point in preparing the master budget. The sales budget is starting point in preparing the master budget. The sales budget is constructed by multiplying the expected sales in units by the sales price.

Generally sales budget is accompanied by computation of expected cash receipt for forthcoming budget period. This computation is needed to assist in preparing the cash budget for the year. Expected cash receipts are composed of collections on sales made in the current budget period. (Garrison, 1985:306)

Sales budget from sales forecast. A sales forecast encompasses potential sales for the entire industry as well as potential sales for the firm preparing the forecast. Factors that are considered in making a sales forecast include:

     a. Past experience in terms of sales volume.

     b. Prospective pricing policy.

     c. Unfilled order backlogs.

     d. Market research studies.

     e. General economic condition.

     f. Industry economic condition.

     g. Movement of economic indicators such as gross national product, employment prices, and personnel income.

     h. Advertising and product promotion industry completion

     i. Market share

Sales results from prior years are used as a starting point in preparing a sales forecast.

ii. The Production Budget

After the sales budgets has been prepared, the production requirements for the forth coming budget period can be determined and organized in the form of production budget sufficient goods will have to be available to meet sales need and proved for the desired ending inventory. The reminder will have to be produced. Thus, Production need can be determined by adding budgeted sales units to the desired ending inventory and deducting by adding budgeted sales units to the desired ending inventory and deducting the beginning from the total. (Horn green, Foster and Dater, 1999: 182)

iii. Purchase Budget

In case of Merchandising firm, instead of preparing production budget it would prepare a merchandise purchase budget showing the amount of goods to be purchased from its suppliers during the period. The merchandise purchase budget is in the same basic format as the production budget, except that it shows goods to be purchased rather than goods to be produced.

iv. Direct Material Budget

After production needs have been computed, a direct material budget should be prepared to show the materials that will be required in the production process. Sufficient raw

materials will have to be available to meet production needs and to provide for the desired ending raw material inventory for the budget period part of this raw materials requirement will already exist in the form of a beginning raw material inventory. The remainder will have to be purchased from supplier.

v. Direct Labor Budget

The direct labor budget is also developed from the production budget. Direct labor requirements must be computer so that the company will know weather sufficient labor time is available to meet production needs. Just knowing in advance, the company can develop plan to adjust the labor force as the situation may require. Direct labor requirement can be computed multiplying product to be produced by each period by the number of direct labor hours required to produce a single unit. Many different types of labor may be involved. If so, then computation should be by type of labor needs. The hours of direct labor time resulting from these computations can then be multiplied by the direct labor cost per hour to obtain budgeted total direct labor cost.

vi. The Manufacturing Overhead Budget

The manufacturing overhead budget provides a schedule of all costs of production other than direct material and direct labor. These costs should be broken down by cost behavior for budgeting purposes and a predetermined overhead rate developed. This rate will be used to apply manufacturing overhead to units of product throughout the budget period.

vii.The Selling and Administrative Overhead

The selling and administrative expenses overhead budget contains a listing of anticipated expenses for the budget period that will be incurred in areas other than manufacturing the budget will be made up of many smaller, individual budgets submitted by various persons having responsibility for cost control I selling and administrative matters. If the number of expense items is very large, separate budget may be needed for the selling administrative functions.

II.   Financial Budgets

Financial budgets are concerned with expected cash receipts/ disbursement financial position and results of operations, the component of financial budgets are:

i. The Budget Income Statement

The budgeted income statement is one of the key schedules in the budget process. It is the document that tells how profitable operations are anticipated to be in the forth coming period. It has been prepared; it stands as benchmark against which subsequent company performance can be measured. (Garrison, 1985:313)

ii. The Cash Budget

Cash budget is the detail showing cash receipt, cash disbursement and the balance cash. The cash budget is composed of four major sections:
- The Receipt sections
- The disbursement sections
- The cash excess or deficiency section
- The financing section

The receipt section consists of the opening balance of cash added to whatever is expected in the way of cash receipts during the budget period. The major source of receipts will be from sales. The disbursement section consists of cash payment that is planned for the budget period. These payments include raw material purchases, direct labor payments, manufacturing overhead cost and so on. Other cash disbursements are income tax, Capital equipment purchases, dividend payment and so on.

The cash excess and deficiency section consists of the difference between the cash receipt section totals and the cash disbursement section totals. If deficiency exists the company will need to arrange for borrowed funds from its bank. If an excess exists, funds borrowed in previous period can be repaid or the idle funds can be placed in short-term investment.

The financing section provides a detailed account of the borrowings and repayments projected to take place during the budget periods. It also includes a detail of interest payment that will due on money borrowed.

2.1.2 Cash Management under Profit Planning and Control

Efficient and optimal cash flow management is important to all firms. Financial managers working with banks have developed cash gathering and disbursing technique, which speed up the availability of funds and thus enable the firm to put its cash to work sooner.

Fred Weston & E.F. Brigham **"Essentials of Managerial Finance"**, 1981 P. 428 "Cash is a "non earning " assets in the sense that, although it is needed it is needed to pay for labor and raw materials, to buy fixed assets, to pay taxes to service debt, to pay dividends and so on, cash itself earns no interest. Thus the goal of cash management is to conduct business. Firm holding cash for two primary purposes, they are."

I   Transaction motives

II   Compensation to banks for providing loans and services.

Glenn A Welch, Ronald W Hilton, Paul N. Gorden, 1993, P. 433-434 "Planning cash inflows and outflows gives the planned beginning and ending cash position for the budget period. Planning the cash inflows and outflows will indicate (i) the need for financing probable cash deficits or (ii) the need for investment probable cash to profitable use. The cash budget is directly related to other plans such as the expenses budgets and the capital expenditure budget. Never, the less planning and control of the activities do not automatically take care of cash position. The cash budget focuses exclusively on the amounts and timing of cash inflows and outflows. The primary purposes of cash budget are:

i.   Give the probable cash position at the end of each period as a result of planned operation.

ii.   Identify cash excesses or shortage by time period.

iii.   Establish the need for financing and or the availability of idle cash for investments.

iv.   Coordinate of cash with (i) total working capital (ii) sales revenue (iii) expenses (iv) Investment and (v) liabilities.

Most companies should develop both long-term and short-term plan about their cash flows. The short–term cash budget is included in annual profit plan. A cash budget basically includes two parts (i) the planned cash receipt (inflow) and the planned cash disbursements (outflows).

Techniques for Improving Cash Flows:

Planning the cash flows of a company should include consideration of how to improve cash flows, improving cash flow basically involves increasing the amount of focus on (a) cash collection process to speed up cash collections (b) the cash payment policies for the

immediate investment of idle cash balance to maximize interest earnings. Some of the ways often used to improve the efficiency of the cash collection process are as follows.

i.   Review the lag date of sales of goods and services on credit to mailing of (a) invoices and (b) the first billing.

ii. If cash discounts are given to customers for early cash collection and whether the discounts too high too low. Also, monitor whether the discount policy is being violated in the company.

iii. Consider ways it decrease the time between the data that customers pay by cheque and the cash is available for use in the company's account.

iv. Review of credit granting process to determine whether bad credit risks are being screened out.

v.   Some of the ways often to improve the efficiency of the cash payment process are as follows:

   a.   Make all the payment on the latest non- penalty days, do not pay early.

   b.   Make all payment by cheque preferable on Friday to maximize float in favor of the company.

   c.   Take all cash discount allowed for early payment.

   d.   Establish policies, and payment process, to minimize the possibility of fraudulent payment by company employees.

   e.   Establish a policy of no cash advance (to both outside and inside i.e. employees)

2.1.3 Cash Budget Under Profit Planning and Control

The planning and controlling of the cash inflows, the cash outflows, and related financing are important in all enterprise. Cash budgeting an effective way to plan and control the cash flows, assess the cash needs, and effectively used excess cash. A cash budget shows the planned cash inflows, outflows and ending position by interim periods for a specific time span. Most companies should develop both long term and short term plan about their cash flows. The short term budget basically includes two parts:

   i. The planned cash receipts (inflow) and
   ii. The planned cash disbursement (outflow)

The budget focuses exclusively on the amounts and timing of cash inflows and outflows. In contrasts, the other focuses exclusively on timing of all transaction both cash and non-cash.

Glenn A Welch, Ronald W Hilton, Paul N. Gorden, 1993, P.433-434."For the purpose of PPC, the cash budgets are developed under three kinds of time horizon. They are the cash budgets are developed under three kinds of time horizon. They are."

I. Long Term Time Horizon

The long-term time horizon should be consistent with the time dimensions of the (a) strategic long-term profit plan, and (b) Capital expenditure project. Planning long-range cash inflows (primarily from sales, services and financing), and long-range cash out flows (primarily for expenses, capital expenditures, and payment of debt) is fundamental to sound financial decisions and to the optimum use of cash and long-term credit.

Long term or strategic cash usually involve in analyze of future market potentials, which was be built up from a basis foundation such as populations, changes state of economy, industry projections and finally company objectives. Long term managerial strategies would affect such areas as long term pricing policy, development of new products and innovations of present products, new directions in marketing efforts, expansion or change in distribution changes and cost patterns.

II. Short Term Time Horizon

The short-term cash horizon should be consistent with the tactical shot term profit plan. Cash planning for this time horizon requires detailed plan for cash inflows and outflows that are directly related to the annual profit plan. E.g. cash from sales and cash to pay for new equipments.

Short term or tactical cash budgets are prepared to plan sales for 12 months. For the first quarter, at the end of each month or quarter though out the year, the cash plan is restudied and revised by adding a period in the future and dropping the period just ended. Thus short term cash budgets usually subject to review and revision on a quarterly basis, this budgets are usually developed interns cash budget includes a details plan for each major

expenditure. Short-term cash budgets must also be structured by marketing responsibility for planning and control process.

III. Immediate Time Horizon

The immediate time horizon is used in many enterprises to assess, to control, management cash inflows and outflows often on a continuation daily basis. Its primary focus is to ensure cash shortage and excessive cash balances do not occur.

2.1.4 Meaning of Cash Management

The term 'cash management' is concerned with the management of current assets and current liabilities of the business, which is necessary for day-to-day operation. Ram M. Saksena, "Towards more *Efficient Cash Management*" Nepal journal of management, quarterly no. 5, Kathmandu 1974, P.31 "Cash Management is concerned with the decision regarding the short-term funds influencing overall profitability and risk involving in the firm. The management of cash has been regarded as one of the conditioning factors in the decision-making issues." It is no doubt, very difficult to point out as to how much cash id needed by a particular company, but it is very essential to analyze and find out the solution to make an efficient use of fund for maximizing the risk of loss to attain profit objectives. Cash is the money, which the firm can disburse immediately with out any restriction. The term cash includes coins currency and cheque held by the firm and balance in its bank accounts. Sometime near cash items, such as marketable securities is also included in cash.

Cash the most liquid asset, is of vital importance to the daily operations of business firm. Raymond P. Kent "*Corporate Financial Management*," Richard D. Irwin, Inc. "Cash is both the beginning and the end of the working capital cycle-cash, inventories, receivable and cash. Its effective management is the key determinant of efficient working capital management. Cash like the blood stream in the human body gives vitality and strength to a business enterprise. The steady and healthy circulation of cash through out the entire business operation is the business solvency." 'According to J.M. Keyns 'it is cash, which keeps a business going. Hence, every enterprise has to hold necessary cash for its existence. In a business firm ultimately, a transaction results in either an inflow or an outflow of cash. In an efficient managed business, static cash balance situation generally does not exist. Adequate supply of cash is necessary to meet the requirement of the business. Its shortage may stop the business operations and may degenerate a firm into a

state of technical insolvency and even of liquidation. Through idle cash is sterile; its retention is not without cost. Holding of cash balance has an implicit cost in from of its opportunity cost. 'The highest the level of idle cash the greater is the cost of holding it in the manner of loss of interest, which could have been eared either by investing it and securities or by reducing the burden of interest charges by paying off the loans taken previously. If the level of cash balance is more than the desired level with the firm, it shows mismanagement of funds. Therefore, for its smooth running and maximum profitability proper and effective cash management in a business is of paramount importance.

2.1.5 Efficiency of Cash Management

Cash use a number of functions as it makes payment possible. It servers to meet emergencies, but if cash is kept idle it contributes directly nothing to the earning of the corporation. As such corporation must adopt such a policy that makes optimum cash management possible. The financial manager of the corporation should try to minimize the corporations holding of cash wide still maintaining enough to insure payment of obligation. Dr. Manohar Krishna Shrestha, *Working Capital Management*." "For improving the efficiency of cash management effective of cash management method of collection and disbursement should be adopted. Some methods for efficiency of cash management are briefly described below."

I. Speedy Cash Collection of Useable Cash

A firm can conserve cash and reduce its requirement for cash balance if it can speed up its cash collection. Reducing the lag for gap between the times a customer pays his bill can accelerate cash collection and the time the cheque is collected and funds become available for use. Within this time gap, the delay is caused by the mailing time. The amounts of cheque sent by customers but not yet collected are called deposit float. The greater the deposit floats, the longer the time taken in converting cheque into usable funds. There are mainly two techniques, which can be used to save mailing and processing time concentration banking, lock box system. The process can be presented by the following picture.

Figure No. 2.1

Speedy Cash Collection of Useable Cash

 Recipient sees delays as collection float.

[Source: Brealey Mayers *"Principles of Corporation Finance"*, Fourth Edition P.N., 793.]

II. Concentration Banking

Concentration banking is a system of operating through number of collection centers, instead of a single collection center centralized at the firm head office. In this system the firm will have a large number of bank accounts operated in the area where the firm its branches. All branches may not have the collection centers. The collection centers will be required to collect cheque from customers and deposit them in their local bank accounts. The collection center will transfer funds above some predetermined minimum to a control generally at the firm's head office, each day. A concentration bank is one where the firm has a major bank account usually the disbursement.

III.   Slowing Disbursement

Apart from speedy collection of account receivable the operation cash requirement can be reduce by slow disbursement of account payable. It may be recalled that a basic strategy of cash management is account payable. It may be recalled that a basic strategy of cash

management is to delay payment as long as possible without impairing the credit rating of the firm. Infect slow disbursement represents a source of fund requiring no interest payments. There are some technique to delay payment is: avoidance of early payment centralized disbursement, floats and accruable. Dr. Manohar Krishna Shrestha, *Working Capital Management*." "Quick collection and slow disbursement accomplish the corporation with adequate cash in hand for longer periods. Effective control of disbursement of cash results in a faster turnover of cash." James C. Van Horne, **"Corporate Financial Management"** Prentice Hall of India Pvt.Ltd New Delhi, 1974, P. 426 "Whereas the underlying objectives of collection are maximum acceralation, the objectives is disbursements are to slow them down as much as possible."

IV. Cash Velocity

Efficiency in the use of cash depends upon the cash velocity i.e. level of cash over a period of time.

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

V. Synchronized Cash Flows

Situation in which inflow coincides with out flows, there by permitting a firm to hold transaction balance to a minimum.

VI. Using Float

Cheque written by a firm and not deducted from bank records until they are actually received by bank, possible a matter of several days the lag between the time the cheque is written until the time the bank receives it is known as float.

VII. Transferring Funds

There are two principle method-wire transfers and electronic depository transfer cheques. With a wire transfer, funds are immediately transferred from bank to another. With an electronic depository transfer cheque (DTC) arrangement in the movements of funds, an electronic cheque image is processed through an automatic clearing house. The funds become available on business day later. From small transfers, a wire transfer may be too costly.

VIII. Minimum Cash Balance

Corporations are required to keep a minimum cash balance requirement of a bank either for the service it render or in consideration of a lending arrangement.

IX. Overdraft System

A system where by depositors may write cheques in excess of their balances with their banks automatically extend loans to cover the shortage. Most of the foreign countries use overdraft system.

X. Transferring Fund

A transferring fund is a system for moving funds among accounts at different banks. The main transfer mechanisms are depository transfer cheques (DTC), electronic depository transfer cheques (EDTC) and wire transfers.

2.1.6 Different Techniques of Cash Management

I. Cash Planning

Cash planning can help anticipate future cash flows and needs of the firm and reduces the possibility of the idle cash balance and cash deficits.I.M. Pandey, **"*Financial Management*"** Vikas Publishing House Pvt. Ltd. P.843. "Cash planning is a technique to plan for and control the use of cash." The forecast may be based on the present operation 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. It depends upon the size of the firm and philosophy of management.

II. Cash Budget

Cash budget is the most significant device to plan for and control cash receipts and payment. Ibid." A cash budget is a summary statement of the firm expected cash inflows and outflows over a projected time period." This information helps the financing of these needs and exercise control over the cash and liquidity of the firm.

The time horizon of cash budget may differ from firm. A firm whose business is affected by seasonal variations may prepare monthly cash budget. Daily or weekly cash budget should be

prepared from determining cash requirements it cash flows show extreme fluctuation cash budget for the longer interval may be prepared of cash flows are relatively stable.

III. Short term Cash forecasting

There are most two common used methods of short term cash forecasting are as follows:

i. Receipt and Disbursement Forecast

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

ii. Adjusted Net Income Method

This method cash forecasting involves the tracing of working capital flows. Sometime it is also called the sources and uses approach. Two objectives if the adjusted net income approaches are to project the company's need for cash at some future date and to show whether the company can generate this money internally or not, how much will gave to either borrow or rise in capital market. The preparing the adjusted net income forecast item such as net income, depreciation, taxes, dividends etc, can easily be determined from the company's annual operating budget.

IV. Long Term Cash Forecasting

Long term cash forecasting are prepares to give an idle of the company's financial requirement of distant future. Once a company has developed long term cash forecast, it can be used to evaluate the impact of say new product development on the firm financials conditions three, five or more years in future. The major uses of the long term cash forecast are the company's future financials needs, especially for IT working capital requirements, to evaluate proposed capital projects and it help to improve corporate planning long term cash forecasting not only reflects more accurately the impact of any recent acquisitions but also foreshadows financing problems these new additional may post for the company.

2.1.7   Determining the Optimum Cash Balance

Financial Manager Responsibilities are to maintain a sound liquidity position of the firm. So, that due may be settled in time. The firms need cash not only to purchase raw materials

and pay wages but also for payment of dividend, interest, taxes and countless other purposes. The test of liquidity is really the availability of cash to meet the firm obligations when they become due. 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. A trade off between risk and return influences such a decision. If the firms maintain the small cash balance, its liquidity positions become weak and suffers from a capacity of cash to make payment. But investing released funds in some profitable opportunities can attain a higher profitability. If the firms maintain the high level of cash balance. it will have a sound liquidity position but forego the opportunity to earn interests. Thus the firm should maintain and optimum cash balance to find out the optimum cash balance the transaction cost and the risk of too small a balanced should be matched with the opportunity cost of too large a balance. The figure shows this trade-off graphically.

Figure No. 2.2

Optimum Cash Balance

If the firm maintains larger cash balances its transaction costs would decline, but the opportunity costs would increase.

At point 'E' the sum of the two costs is minimum. This is the point of optimum cash balance, which a firm should sack to achieve.

2.1.8 Cash Management Models

There are different types of analytical model for cash management.

I)   Baumol Model

II) Miller-Orr model

III) Orgler's model

I. Baumol Model

Baumol W. J. the transaction demand for cash. An inventory theoretic approach quarterly journal of economic LXV (November 1952 P.P.545-556) (M.Y. Khan & P.K.Jain (FM) Book.) In view of minimizing the opportunity cost of holding cash and maximizing the return on the available funds, the cash balance should be maintained as a minimum level and the funds which are not required at the current moment the firm should immediately invested it in the marketable securities.

Baumol model is one of the methods that can be used for this purpose. Baumol identifies the cash maintenance as analogues to inventory maintenance and demonstrates that the model if economies order quantities that is applicable to inventory management is perfectly applicable in cash management too. Baumol model is based on the assumptions that (i) the cash is used at a constant rate. (ii) The periodic cash requirements is more or less and (iii) there are some costs such as opportunity costs that increase and other costs such as transaction costs that decrease as such balance increase. Because of the assumption (i) and (ii) the graphical representation of cash position looks like as follows:

Figure no: 2.3

EOQ model of cash balancing

Cash Balance

Unlike the case of inventory purchases, the cash transfer does not take time. Therefore, it is normally not required to maintain safety stock for cash.

Given its assumption, the model prescribes an optimal size of cash balance and the optimal size of cash transfer from marketable securities to cash account or 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.

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

Figure No: 2.4

Relationship between average cash balance and cost of cash maintains

O   E

Mathematically, the optimal size of cash transfer from investment account or line of credit, E is determined as follows

$$E = \sqrt{\frac{2FR}{K}}$$

Where,

  F = Fixed transaction cost per transaction

  R = Requirement of cash per period

  K = Opportunity cost of holding cash or interest rate on borrowing

The Baumol model can be appropriately applied in case of predictable uniform net cash flows, but not in the situations characterized by irregular and uncertain cash flows.

The average cash balance (c) is calculated as follows:

$$C = \frac{E}{2} + M$$

Where, M = Minimum balance or cash for precautionary purpose.

II. Miller- ORR model

Miller M.H. and Orr. D.A. Model of the Demand for money in firms. Quarterly Journal of economic LXY (Aug, 1966), P.P.413-435. The size of cash need depends on the pattern and degree of irregularity of inflow and outflows. The Baumol model does not consider the possible inflow and outflows. The Baumol model does not consider the possible the possible irregularity and uncertainty of receipt and payments. Merton Miller Dainel ORR have developed a model known as miller-ORR model, that takes into account the realistic Patten of cash flows and prescribed when and how much to transfer from cash to investment account and vice- versa.

The model is based on the assumption that the daily net cash flows are Random in size as well as in the negative or positive flows and normally distributed in the long run. The model sets a range of high and low limits with in when the cash balance is allowed to fluctuate and set the target cash balance (z) in between these two limits. The model suggests bringing the cash balance to target balance whenever its drifts a ways to the limit sin either direction. The rule is to transfer the amount of cash that is necessary to bring the cash position to its target balance from the investment account whenever the balance slides down to the lower (L) to transfer the cash in excess of target balance to the investment account whenever it reaches to the upper limit (U). The lower limit in the model is set by either managerial decision to meet emergency need or as required by bank to mountain compensating balance in the account. The graphical representation of this model is as follows:

Figure No: 2-5

Graphical presentation of Miller Orr model of cash balance

0

Mathematically, the model is set as follows:

$$Z = \left(\frac{3F\dagger^2}{4i}\right) + L$$

The lower limit L is given, the model calculate the z and u.

$$U = 3\left(\frac{3F\dagger^2}{4i}\right) + L$$

$$= 3Z\text{-}2L$$

The average cash balance (C) is obtained as follows:

$$C = \frac{4Z - L}{3}\dagger^2$$

Where,

Z = target cash balance

F = fixed transaction cost per transacts

I = daily interest/ opportunity cost

$\dagger^2$ = variance of net daily cash flows

L = lower limit

III. Orgler's Model

Orgler, Y.E., *Cash Management Method and model*, Wands worth publishing company Balmont, California, 1970. According to this model, an optimal cash management strategy

can be determined through the use of a multiple programming model comprise three society I) selection the use of a appropriate planning horizon ii) Selection of the appropriate decision variables. iii) Formulation of the cash management strategy with the other operations of the firm such as production and with less restriction on working capital balance.

The model basically uses one year planning horizon with twelve monthly periods because of its simplicity. It has four basis sets of decisions variables which influence cash management of a firm and which must be incorporated into the liner programming model of the firm. These area i) payment schedule ii) short-term financing iii) purchase and sale of marketable securities and iv) cash balance itself.

The formulation of the model requires that the financial manager first specify an objective function and then specify a set of constraints. Orgler's objective function is to minimize the horizon value of the net revenues from the cash budget over the entire planning period using the assumption that all revenue generated is immediately re-invested and that any cost is immediately financed. The objective function recognizes each operation of the firm that generates cash inflow or cash out slows as adding or subtracting profit opportunities for the firm is cash management operations. In the objective function decision variables which cause inflow such as payment on receivables which cause inflow such as payment on receivables have positive co-efficient, while decision variable which generate cash outflows, such as interest on short term borrowing have example produce revenue and their have a positive co-efficient while the sale of those securities would incurred conversion costs and have a negative co-efficient.

The constrains of the model could be i) institutional ii) policy constraints. The institutional constraints are those imposed by external factors, for instance, the financial manager may be prohibited from selling securities before maturity. Either constraint can occur in the model during on monthly period or over several or all the months in the one year planning horizon. An example of linear programming model is as follows:

Objective function: max profit $= a_1 x_1 + a_2 x_2$

Subject to: $b_1 x_1$ production

$b_2 x_2 =$ constraints

$c_1 x_1 + c_2 x_2$ Cash available constraints

$8_1 x_1 + 8_2 x_2 >$ Current assets requirement constraints.

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

2.1.9 Cash Cycle

Ezra Solman and J.J. Prigle, "An Introduction to Financial Management Prentice Hall of India Pvt.Ltd. New Delhi 1978, P. 178.The cycle refers to their process by which cash is usual to purchase materials from which are produced goods, which are then sold to customers, who later pay bills. The firm receives cash from customers and the cycle repeats itself. The cash cycle involves several steps along the way as cash flow from firm accounts as shown as below:

Figure no: 2-6

Cash cycle

A	B	C	D	E	F	G	H	I

Details of cash cycle

Where, A = Materials ordered

B = Materials received

C = Payment

D = Cheque clearance

E = Goods sold

F = Customer mails payment

G = Payment received

H = Cheques deposited

I = Funds collected

In addressing ourselves to the cash management strategies, we concerned with the time periods involved in stages B,C,D and F,H,I. It may be mentioned that a firm has no control over the time involved between stages A and B the lag between D and E is determined by the production process and inventory policy. The time period between E and F is

determined by credit terms and the payments policy of customers. This hypothetical example explains that the corporation needs 60 days or two months to collect funds from the beginning of materials ordered to have ultimate cash. It takes 14 days to receive ultimate cash. It takes 214 days to days to receive materials from suppliers and adding 20 days for payment and still two days assumed for clearing the cheque. Sale of inventory takes 48 days to have complete clearing off stocks and customers might pay only after 28 days to have complete clearing off stocks and customers might pay only after 28 days by mailing cheques. Moreover six additional days are taken for payment receipt cheque deposit and ultimate collection. This is applicable only for direct selling of customer's goods but in a manufacturing concern the time lag may be still greater.

2.1.10. Definitions of key terms

To avoid ambiguity, confusion and misunderstanding the key terms used in this study have been defined as follows:

I. Sales

Sales include only trading sales and ignore the miscellaneous sales.

II. Average collection period:

This indicates the number of days entertained by sundry debtor or credit period allowed to sundry debtor.

Average collection period =   Time (receivable turnover)

No of days in a year

III. Account receivable to cash balance:

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

Account receivable to cash balance =   Cash and bank balance
                                                             Account receivable

IV. Cash Budget:

Cash budget is the most important tools of cash management. It is a plan of future cash receipt and payment.

2.2 Introduction and Purpose

One of the major responsibilities of management is to plan; control and safe guard the resources of the enterprises. Two kind of resources flow through many business-cash and non-cash assets. This chapter focuses on the cash planning and control of the cash inflows (i.e. cash received) and cash outflows (i.e. payment of cash). The planning and controlling of the cash inflows, cash out flows and the related financing is important in all enterprises. The cash budgeting is the effective way to plan and control of the cash flows, assess cash meds and effectively use excess cash. "A primary objective is to plan the liquidity position of the company as a basis for determining future borrowings and future investments. For example excess is not invested incurs an opportunity cost that is low of the interest. That could be earned in the excess cash. The timing of the cash flows can be controlled in many ways by management. Such as increasing the effectiveness of credit and collection activities.

Making payment by time draft rather than by cheque, making payment and the last day of discount periods batching payments, and giving discount on cash sale. Cash management is important in enterprises, whether large or small. Many leading agencies require cash flows projections before granting loan.

The focus of cash is planning, time horizons in cash planning and control approach used to develop a cash budget, financial accounting approach to compute cash flows, control of the cash positions, technique for improving cash flows, Planning and controlling cash in a non-manufacturing company.

2.3 Reviews

Various scholars as well as authors have given different views about cash management some of them have to be taken for cash management, According to Betty, J (1972), *Management Accountancy*, cash is only one constituent so what is essentially a combination of earning a profit investment for business. The objective should aim to obtain an optimum level for each component of current assets figure and a smooth and rapid conversion of these assets to cash both of these lead to improve earning power. He again suggested that if cave is taken for crash programmed for improving cash may have

unexpected consequences. In the short term it will be possible to cut back expenditure on marketing and other function but future sales will probably suffer and, consequently, there will be further deterioration in cash flow. Further, he defined cash management as the process involved in the effective planning and control of cash requirements of a business.

Similarly, Panadey, I.M. (1997), *Financial Management,* suggested that the firm should keep sufficient cash neither more nor less. Cash shortage will disrupt the firm's manufacturing operations while excessive cash will simple remain idle without contributing anything toward the firm's profitability. According to him, the major function of financial manager is to maintain sound cash position. Some theoretical insights about cash management has presented by him. He said that cash management is concerned with the managing of

(i)   Cash flows into and out of the firm,
(ii)   Cash flows within the firms, and
(iii)   Cash balance hold by the firm at point of time by financing deficit or investing surplus.

It can be represented by a cash management cycle. Sales generate cash which has to be disbursed out. The surplus cash has to be invested while deficit has to be borrowed cash management seeks to accomplish this cycle at minimum cost. At the sometime, it also seeks to achieve liquidity and control. Cash management assumes more importance asset that a firm holds. It is significant because it is used to pay the firm's obligation. However, cash is unproductive. Unlike, fixed assets or inventories, it does not produce goods for sale. Therefore, the aim of cash management is to maintain adequate control over cash in some profitable way, the cash management cycle is shown in the following page:

Figure No. 2.7

Cash management cycle

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

Jain, S.P. and Narang, K.L. (1993), *Financial Management Accountancy,* have described about cash management. He said that cash is curtailing component of working capital of a concern. Cash like blood stream of human body, given strength to human body given strength to business unit. He explained that cash is ultimate resource for a business; unit management should endeavor to secure large cash at the end of each working capital cycle than what in had at the beginning of working capital cycle. Further, the important objective I managing cash should be trade off liquidity and profitability in order to maximize profits.

By keeping larger amount of cash, the firm is able to meet its obligation when they fall due and the risk of technical insolvency is reduced. However, cash is non-earning assets, so unnecessary cash should not be kept, as hand then the optimum required continuing the operation of the business efficiency. Liquidity and profitability must be balanced in such a way that the organization retains its liquidity and at the same time maximizes its profitability must be balanced in such a way that the organization retains its liquidity and at the same time maximizes its profitability. They also stressed that business transaction, without involvement of cash is mythical in this monitory world. Today importance of cash management is recognized by all segments of organization activities. If some of departments are handled independently without considering their implications of cash management the conflicting interest of these departments are bound to create serious problem. The study of cash management so therefore considered as integrated approach to management science.

Simon Harry and Kerrenbrock, Wilbert E. (1964), *Intermediate Accountancy,* expressed that cash is more often than other assets, is the item involved in business transaction. This is due to nature of business transactions, which include a price and condition calling for settlement in terms of medium of exchange. In striking contrast to activity of cash it is unproductive in nature. Since cash is measure of value, it is not expand to grow unless it is converted in to other properties. Excessive balance of cash on hand is often referred to as "idle cash". To be most useful to a business enterprise, cash must be kept moving.

Hampton, John J. (1989), *Financial Decision Making***,** has given more suggestion for effective management of cash. He explained that net working capital is the measure of liquidity, which is defined as an adequacy of near term cash to meet the firm's obligation. The highly liquid firm has sufficient cash to pay its bill at all time. An illiquid firm is unable to pay its bills when due. The investment of excess cash, minimizing of inventory, speedy collection of receivables and elimination of unnecessary and costly short term financing all contribute to maximizing the value of firm. In a periled of high interest rate, customer may be slow in paying their bills and that will be cause an increase in receivable. If the level of cash is linked to the level of sales variable working capital may be changed.

Khan, M.Y. and Jain, P.K. (2003), *Financial Management*, explained that cash management linkage with working with working capital management, He expressed that

cash management is one part of the key areas of working capital management. A part from the fact that is the most liquid current asset, cash is the common denominator to which all current assets can be reduced because the other major liquid assets, that is, receivables and inventories get eventually converted into cash. This underlined the significance of management, he presented a detail account of the problem involved in managing cash i.e. motive for holding cash objective of cash management, factors determining cash needs, cash management models, cash budgets basic strategies for efficient management of cash, and specific technique to manage cash subsequently.

Shrestha, Manohar Krishna (1980), *Financial Management*, has described some conceptual ingredients about cash management which is based on his various research studies. We can learn lessen from it and also helpful for this study indeed. He adjusted the relation of cash with efficient and inefficient corporations. He suggested that if cash holding is bad for inefficient corporation, cash shortage is dangerous for efficient corporations. As for inefficient corporations, it does not matter whether cash inverses or devisees if they are not in a position to utilize them. But efficient corporation due to undertaking of more operations need more cash bedsides having profit.

Weston J. Fred and Brigham Eugene F. (1978), *Management Finance,* have poured some views about cash management after their various studies on it. The bond conceptual finding of their studies provides sound knowledge and guidelines for the future studies in the field of cash management. They explained in the beginning the motives for holding cash, specific advantage of adequate cash, synchronization of cash flows, expanded collection and cheque clearing, using float, cost of cash management, determining minimum cash balance, compensating balance, marketable securities. Substitutes for cash are criteria for setting securities investment alternatives.

Van horne, james c (2002), *Financial Management and Policy*, has prescribed the knowledge about cash management. He said that cash management involves managing the monies of the firm to maximize the cash availability and interest income to any idle funds. At one end the function starts when a customer writes a check to pay the firm on its account receivable. The function ends when a supplier, an employee or government realizes collected fund from the firm as an amount payable or accruals. All activities realizes collected fund from the firm as an amount payable or accruals. All activities between these two points fall within the realm of cash management. The firm's decision about when to pay its bills involves account payable and accrual management. He again

described an idea of effective collection and disbursement so that maximum cash is available. Collection can be accelerated by means of concentration banking, lock-box system and certain other procedures. Disbursement should be handled to give maximum transfer flexibility and the optimum timing of payment, being mind-full, however, of supplier relations. Methods of controlling disbursement i.e. electronic fund transfer is becoming increasingly important, and most corporation use such transfer in use way or another.

Brigham, Eugene F., Gapenski, louis C. and Ethrhardt, Michael C. (2001), *Financial Management,* have described some conceptual insight which are based on various research studies. They believed that cash is often called 'non earning assets'. It is needed to pay for labor and raw materials, to buy fixed assets, to pay taxes, to service debt, to pay dividend and so on. However, cash it self earns no interest. Thus the goals of the cash manager is to minimize is to minimize the amount of cash the firm must hold for use in conducting its normal business activities, Yet, the same time, to have sufficient cash (i) to take trade discount, (ii)to maintain its credit rating, and (iii) to meet unexpected cash needs.

Pradhan, Radheshyam (2004), *Financial Management,* explained about cash and it management. He describes that cash includes coins, currencies, cheque hold by a firm, and balances in its bank account. This money is immediately useable to pay bills. Some times "near cash items" are also included in cash, e.g., marketable securities. If the firm has excess cash, it may decide to convert it to short term investments. The financial manager will purchase low risk, high liquidity money market instruments that can be converted back to cash without delay if the need arises. The securities provide a small profit on cash that may not be needed immediately for the firm's operation. These securities are widely used as short term investment by firm in developed countries. Each securities offers different characteristics that make it suitable for different firms. He said cash management is also called management of money position because cash includes not only the cash or currency in hand but also the readily convertible securities or other neat cash items, e.g. time and demand deposits, readily available credit and so on. According to him the concerning area of cash management is,

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

2.4 Review of Thesis

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

Bajracharya, Subarna Lal (1990), *A Study of **Cash Management in Nepalese Public Enterprise***, has studied the cash management practices in Nepalese public enterprises. He has taken 18 enterprises as a sample. According to his study, he concluded that,

- Cash management in public enterprises of primarily based on the traditional practices. Lacking in a scientific approach, more serious aspects of cash management has been the any formalized system of cash planning and cash budgeting in many of enterprises, although the executive of some enterprise do have the practices of forecasting cash requirement on a formal basis.

- Modern practices with respect to debt collection, monitoring the payment 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.

- By and large most enterprises have periodic accumulation of surplus cash and corresponding cash shortage from time to time. However, on 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 which failed to consider the cost of administering such investments.

- There had been wide variations overt-time in the state of financial health of enterprises in terms of the composition of current assets to current liabilities as revealed by the relevant financial ratios.

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

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

Bhatt Prasad Binod (2005) has conducted his research work on the topic of *"Inventory Management: A Comparative Study of Dairy Development Corporation and Sita Ram Gokul Milk Limited".* The comparative was based mostly on the secondary data however the writer was successful to draw some conclusion based on the primary data. The primary objective of the study was to make a comparative analysis of the present inventory management position of DDC and Sitaram Gokul Milk and to find out the impact of inventory in profitability of the companies. And the secondary objective of the study was to identify the problem the company faces with respect to the inventory management and to provide appropriate suggestions based on the major findings. Beside the objectives the writer has made the conclusion that the DDC and SGML needs to maintain a suitable label of inventory with appropriate cost control techniques so that the company could meet the consumer demand in a effective and efficient way. The writer has also suggested some models, examples and formulas for every manufacturing and non manufacturing enterprise to reduce unnecessary cost incurred on ordering and carrying the inventory. The other hand discussing about recommendation the study stresses the need of a good inventory management system for the better performance of the companies. If DDC and SGML initiate steps to the appropriate management of inventory certainly both will cope their set objective successfully on the basis of the study. Further more the writer has suggested that the most easy applicable model of ABC classification is another tool that can be applied for managing inventory smoothly and the company should follow scientific tools and techniques i.e. economic order quantity and economic lot size formula which helps to reduce the relevant total cost for manufacturing the product.

Gautam Biranji 1999, entitled, *"A Case Study of Cash Management on Gandaki Noodles Pvt. Ltd."* on the partial fulfillment of the requirements for the degree of master's of business administration. During research studies, secondary date were used published by Gandaki Noodles Pvt. Ltd. after studying this minutely, there are also some major finding, recommendations and shortcoming has been identified.

Keeping in view these shortcomings in the reviewed thesis, an effort has been made to analyze cash management in comparatively broader perspective in the subsequent thesis.

Similarly, Pradhan, Bijaya (1997), *A Case Study of **Cash Management of Salt Trading Corporation Ltd***, had found that,

- STCL could not make the best are of available cash balance prudently.
- The cash collection efficiency in this corporation is very low.
- The collection of trade credit in the corporation is low during three years of study period.
- Management has taken liberal credit policy to sales of goods. Hence the cash and bank balance of study period is minimum Account Receivable (A/R).
- No, optimum cash balance is maintained. The cash and bank balance with respect to current assets has been fluctuating trend. Similar in the case with respect to the total assets.

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

i)   Efficient management of cash
ii)   Prepare monthly trial balance cash, fund statements and financial report.
iii)   Design the effective A/R management
iv)   Adopt efficient credit policy.
v)   Invest surplus cash in profitable opportunities
vi)   Prepare cash budget
vii)   Maintain optimum cash balance
viii)   Investment in marketable securities.

Following shortcomings have been identified in the thesis

- Inadequate use of financial and statistical tools.
- Profitability ratios have not been worked out and thus a major portion of the study, i.e. analysis of relation between liquidity with profitability has been found missing. This analysis holds significance because of conflicting nature of liquidity and profitability. "…If a firm doesn't have adequate working capital, i.e. it doesn't invest sufficient funds in current assets, it may become illiquid and consequently may not have the ability to meet its current obligations and thus invite the risk of bankruptcy. If the current assets are too large, the profitability is

adversely affected. The key strategies and considerations in ensuring a trade-off between profitability and liquidity is one major dimension of working capital" (Khan & Jain, 1986, p. 7-8).

- Acid- test ratio and current ratio has not been included in analyzing liquidity position. These ratios have been considered the most effect tools for analyzing liquidity position of an enterprise.

- Analysis of cash flow statement has been found missing. This analysis is important because it analyses movement of cash, internal financing management and success or failure of cash planning.

- Cash budget analysis has been missing. This analysis also holds particular significance for it assesses efficiency of a firm in speculating cash deficit and surpluses in future.

Prtihi Ramesh (2003) conducts another study in the title of "*A study on Cash Management of UMHT*" by using six years data of 2054/055 to 2059/060. Or; of different objectives, one is "To have true insights into its cash management and to present the existing cash management and to expand few suggestions on the basis of analysis to improve the cash management for future."

Another research by Sainju, Sabin Prakash (2003), *Cash Management in Public Manufacturing Enterprises of Nepal*; a case study of Royal Drugs, has made conclusion indicating the poor cash management practices of Royal Drugs Limited (RDL). He concluded that

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

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

Mr. Sindhu Lal Shrestha (1988) has conducted his research work on the topic of "***Working Capital Management of Bansbari Leather and Shoe Factory.***" The analysis of the factory was based on the secondary data. The objective of this study was to operate with setting certain sales target and make regular inspection to fine out the excess or deficit of current assets and to adopt suitable credit policy with responsible discount and should have appropriate cash balance and working capital.

Liquidity is the lifeblood of a corporation a want of cash is the only factor, which may free it out of business cash flow in a corporation by direct cash sales of assets. It flows out indirect purchase and payment to creditors, wages and other costs. Cash also flows in the purchase and payment to creditors, wages and other equipment. In the payment of taking interest on important bearing on the overall liquidity position and failure of maintaining sufficient degree of liquidity may cause interruption of regular operation. Besides making corporate manager's unable to pay obligation in time, while each situation in unique the one common threat that runs through all corporate in crisis is a lack of liquidity. (Goldress and Rogner,1976:24).

In the type of financial manager should not only attain towards the aspect of profitability but he should also turn towards ensuring the liquidity of the corporation. Since every business is a constant debtor an enterprise borrows funds from financial institution and purchase merchandise on credit, there by are fewer obligations to the government. Thus every enterprise owns liabilities unless the payment is made at the maturity of the particular debt, the reputation of the firms is tarnished at worst the creditor may force the firm to terminate its business (Solomon and Donald, 1964:13).

A cash budget shows the planned cash inflows, outflows and ending position by interim period for a specific time span. Most companies should develop both long term and short-term plans about their cash flows. The short-term cash budget is included in the annual profit plan. A cash budget basically includes two part: I) the planning cash receipt II) planned cash disbursement, planning cash inflow and outflow given planned beginning and ending cash position for the budget period planning the inflows and outflows will include: I) need for financing probable cash deficit or the need for the investment planning to put excess cash to probable uses (Welsch and Ronald. 1973:433).

As such whatever cash a corporation has must be utilized efficiently to meet obligation of interest payment if cash is obtained from borrowing and it is received through issue of

shares the corporation has responsibility to owners in assuring them to pay favorable rate of return since cash is not easy to obtain the available cash must be prudently spent without incurring loss. Although it is impossible to formulate a set of management assets policy of universal applicability, one policy or rule that appears to be unanimously accepted is that cash must be conserved (Kent, 1964:128).

Computer and catalogue browsing at T.U. Central Library showed no other dissertations in cash management in any enterprise. Nevertheless, there were plenty of dissertations, which were closely related to cash management. For instance working capital management, receivable management and inventory management are the topics, when are in some way related to cash management.

Thus it was identified that there are still a lot to explore in cash management function of the financial literature. It was clear from review of literature that a dissertation on cash management is one of the uncommon undertakings; there were several alternatives to begin an undertaking of a thesis. Alternative such as case study, comparative analysis, study of more than two enterprises etc. were some of these. Likewise, the other variations of alternatives are the types by legal status of enterprises existing in the country; for instance private enterprise, public enterprise, partnership enterprise, government enterprise, or the other combination could be by the type of goods or services these enterprises are producing; for instance develop industry, pharmaceutical industry, cigarette factory, financial institutions, paper and paper products industry, and so on. The complications got simplified after the following literature review.

2.5 Research Gap

All the research studies mentioned above concerned with the study of the cash management of DDC. The finding and conclusions of all studies are generally the same. All have pointed out that there is no proper planning and control system in the PEs to achieve the goal and objectives. Thus this study is designed to highlight the effect of cash position, surplus/deficit, and liquidity position regarding cash management practices of the company. Since there are no any recent study has been made, this study emphasized the effect of cash management of DDC. On the other hand, no any research attempt has been made after DDC suffered from losses. So, this research work is very much centered to identify the responsible causes to analyze them and recommended practical suggestions for the betterment of DDC.

CHAPTER-III

RESEARCH METHODOLOGY

3.1   Introduction

Research methodology can be defined as systematic process that is adopted by the research in studying problem with certain objective. Research is careful investigation or inquiry especially through search for new fasts in any branch of knowledge is research. Accounting to C.R. Kothari, Research can be defined. "The research of knowledge through objective and systematic method of finding solution to a problem in research." (Kothari, 1989:2). The main purpose of this chapter is to focus on different research method and conditions, which are used while conducting this study. Every study needs a systematic methodology to show the better results of the research. The basic objective of this study is to analysis the cash management of DDC. Methodology states the method with which data have been extracted and discuses the tools that have been used in interpretation of such data of fulfill the objectives. Thus in this chapter focus is made on research design, the population and the sample, nature and sources of data and processing procedure tools and techniques used for cash management to analyze the data.

3.1.1. Research Design

This study is the research case study of dairy Development Corporation, one of the oldest public manufacturing enterprises of Nepal. Historical financial data of last ten fiscal year of the company have been the basis of the study. The balance sheets and profit and loss account for last ten years have been compared to analyze the cash management of the company.

3.1.2 The Population and Sample

Public manufacturing enterprises in Nepal are a total of 38 (According economic survey of 2061/62). DDC is one of them. So the existing number of public manufacturing enterprises in Nepal refers to the population and Dairy Development Corporation, the sample. Since DDC is the oldest public manufacturing dairy company. It is most likely to represent all other public manufacturing enterprises, particularly the dairy company of the country. However, this is a case study, and thus the finding couldn't be extensively generalized to all other public manufacturing enterprises.

3.1.3 Nature and Source of Data Collection

This study is based upon the secondary data. Basically, secondary data has been collected from annual report which comprises the financial statement such as: balance sheet, trial balance, cost sheet, profit and loss account etc. Thus, this is the main source of data and other necessary data concerning with this research study was obtained through the research authorized staff at central office of DDC, Lainchour Kathmandu. Some of these data were published while other unpublished. The balance sheet and profit and loss account were obtained for the last ten years (i.e. FY 2054/55 to 2063/64). To attain the objectives of the study secondary data have been collected through contacts, visits and discussions with account officer and other related persons.

3.1.4 Financial and Statistical Tools and Techniques for Analysis of Data

To find out the true picture of "cash management" of DDC, the financial analytical tools and statistical tools has been used for the quantitative analysis of secondary data are as follows.

I. Ratio Analysis

i. Analysis of cash turnover

The cash turnover ratio explains how quickly the cash is received from the sales; or in other words it measures the speed with which cash move through an enterprise's operation. Cash turnover ratio is obtained by following formula.

$$\text{Cash Turnover Ratio} = \frac{\text{Sales}}{\text{Cash in hand and bank}}$$

ii. Account Receivables/ Debtors Turnover Ratio

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

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

With computation of this ratio, average collection period of receivables is also calculated. Shorter average collection period refers to good credit management and vice versa. But too short collection period suggests that the company has a rigid credit policy and thus sales

curtail would be the consequences as the sales transaction is only targeted to parties making payment promptly.

The average collection period can be computed as follows:

$$\text{Average collection period} = \frac{\text{Days in a year}}{\text{Debtors Turnover Ratio}}$$

Where,

$$\text{Collection of account} = 1 - \frac{\text{Re}\,ceivables}{Sales} \times 100$$

iii. Account Receivables to Cash and Bank Balance

This ratio measures the cash and bank balance in relation with account receivables (or sundry Debtors) of the firm. Higher ratio refers to sound liquidity position and vice verse. However, too high ratio is indicative of the fact that business dealings are restricted to only those parties making quick payments, thereby limiting its scope of sales volume.

$$\text{A/R to cash and bank balance} = \frac{\text{Cash and bank}}{\text{Account Receivables}}$$

iv. Analysis of Cash 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 since too high indicates excess cash balance held idle and too low ratio means the firm unable to meet current liabilities.

$$\text{Cash to C.L.} = \frac{\text{Cash and Bank}}{\text{Current Liabilities}}$$

v. Analysis of Cash and Bank Balance to Current Assets

This ratio is also supportive to analyze the liquidity position of the firm. It measures the proportion of cash and bank balance, the most liquid current assets in the total current assets. Higher ratio implies sound liquidity position and vice versa.

It is computed as follows:

Cash and Bank

Cash and bank balance to C.A. =
$$\frac{}{\text{Current Assets}}$$

vi. Analysis of Current Ratio

It examines the position of the company as to it's holding of current assets against its current liabilities. Higher ratio indicates satisfactory position and vice versa. However, too high ratio is indication of poor cash management indicating high inventory and or poor credit management. So the idle current ratio is 2:1, however for a public enterprises, the ratio tend to be little current assets. But nevertheless any company should maintain this ratio above 1:1, since ration lower then this definitely indicates poor liquidity position. The ratio is computed as follows:

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

vii. Analysis of Quick Ratio or Acid Test Ratio

It is calculated by deducting inventories from current assets and dividing the reminder by current liabilities. Inventories are typically the least liquid of a firm's current assets and the assets on which losses are most likely to occur in the event of liquidation. Therefore, this measure of the firm's ability to pay off short-term obligations without relaying on the sale of inventories is important.

$$\text{Quick ratio} = \frac{\text{C.A.- Inventories}}{\text{C.L.}}$$

This ratio is superior to current ratio comparing this ratio with current ratio gives a clear idea as to if current assets have been tied up in inventory or not.

viii. Stock Turnover Ratio/Inventory Turnover Ratio

The inventory turnover is defined as the cost of goods sold divided by inventory. Analysis of this ratio gives an idea on how quickly the least liquid current asset, i.e. inventory is converted into sales.

$$\text{Inventory turnover ratio} = \frac{\text{Sales}}{\text{Inventory}}$$

ix. Total Capital Turnover Ratio

The total capital turnover is of interest because total capital represents the portion of total assets that is financed by sources carrying explicit costs .It's calculation.

$$\text{Total Capital Turnover} = \frac{\text{Sales}}{\text{Total Capital}}$$

x. Investment Rate

The investment rate is calculated as the percentage by which the total capital in a year has increased over total capital of the previous year. Investment is defined as the change in total capital between two time periods.

$$\text{Investment rate (for current years)} = \frac{\text{Total capital for current year-Total Capital for previous year}}{\text{Total Capital for previous year}}$$

xi. Net Profit Margin Ratio

This ratio is computed to analyze profitability position of a firm. Higher ratio high profitability and vice versa, this ratio gives the percent profit or loss with respect to its sales.

$$\text{Net profit margin ratio} = \frac{\text{Net profit after tax}}{\text{Sales}}$$

xii.   Return on Working Capital Ratio

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

$$\text{Return on working capital ratio} = \frac{\text{NPAT}}{\text{Working Capital}}$$

xiii.   Net profit after Tax to Quick Assets Ratio

This ratio also examines profitability of firm; analyses proportion of quick assets (i.e. current assets- inventory) in earning the profit amount.

$$\text{NPAT to Quick Assets} = \frac{\text{NPAT}}{\text{Quick Assets}}$$

II.   `Statistical Tools

i. Straight Line Trend

(The least square method, Yc = a+bx)

This is one of the time series analyses which give the beat estimate of one variable for any given value of other variables. This is analyzed specially for the average mathematical relationship between two variables.

In this method, a trend line Yc = a + bx, is fitted to the given data such $\sum (Y-Yc) = 0$ and $\sum (Y-Yc)^2$ is least.

Where,

Yc = Value of y computed from relationship for a given 'x'.

A = Numerical constants measures the distance of the fitted line directly above or below the origin or y-intercept.

b = Numerical constant which measures the change in y per unit change in x.

x = Time in case of time series analysis.

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

$$\sum y = Na + b \sum x$$
$$\sum xy = a \sum x - b \sum x^2$$

Where, N is the number of years or any period 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:

$\sum x = 0$, then the above two normal equation will be reduced to:

$$\sum y = Na$$

$$\therefore a = \frac{\sum y}{N}$$

$$\sum xy = b \sum x^2$$

$$\therefore b = \frac{\sum xy}{\sum X^2}$$

ii. Karl Pearson's Coefficient of Correlation

$$\mathbf{(r)} = \sqrt{\frac{\sum UV}{\sum U^2 \sum V^2}}$$

If two variables (say x and y) very such that change in one accompanies the change in other, than 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 x results decrease in y and decrease in x follows increase in y.

Correlation measures the degree of relationship or association between the variables. To put it differently, it helps in analyzing the co-variation of two more variables. It is noted that a high degree of correlation between two variables doesn't always necessarily imply that changes in one variation cause changes in the other i.e. correlation doesn't necessarily imply causation while causation always implies correlation.

Karl Pearson's coefficient of correlation is one of the best and population methods. Karl Pearson's coefficient of correlation (r) measures the degrees of association between the two variables suppose x and y, given by:

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

Where,

r = Karl Person's coefficient of correlation between x and y.

$U = x - \bar{x}$, , $V = y - \bar{y}$,, and $\bar{x} = \frac{\sum X}{N}$, $\bar{y} = \frac{\sum Y}{N}$

N = No. of years

However in this thesis work, while computing correlation coefficient, the above formula has been used only once manually. For rest of the computations will be done on computer directly.

The value of 'r' lies between +1.00 to – 1.00 value of +1.00 refers to the highly positive correlation between the variables, i.e. variable is directly proportional to another, or in other words, increase in one variable leads to increase 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, or in other words, increase 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. increase or decrease in one variable result no impact on another variable and vice-versa.

Together with Karl Pearson's coefficient of correlation, probable error (P.E.) of the correlation coefficient is also computed. This probable error of the correlation coefficient is the basis for the interpretation of its value. It is given by,

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

Where,

P.E. = Probable error of correlation coefficient

N = Number of pair of observation

r = Correlation coefficient

When r < P.E., the value of r is not statistically 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.

But when P.E. < r <6 (P.E.), the value of 'r' is inconclusive as to statistically significant/ insignificant correlation.

The upper and lower limit within the correlation coefficient is expected to lie are given by-

r + P.E. (upper limited), and

r – P.E. (lower limited), respectively.

But, when 'r' is of negative i.e., -1.00 ≤ r ≤0, in order to compare 'r' with P.E. which is always in positive value, 'r' modulus' or /r/ is calculated. /r/ is nothing but it is the positive value of r itself.

For instance, if r is calculated as r = 0.5, then /r/ = 0.5.

iii. **Standard Deviation (S.D.)**

$$\therefore \textbf{S.D.} \ (\dagger) = \sqrt{\frac{1}{N}\sum x^2} = \sqrt{\frac{\sum d^2}{N} - \left(\frac{\sum d}{N}\right)^2}$$

Standard deviation measures the 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 and 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 sigma ' † 'and is given by:

$$\textbf{S.D. } (†) = \sqrt{\frac{1}{N}\sum x^2}$$

Where,

$X = X - \overline{X}$

N = No. of year

It can also compute as follows

$$\textbf{S.D. } (†) = \sqrt{\frac{1}{N}\sum x^2} = \sqrt{\frac{\sum d^2}{N} - \left(\frac{\sum d}{N}\right)^2}$$

Where,

$D = x - A$

And, A = assumed mean

In this thesis work, however, while computing standard deviation, the above formula has employed only once manually. For rest of the computations will be done by taking of the help of computer directly.

In conjunction with standard deviation, coefficient of variation (C.V.) is also computed which is 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:

$$\textbf{C.V.} = \frac{†}{\overline{x}} \times 100\%$$

The ratio is called the coefficient of standard deviation C.V. has no units. Distribution with lower C.V. is said to be less variables (or more consistent or more uniform) and the distribution with higher C.V. is indicative of more variable (or less consistent or less uniform).

The limitation of using C.V. is that when the distributions being compared have negative observation, it provides unreliable way to compare variability across data sets.

iv. Regression Analysis and its Line

Regression is the statistical tool which is used to determine the statistical relationship between two (or more) variables and to make estimation (or production) of one variables on the basis of the other variables. It helps to calculate the unknown value of one variable can be estimated on the basis of known value of other variables. The closer relationship between the two variables, the more accurate the estimated value is the unknown variable to be estimated is called dependent variable and the known variable is called independent variable.

Note worthy here is that correlation analysis indicates to what degree the variables are related and regression analysis indicates how the variables are related:

Regression line of x variable on y variables (i.e. 'x' on 'y')

$$(x - \bar{x}) = b_{xy}(y - \bar{y})$$

Regression line of y variable on x variables (i.e. 'y' on 'x')

$$(y - \bar{y}) = b_{yx}(x - \bar{x})$$

Where, $\bar{x}$ and $\bar{y}$ = Arithmetic means of x and y – series respectively.

$$\therefore b_{yx} = \frac{N \sum xy - (\sum x)(\sum y)}{N \sum x^2 - (\sum x)^2}$$

$$\therefore b_{xy} = \frac{N \sum xy - (\sum x)(\sum y)}{N \sum y^2 - (\sum y)^2}$$

v. Lorenz Curve

Lorenz Curve is graphic method of studying dispersion in a distribution. Dr. Lorenz introduced for the first time this method of measuring dispersion. He used this method to measure inequalities in the distribution of income and wealth between different countries for different time periods. Lorenz curve is obtained by plotting the cumulative percents of variables values (e.g. wealth, profits, etc.) on y-axis and the cumulative percents of the corresponding frequencies on x-axis. Thus the Lorenz curve is the cumulative percentage curve.

CHAPTER – IV

PRESENTATION AND ANALYSIS OF DATA

The world economy has displayed encouraging growth despite some unfavorable developments, and Nepal's immediate neighbors China and India have also showed impressive high economic growth. Despite such favorable situation, Nepal could not take benefit due to internal conflict, political instability, and absence of democratic government, ineffective policies and weak implementation. Hence there is a challenge to solve these intricate problems.

4.1   Introduction

To meet the aforementioned objectives, which is stated in stated in chapter one is to have true insight into "cash management" of dairy development corporation? For accomplishment of these objectives, a definite course of research methodology has been followed, which is described in chapter III. Now in this study the effort has made to access and analysis the cash management to disclose the actual position of cash management in DDC.

In this chapter, the efforts have been made to Analysis and interpreter the obtained data in an appropriate manner. The available data are tabulated as well in the appropriate categories on the basic of their homogeneous nature. These tabulated data are analyzed with the help of financial, statistical and cash management tools and are finally interpreted to explore the facts.

4.2   Analysis of Cash and Bank Balances

Holding of optimum cash balances is the rational cash management practice of a business firm. A total cash balance refers to the cash in hand, cash at bank and cash in transit, near cash assets such as marketable securities and time deposits in bank. In this way management of cash plays a significant role in current assets of DDC. Following Table No. 4 shows the amount of cash and bank balance of DDC during the period under study. The cash balance of each fiscal year and has been compared to preceding year to analyze fluctuations.

(Rs. in Million)

Fiscal Year	Cash and bank balance	Increase/Decrease
2054/55	87.01	-
2055/56	90.68	4.21%
2056/57	133.93	47.69%
2057/58	183.46	36.98%
2058/59	214.71	17.03%
2059/60	176.41	(17.83%)
2060/61	189.25	7.27%
2061/62	198.63	4.95%
2062/63	192.74	(2.96%)
2063/64	300.46	55.89%

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No.1)

In FY 2054/55, the cash balance of the company was Rs. 87.01 million, which increased by 4.21 percent, to Rs. 90.68 million in the following year. In this way, above table shows that the cash balance of next year increased in a rapid way by 47.69 percent in FY 2056/57 which is quite surprisingly doesn't seems to be maintained in coming year. However, the sharp increase continues in FY 2057/58 with 36.98 percent, the figures are quite good but as compared to preceding year it seems not so satisfactory. Again very surprisingly the fluctuation was there, after the good cash balance there was very high decrease in the FY 2058/059. In the next FY 2059/60 the fluctuating trends continues with the minus figure of 17.83 percentages it can be considered as the sharpest deviation. Likewise there was slight increase in cash balance in FY 2060/61 and 2061/62. In the year 2063/64 the figure of 55.89 percentages regarding holding cash balance again seems in a stronger position.

The figure suggested that the cash held is very erratic in nature ranging from the lowest Rs. 87.01 million in FY 2054/55 to the highest of Rs.300.46 million in FY 2063/64. Such fluctuations state that decisions regarding holding cash balance at the year-end are rather a haphazard decision without any substantial logic and policy.

The figure thus observed shows that the company has not been following a definite policy regarding the amount of cash to hold in each fiscal year end.

Following figure shows graphically, the variations in cash balance held at the fiscal year end.

Figure No. 4.1

4.2.1   Analysis of Dispersion in Cash and Bank Balance

Following table shows the dispersion in the cash balance at the year-ends under study. Standard deviation is the measure of dispersion used for analysis.

Table No. 4.2

Dispersion in cash and Bank Balance

(Rs. in Million)

Fiscal Year	Cash and bank balance (X)	$x^2 = (X - \overline{X})^2$
2054/55	87.01	8049.16
2055/56	90.68	7404.60
2056/57	133.93	1831.84
2057/58	183.46	45.29
2058/59	214.71	1442.48
2059/60	176.41	0.1024
2060/61	189.25	156.75
2061/62	198.63	479.61
2062/63	192.74	256.16
2063/64	300.46	15309.11
N = 10	$\sum X = 1767.28$	$\sum x^2 = 34975.62$

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No. 2)

$$\text{Standard deviation } (\dagger) = \sqrt{\frac{1}{N}\Sigma x^2} \quad = \sqrt{\frac{1}{10} \times 34975.62} \quad = \text{Rs. 59.14 million}$$

Dispersion in cash balance shows that DDC has been haphazardly holding cash balance without having speculation. The cash balance held are sometimes so high and sometimes so low computed standard deviation has been founds Rs. 59.14 million which indicates there is no normal degree of uniformity in holding cash balance in the fiscal year ends.

Calculation of coefficient of variation (C.V.) further shows that whether the uniformity or homogeneity of cash balance held is poor, good or excellent.

$$\text{Coefficient of variation (C.V.)} = \frac{\dagger}{\overline{X}} \times 100 \quad = \frac{59.14}{176.73} \times 100 \quad = 33.46\%$$

Lower C.V. indicates higher consistency or higher homogeneity or highly stable cash balances where as higher C.V. indicates just opposite situation. In this way C.V. of 33.46 percent definitely signifies that the homogeneity in holding cash balance is poor.

4.2.2 Lorenz Curve Analysis of cash and Bank Balance

Lorenz curve helps to fine out the dispersion from normal distribution by graphic method.

Table No. 4.3

Lorenz Curve Analysis: Calculation of Cumulative Percentage

(Rs. in Million)

Fiscal Year	Cum. Year	Cum % In Year	Cash &bank balance	Cum. Cash & bank balance	Cum %
2054/55	1	10	87.01	87.01	4.92
2055/56	2	20	90.68	177.69	10.05
2056/57	3	30	133.93	311.62	17.63
2057/58	4	40	183.46	495.08	28.01
2058/59	5	50	214.71	709.79	40.16
2059/60	6	60	176.41	886.20	50.14
2060/61	7	70	189.25	1075.45	60.85
2061/62	8	80	198.63	1274.08	72.09
2062/63	9	90	192.74	1466.82	82.99
2063/64	10	100	300.46	1767.28	100.00

Source: Balance Sheet of DDC of the Relevant Year.

Lorenz's curve is a visual aid system of lining dispersion. The variability of cash and bank balance can easily be compared by this method. On the basis of above table, Lorenz curve has been drawn as follows.

Figure No. 4.2
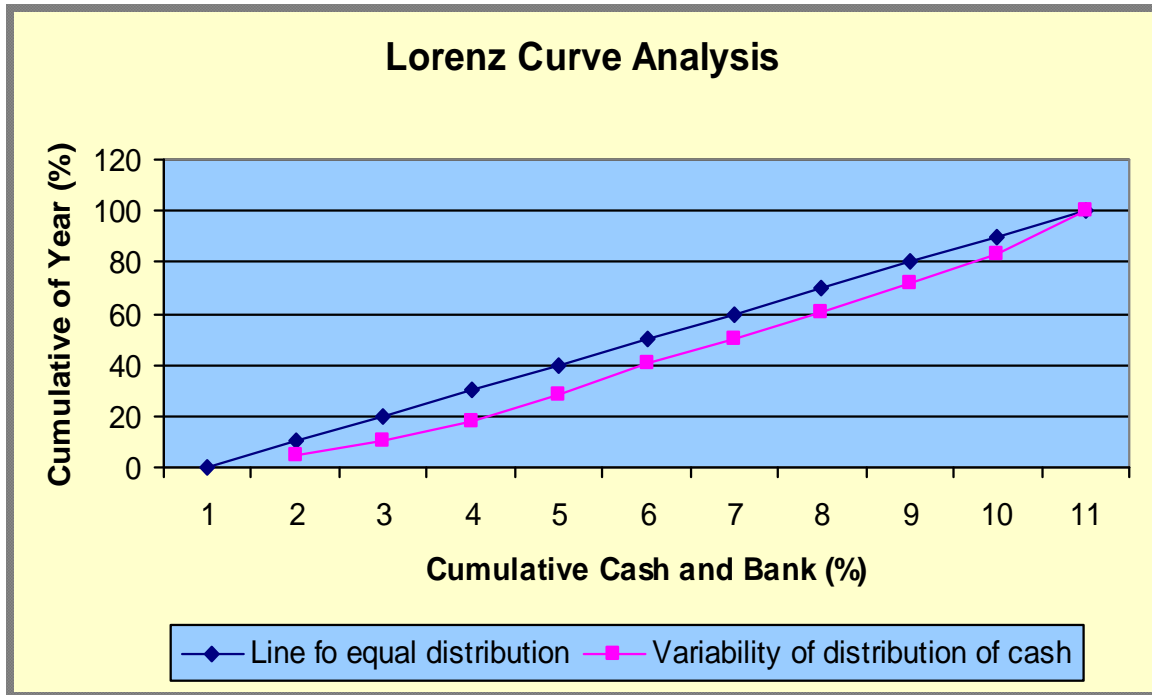
The measure of variability of distribution of cash and bank balance is provided by the distance of the curve of cumulated percentages from the line of equal distribution; points of the curve (i.e. cash variability curve) lying approximately nearer to the line of equal distribution indicating minutely variability in distribution of cash i.e. there is a small (minute) percentage of dispersion in cash balance and vice-versa.

4.2.3 Fitting the Straight Line Trend by Least Square Method for Variations in Cash 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 variable (s). Here, an effort has been made to forecast the cash balance of DDC in future fiscal years, based on its past trends.

Table No. 4.4

Fitting the Straight Line Trend by Least Square Method of Variations in Cash Balance

(Rs. in Million)

Fiscal Year	Cash and bank Balance (y)	Deviation form 2058/059 (x)	xy	x^2
2054/55	87.01	-4	-348.04	16
2055/56	90.68	-3	-272.04	9
2056/57	133.93	-2	-267.86	4
2057/58	183.46	-1	-183.46	1
2058/59	214.71	0	0	0
2059/60	176.41	1	176	1
2060/61	189.25	2	378.5	4
2061/62	198.63	3	595.89	9
2062/63	192.74	4	770.96	16
2063/64	300.46	5	1502.3	25
n = 10	$\sum y = 1767.28$	$\sum x = 5$	$\sum xy = 2352.25$	$\sum x^2 = 85$

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No.3)

The equation of straight line trend is given by

$$\therefore \quad y_c = a + bx$$

To find the value of 'a' and 'b', we should solve the following equations as well.

Where,

$$\sum y = na + b\sum x \text{ ---------------------- (i)}$$

$$\sum xy = a\sum x + b\sum x^2 \text{ ---------------------- (ii)}$$

After putting the values and then solving above the two equations, the value of 'a' and 'b' will be as follows:

$\therefore a = 167.83$ and $b = 17.80$ (appendix No. 2)

Hence, the equation of the straight line trend is given by:

$$y_c = a\text{-}bx$$

$$\therefore \quad y = 167.83\text{-}17.80x$$

The trend line shows positive figure of cash balance in future. The annual rate of increment in cash balance has been calculated Rs. 17.80×1000000 (million) = Rs. 17800000, i.e. Rs. 17.80 million.

In this case when x = 6 (i.e. FY 2064/65)

$y_c = 167.83 + 17.80 \times 6 = $ Rs. 274.63

Likewise,

When,

X = 7(i.e. FY 2065/66)

$y_c = 167.83 + 17.80 \times 7 = $ Rs. 292.43

Hence, expected cash balance in FY 2064/65 is Rs. 274.63 million and in FY 2065/66 will be Rs. 292.43 million. In FY 2064/65, cash balance will have been increased by Rs. 17800000 (i.e.17.80 million) compared to the preceding year. Thus the trends shows that the cash balance is expected to increase by Rs. 17.80 million every year.

In like manner, for other FY's expected cash balance can be calculated either by using the above formula or by adding Rs. 17.80 million from the preceding year's cash balance.

Figure No. 4.3
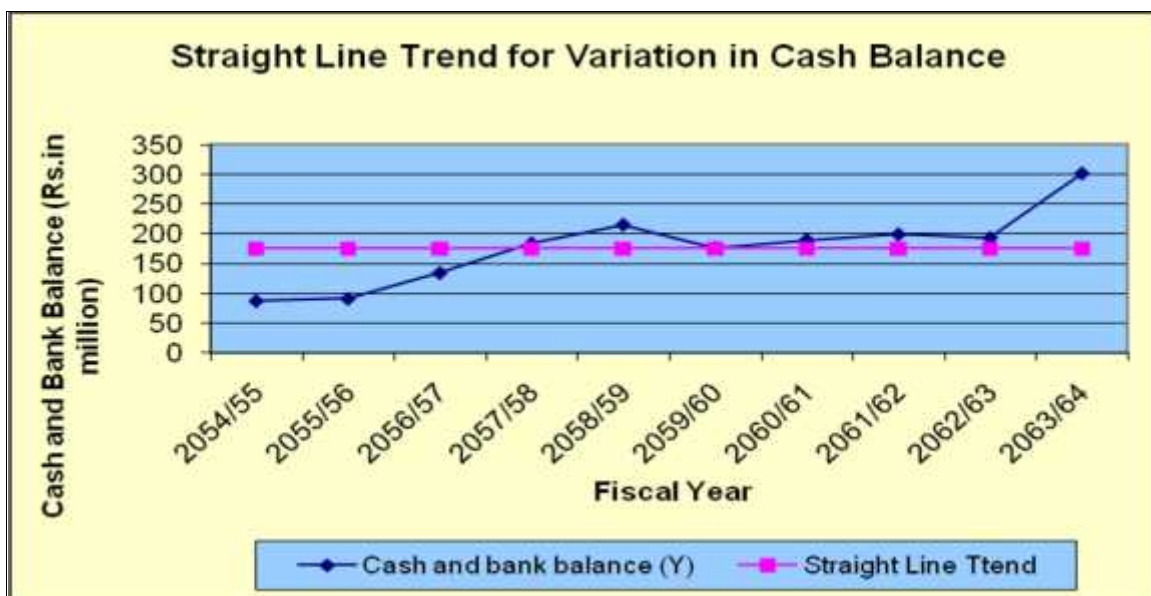
By extending the trend line in graph with scale cash and bank balance could be plotted for subsequent FY's or conversely, by using the straight line trend equation, values of cash and bank balance could be plotted for respective FY's and the straight line could be drawn.

4.3 Analysis of Cash Turnover Ratio or Sales to Cash and Bank Balance

The cash balance of the company should be optimum to meet its current obligations in course of daily business transaction cash turnover ratio represents how quickly the cash is received from its sales revenue. In other words it measures the speed with which cash move through an enterprises operation. Higher turnover is the signal of good liquidity and vice versa. However, too high ratio indicates excess cash balance being held idle.

Table No. 4.5
Cash Turnover Ratio

(Rs. in Million)

Fiscal Year	Sales	Cash & bank balance	Ratio (Times)	Cash Conversion day
2054/55	1053.76	87.01	12.1107	30
2055/56	1274.10	90.68	14.0505	26
2056/57	1278.19	133.93	9.5437	38
2057/58	1387.36	183.46	7.5621	48
2058/59	1348.39	214.71	6.2800	58
2059/60	1484.77	176.41	8.4165	43
2060/61	1548.23	189.25	8.1808	45
2061/62	1595.90	198.63	8.0345	45
2062/63	1535.81	192.74	7.9682	46
2063/64	1589.66	300.46	5.2907	69
Total	14095.41	1767.28		
Average	1409.541	176.728	7.9758	46 (Approx)

Source: Profit and Loss a/c and balance sheet of DDC for relevant year, *(Appendix Table No. 4)*

Erratic fluctuations have been observed in cash turnover analysis. The ratio is fluctuating not too high and not too low, indicative of some definite policy of holding cash balance in relation to sales volume is in DDC. Above table shows that the highest ratio of 14.0505 times has been observed in FY 2055/56, likewise, the lowest ratio of

5.2907 has been observed in 2063/64. The overall average ratio has been calculated 7.9758 times.

Except in FY (2057/58, 2058/59, 2059/60, 2060/61, 2061/62, 2062/63, 2063/64), the cash turnover shows the lower then the average. This shows that cash turnover is not so strong in DDC. The lowest cash conversion day is 26 days in FY 2055/56. It indicates that the company unable to collect cash from its credit sale timely.

In the like manner, the average cash turnover cycle has been found 46 days. However, due to unavailability of information regarding credit policy of the company, the credit days allowed to its debtors was not shown. So, no precise analysis could be carried out each turnover cycle.

The cash amount held in each fiscal year end showed no more but a little bit relation to the sales volume. Generally, high sales imply high cash balance to hold and vice versa. But above figure do not follow this rule.

From the above calculation it is observed that the cash collection in DDC is not so efficient.

4.3.1 Analysis of Correlation between Sales and Cash and Bank Balance

A noteworthy fact here is that the cash balance held at the FY ends can fluctuate in relation to fluctuations in other variables. For instance, if sales grow higher, as a general rule the cash balances held tend to be higher too, and vice versa. Generally, cash balance held and sales volumes are positively correlated. The following statistical analysis i.e. calculation of Karl Pearson's coefficient of correlation will show if the company has been following this rule.

<center>**Table No. 4.6**</center>

<center>**Karl Pearson's Coefficient of Correlation (r)**</center>

<div align="right">**(Rs. in Million)**</div>

Fiscal Year	Sales (x)	Cash balance (y)	$U = (x-\bar{x})$	$V = (y-\bar{y})$	U^2	V^2	UV
2054/55	1053.76	87.01	-355.78	-89.72	126579.40	8857.16	31920.58
2055/56	1274.10	90.68	-135.44	-86.05	18343.99	7404.60	11654.61
2056/57	1278.19	133.93	-131.35	-42.80	17252.82	1831.84	5621.78
2057/58	1387.36	183.46	-22.18	6.73	491.95	45.29	-149.27
2058/59	1348.39	214.71	-61.15	37.98	3739.32	1442.48	-2322.48
2059/60	1484.77	176.41	75.23	-0.32	5659.55	0.1024	-24.07
2060/61	1548.23	189.25	138.69	12.52	19234.92	156.75	1736.40
2061/62	1595.90	198.63	186.36	21.90	34730.05	479.61	4081.28
2062/63	1535.81	192.74	126.27	16.01	15944.11	256.16	2021.58
2063/64	1589.66	300.46	180.12	123.73	32443.21	15309.11	22286.25
n = 10	$\sum x =$ 14095.41	$\sum y =$ 1767.28	$\sum U = 0$	$\sum V = 0$	$\sum U^2 =$ 274419.32	$\sum V^2 =$ 35783.10	$\sum UV =$ 76826.66

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No.5)

∴ Karl Pearson's Coefficient of correlation

$$(r) = \frac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \frac{76826.66}{\sqrt{274419.32 \times 35783.10}}$$

∴ (r) = 0.7753

This shows that there exists positive correlation between sales volume and cash balance. It means the test of significance of the value of 'r' shows that there is a significant relationship between cash and bank balance.

For this purpose, probable error has been calculated as follows.

Probable Error (P.E.) $= \dfrac{0.6745(1-r^2)}{\sqrt{n}} = \dfrac{0.6745(1-0.7753^2)}{\sqrt{10}}$

$$\therefore \text{P.E.} = 0.085$$

$$\therefore 6(\text{P.E.}) = 6 \times 0.085 \quad = 0.51$$

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.

But in this case,

P.E. < r > 6 (P.E.)

This implies, though there is significant positive correlation between the two variables, it is at all significant i.e. there is much more evidence of correlation.

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

r + P.E. = 0.7753 + 0.085 = 0.8603 (Upper Limit)

r – P.E. = 0.7753 – 0.085 = 0.6903 (Lower Limit)

So, the coefficient of correlation is expected to lie between 0.6903 and 0.8603.[here we have to comment]

4.3.2 Regression Analysis: Computation of Regression Equations Regression Coefficients and Regression Lines

In regression analysis, the nature of relationship between the two variables is established and the unknown variable is estimated on the basis of other known variables. In this case, cash balance has been estimated by means of value of actual sales.

The regression lines of sales (x) on cash balance are given by:

$$X - \bar{x} = r.\frac{\dagger_x}{\dagger_y}(y - \bar{y})$$

Where,

$\bar{x}$ = Mean sales = 1409.54

$\bar{y}$ = Mean of cash and bank balance = 176.73

$\dagger_x$ = Standard deviation of sales = Rs. Rs.165.66 million

(This is calculated by using the following formula)

71

$$\therefore \dagger_x = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n}}$$

$\dagger_y$ = Standard deviation of cash and bank balance = Rs. 59.82

(This is calculated by using the following formula)

$$\therefore \dagger_y = \sqrt{\frac{\Sigma(y-\bar{y})^2}{n}}$$

r = Karl Pearson's coefficient of correlation = 0.7753

$$\therefore x-\bar{x} = r.\frac{\dagger_x}{\dagger_y}(y-\bar{y})$$

or (x-1409.54) = $0.7753 \times \dfrac{165.66}{59.82}$ (y-176.73)

or (x-1409.54) = 2.1470(y-176.73)

$$\therefore x = 1030.101 + 2.1470y$$

This equation shows that a sale is estimated to increase by 2.1470 if per unit increase in cash balance.

Likewise, regression line of cash balance (y) on sales (x) can be computed as follows.

$$(y-\bar{y}) = r.\frac{\dagger_y}{\dagger_x}(x-\bar{x})$$

After putting of each value, only result or value of y will be shown here (by using above same process).

$$\therefore y = -217.80 + 0.2799x$$

This shows that cash balance is estimated to increase by 0.2799 units if per unit increase in sales volume.

Assuming that sales volume is a function of cash balance now, when cash balance is expected to be Rs.176.77 million in FY 2062/063, the expected sales is given by:

X (sales)   = 1030.101 + 2.1470y

                = 1030.101 + 2.1470 x 176.77

$\therefore$ Sales (x)   = Rs.1409.63 million

Hence,

The estimated sale in FY 2062/2063 is Rs. 1409.63 million, when cash balance is estimated to be Rs. 176.77 million.

In the like manner, assuming sales as a function of cash balance, sales volume can be estimated for other fiscal years also.

And similarly assuming cash balance as a function sales volume, then cash balance can be computed with same process as before by using following formula.

$$\therefore y \text{ (cash)} = -217.80 + 0.2799x.$$

4.4 Analysis of Liquidity Position

The liquidity of a firm indicates its position to meet its current/ short-term obligations when it becomes due for payment. Thus, in cash management, the study of liquidity position of an enterprise constitutes an important role. If a firm is adequately liquid or solvent the short-term creditors are interested in such firms and therefore such firms get their short-term requirement readily. However, too much liquidity or in other words, holding more then enough cash balances to meet its current payments is also an indication of mismanagement of cash, because such cash balances remained after meeting its payment would remain idle. So an optimum liquidity is the necessity of the firm (Khan and Jain, 1986)

4.4.1 Components of Total Current Asset and Their Share

To analysis the organizations liquidity position here it is necessary to take a glance to total current assets and the share of current assets to the total current assets. Here the major share holders of the total assets are cash and balance, account receivable, advance payment and inventory.

As out topic is related to the cash so it has been obvious reveal the share of cash and bank balance with other contributing current assets to the total current assets. To maintain the liquidity of any organization cash plays the vital role and with this fact the cash is playing dominant role in the contribution to the total current asset. Table no. is showing the share of different current assets to total current assets.

Table No.4.7

Share of Different Current Assets to Total Current Assets

(Rs. in Million)

Fiscal Year	Current Assets	% of TCA	Cash & bank balance	% of TCA	Account Receivables	% of TCA	Advance Payment	% of TCA	Inventory	% of TCA
2054/55	245.57	100	87.01	35.45	7.36	2.99	23.04	9.38	128.16	52.19
2055/56	268.66	100	90.68	33.75	8.06	3.00	29.52	10.98	140.41	52.26
2056/57	360.91	100	133.93	37.11	3.23	0.89	33.57	9.30	190.19	52.70
2057/58	412.29	100	183.46	44.50	2.63	0.64	39.63	9.61	186.58	45.25
2058/59	451.55	100	214.71	47.55	3.55	0.76	44.78	9.92	188.51	45.92
2059/60	501.42	100	176.41	35.18	3.83	0.76	102.13	20.37	219.05	43.68
2060/61	444.64	100	189.25	42.56	4.61	1.04	87.07	19.58	165.71	37.27
2061/62	450.76	100	198.63	44.06	4.81	1.07	91.01	20.19	156.21	34.65
2062/63	466.15	100	192.74	41.35	7.14	1.53	97.06	20.82	169.21	36.30
2063/64	496.26	100	300.46	60.54	6.43	1.30	84.54	17.03	104.83	21.12
Total	4098.21	100	1767.28	-	51.65	-	632.35	-	1648.86	-
Average	409.82	100	176.73	43.12	5.17	1.26	63.34	15.43	164.89	40.23

Source: Balance Sheet of DDC of the Relevant Year.

So, the above table represents that the structure of current asset is more appropriate to support the liquidity position in an organization. It shows that the trend of current asset has been increasing in every fiscal year. It is better for the economic strength of the organization and to maintain ratio with current liability.

From the following table we can see that the largest contribution in total current asset is from cash and bank balance then from the inventory. The average contribution of cash and bank balance for the last 10 years is 43.12% where as the average contribution of inventory is 40.23%.

Figure No 4.4

Share of Different Current Assets to Total Current Assets

Inventory
40.23%

Cash & bank balance
43.12%

Account Receivables
1.26%

AdvancePayment

15.43%
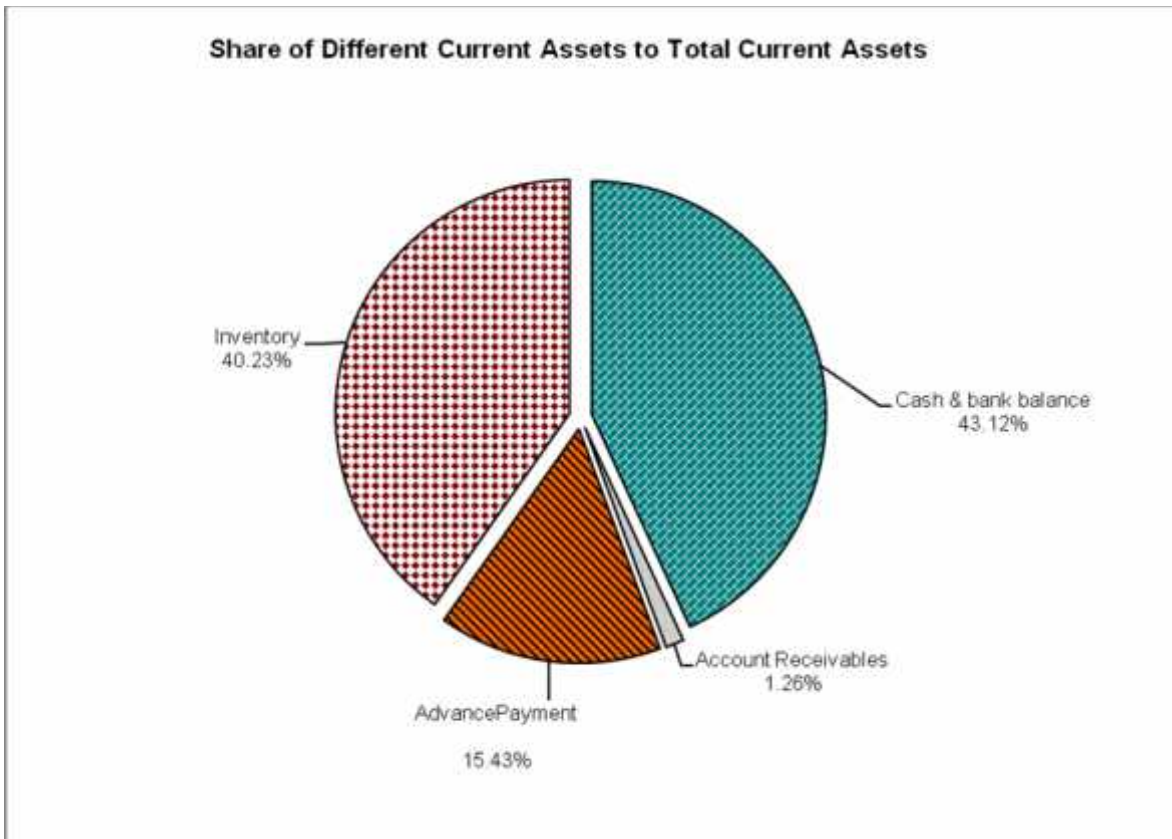
In above mentioned figure four shown component are the sharing the major contributions in total current asset. Besides these, other's contribution is not so important but they cannot be ignored. The average contribution of account receivable for the last 10 years is 1% in total current asset. **.** It is clear that the share of account receivable in the total current asset is very low and it is below 2% through the period of study from the fiscal year 2054/55 to 2063/64. Advance payment also constitutes as major part in the structure of total current asset. It has been increased from Rs. 23.04 million to Rs. 97.06 million from fiscal year 2054/55 to 2063/64. It covers the third position in the total current asset. The average contribution of advance payment to total current asset of past 10 year is 15 percent.

From the following figure we can see that the largest contribution in total current asset is from cash and bank balance then from the inventory. The average contribution of cash and bank balance for the last 10 years is 44% where as the average contribution of inventory is 40%. The figure suggests that the cash and bank balance is playing a vital role to maintain the organization's liquidity in a right track.

75

4.4.2 Analysis of Current Ratio

It is ratio of current assets to current disabilities. It is one of the reliable methods to examine liquidity position of an enterprise. It is also called working capital. Generally, current assets should be twice to the current liabilities. If the ratio is higher then 2, it is very comfortable for the creditors but it is the indicator of idle funds and the ratio is less then 2, difficulty may be experienced in the payment of current liabilities and day to day operations of the business may suffer. Here further the table describes.

Table No. 4.8
Current Ratio

(Rs. in Million)

Fiscal Year	Current Assets	Current Liabilities	Ratio (Times)
2054/55	245.57	128.12	1.92:1
2055/56	268.66	255.59	1.73:1
2056/57	360.91	200.78	1.80:1
2057/58	412.29	231.01	1.78:1
2058/59	451.55	268.91	1.68:1
2059/60	501.42	406.14	1.23:1
2060/61	444.64	398.44	1.11:1
2061/62	450.76	387.77	1.16:1
2062/63	466.15	347.11	1.34:1
2063/64	496.26	358.68	1.38:1
Total	4098.21	2982.55	
Average	409.821	298.255	1.37:1

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No. 6)

As stated by " Khan and Jain", taking into consideration the nature of a company, satisfactory current ratio for a public enterprise is generally very low, as normally these companies have very little need for current assets. So, satisfactory ratio for DDC, public enterprises is therefore between 2:1 and higher than 1.5:1. But in general, ratio less then 1:1 is certainly undesirable for any enterprises. The current ratio of DDC is shown below.

Figure No 4.5
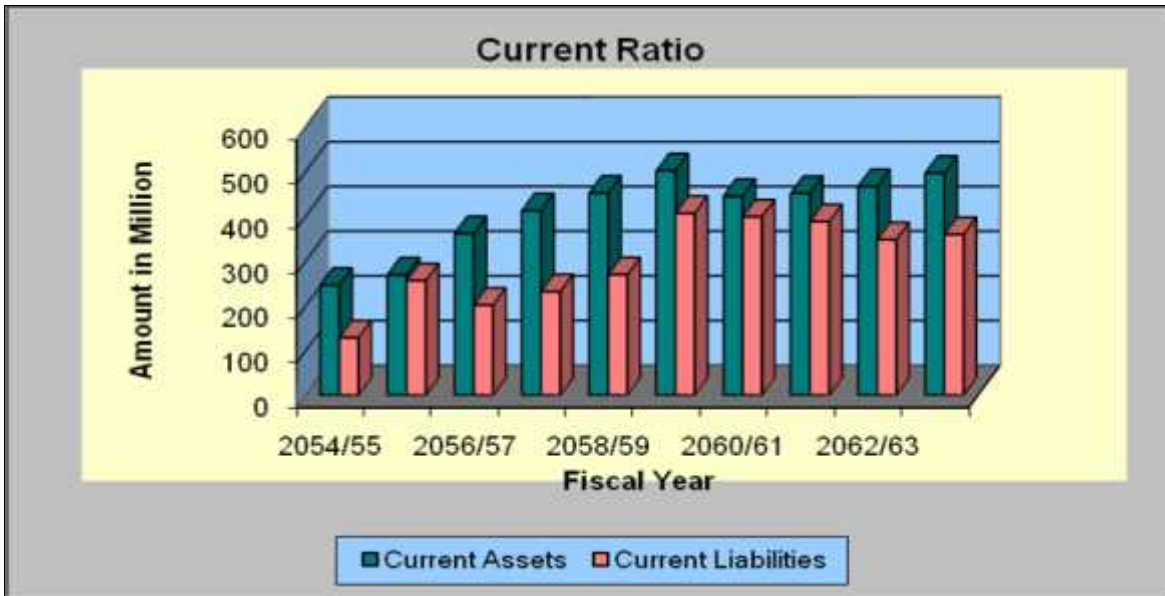
The figures indicates overall, the average ratio signals a little bit unsatisfactory position of the DDC, which ratio is lower then the standard ratio 2:1. This should be a little bit above the average ratio to reach nearer to 2:1 (standard ratio). The figure shows that current ratio varies from 1.92:1 in FY 2054/55 to 1.11:1 in FY 2060/61 indicating high functions. The most favorable current ratio is observed in FY 2054/55 when the ratio is 1.92:1. In this way the liquidity position of the DDC is in a favorable position.

Normally, current assets should be position correlation with current liabilities. The company has been able to maintain good liquidity position. The correlation between these two variables current assets and current liabilities should be significantly positive.

Karl Pearson's coefficient of correlation (r) between current assets and current liabilities is

Correlation coefficient (r) = 0.809   (*Appendix table No. 6*)

This shows that current assets and current liabilities are positively correlated. This implies that the company's current assets are increasing with increase in its current liabilities and vice-versa. To examine its significance, we may use Probable Error (P.E.), which has been calculated as follows:

$$\text{P.E. (Probable Error)} = \frac{0.6745(1-r^2)}{\sqrt{10}} = \frac{0.6745(1-0.809^2)}{\sqrt{10}}$$

$$= 0.074$$

Where,   6(P.E.) = 6 x 0.074   = 0.444

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.

But in this case P.E. < r > 6 (P.E.) i.e. 0.074 < 0.809 > 0.444 which implies though there exists significant positive correlation between the two variables.

Therefore, this correlation analysis indicated that the company has been significantly maintaining its current assets according with its current liabilities. In other words, current assets are being significantly increased with increase in current liabilities and vice versa.

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

r – P.E. = 0.809-0.074 = 0.735 (Lower Limit)

r + P.E. = 0.809+0.074 = 0.883 (Upper Limit)

So, the correlation coefficient is expected to lies in between 0.735 to 0.883.

4.4.3 Analysis of Acid Test or Quick Ratio

This excludes the inventory, the least liquid asset from the current assets and compares it with current liabilities. Inventory when excluded from current assets is called quick assets. Inventory is not capable of readily converting into cash and therefore it is the less liquid compared to other converting into cash and therefore it is the less liquid compared to other composition of current assets. Inventory is less liquid because it requires certain times to get converted into cash. But other constituents of current assets can be readily converted into cash.

The quick ration measures the capacity of a firm to convert its current assets quickly into cash in order to meet its current liabilities.

Table No. 4.9

Quick Ratio/ Acid Test Ratio

(In Rs. Million)

Fiscal Year	Quick Assets	Current Liabilities	Ratio (Times)
2054/55	117.41	128.12	0.91:1
2055/56	128.25	255.59	0.50:1
2056/57	170.72	200.78	0.85:1
2057/58	225.71	231.01	0.97:1
2058/59	263.04	268.91	0.97:1
2059/60	282.37	406.14	0.69:1
2060/61	278.93	398.44	0.70:1
2061/62	294.55	387.77	0.75:1
2062/63	296.94	347.11	0.85:1
2063/64	391.43	358.68	1.09:1
Total	2449.35	2982.55	
Average	244.935	298.255	0.82:1

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No. 7)

Figure No. 4.6
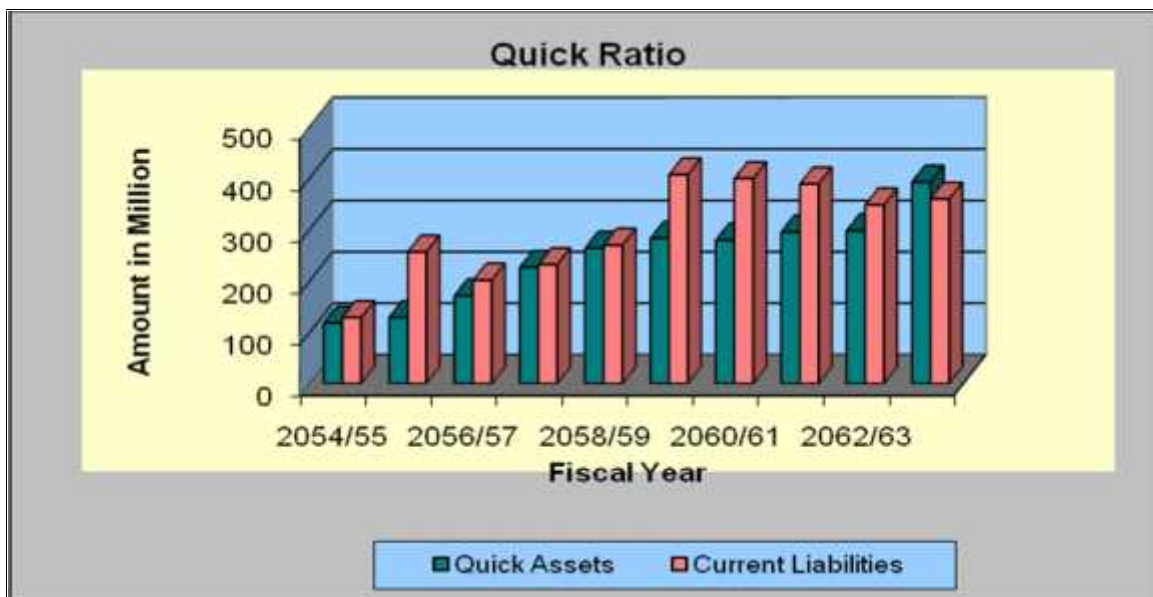
The standard quick ratio to be maintained by an enterprise is 1:1. By observing above figures, there is kept more idle liquid assets in FY 2063/64, by 1.09:1. In this way in FY

79

2063/64 there was no proper management of liquid assets, which was to be minimized to 1:1 (proper quick ratio). In another sides, the ratios obtained are satisfactory for the fiscal year 2054/55, 2057/58 and 2058/059. Since during these fiscal year the ratios tend to be around the standard ratios of 1:1. However, other ratios for rest of the fiscal years have been below the standard ratio and as such liquidity positions for corresponding years are unsatisfactory.

A large part of the current assets have been tied up in slow moving and unstable inventories and slow paying debts. Thus the analyses of liquidity position by these both methods have given a precise insight into the liquidity position of DDC.

Overall the liquidity position can be assumes satisfactory, because the average ratio is 0.82:1, which is some how around the standard ratio 1:1, thus it is not quite favorable but up to some extent it in the favor of DDC.

Besides analyze of quick ratios, correlation between quick assets and current liabilities should also be analyzed. Normally, relation between these two variables should be significantly positively correlated.

Karl Pearson's coefficient of correlation between quick assets and current liabilities.

Correlation coefficient (r) = 0.795 *(Appendix Table No. 8)*

This shows that there exists positive correlation between the two.

Computation of Probable Error,

$$\text{P.E. (Probable Error)} = \frac{0.6745(1-r^2)}{\sqrt{n}} \quad = \frac{0.6745(1-0.795^2)}{\sqrt{10}}$$

$$= 0.078$$

Where, 6(P.E.) = 6 x 0.078 = 0.468

Now, if r > 6 (P.E.), it is indicative of statistically significant positive correlation. Similarly, if r < P.E., it is indicative of statistically insignificant positive correlation. But here P.E. < r > 6 (P.E.) i.e. 0.078 < 0.795 > 0.468, this implies, though there exist significant positive correlation between the two variables.

Therefore, this correlation analysis indicated that the company has been significantly increasing its quick assets accordingly with increase in current liabilities and vice-versa.

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

r – P.E. = 0.468-0.078 = 0.39 (Lower Limit)

r + P.E. = 0.468+0.078 = 0.546 (Upper Limit)

Hence, the correlation coefficient is expected to lies in between 0.39 to 0.546.

4.5 Analysis of Profitability Position

Perhaps, most of the company wants to maximize sales and maximize profit consequently. Whatever may be the liquidity position, the main touchstone is that the company should be operating under profit. It is found that in certain cases, though liquidity position of a firm is not sound enough, the firm is running well under profit. For these companies, by maintaining sound liquidity position, profit can further be maximized. Whereas, in spite of sound liquidity position if the company is running under loss, then such soundness in liquidity is virtually of no use. But, worth mentioning here is that, low profitability doesn't always suggest a bad financial position. Conversely, such low profitability may be resulting high sales and thus could be assisting in sales maximizing policy. Another point to be noted here is the relation between profitability and liquidity. The relation between the two is conflicting such that if a firm tends to increase it's profitability by investing and reinvesting its cash and near cash assets. The firm could run out of cash and unable to meet its current obligations, then it could run risk of depriving of high profitability. However, in practice, a firm should be simultaneously maintaining sound liquidity as well as profitability. So, this implies there should prevail positive correlation between liquidity and profitability.

Hence, the following analyses have been presented here.

4.5.1 Analysis of Net Profit Margin Ratio

It measures the relationship between net profits and sales of a firm. A high profit margin indicates adequate returns to the firm and thus enables in withstanding in adverse economic situations when sales price is declining, cost of production is rising and demands for the product is falling, a low profit margin shows just the opposite. This is computed by dividing net profit after taxes by sales.

Net Profit Margin Ratio

(Rs. in Million)

Fiscal Year	Net Profit/Loss After Tax	Sales	Ratio (%)
2054/55	(5.91)	1053.76	(0.56%)
2055/56	(31.80)	1274.10	(2.50%)
2056/57	(0.15)	1278.19	(0.011)
2057/58	(14.00)	1387.36	(1.009%)
2058/59	(21.62)	1348.39	(1.60%)
2059/60	(107.56)	1484.77	(7.24%)
2060/61	(76.13)	1548.23	(4.91%)
2061/62	8.93	1595.90	0.54%
2062/63	10.58	1535.81	0.69%
2063/64	7.36	1589.66	0.46%
Total	(78.04)	14095.41	
Average	(7.804)	1409.541	(0.55%)

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No. 9)

As it has become an axiom that the public limited company owned by government cannot find its way towards profit and so is government is under the pressure of privatizing such companies. Here we can see that DDC has been operating under loss since 2054/55 to 2060/61. However the company was able to make its way towards the profit in the year 2061/62 although the profit was not enough to compensate the previous losses but it can be taken as a positive move which is proved by coming year's profit.

4.5.2 Analysis of Return on Working Capital (i.e. Current Assets)

(Gross concept of W/C = The composition of total current assets)

It is computed by dividing net profit after tax (loss) by current assets. Higher ratio indicates higher utilization of current assets to earn profit and vice versa.

Table No.4.11

Return on Working Capital

Fiscal Year	Net Profit After Tax/Loss	Current Assets	Ratio (%)
2054/55	(5.91)	245.57	(2.40%)
2055/56	(31.80)	268.66	(11.83%)
2056/57	(0.15)	360.91	(0.04%)
2057/58	(14.00)	412.29	(3.39%)
2058/59	(21.62)	451.55	(4.78%)
2059/60	(107.56)	501.42	(21.45%)
2060/61	(76.13)	444.64	(17.12%)
2061/62	8.93	450.76	1.98%
2062/63	10.58	466.15	2.27%
2063/64	7.36	496.26	1.48%
Total	(78.04)	4098.21	
Average	(7.804)	409.821	(1.90%)

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No. 10)

The analysis showed that DDC has not been utilizing its current assets effectively in earning profit. Noticeably, in the FY 2059/60 which calls for serious attention. Besides, the overall ratio are also dissatisfying, indicating loss in each fiscal year (i.e. 2061/62, 2062/63 and 2063/64) has insignificant positive return on working capital with ratio 1.98%,2.27% and 1.48% respectively.

Overall, the return on working capital is disappointing indicating drastic downfall of the company. The average return on working capital has been calculated (1.90%).

4.5.3 Analysis of Net Profit after Tax (Net Loss) to Quick Assets

It is also computed by dividing net profit after tax (net loss) by quick assets. Higher ratio indicates higher utilization of quick assets in earning profits and vice-versa.

Net Profit after Tax (Net Loss) to Quick Assets

(Rs. in Million)

Fiscal Year	Net Profit After Tax/Loss	Quick Assets	Ratio (%)
2054/55	(5.91)	117.41	(5.03%)
2055/56	(31.80)	128.25	(24.79%)
2056/57	(0.15)	170.72	(0.087%)
2057/58	(14.00)	225.71	(6.20%)
2058/59	(21.62)	263.04	(8.21%)
2059/60	(107.56)	282.37	(38.09%)
2060/61	(76.13)	278.93	(27.29%)
2061/62	8.93	294.55	2.92%
2062/63	10.58	296.94	3.56%
2063/64	7.36	391.43	1.88%
Total	(78.04)	2449.35	
Average	(7.804)	244.935	(3.18%)

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No. 11)

By observing the above analysis of working capital ratio, it found that the ratio has also been found disastrous. The figure clearly indicates that utilized quick assets have not been earning profit in each of the fiscal year. A few significant positive ratios have been observed in FYs 2061/62, 2062/63 and 2063/64 with 2.92%, 3.56% and 1.88%, except in these FYs, in all other FYs the (0.087%) to the highest of (38.09%), which definitely signifies dismal situation of DDC.

4.6 Analysis of Liquidity in Relation to Profitability

In a firm/ company profitability and liquidity are contradictory and conflicting nature, and such the firm should seek for trade off between the two conflicting nature between these two could be justified by following examples, if a firm holds large current assets, so as to become more liquid, the consequence is that the profitability is adversely affected since the firm could have invested a large portion of such current assets in earning profit. Conversely, if a firm doesn't keep enough current assets and invests its large portion in earning profit, the consequence is that the firms fails to meet its current liabilities i.e.

become illiquid and invite the risk of bankruptcy. The conflicting nature of these two is such that when liquidity is being maintained, profitability tends to fall down and vice versa. This very contradictory nature, a firm should however maintain satisfactory liquidity as well as profitability. In other words, liquidity and profitability should be significantly positively correlated.

4.6.1 Analysis of Correlation between Net Profit after Tax (Net Loss) to Quick Assets Ratio and Quick Assets to Current Liabilities Ratio

Hence, Karl Pearson's coefficient of correlation between following two ratios has been analyzed here, which ratio is given in the following tables. In this analysis, net profit after tax to quick assets ratio has represented profitability ratio and quick assets to current liabilities has represented liquidity ratio.

Table No. 4.13

Karl Pearson's Correlation Coefficient (r) between Profitability Ratio and Liquidity Ratio

(Rs. in Million)

Fiscal Year	Net Profit after Tax to Quick Assets Ratio (Profitability Ratio)	Quick Assets to Current Liabilities Ratio (Liquidity Ratio)
2054/55	(5.03%)	91%
2055/56	(24.79%)	50%
2056/57	(0.087%)	85%
2057/58	(6.20%)	97%
2058/59	(8.21%)	97%
2059/60	(38.09%)	69%
2060/61	(27.29%)	70%
2061/62	2.92%	75%
2062/63	3.56%	85%
2063/64	1.88%	109%

Source: Balance Sheet of DDC of the Relevant Year, (Appendix table No. 12)

Karl Pearson's coefficient of correlation (r) = -0.593 (Appendix Table No. 12)

This indicates that there exists negative correlation between liquidity and profitability. To put it differently, increase in profitability indicates decrease in liquidity and vice-versa. In fact that, since DDC has been operating under loss.

The significance of this negative correlation has been stated that

$$\text{Probable Error (P.E.)} = \frac{0.6745(1-r^2)}{\sqrt{n}} = \frac{0.6745\{1-(-0.593^2)\}}{\sqrt{10}}$$

$$= 0.288$$

6(P.E.)   = 6 x 0.288   = 1.729

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

Similarly, if r < P.E. It is indicative of statistically insignificant positive correlation.

However, here P.E. > r < 6 (P.E.) i.e.

o.288> -0.593 < 1.729

This implies, though there exists insignificant negative correlation between the two. Hence, this proves that practically liquidity has been decreasing with increase in profitability.

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

r + P.E. = -0.593+ 0.288 = -0.305 (Upper Limit)

r - P.E. = -0.593- 0.288 = -0.881 (Lower Limit)

Hence, the correlation coefficient is expected to lie between -0.305 and -0.881.

Hence, by analyzing above data, the analysis proved that the correlation between two (i.e. Profitability and Liquidity) is not satisfactory trend because of negative correlation.

4.7 Analysis of Cash and Bank Balance to Account Receivable

This ratio can help to measure the relationship between the cash and bank balance to account receivables. The higher ratio indicates better liquidity position and vice-versa. However, too high ratio indicates excessive cash balance are held idle, and that the transactions are limited only two parties making prompt payments. The following table shows the relationship of A/R to cash and bank balance.

Cash and Bank Balance to Account Receivables

(Rs. in Million)

Fiscal Year	Cash & bank balance	Account Receivables	% of AIR
2054/55	87.01	7.36	1182.00%
2055/56	90.68	8.05	1125.60%
2056/57	133.93	3.22	4152.61%
2057/58	183.46	2.63	6978.31%
2058/59	214.71	3.55	6045.61%
2059/60	176.41	3.83	4604.92%
2060/61	189.25	4.61	4104.67%
2061/62	198.63	4.81	4127.63%
2062/63	192.74	7.14	2699.43%
2063/64	300.46	6.43	4672.78%
Total	1767.28	51.65	-
Average	176.728	5.17	3418.38%

Source: Balance Sheet of DDC of the Relevant Year.

The figure indicates that ratio fluctuates from 1125.60 to 6978.31. It means the fluctuation of cash and bank in each and every study year is so high. During the study period cash and bank balance is at minimum in the year2054/55. But in the FY 2058/59, the cash balance is high in comparison with other balance. In FY 2057/58 and 2058/59 the ratio are 6978.31 percent and 6045.61 percent even the ratio of other fiscal year (i.e. from 2057/58 to 2061/62), which has indicted that the cash balance held is excessive and has been idle. The erratic fluctuation suggest that the corporation has not been following a definite policy regarding how much cash balance has to hold at the fiscal year end. The average ratio is 3418.38 percent, which is quite excessive (i.e. cash balance).

Karl Pearson's coefficient of correlation (r) between cash and bank balance and account receivables has been computed on excel worksheet as follows.

Correlation coefficient (r) = - 0.074815, which shows that there existed negative correlation between cash balance and account receivables.

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

Probable Error (P.E.) $\quad = \dfrac{0.6745(1-r^2)}{\sqrt{n}} \quad = \dfrac{0.6745\{1-(-0.0748^2)\}}{\sqrt{10}}$

$$= 0.214$$

$$6\ (P.E.)\ = 6 \times 0.214 \qquad = 1.286$$

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

If r < 6 (P.E.), it is indicative of statistically insignificant positive correlation. But in this cash P.E. > r < 6 (P.E.) i.e. 0.214 > -0.0748 < 1.286, this implies, though there exists negative correlation between the two, no conclusion could be derived as to statistically significant/insignificant.

There, this correlation analysis within which the correlation coefficient is expected to lie is given by;

$\qquad$ r + P.E. = -0.0748+0.214 = 0.1392 (Upper Limit)

$\qquad$ r - P.E. = -0.0748-0.214 = -0.2888 (Lower Limit)

So, the coefficient of correlation is expected to lie between 0.1392 and -0.2888 respectively.

4.8 Analysis of Receivables/ Debtors Turnover Ratio

This ratio shows how quickly receivables or debtors are converted into cas, "In other words the debtors turnover ratio is a test of the liquidity of the debtors of a firm" (Khan and Jain, 1986). The ratio describes how the debtors will have been handled by the company. 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 enterprises. Likewise, lower ratio and longer average collection periods signals delayed payments by the debtors.

Table No. 4.15

Receivables/ Debtors Turnover Ratio

(Rs. In Million)

Fiscal Year	Sales	Account Receivables	Ratio (time)	Total Cash Collection %	Average Collection Days
2054/55	1053.76	7.36	143.15	99.30	3
2055/56	1274.10	8.05	158.15	99.36	2
2056/57	1278.19	3.22	396.31	99.75	1
2057/58	1387.36	2.63	527.71	99.81	1
2058/59	1348.39	3.55	379.66	99.74	1
2059/60	1484.77	3.83	387.57	99.74	1
2060/61	1548.23	4.61	335.79	99.70	1
2061/62	1595.90	4.81	331.63	99.70	1
2062/63	1535.81	7.14	147.39	99.31	2
2063/64	1589.66	6.43	174.76	99.38	3
Total	14095.41	51.65			
Average	1409.541	5.17	174.76	99.55	2(approximate)

Source: Balance Sheet of DDC of the Relevant Year.

Above table shows the ratios fluctuating and vary from the lowest 143.15 times to highest of 527.71 times with total collection percentage of 99.30 percent to 99.81 percent and average collection period or days of 1 day to 3 days in the FY 2056/57 to 2061/62 and FY 2054/55 respectively. The most satisfactory receivables management has been observed in FY 2057/58 although the receivable management in each and every fiscal year is so satisfactory on the basis of total cash collection percentage, because there are a few percentages of account receivables in comparison to the sales volume, that's the normal case for DDC.

Likewise, the average collection days vary from 1 day to 3 days and overall average collection days is 2 days. However, it should be noted that too short average collection days doesn't necessarily imply that the firm is functioning well, for it indicates a very restrictive credit and collection policy and thereby sales only to those debtors whose financial conditions are sound and who make their payment readily. Such restrictive policy would definitely avoided bad debts.

It is to be noted that DDC being a public enterprises supported by governments. Can execute credit regulatory rules with full authority to private enterprises; and as such minimize the risk of receivables running into bad debts. Therefore, although DDC, public enterprises has strict credit policy, it can avoid the risk of bad debts compared to the private companies.

4.9 Analysis of Inventory (or Stock) Turnover Ratio

It is the way of analyzing the liquidity of an enterprise by calculating how quickly the least liquid current assets, i.e. inventory is converted in to cash. This ratio of inventory turnover or the ratio of sales to inventory fives idea on how quickly the inventories are converted to sales. High inventory ratio signals better inventory management and vice- versa. However very high inventory turnover ratio is indicative of under investment in or very low high inventory, and as such implies that the firm has not been meeting customer demand. This also foretells that firm might go out of stock incurring high "stock and Cost." Which is unfavorable for the firm? So, a firm should go or an optimum inventory ratio. Which indicates sound inventory management? Under this, fluctuations in inventory turnover ratio can be studied.

Table No. 4.16

Inventory Turnover Ratio

(Rs. in Million)

Fiscal Year	Sales Volume (Rs.)	Inventory (Rs.)	Ratio/ Times
2054/55	1053.76	128.16	8.22
2055/56	1274.10	140.41	9.07
2056/57	1278.19	190.19	6.72
2057/58	1387.36	186.58	7.43
2058/59	1348.39	188.51	7.15
2059/60	1484.77	219.05	6.77
2060/61	1548.23	165.71	9.34
2061/62	1595.90	156.21	10.21
2062/63	1535.81	169.21	9.07
2063/64	1589.66	104.83	15.16
Total	14096.17	1648.86	
Average	1409.617	164.886	8.55

Source: Balance Sheet of DDC of the Relevant Year.

There is somehow fluctuates observed from 6.72 times to 15.16 times and this occurs from fiscal year 2056/57 and 2063/64. The ratio 15.16 in FY 2063/64 is the highest of all ratios, during the period the ratio has definitely suggested that, either the company should have undergone under-investment or the inventory hold was comparatively lower. And at last overall ratio has been calculated 8.55 times. We can express it with the help of figure also.

Figure No. 4.7

4.10 Analysis of Cash and Bank Balance to Current Assets

As stated earlier cash is the most liquid current and as such more the amount of cash balance in an enterprise, more liquid the enterprises in meeting its current obligations. However, bearing excess cash signifies cash balance being held idle without any motives.

This ratio indicates 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 balance to hold at the fiscal year end.

Table No. 4.17

Cash and Bank Balance to Current Assets

(Rs. in Million)

Fiscal Year	Current Assets	Cash & bank balance	Ratio (%)	Difference in ratio
2054/55	245.57	87.01	35.43%	-
2055/56	268.66	90.68	33.75%	(1.68%)
2056/57	360.91	133.93	37.01%	3.26%
2057/58	412.29	183.46	44.49%	7.48%
2058/59	451.55	214.71	47.54%	3.05%
2059/60	501.42	176.41	35.18%	(12.36%)
2060/61	444.64	189.25	42.56%	7.38%
2061/62	450.76	198.63	44.06%	1.50%
2062/63	466.15	192.74	41.34%	(2.72%)
2063/64	496.26	300.46	60.54%	19.2%
Total	4098.21	1767.28	-	-
Average	409.821	176.728	43.12%	-

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No.13)

The observation of the ratio shows that proportion of cash and bank balance in current assets range from the lowest of 33.75 percent to the highest of 60.54 percent in the fiscal years 2055/56 and 2063/64 respectively. Attention has been drawn in the FY 2054/55, 2055/56 and 2059/60 where the proportion of cash balance in current assets is comparatively lower than other ratio in the respective fiscal years with 35.43 percent, 33.75 percent and 35.18 percent respectively. The company must have undergone cash scarcity to meet short-term payment during these fiscal years. The average ratio has been calculated 43.12 percent.

Figure No. 4.8

Cash and Bank Balance to Current Assets
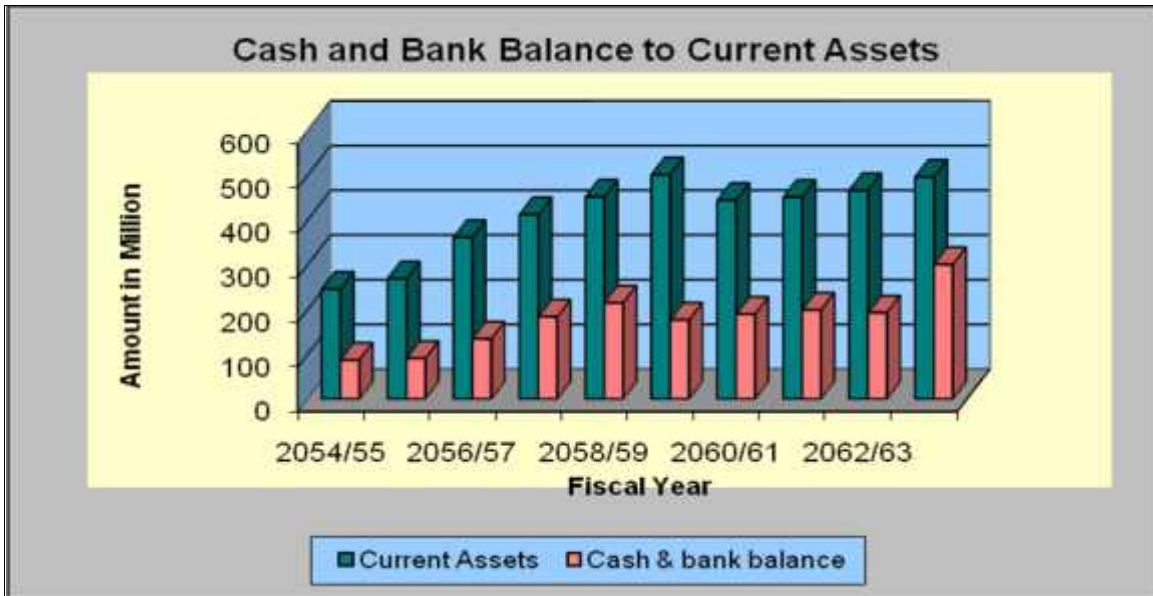
Karl Pearson's coefficient of correlation (r) between cash and bank balance and current assets is = 0.8606 (Appendix Table No. 13)

Since, coefficient of correlation is 0.8606, which tends to 1. This shows that there exists significant positive correlation between these two variables. Therefore, this indicated that DDC has a definite practice as to what should be the proportion of cash balance in its total current assets.

$$\text{Probable Error (P.E.)} \quad = \frac{0.6745(1-r^2)}{\sqrt{n}} \quad = \frac{0.6745(1-0.860^2)}{\sqrt{10}}$$

$$= 0.055$$

Similarly,

6 (P.E.)   = 6 x 0.055   =0.33

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

Where, if r < P.E., It is indicative of statistically insignificant positive correlation.

But in this cash P.E. < r > 6 (P.E.) i.e. 0.055 < 0.860 > 0.33, this implies. Though there exists significant correlation positive correlation between these two variables.

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

r + P.E. = 0.860 +0.055 = 0.915 (Upper Limit)

r - P.E. = 0.860 +0.055 = 0.805 (Lower Limit)

So, the coefficient of correlation is expected to lie between 0.915 and 0.805.

4.11 Analysis of Cash and Bank to Current Liabilities

The analysis of cash and bank balance to current liabilities indicate the proportion of cash balance available to meet the payments of current liabilities. 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 No. 4.18

Cash and Bank Balance to Current Liabilities

(Rs. in Million)

Fiscal Year	Cash & bank balance	Current Liabilities	Ratio (%)
2054/55	87.01	128.12	67.91%
2055/56	90.68	255.59	58.28%
2056/57	133.93	200.78	66.70%
2057/58	183.46	231.01	79.43%
2058/59	214.71	268.91	79.84%
2059/60	176.41	406.14	112.25%
2060/61	189.25	398.44	121.14%
2061/62	198.63	387.77	51.22%
2062/63	192.74	347.11	55.52%
2063/64	300.46	358.68	83.76%
Total	1767.28	2982.55	
Average	176.728	298.255	59.25%

Source: Balance Sheet of DDC of the Relevant Year, (Appendix Table No. 14)

The above table shows that the ratios fluctuate from the lowest of 51.52 percent to the highest of 121.14% percent in FY 2061/62 and 2060/61. The data between the FY 2055/56 to FY 2060/61 shows the increasing trend of the ratio. Since the fluctuation is inconsistent. It could be stated that the company has been acing situation of cash excess and deficient in making payments during the fiscal year under study. This has clearly indicated that DDC has not been following a systematic cash management practices because of high cash balance exceeds current liabilities in FY 2059/60 and 2060/61 and vice-versa. The average ratio has been found calculated 59.25 percent.

Karl Pearson's coefficient of correlation (r) between cash and bank balance and current liabilities is given by coefficient of correlation (r) = 0.6181 *(Appendix Table No. 14)*

Since, coefficient of correlation is positive. It indicates that there exists positive correlation between cash and bank and current liabilities.

In order to compare it with probable error (P.E.) has been calculated as follows:

$$\text{Probable Error (P.E.)} = \frac{0.6745(1 - r^2)}{\sqrt{n}} = \frac{0.6745(1 - 0.618^2)}{\sqrt{10}}$$

$$= 0.131$$

Similarly,

$$6(\text{P.E.}) = 6 \times 0.131 = 0.786$$

It this case, P.E. < r > 6 (P.E.) i.e. 0.131 < 0.618 > 0.786, this indicates that there is significant positive correlation between cash and bank balance and current liabilities. In other words, when cash balance held increasingly then the current liabilities is also increased and vice-versa. So, this definitely shows that there existed cash available to meet current liabilities payment as well.

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

r + P.E. = 0.618 + 0.131 = 0.749 (Upper Limit)

r - P.E. = 0.618 - 0.131 = 0487 (Lower Limit)

Hence, the coefficient of correlation is expected to lie between 0.749 and 0487.

4.12 Analysis of Current Assets Variable: Inventory and Advance Payment

In the section of analysis, an attempt has been made to analyze dispersion in current assets variables; inventory, sundry debtors and advance payment and find out the type of correlation existing between the dispersion in these variables and sales, overall, the analysis have been targeted to examine the operating activities of DDC.

The following tables have been extracted from balance sheet of DDC.

Table No. 4.19

Current Assets Variables: Inventory and Advance Payment

(Rs. in Million)

Fiscal Year	Inventory	Increase/ Decrease	Account Receivables	Increase/ Decrease	Advanced Payment	Increase/ Decrease
2054/55	128.16	-	7.36	-	23.04	-
2055/56	140.41	12.25	8.06	0.69	29.52	6.48
2056/57	190.19	49.78	3.23	(4.83)	33.57	4.05
2057/58	186.58	(3.61)	2.63	(0.60)	39.63	6.06
2058/59	188.51	1.93	3.55	0.92	44.78	5.15
2059/60	219.05	30.54	3.83	0.28	102.13	57.35
2060/61	165.71	(53.34)	4.61	0.78	87.07	(15.06)
2061/62	156.21	(9.5)	4.81	0.20	91.01	4.04
2062/63	169.21	13	7.14	2.33	97.06	6.05
2063/64	104.83	(64.38)	6.43	(0.71)	84.54	(12.52)

Source: Balance Sheet of DDC of the Relevant Year.

Generally accepted rule is that, if there has been a sound cash management practice in an organization, the fluctuation in increase/ decrease of these variables is moderate i.e. more or less consistent. The other rule is that these increase/decrease in variable moves in the same direction as the increase/decrease in sales and profit of the organization. In other words increase in these variables should give rise to increase in sales and profit of the organization and vice-versa; i.e. inventory, receivables and advance paid are positively correlated to sales and profit.

The above table definitely show that increases/decrease in these variables is not consistent. Analysis has to be carried on the part if such inconsistency in the variables is in positive correlation with sales and profit of DDC. These heavy fluctuation in increment/decrement of these variables could only be favored if such fluctuation have positive correlation with sales and profit of DDC.

4.12.1 Analysis of Dispersion in Inventory and Correlation Between Sales and Inventory

The measure of dispersion i.e. standard and coefficient of variation (C.V.) of the inventory has been computed and only result is to be shown as follows:

Standard Deviation (S.D.) = 32.02 million

$$\therefore = \sqrt{\frac{1}{N} \sum x^2} \quad \text{Where, X-} \overline{X}$$

Mean value of inventory ($\overline{X}$) =164.88 Million *(Appendix Table No. 15)*

Coefficient of Variation (C.V.) = 19.42%

$$\therefore C.V. = \frac{\dagger}{\overline{X}} \times 100$$

Standard deviation of 32.02 million and C.V. of 19.42% suggest that fluctuation in inventory is high. We know that less the C.V., more will be the uniformity; consistency etc. and more the C.V. less will be the uniformity consistency etc.

As a general rule the fluctuation in this variable should be positively correlated with sale computation of Karl Pearson's coefficient of correlation as calculate between sales and inventory (r) =0.064 *(Appendix Table No. 16)*.

This suggests that there exist positive correlation between two variables.

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

$$= \frac{0.6745(1 - 0.064^2)}{\sqrt{10}}$$

$$\therefore \text{ P.E.} = 0.212$$

$$\therefore 6(\text{P.E.}) = 6 \text{ X } 0.212 = 1.272$$

Here, P.E. < r > 6 (P.E.) i.e. 0.212 < 0.064 > 1.272. This implies, though there exists positive correlation between the two i.e. there is significantly positive correlated.

This is indicative of the fact that the firm has been increasing its inventory level with increase in sales and vice-versa.

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

r + P.E. = 0.064 + 0.212 = 0.276 (Upper Limit)

r - P.E. = 0.064 - 0.212 = -0.148 (Lower Limit)

So, the coefficient of correlation is expected to lie between 0.276 and -0.148.

4.12.2   Analysis of Dispersion in Advanced Payment and Correlation between Sales and Advanced Payment

Standard deviation and coefficient of variation (C.V.) has been calculated and only result is to be shown here as follows:

Standard Deviation (S.D.) = 29.97 million

Mean value of Advanced payment ($\overline{X}$) = 63.23 million

Coefficient of Variation (C.V.)   = 47.39%

Standard deviation of 29.97 million and C.V. 47.39% states that advanced payment has been highly fluctuating. However, more stability is desired.

Computation of Karl Pearson's coefficient of correlation between advance payment and sales as computed on excel worksheet (r) = 0.898. This suggests that there exist positive correlation between two variables.

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

$$\text{Probable Error (P.E.)} = \frac{0.6745(1-r^2)}{\sqrt{N}} \qquad = \frac{0.6745(1-0.898^2)}{\sqrt{10}}$$

$$\therefore \text{ P.E.} = 0.041$$

$$\therefore 6(\text{P.E.}) = 6 \text{ X } 0.041 \qquad = 0.247$$

Here, P.E. < r > 6 (P.E.) i.e. 0.041 < 0.898 > 0.247. This implies, that there exists significant positive correlation between sales and advanced payment. That means an increase in sales tends to increases in advanced payment and vice-versa.

Comparing dispersion in current assets variables, inventory, receivables and advanced payment. It has been concluded that the least dispersed variable is inventory with C.V. of 27.72 percent, and then follows receivable with C.V. of 47.65 percent and the most dispersed is advanced payment with C.V. of 51.46 percent. It is to be noted that low C.V. refers to low degree of dispersion and vice-versa.

4.13   Analysis of Current Liabilities

In this section of analysis an effort has been made to analyze current liabilities of DDC with respect to its dispersion. Low degree of dispersion is considered favorable, signifying the firm to be smoothly handling its liabilities.

Standard deviation and coefficient of variation of current liabilities has been computed and only result is to be shown as follows.

Standard Deviation (S.D.) = 90.21 million

Mean value of C.L. ($\overline{X}$)　　= 298.25 million

Coefficient of Variation (C.V.) = 30.25%

Standard deviation of 90.21 million and C.V. of 30.25% is indicative of the fact that current liabilities have been moderately fluctuating. However, a more stable or comparatively low fluctuation in current liabilities should been favorable for the firm.

Hence, finally the important part of this dissertation i.e. presentation and analysis of data comes to end. Overall, the cash management of DDC has been analyzed to be poor. However the analysis presented here could not be considered complete and final. The time constraints and unavailability of the data have limited the scope of this analysis. In subsequent chapter major finding of the analysis and recommendations to remedy the situation have been presented systematically. In the like manner conclusion have been drawn at the end.

4.14　Major Findings

Due to rapid globalization, events in one corner of the world are having their effects on other parts of the world. War, conflict and natural disasters have badly affected the economy, supply situation of essential goods and services, inflation etc. of developing countries and other countries as well. [Economic Survey, Ministry of finance]

The overall economic activities gradually shrunk due to the problems of maintaining law and order and weak security situation because of 12-year long internal conflict, which affected the development works, hampered industrial growth and created blockages in transportation much needed for accelerated economic growth. The successful people's movement '*Jan-Aandolan II*' in FY 2005/06 has led to the restoration of peace which can now pave the way for favorable environment for undertaking development works and other economic activities. If the peace cannot be restored and the country is pushed to further conflict, the economy will further plunge into problems. Hence, the challenge is to restore sustainable peace in the country. [Economic Survey, Ministry of finance]

There are some complaints still intact that there is a growing tendency of loss incurring DDC to depend on government funding and tendency of profit making

DDC to draw excessive benefits and facilities. The expenses of DDC is found to have amplified due to the prevailing tendency of not making public the actual status of existing posts and employing additional manpower by ignoring the government policy of rightsizing the number of employees. There is an extreme challenge to establish a tradition of realizing accountability and commitment by related PEs and ministries in this regard.

In the context of Nepali economy there are so many ups and down there, there was the successful people's movement '*Jan-Aandolan II*' in FY2005/06 too. Due to this some how every sector are affected and has to bear big losses too. But regarding to our topic the major findings that are drawn through the previous chapters and from data presentation and analysis during the study period of last 10 years are summarized as below:

✱ DDC doesn't have any definite policy regarding how much of cash balance have to hold in each fiscal year.

   Cash and bank balance held during each fiscal years under study were observed to be moderately erratic and thus the very fact indicated the firm to be lacking definite policy regarding how much of cash and bank balance to hold in each FY. Moreover the cash balance held is in some extent of increasing trends. A glance at chart (Figure No.4.2) and Lorenz curve shows an erratic dispersion of cash and bank balance of 59.82 million and C.V. of 33.85 percent are the supporting analyses. Equation of straight line trends shows that cash balance increased 17.80 million every year.

✱ The cash balance forecasting of DDC is somehow correlated with the sales volume. Which means up to some extent the sales of DDC plays a decisive role in cash and bank balance holding.
   Correlation coefficient between cash & bank balance with sales is positive with r= 0.7753 and the relation of P.E. < r > 6 (P.E.), that indicates the relation is statistically significant between both variables. The moderate fluctuations [cash turnover ratio (6.28 times in FY 2058/59 to 14.05 times in FY 2055/56)] also add some emphasis on the relation between cash & bank balance and sales.

✱ In some extent, DDC is able to maintain near about half proportion of current assets including cash in it.

Proportion of cash and bank balance in current assets is very moderate and the cash balance their shows the relation with current assets of DDC. The average ratio of cash balance to current assets is 43.12 percent, which is about quite moderate proportion of cash in current assets. Similarly average contribution of inventory to current assets is 40.23% and average contribution of advance payment is 15.43%.

✳ The liquidity of a firm indicates its position to meet its current/short-term obligations when it becomes due for payment therefore the overall liquidity position of the firm has been found moderately dissatisfactory.

- The current ratio indicates the average ratio signals, slightly deflected from standard ratio 2:1 which shows little unsatisfactory position of the DDC. There should be little bit rise in current ratio to reach nearer to 2:1 (standard ratio). A large portion of DDC's current assets has been tied-up in liquid asset i.e. inventory. Triangulation or the cross examination of the liquidity position suggested that current assets have been tied-up in slow moving and unsolvable inventories.

- Current assets and quick assets are partially being maintained in accordance with current liabilities.

    Practically significant positive correlation between current assets and current liabilities (i.e. r = 0.8091, where P.E. < r > 6 (P.E.) and the same significant positive correlation between quick assets and current liquidities (i.e. 'r' = 0.795, where < r > 6 (P.E.), indicates, perhaps current assets and quick assets are being maintained in accordance with current liabilities.

✳ The standard quick ratio to be maintained by an enterprise is 1:1. By analyzing the fact, there are more idle liquid assets kept in FY 2063/64, by 1.09:1. In this way in FY 2063/64 there was no proper management of liquid assets, which was to be minimized to 1:1 (proper quick ratio). But the overall liquidity position is little bit satisfactory, because the average ratio is 0.82:1. Which is some how around the standard ratio 1:1, thus it is not quite favorable but some extent it can be assumed favorable for DDC.

✳ As it has become an axiom that the public limited company owned by government cannot find its way towards profit. After analysis we can observe that DDC has been operating under loss since 2054/55 to 2060/61. However the company was able to make its way towards the profit in some years, although the profit was not enough to

compensate the previous losses but it can be taken as a positive move which is proved by coming year's profit.

Profitability of DDC is being in worsening trend, liquidity does not practically increase with increase in profitability and vice-versa. In other words, positive correlation between liquidity and profitability is not practically certain. But in some extent, return on working capital ratio and current ratio is positively correlated.

✱ DDC is able to collect receivables from its sundry debtors timely. The receivable management of the firm has been observed to be highly satisfactory, because of average debtor's turnover ratio is so high with 174.76 times and average collection period for whole of 10 years is 2 (Approx) days. Converting debtors in to cash promptly could be assumed as good indication.

But in other hand proportion of cash bank balance compared to its account receivables is not satisfactory. The negative correlation between these two variables makes it far from satisfaction. This suggests that holding of cash balance has no relation with account receivable of the firm. However, positive correlation between the two variables is favorable.

✱ DDC has been precisely meeting of some efforts to its current liabilities payment. For some FYs DDC has available of excess cash to meet its short term creditors where as for other FY's DDC has not faced specially for shortage of cash. However, the significant positive correlation between these two variables (r) = 0.6181 and the average ratio of cash and bank balance to current liabilities is 59.25 percent. It means clear that DDC is able to meet current liabilities payment i.e. indicative of good cash management.

✱ Overall yearly cash inflow an outflow in DDC is not properly managed surplus cash has not been properly employed to earn returns by investing in short-term investment opportunities.

- It does not prepare cash flow statement and cash budget.

✱ No, optimum cash balance is maintained. The cash and bank balance with respect to current assets has been fluctuating trend. Similar is the case with respect to the total assets.

✱ Inventory level of DDC is moderately unstable for each FY due to the standard deviation of 32.02 million and the correlation between sales and inventory is (r) = 0.064 i.e. < r > 6 (P.E.), indicates significant positive relationship between two variables.

✱ Advanced payment fluctuates highly and there exist significant positive correlative with sales. i.e. standard deviation of 29.97 million and C.V. of 47.39 percent indicates highly fluctuation in advanced payment payments. Coefficient of correlation between advance payment and sales is (r) = 0.898 i.e. < r > 6 (P.E.) and thus indicates that there is significant positive correlation between the two variables.

✱ Current liabilities fluctuate moderately i.e. standard deviation of Rs. 90.21 million and C.V. of 30.25 percent is indicative of the fact that current liabilities fluctuate moderately.

✱ Cash management is an effective mechanism for every organization to achieve goals and objectives but in DDC, the management committee has not paid attention towards proper cash management.

✱ The fluctuating trend of cash balance shows that DDC has been facing problem of cash management.

CHAPTER – V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The study focuses on the cash management adopted by DDC. It attempts to analyze the cash management of DDC for last ten years form 2054/55 to 2063/64 DDC has growing concern of greater national importance in the area of providing milks and other milky manufactured items. It contributes significantly to the economic development of the country. However, DDC is found to be suffered from "cash management." So the objective of this study is to have true insight in to its "cash management." An effect has been made to assess and analysis the "cash management" Of the corporation. An attempt has also been made in the study to provide a possible suggestive frame work for the better cash management of DDC.

In order to fulfill aforementioned objectives as stated in earlier in Chapter- III "Research Design" is adopted for the study. This study is based mainly on the secondary data. It constitutes mostly the balance sheet and profit and loss a/c for the relevant year. Besides these, the performance has also been supplemented from interview with related persons of DDC i.e. charter accountant and account officers etc). This study used financial statistical tools to accomplish the objective. They are financial ratio and correlation regression for the relevant years.

This chapter is divided in to three sections i.e. introduction, conclusion and recommendations.

The First Section is intended to give brief introduction about this chapter.

The Second Section highlights the conclusion based on major finding of the study.

The Third Section recommendation the corrective actions that the management of DDC should take to improve the present condition of DDC.

5.2 Conclusion

Conclusively, it can be stated that DDC's cash management practices is deprived from standard practices and not so effective due to the lack of mobilizing of excess cash in the profitable sector and lack of awareness of the employees for practicing better cash management inside DDC. Negative profitability of the firm adds much to the worsening financial position of the firm. Besides, cash management being one of the major elements in financial function. There is other numerous aspect of finance involved in the overall financial performance of a firm. In addition to this, the overall performance of a firm counts for other managerial aspects such as human resource management, organizational structure, marketing management, etc. however, above all disappointing down falling trend of the financial position is indicative of the fact that DDC should immediately seek for drastic change in its managerial structure. So below could, to a greater extent, uplift DDC's cash management in a good situation.

5.3 Recommendations

There is still a structural challenge to make sustainable, broad based and effective cash management practices to increasing productivity through the idle resources. At the same time, preparation and implementation new emerging concept in the world of management, bridging the gaps between the organization objective and organization's performance, filling the loop holes in the current cash management, practicing the right and consistent cash management etc. are equally a challenging task to DDC.

Following viable suggestions have been recommended to improve the cash management efficiently in DDC.

1   Cash planning manager or experts should be appointed. The lack of knowledge of modern financial management's tools and technique among existing employees in the organization is one of the causes of poor financial performance to the organization. DDC must ensure to upgrade the current financial management skill.

2   Maintain optimum cash balance in the end of each year. The study has identified that DDC has not been maintaining optimum cash balance. The balance held are sometimes high and sometimes low without any definite purpose as to why the firm has held excess or deficient balances. For a good

running firm holding of optimum cash balance as per its sales, profit and or other influencing variables is recommended.

3   Idle cash should be invested in profitable sector. The DDC should manage its cash affairs in such a way as to keep cash balance at a minimum level to invest the surplus cash funds in profitable opportunities.

4   The DDC should prepare at least monthly trial balances of financial statements. Which can help remedy adverse financial situation in time. A year's time is quite lengthy and thus it is likely that analyzes of yearly financial statement could not properly monitor and remedy in financial situations in time.

5   Cash budget should be developed monthly, quarterly and yearly periods on the basis of cash inflow and outflow analysis. From the analysis it has been identified that DDC has been preparing nominal cash budget without any definite policy and planning. So it is recommended to prepare cash budget that is entirely based on cash flow analysis. The objective of preparing a cash budget is to forecast whether at any point of time there is likely to be an excess or shortage of cash.

6   The DDC should prepare cash flow statement which is one of the commonly prepared financial statements under cash management function. Since, DDC does not prepare cash flow statement, it is strongly recommended to prepare it whereby a firm is able to assist cash on flow and outflows and thus assist in sound management of a firm.

7   There should not be tied up unsolvable inventories in current assets. It is the most illiquid current assets, affects the liquidity position of the firm and thus is unfavorable. So, it is recommended not to tie-up or current assets in unsolvable inventories. In other words curtail unnecessary inventory to enhance liquidity position in of DDC.

8   Maintain optimum current assets variables (i.e. inventory sundry debtors and advance payments) and current liabilities every year. Study showed that beside cash and banks other variables of current assets (inventory, sundry debtors and advanced payment and current liabilities also fluctuate moderately. Optimization of these variables is therefore recommended which would maintain a sound liquidity.

9   The DDC should determine minimum level of cash balance to hold every year, maintain such minimum level of cash balance as a requirement of precautionary. Speculative and compensation motives, besides for daily transaction.

10   Poor cash management in DDC definitely counts for inefficient or poor use of financial and statistical tools. Thus, it will be better for DDC by using of statistical tools for forecasting purpose may be used wherever applicable.

11   DDC has been bearing losses in almost all fiscal years. One of the factors that count for such negative profitability in the high operating cost. Untimely or unsystematic purchase of raw milks. Allocating high overhead expenses and other unnecessary operating expenses counts curtail operating costs, which shall give positive impact to profitability of the firm.

12   The imprested system should operate on a weekly basis except in cases where large amounts of cash required when it should be reimbursed more frequently. It is better to have smaller float and more frequent reimbursement from the bank than to carry a large float in the office.

13   The provision of rewards, prize, incentives should be introduced in the act to encourage customers to pay credit voluntarily rather through coercive measures.

14   The rate of fine and penalties should be increased in the form of charging interest on dew money to increase the collection.

15   Efficient, competent and improved administration can contribute to a lot to the organization. Although this is not directly related to our subject and topic but there is a felt need of skill oriented and refresher training as well as the improvement in organizational structure and administrative procedures. This is one of the challenges for making administration effective.

The success or effectiveness of cash management system entirely depends upon good management and the firm's holding of optimum cash balance as per its sales, profit and or other influencing variables. Although Cash management is an effective mechanism for every organization to achieve goals and objectives but in DDC, the management committee has not paid attention towards proper cash management. So at last the study suggests DDC to go for a modern existing cash management practices in Nepal.

APPENDICES

Appendix Table No. 1 - Analysis of Cash & Bank Balance

Fiscal Year	Cash & Bank Balance	Increase/ Decrease (%)
2054/55	87.01	-
2055/56	90.68	(90.68 - 87.01)/87.01 = 4.21%
2056/57	133.93	(133.93 - 90.68)/90.68 = 47.69%
2057/58	183.46	(183.46 - 133.93)/133.93 = 36.98%
2058/59	214.71	(214.71 - 183.46)/183.46 =17.03%
2059/60	176.41	(176.41 - 214.71)/214.71 = (17.83%)
2060/61	189.25	(189.25 - 176.41)/176.41 = 7.27%
2061/62	198.63	(198.63 - 189.25)/189.25 = 4.95%
2062/63	192.74	(192.74 - 198.63)/198.63 = (2.96%)
2063/64	300.46	(300.46 - 192.74)/192.74 = 55.89%

Appendix Table No. 2 - Dispersion in Cash & Bank Balance

Fiscal Year	Cash & Bank Balance (X)	$x = X - \overline{X}$	$x^2 = (X - \overline{X})^2$
2054/55	87.0100	-89.2700	7969.1329
2055/56	90.6800	-85.6000	7327.3600
2056/57	133.9300	-42.3500	1793.5225
2057/58	183.4600	7.1800	51.5524
2058/59	214.7100	38.4300	1476.8649
2059/60	176.4100	0.1300	0.0169
2060/61	189.2500	12.9700	168.2209
2061/62	198.6300	22.3500	499.5225
2062/63	192.7400	16.4600	270.9316
2063/64	300.4600	124.1800	15420.6724
N = 10	**X = 1767.2800**		**X^2 = 34977.7970**

$$\text{Mean } (\overline{X}) = \frac{X}{N} = \frac{1767.28}{10} = 176.728$$

Appendix Table No. 3 - Least Square Method for Variations in Cash Balance

Fiscal Year	Cash & Bank Balance (y)	Deviation from 2058/59 (x)	xy	x^2
2054/55	87.01	-4	-348.04	16
2055/56	90.68	-3	-272.04	9
2056/57	133.93	-2	-267.86	4
2057/58	183.46	-1	-183.46	1
2058/59	214.71	0	0	0
2059/60	176.41	1	176	1
2060/61	189.25	2	378.5	4
2061/62	198.63	3	595.89	9
2062/63	192.74	4	770.96	16
2063/64	300.46	5	1502.3	25
N = 10	$\sum y = 1767.28$	$\sum x = 5$	$\sum xy = 2352.25$	$\sum x^2 = 85$

The equation of straight line trend is given by

$$\therefore \quad y_c = a + bx$$

To find the value of 'a' and 'b', we should solve the following equations as well.

Where,

$$\sum y = na + b\sum x \text{ ---------------------- (i)}$$

$$\sum xy = a\sum x + b\sum x^2 \text{ ---------------------- (ii)}$$

Putting the value of 'x' and 'y' on eqn. i & ii, and multiply eqn. ii by 2 and subtract. Then we get

$$1767.28 = 10a + 5b$$
$$\underline{2352.25 = 10a + 170b}$$
$$2937.22 = 165\ b$$

$$\therefore\ b = 17.80$$

Again, putting the value of 'b' in eqn. i, then we get

$$1767.28 = 10a + (5 \times 17.80)$$

$$\therefore\ a = 167.83$$

Hence, a = 167.83 and b = 17.80

Appendix Table No. 4 - Cash Turnover Ratio

Fiscal Year	Sales	Cash & Bank Balance	Cash Turnover Ratio = Sales/Cash & Bank	Cash Conversion Day = 365/ratio
2054/55	1053.76	87.01	1053.76/87.01 = 12.11	30
2055/56	1274.10	90.68	1274.10/90.68 = 14.05	26
2056/57	1278.19	133.93	1278.19/133.93 = 9.54	38
2057/58	1387.36	183.46	1387.36/183.46 = 7.56	48
2058/59	1348.39	214.71	1348.39/214.71 = 6.28	58
2059/60	1484.77	176.41	1484.77/176.41 = 8.41	43
2060/61	1548.23	189.25	1548.23/189.25 = 8.18	45
2061/62	1595.90	198.63	1595.90/198.63 = 8.03	45
2062/63	1535.81	192.74	1535.81/192.74 = 7.96	46
2063/64	1589.66	300.46	1589.66/300.46 = 5.29	69

Appendix Table No. 5 - Correlation between Sales and Cash and Bank Balance

Fiscal Year	Sales (x)	Cash Balance (y)	$U = (x - \bar{x})$	$V = (y - \bar{y})$	U^2	V^2	UV
2054/55	1053.76	87.01	-355.78	-89.72	126579.40	8857.16	31920.58
2055/56	1274.10	90.68	-135.44	-86.05	18343.99	7404.60	11654.61
2056/57	1278.19	133.93	-131.35	-42.80	17252.82	1831.84	5621.78
2057/58	1387.36	183.46	-22.18	6.73	491.95	45.29	-149.27
2058/59	1348.39	214.71	-61.15	37.98	3739.32	1442.48	-2322.48
2059/60	1484.77	176.41	75.23	-0.32	5659.55	0.1024	-24.07
2060/61	1548.23	189.25	138.69	12.52	19234.92	156.75	1736.40
2061/62	1595.90	198.63	186.36	21.90	34730.05	479.61	4081.28
2062/63	1535.81	192.74	126.27	16.01	15944.11	256.16	2021.58
2063/64	1589.66	87.01	180.12	123.73	32443.21	15309.11	22286.25
n = 10	$\sum x =$ **14095.41**	$\sum y =$ **1767.28**	$\sum U = 0$	$\sum V = 0$	$\sum U^2 =$ **274419.32**	$\sum V^2 =$ **35783.10**	$\sum UV =$ **76826.66**

Where,   Mean $(\bar{x}) = \dfrac{\sum x}{n} = \dfrac{14095.41}{10} = 1409.541$

Mean $(\bar{y}) = \dfrac{\sum y}{n} = \dfrac{1767.28}{10} = 176.728$

Appendix Table No. 6 - Karl Pearson's coefficient of correlation (r) between Current Assets and Current Liabilities

Year	Current Asset (X)	Current Liabilities (y)	$U = X - \overline{X}$	$V = Y - \overline{y}$	U^2	V^2	UV
2054/55	245.57	128.12	-164.25	-170.13	26978.06	28944.22	27943.85
2055/56	268.66	255.59	-141.16	-42.66	19926.15	1819.88	6021.89
2056/57	360.91	200.78	-48.91	-97.47	2392.19	9500.40	4767.26
2057/58	412.29	231.01	2.47	-67.24	6.10	4521.22	-166.08
2058/59	451.55	268.91	41.73	-29.34	1741.39	860.84	-1224.36
2059/60	501.42	406.14	91.6	107.89	8390.56	11640.25	9882.72
2060/61	444.64	398.44	34.82	100.19	1212.43	10038.04	3488.62
2061/62	450.76	387.77	40.94	89.52	1676.08	8013.83	3664.95
2062/63	466.15	347.11	56.33	48.86	3173.07	2387.30	2752.28
2063/64	496.26	358.68	86.44	60.43	7471.87	3651.78	5223.57
n = 10	**4098.21**	**2982.55**			**72967.91**	**81377.75**	**62354.70**

Where,   Mean $(\overline{x}) = \dfrac{\sum x}{n} = \dfrac{4098.21}{10} = 409.821$

Mean $(\overline{y}) = \dfrac{\sum y}{n} = \dfrac{2982.55}{10} = 298.255$

∴ Karl Pearson's Coefficient of correlation

$$(r) = \frac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \frac{62354.70}{\sqrt{72967.91 x 81377.75}}$$

∴   (r) = 0.809

Appendix Table No. 7 - Analysis of Acid Test or Quick Ratio

Year	Current Assets (CA)	Inventory (Inv.)	Quick Assets (CA - Inv)	Current Liabilities	Ratio (QA/CL)
2054/55	245.57	128.16	117.41	128.12	0.91:1
2055/56	268.66	140.41	128.25	255.59	0.50:1
2056/57	360.91	190.19	170.72	200.78	0.85:1
2057/58	412.29	186.58	225.71	231.01	0.97:1
2058/59	451.55	188.51	263.04	268.91	0.97:1
2059/60	501.42	219.05	282.37	406.14	0.69:1
2060/61	444.64	165.71	278.93	398.44	0.70:1
2061/62	450.76	156.21	294.55	387.77	0.75:1
2062/63	466.15	169.21	296.94	347.11	0.85:1
2063/64	496.26	104.83	391.43	358.68	1.09:1
Total	**4098.21**	**1648.86**	**2449.35**	**2982.55**	

Appendix Table No. 8 - Karl Pearson's coefficient of correlation between Quick Assets and Current Liabilities

Year	Q.A. (X)	C.L. (Y)	$U = X - \bar{X}$	$V = Y - \bar{y}$	U^2	V^2	UV
2054/55	117.41	128.12	-127.525	-170.13	16262.63	28944.22	21695.83
2055/56	128.25	255.59	-116.685	-42.66	13615.39	1819.88	4977.78
2056/57	170.72	200.78	-74.215	-97.47	5507.87	9500.40	7233.74
2057/58	225.71	231.01	-19.225	-67.24	369.60	4521.22	1292.69
2058/59	263.04	268.91	18.105	-29.34	327.79	860.84	-531.20
2059/60	282.37	406.14	37.435	107.89	1401.38	11640.25	4038.86
2060/61	278.93	398.44	33.995	100.19	1155.66	10038.04	3405.96
2061/62	294.55	387.77	49.615	89.52	2461.65	8013.83	4441.53
2062/63	296.94	347.11	52.005	48.86	2704.52	2387.30	2540.96
2063/64	391.43	358.68	146.495	60.43	21460.79	3651.78	8852.69
N = 10	**2449.35**	**2982.55**			**65267.27**	**81377.75**	**57948.85**

Where,   Mean $(\bar{x}) = \dfrac{\sum x}{N} = \dfrac{2449.35}{10} = 244.935$

Mean $(\bar{y}) = \dfrac{\sum y}{N} = \dfrac{2982.55}{10} = 298.255$

∴ Karl Pearson's Coefficient of correlation

$$(r) = \dfrac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \dfrac{57948.85}{\sqrt{65267.27 x 81377.75}}$$

∴   (r) = 0.795

Appendix Table No. 9 – Net Profit Margin Ratio

Year	Net Profit/Loss After Tax	Sales	Net Profit Margin Ratio (NPAT/Sales)
2054/55	(5.91)	1053.76	(5.91)/1053.76 = (0.56%)
2055/56	(31.80)	1274.10	(31.80)/1274.10 = (2.50%)
2056/57	(0.15)	1278.19	(0.15)/1278.19 = (0.011)
2057/58	(14.00)	1387.36	(14.00)/1387.36 = (1.009%)
2058/59	(21.62)	1348.39	(21.62)/1348.39 = (1.60%)
2059/60	(107.56)	1484.77	(107.56)/1484.77 = (7.24%)
2060/61	(76.13)	1548.23	(76.13)/1548.23 = (4.91%)
2061/62	8.93	1595.90	8.93/1595.90 = 0.54%
2062/63	10.58	1535.81	10.58/1535.81 = 0.69%
2063/64	7.36	1589.66	7.36/1589.66 = 0.46%

Appendix Table No. 10 – Return on Working Capital (Current Assets)

Year	Net Profit/Loss After Tax	Current Assets	Net Profit Margin Ratio (NPAT/Sales)
2054/55	(5.91)	245.57	(5.91)/245.57 = (2.40%)
2055/56	(31.80)	268.66	(31.80)/268.66 = (11.83%)
2056/57	(0.15)	360.91	(0.15)/360.91 = (0.04%)
2057/58	(14.00)	412.29	(14.00)/412.29 = (3.39%)
2058/59	(21.62)	451.55	(21.62)/451.55 = (4.78%)
2059/60	(107.56)	501.42	(107.56)/501.42 = (21.45%)
2060/61	(76.13)	444.64	(76.13)/444.64 = (17.12%)
2061/62	8.93	450.76	8.93/450.76 = 1.98%
2062/63	10.58	466.15	10.58/466.15 = 2.27%
2063/64	7.36	496.26	7.36/496.26 = 1.48%

Appendix Table No. 11 – NPAT to Quick Assets

Year	NPAT	Current Assets (CA)	Inventory (Inv.)	Quick Assets (CA - Inv)	Ratio NPAT/Quick Assets
2054/55	(5.91)	245.57	128.16	117.41	(5.03%)
2055/56	(31.80)	268.66	140.41	128.25	(24.79%)
2056/57	(0.15)	360.91	190.19	170.72	(0.087%)
2057/58	(14.00)	412.29	186.58	225.71	(6.20%)
2058/59	(21.62)	451.55	188.51	263.04	(8.21%)
2059/60	(107.56)	501.42	219.05	282.37	(38.09%)
2060/61	(76.13)	444.64	165.71	278.93	(27.29%)
2061/62	8.93	450.76	156.21	294.55	2.92%
2062/63	10.58	466.15	169.21	296.94	3.56%
2063/64	7.36	496.26	104.83	391.43	1.88

Appendix Table No. 12 - Karl Pearson's Correlation Coefficient (r) between Profitability Ratio & Liquidity Ratio

Year	NPAT (X)	Liquidity Ratio (Y)	$U = X - \bar{X}$	$V = Y - \bar{y}$	U^2	V^2	UV
2054/55	-0.0503	0.9100	0.0507	0.0820	0.0026	0.0067	0.0042
2055/56	-0.2479	0.5000	-0.1469	-0.3280	0.0216	0.1076	-0.0482
2056/57	-0.0009	0.8500	0.1001	0.0220	0.0100	0.0005	0.0022
2057/58	-0.0620	0.9700	0.0390	0.1420	0.0015	0.0202	0.0055
2058/59	-0.0821	0.9700	0.0189	0.1420	0.0004	0.0202	0.0027
2059/60	-0.3809	0.6900	-0.2799	-0.1380	0.0783	0.0190	-0.0386
2060/61	-0.2729	0.7000	-0.1719	-0.1280	0.0295	0.0164	0.0220
2061/62	0.0292	0.7500	0.1302	-0.0780	0.0170	0.0061	-0.0102
2062/63	0.0356	0.8500	0.1366	0.0220	0.0187	0.0005	0.0030
2063/64	0.0188	1.0900	0.1198	0.2620	0.0144	0.0686	-0.0314
N = 10	**-1.0134**	**8.2800**			**0.1939**	**0.2658**	**-0.1476**

Where,   Mean $(\bar{x}) = \dfrac{\sum x}{N} = \dfrac{-1.0134}{10} = -0.10134$

Mean $(\bar{y}) = \dfrac{\sum y}{N} = \dfrac{8.28}{10} = 0.828$

∴ Karl Pearson's Coefficient of correlation

$$(r) = \frac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \frac{-0.1476}{\sqrt{0.1939 x 0.2658}}$$

∴   (r) = -0.593

Appendix Table No. 13 - Cash and Bank Balance to Current Assets

Year	Current Assets (X)	Cash & Bank (Y)	$U = X - \bar{X}$	$V = Y - \bar{y}$	U^2	V^2	UV
2054/55	245.57	87.01	-164.25	-89.72	26978.06	8049.32	14736.18
2055/56	268.66	90.68	-141.16	-86.05	19926.15	7404.26	12146.54
2056/57	360.91	133.93	-48.91	-42.80	2392.19	1831.67	2093.25
2057/58	412.29	183.46	2.47	6.73	6.10	45.32	16.63
2058/59	451.55	214.71	41.73	37.98	1741.39	1442.63	1584.99
2059/60	501.42	176.41	91.60	-0.32	8390.56	0.10	-29.13
2060/61	444.64	189.25	34.82	12.52	1212.43	156.80	436.02
2061/62	450.76	198.63	40.94	21.90	1676.08	479.70	896.67
2062/63	466.15	192.74	56.33	16.01	3173.07	256.38	901.96
2063/64	496.26	300.46	86.44	123.73	7471.87	15309.61	10695.39
N = 10	**4098.21**	**1767.28**			**72967.91**	**34975.79**	**43478.49**

Where, Mean $(\bar{x}) = \dfrac{\sum x}{N} = \dfrac{4098.21}{10} = 409.82$

Mean $(\bar{y}) = \dfrac{\sum y}{N} = \dfrac{1767.28}{10} = 176.728$

∴ Karl Pearson's Coefficient of correlation

$$(r) = \frac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \frac{43478.49}{\sqrt{72967.91 x 34975.79}}$$

∴   (r) = 0.8606

117

Appendix Table No. 14 - Cash and Bank Balance to Current Liabilities

Year	Cash & Bank (X)	Current Liabilities (Y)	$U = X - \overline{X}$	$V = Y - \overline{y}$	U^2	V^2	UV
2054/55	87.01	128.12	-89.72	-170.14	8049.32	28945.92	15264.17
2055/56	90.68	255.59	-86.05	-42.67	7404.26	1820.30	3671.24
2056/57	133.93	200.78	-42.80	-97.48	1831.67	9501.38	4171.74
2057/58	183.46	231.01	6.73	-67.25	45.32	4521.89	-452.69
2058/59	214.71	268.91	37.98	-29.35	1442.63	861.13	-1114.58
2059/60	176.41	406.14	-0.32	107.89	0.10	11639.17	-34.31
2060/61	189.25	398.44	12.52	100.19	156.80	10037.03	1254.52
2061/62	198.63	387.77	21.90	89.52	479.70	8012.94	1960.56
2062/63	192.74	347.11	16.01	48.86	256.38	2386.81	782.27
2063/64	300.46	358.68	123.73	60.43	15309.61	3651.18	7476.51
N = 10	**1767.28**	**2982.55**			**34975.79**	**81377.75**	**32979.41**

Where,   Mean $(\overline{x}) = \dfrac{\sum x}{N} = \dfrac{1767.28}{10} = 176.728$

Mean $(\overline{y}) = \dfrac{\sum y}{N} = \dfrac{2982.55}{10} = 298.82$

∴ Karl Pearson's Coefficient of correlation

$$(r) = \frac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \frac{32979.41}{\sqrt{34975.79 x 81377.75}}$$

∴   (r) = 0.6181

Appendix Table No. 15 - Analysis of Dispersion in Inventory

Year	Inventory (X)	$x = X - \bar{X}$	x^2
2054/55	128.16	-36.72	1348.8
2055/56	140.41	-24.47	599.075
2056/57	190.19	25.30	640.292
2057/58	186.58	21.69	470.63
2058/59	188.51	23.62	558.093
2059/60	219.05	54.16	2933.74
2060/61	165.71	0.824	0.67898
2061/62	156.21	-8.67	75.273
2062/63	169.21	4.32	18.697
2063/64	104.83	-60.05	3606.72
N = 10	**1648.86**		$\sum x^2 = \mathbf{10252}$

Where,   Mean $(\bar{x}) = \dfrac{\sum x}{N} = \dfrac{1648.86}{10} = 164.88$

Standard Deviation (S.D.)

$$= \sqrt{\frac{1}{N} \sum x^2}$$

$$= \sqrt{\frac{10252}{10}}$$

$\therefore$ S.D. $=$ 32.02

Again,

Coefficient of Variation (C.V.)

$$. = \frac{\dagger}{\bar{X}} \times 100$$

$$. = \frac{32.02}{164.88} \times 100$$

$\therefore$ C.V. $= 19.42$

Appendix Table No. 16 - Correlation between Sales and Inventory

Year	Sales (X)	Inventory (Y)	$U = X - \overline{X}$	$V = Y - \overline{y}$	U^2	V^2	UV
2054/55	1053.76	128.16	-355.86	-36.73	126634.20	1348.80	13069.20
2055/56	1274.1	140.41	-135.52	-24.48	18364.86	599.07	3316.91
2056/57	1278.19	190.19	-131.43	25.30	17273.06	640.29	-3325.63
2057/58	1387.36	186.58	-22.26	21.69	495.37	470.63	-482.84
2058/59	1348.39	188.51	-61.23	23.62	3748.75	558.09	-1446.43
2059/60	1484.77	219.05	75.15	54.16	5647.97	2933.74	4070.59
2060/61	1548.23	165.71	138.61	0.82	19213.56	0.68	114.22
2061/62	1595.9	156.21	186.28	-8.68	34701.36	75.27	-1616.19
2062/63	1535.81	169.21	126.19	4.32	15924.67	18.70	545.66
2063/64	1589.66	104.83	180.04	-60.06	32415.48	3606.72	-10812.66
N = 10	**14096.17**	**1648.86**			**274419.29**	**10252.00**	**3432.83**

Where, Mean $(\overline{x}) = \dfrac{\sum x}{N} = \dfrac{14096.17}{10} = 1409.61$

Mean $(\overline{y}) = \dfrac{\sum y}{N} = \dfrac{1648.86}{10} = 164.88$

$\therefore$ Karl Pearson's Coefficient of correlation

$$(r) = \frac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \frac{3432.83}{\sqrt{274419.29 x 10252}}$$

$\therefore$ (r) = 0.064

120

Appendix Table No. 17 - Correlation between Sales and Advanced Payment

Year	Advance Payment (X)	Sales (Y)	$U = X - \overline{X}$	$V = Y - \overline{y}$	U^2	V^2	UV
2054/55	23.04	1053.76	-40.20	-355.86	1615.64	126634.20	14303.67
2055/56	29.52	1274.1	-33.72	-135.52	1136.70	18364.86	4568.96
2056/57	33.57	1278.19	-29.67	-131.43	880.01	17273.06	3898.78
2057/58	39.63	1387.36	-23.61	-22.26	557.20	495.37	525.38
2058/59	44.78	1348.39	-18.46	-61.23	340.59	3748.75	1129.94
2059/60	102.13	1484.77	38.90	75.15	1512.82	5647.97	2923.08
2060/61	87.07	1548.23	23.84	138.61	568.11	19213.56	3303.84
2061/62	91.01	1595.9	27.78	186.28	771.45	34701.36	5174.01
2062/63	97.06	1535.81	33.83	126.19	1144.13	15924.67	4268.48
2063/64	84.54	1589.66	21.31	180.04	453.90	32415.48	3835.82
N = 10	632.35	14096.17			8980.55	274419.29	43931.95

Where,   Mean $(\overline{x}) = \dfrac{\sum x}{N} = \dfrac{632.35}{10} = 63.23$

Mean $(\overline{y}) = \dfrac{\sum y}{N} = \dfrac{14096.17}{10} = 1409.61$

∴ Karl Pearson's Coefficient of correlation

$$(r) = \frac{\sum UV}{\sqrt{\sum U^2 \sum V^2}}$$

$$= \frac{43931.95}{\sqrt{8980.55 x 274419.29}}$$

∴   (r) = 0.898

Appendix Table No. 18 - Analysis of Current Liabilities

Year	Current Liabilities (X)	$x = X - \overline{X}$	x^2
2054/55	128.12	-170.13	28944.22
2055/56	255.59	-42.66	1819.88
2056/57	200.78	-97.47	9500.40
2057/58	231.01	-67.24	4521.22
2058/59	268.91	-29.34	860.84
2059/60	406.14	107.89	11640.25
2060/61	398.44	100.19	10038.04
2061/62	387.77	89.52	8013.83
2062/63	347.11	48.86	2387.30
2063/64	358.68	60.43	3651.78
N = 10	**2982.55**		$\sum x^2 =$ **81377.75**

Where, Mean $(\overline{x}) = \dfrac{\sum x}{N} = \dfrac{2982.55}{10} = 298.25$

Standard Deviation (S.D.)

$$= \sqrt{\frac{1}{N} \sum x^2}$$

$$= \sqrt{\frac{81377.75}{10}}$$

$\therefore$ S.D. $= 90.21$

Again,

Coefficient of Variation (C.V.)

$$. = \frac{\dagger}{\overline{X}} \times 100$$

$$. = \frac{90.21}{298.25} \times 100$$

$\therefore$ C.V. $= 30.25$

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