

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the Study

Nepal is classified as a least developed agro based country having a per capita income of about US\$ 322. According to the National Census 2001, the total population of the country is about 23.15 million, the present population is estimated to be around 25.8 million. About 87% of the populations are in the rural areas. More than 30% of the population subsists below the poverty line. Economic growth rate of the country has not improved substantially over time to overtake population growth. As the current population growth is 2.25 % per annum, the gain achieved by development activities has been over shadowed by growing population. (Central Bureau of Stat., 2006:23)

Agriculture is the largest sector and the backbone of the Nepalese economy. About 76% of the population maintains their livelihood through agriculture. The share of agriculture sector to GDP is about 39%. (Pant, 2005:58)

Nepal's industrial sector is very small in terms of its contribution to the national economy. It employs only about 3% of the total employment in the country. The share of the manufacturing sector in the GDP is around 10%. In Nepal, most of the manufacturing units run below their capacity. Capacity utilization in general has been quite unsatisfactory. Underproduction is a regular phenomenon. The average capacity utilization is around 41% of total manufacturing industries. (Pant, 2005:257-258)

Nepal had late start in development. Its pace of industrialization has been slow. The history of industrial growth in Nepal can be divided into three distinct eras: -

- i. Era of crafts and cottage industries (till 1935)
- ii. Era of haphazard Industrial growth (1936-1955)
- iii. Era of Planned Industrial growth (1956 to present) (Agrawal, 2003:84)

Industrialization is a comparatively new phenomenon in Nepal. Biratnagar Jute Mills set up in 1936 marked the beginning of the organized industry in the country. In the years that followed, industrial growth was accelerated. Industries like Morang Cotton Mills (1941), the Morang Sugar Mills (1946), the Ragupati Jute Mills (1946), and the Juddha Match factory (1946) were set up in Biratnagar in collaboration with Indian businessmen.

Industrialization development in Nepal however started getting regular attention of the government under the aegis of the development plans after the dawn of democracy in 1951. Several industries were established in the public sector mostly with the financial and technical assistance of the USSR and China. (Pant, 2005:251)

Public sector enterprises play an important role in Nepal. They are present in almost all key sectors of the economy, as almost every nation has found as one time or another that it is necessary to establish public enterprises in order to meet the requirements of economic development of the nation. There are two reasons for the emergence of public enterprises in developing countries. First, Private enterprises and managerial competence are so inadequate that there is little hope of augmenting economic growth by relying society on private initiatives and this leads to government intervention directly and actively in the economy in order to achieve its development goals. The second reason pertains to the structural changes that are required. These

changes tend to be so major and the investments needed are so large and long term in their nature that very few private intestines will respond adequately. (The Nepalese Journal of public Administration, 2005:147-150)

The private companies also plays vital role in industrialization and economic growth of the nation. By the help of private companies, the government will be able to reduce its investment in public sector, which are incurring continuous loss. Thus, the government has made efforts to create an appropriate and congenial industrial environment for the private sector to play a dominant role in the national industrialization endeavour. In this context, it should be mentioned that the government has implemented liberalized economic policy, inter alias Industrial Act, Foreign Investment and Technology Act, and has privatized some public enterprises.

The reason for emphasizing industrialization is that industrial development would absorb rural under-employed people to these fields of production where higher productivity is possible without reducing total agricultural output. Industrialization helps the unemployed and underemployed persons especially from the agriculture sector to find alternative modes of productive activities and move into much more productive activities, thereby reducing automatically the pressure on land (Industrialization in Nepal, 2006:34). That is why in every “development plans of Nepal”, the word industrialization has been mentioned too frequently.

Manufacturing public enterprises are playing dominant role in the Nepalese economy. What happens in economy is a part of the effects coming from that performance of manufacturing enterprises as well as their working capital management. So, the study focus on the relationship between working capital management and performance of selected manufacturing companies in Nepal.

## **1.2 Focus of the Study**

Every manufacturing firm needs various types of assets to run the production process without any interruption. Some assets are required to meet the needs of regular production and some to meet the expense and short terms obligation of firms. So management has to manage different types of assets especially required to run the operation of the firm smoothly and to run daily production activities of the company besides the manpower, equipment etc. one of the major components is the working capital without these businesses cannot be operated smoothly.

Working capital management is usually describes as involving the administration of these assets namely cash, marketable securities, receivables, inventories and the administration of current liabilities. It means the working capital management is concerned with the problem that arise in attempting to manage the current assets, the current liabilities and the inter-relationship that exist between them (Van Horne, 1991:126).

Working capital management is crucial aspect of financial management of a firm. It refers to the administration of all aspects of the current assets and current liabilities. It includes that type of capital, which circulates from one to another form in the ordinary conduct of business. It plays a vital role in every business organization, whether they are trading or manufacturing concerns. It is the life blood and controlling nerve center for any types of business because without the control upon it no business organization can run smoothly. As the management of current assets and current liabilities of the business organization is necessary for day to day operations. Thus, it plays the key role in the success and failure of an organization. However, its role is more significant in manufacturing concern. Any error in any components of working capital halts the whole production process. So the study is focused on how the working capital management is managing in Nepalese manufacturing companies listed in NEPSE.

### **1.3 Statement of the Problem**

Working capital management refers to the proper management of firm's current assets and current liabilities, recognizing the interrelations and interactions that exist between them. It is concerned with all decisions and acts that influence the determination of the appropriate level of current assets and their efficient use as well as the choice of the methods of financing them, keeping in view of liquidity.

The working capital of an enterprise is that portion of its total capital which is put for various operative purposes, and has the characteristics of greater divisibility, liquidity and rapidity of turnover which influence the types and terms of financing. Hence, management of working capital is itself a decision making areas within the framework of all overall financial management.

The industrialization in Nepal is being developing very slowly in spite of various attractive policies of government in respect of industrialization. Most of the Nepalese industries are still facing problems of working capital management due to lack of professional manpower. Managers still focus their attention on the procurement aspect of working capital but it seems it is not efficiently utilized the funds defined in terms of working capital.

Basically this study has tried to find out the issues of working capital management of manufacturing companies. In order to highlight the problems more specifically, following research questions are set: -

- a) Is selected companies investment in current assets appropriate to their total asset level?

- b) Is there proper investment in each type of working capital in selected manufacturing companies?
- c) Whether there is there sound liquidity position in manufacturing companies?
- d) Is the Working capital policy appropriate, followed by manufacturing companies with reference to risk return trade off?
- e) Is the overall profitability of manufacturing companies satisfactory?
- f) To see if the inventory conversion, receivable conversion and ultimately cash conversion cycle appropriate?

## **1.4 Objectives of the Study**

The main objective of this study is to examine the overall working capital management of selected manufacturing companies. To achieve these basic objectives, the following specific objectives are drawn: -

- ) To examine the working capital management of the companies under study.
- ) To analyze the variables affecting working capital of manufacturing companies.
- ) To analysis the liquidity position, activity ratio, profitability ratio, turnover position of the selected companies.
- ) To evaluate the relationship between selected variable regarding Working capital.

## **1.5 Research Hypothesis**

For the study some set of null and alternative hypothesis have been formulated and tested:

**H<sub>0</sub>:**

- (i) There is no significant difference in composition of working capital between UN Ltd and BN Ltd.
- (ii) There is no significant difference in liquidity position between UN Ltd and BN Ltd.
- (iii) There is no significant difference in profitability position between UN Ltd and BN Ltd.

**H<sub>1</sub>:**

- (i) There is significant difference in composition of working capital between UN Ltd and BN Ltd.
- (ii) There is significant difference liquidity position between UN Ltd and BN Ltd.
- (iii) There is significant difference profitability position between UN Ltd and BN Ltd.

## **1.6 Significance of Study**

The firm should maintain a sound working capital position. It is very important that current assets are maintained at the optimal level in order to minimize the cost of holding various current assets. Thus, the main objective of working capital management is to minimize the cost of maintaining current assets.

Working capital is the most crucial area in the enterprise management because both shortage of funds for working capital as well as the uncontrolled over expansion of working capital has caused many business to fail. Thus, it is very important to draw the attention of financial managers towards working capital management.

The other important reasons for the studies are: -

- a) A large portion of the financial manager's valuable time is allocated to working capital management.
- b) More than half of the total assets are typically invested in current assets.
- c) There is direct relationship between a firm's growth and its working capital management procedures.
- d) Investment in fixed assets may be reduced by resting or leasing, but in inventories and receivables are usually unavoidable.
- e) The financing of current assets involves a trade off between risk and return.

In short, this study will help the firm to attain efficiency and profitability with proper management of working capital and its components.

The study of working capital management is also important at least for four reasons. Firstly, public enterprises must determine the adequacy of investment in current assets otherwise it would seriously erode their liquidity position. Secondly, they must select the type of current assets suitable for investments so as to raise their operative efficiency. Thirdly, they are required to ascertain the turnover of current assets that greatly determine the profitability of public enterprises. Lastly, they must find out the appropriate sources of funds used to finance current assets.

## **1.7 Limitation of Study**

This study has been limited to the working capital management of selected manufacturing enterprises (listed in Nepal Stock Exchange Limited). Out of 29 manufacturing companies, only two companies have been taken for the research purpose.



The other constraints are as follows: -

- a) The study covers the period of only five years, i.e. from 2000/01 to 2005/06. As the frequent time interval data (i.e., monthly, quarterly or half yearly data) could not be obtained, the study has been forced to use the annual data.
- b) The data used are basically secondary in nature, as analysis of working capital of selected manufacturing companies are based on financial statements (profit and loss account and balance sheet) provided by company,
- c) The lack of sufficient time and resources is another limitation of the study. The study is to fulfill the partial requirement of the MBS program and has to be conducted and submitted within the prescribed time.
- d) The accuracy of the research work will be dependent on the data provided by concerned companies.

## **1.8 Organization of the Study**

For the systematic presentation of the report the research is divided into five chapters as follows:

### **Chapter 1 : Introduction**

The first chapter includes general background of the study, focus of the study, statements of the problem, objectives of the study, research hypothesis, significance of the study and limitation of the study.

### **Chapter 2 : Review of Literature**

The second chapter deals with the issues related to the study which are already published in the form of books, journals, articles or unpublished thesis and past research works.

### **Chapter 3 : Research Methodology**

The third chapter expresses the way and the technique of the study applied in the research process. It includes research design, population and sample, data collection procedure and processing, tools and methods of analysis.

### **Chapter 4 : Presentation and Analysis of Data**

The fourth chapter is the important chapter in which collected and processed data are presented, analyzed and interpreted with using financial tools as well as statistical tools.

### **Chapter 5 : Summary, Conclusions and Recommendation**

Finally, the fifth and the last chapter provides the summary of the study, conclusion and recommendations which are forwarded to the related manufacturing companies to improve their working capita policies.

At the end, an extensive part of references and appendices are also included as the part of this thesis/dissertation work.

# **CHAPTER II**

## **REVIEW OF LITERATURE**

The purpose of reviewing the literature is to develop some expertise in one's area, to see what new contributions can be made, and to receive some ideas for developing a research design. Thus, the previous studies cannot be ignored as they provide the foundation to the present study. Thus, this chapter is broadly discussed under two sections: -

- Conceptual Framework
- Review of Related Studies

### **2.1 Conceptual Framework**

The term “working capital management” is concerned with the management of current assets and current liabilities of the business that is necessary for day-to-day operation. Working capital is a controlling nerve center of business because without the proper control upon it no business organization can run smoothly. Thus, the success and failure of any enterprises not only in the short run but also in long run largely depends upon it.

#### **2.1.1 Concepts of Working Capital**

In the concern of working capital the well known professors Weston and Brigham have given the concept of working capital as: “the term working capital originated at a time when most industries were closely related to agriculture, processors would by crops in the fall. Process them, sell the finished product and end up just before the next harvest with relatively low

inventories. Bank loan with maximum maturity of one year were used to finance both the purchase and the processing costs and these loans were retired with the process from the sale of the finished products.”

### **What is Working Capital?**

Business firms need various types of assets for regular operation. Some assets are required for long term and some others are required especially to meet daily needs and short-term obligations. The assets such as cash, marketable securities, accounts receivables, and inventories are required in order to meet the daily operating needs. These assets are short-term assets, termed as current assets and they are liquid assets in the sense that they can be liquidated within a period of less than one year. Cash and marketable securities are respectively considered as purely liquid and near liquid assets whereas the accounts receivable and inventories are comparatively less liquid. The capital invested in these assets is known as working capital. (Pradhan, 2003:173)

Working Capital has to be regarded as one of the conditioning factors in the long run operations of a firm which is often inclined to treat it as an issue of short run analysis and decision making. Working capital management involves deciding upon the amount and composition of current assets and how to finance these assets. (Kuchhal, 2005:128)

Working Capital represents portion that circulates from one form to another in the ordinary conduct of business. This idea embraces the recurring transition from cash to inventories to receivables to cash that form the conventional chain of business operations. (Brown and Howard, 2002:78)

Working Capital refers to fund that are used during an accounting period to generate a current income of a type which is consistent with the major purpose of a company's existence. (Kulkarni,2003:87) The term working capital often is used to refer the firms' current assets (primarily cash, marketable securities, account receivables and inventories). Working capital refers to the fact that most of its components very closely related with the level of production and sales. Most decision with respect to working capital and its components have their impact over weeks and months rather than years. For this reason, working capital management often is referred to as short-term finance. (Soloman & Pringle, 2001:51)

There are two concepts of working capital: **Gross concept and Net concept**. Gross working capital refers to the firm's investment in current assets. Current assets are the assets which can be converted into cash within an accounting year (or operating cycle) and include cash, short-term securities, debtors, (accounts receivable or book debts) bills receivables and stock (inventory). Net working capital refers to the difference between current assets and current liabilities. CLs are those claims of outsiders which are expected to mature for payment within an accounting year and include creditors (accounts payable), bills payable, and outstanding expenses. Net working capital can be positive or negative. A positive Net working capital will arise when current assets exceed current liabilities. A negative Net working capital occurs when current liabilities are in excess of current assets. (Pandey, 2002:807-808)

The two concepts of Working Capital -Gross and Net- both are equally important for the efficient management of working capital. The Gross working capital concept focuses attention on two aspects of current assets management : - (a) how to optimize investment in current assets? (b) How should current assets be financed? The consideration of the level of investment in current assets should avoid two-danger points-excessive and inadequate investment in current

assets. Investment in current assets should be just adequate, not more not less, to the needs of business firm. Another aspect of the gross working capital points to the need of arranging funds to finance current assets. Whenever a need for working capital funds arises due to the increasing level of business activity or for any other reason, financing arrangement should be made quickly. Similarly if suddenly, some surplus funds arise they should not be allowed to remain idle, but should be invested on short-term securities. Net working capital is a qualitative concept. It indicates the liquidity position of the firm and suggests the extent to which working capital needs may be financed by permanent sources of funds. Current assets should be sufficiently in excess of current liabilities to constitute a margin or buffer or maturing obligations within the ordinary operating cycle of a business. Net working capital concept also covers the question of judicious mix of long-term and short-term funds for financing current assets. In every firm, management must decide the extent to which current assets should be financed with equity capital and/or borrowed capital. (Pandey, 2002: 808-809)

The gross concept of working capital refers to total current assets and the net concept refers to current assets less current liabilities. Gross working capital and total current assets are thus synonymous. The need for the net concept of working capital arises due to the fact that the gross concept fails to consider current liabilities. The gross concept emphasizes that excessive investment in CAs affects profitability, as idle investment yields nothing. Similarly, inadequate investment in current assets makes it difficult to carry out the day- to- day operation of business smoothly. The need for the net concept of working capital arises due to the fact that short-term creditors want an enterprise to maintain current assets at a higher level as compared to current liabilities. It shows the extent of protection provided to short-term liabilities. (Pradhan, 2003:19)

**Working capital Management** is concerned with the problems that arise in attempting to manage the current assets, the current liabilities and the inter-relationship that exist between them. The term current assets refer to those assets, which in the ordinary course of business can be, or will be, turned into cash within one year without undergoing a diminution in value and without disrupting the operations of the firm. Current liabilities are those liabilities which are intended at their inception to be paid in the ordinary course of business, within a year, out of the current assets or earnings of the concern. The goal of working capital management is to manage the firm's current assets and current liabilities in such a way that a satisfactory level of working capital is maintained. This is so because if the firm cannot maintain a satisfactory level of working capital, it is likely to become insolvent and may even be forced into bankruptcy. Each of the current assets must be managed efficiently in order to maintain the liquidity of the firm while not keeping too high level of any one of them. Each of the short-term sources of financing must be continuously managed to ensure that they are obtained and used in the best possible way. The interaction between current assets and current liabilities is, therefore, the main theme of the theory of working capital management. (Khan & Jain, 1997:603)

The main objective of working capital management is to minimize the cost of maintaining current assets. The cost of maintaining necessary current assets depends on the size of such assets held. How much working capital is needed for a firm to run its regular activities? What types of financing are appropriate to use for working capital? Does the size of need to be changed when the sales or volume of business change? In particular, management of working capital deals with the following aspects: (Pradhan, 2003:140-142)

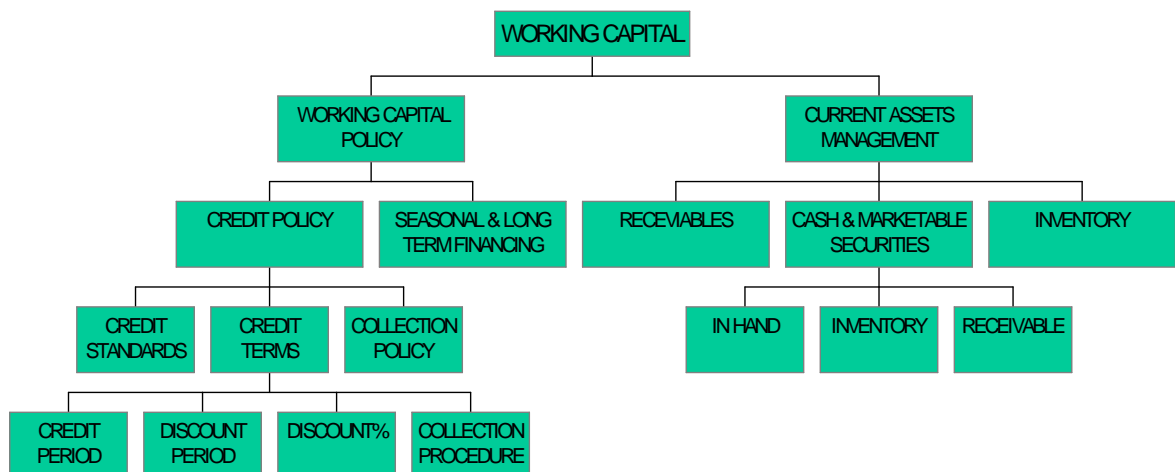
- a) Size of working capital to maintain-size of each type of current assets.
- b) Size of permanent and seasonal working capital.
- c) Sources of financing-short and/or long term, and debt and/or equity financing.

- d) Cost of financing- cost of short-term Vs long terms financing.
- e) Risk associated with types of financing- trade off between cost and risk.
- f) Maintenance of current ratio- minimizing the risk of cash – flow problem.

The objective of managing working capital is the same as the basic objective of the firm, that is, to maximize the value of the firm. In case of working capital, the objective is to minimize the cost of working capital and thereby contributes in the value maximization.

The overall picture of working capital management is presented in the following figure: -

**Figure 2.1**





The definition described above conveys in some way or other, the same meaning. They virtually represent the characteristics of the working capital. It seems that there is consensus on the following special characteristics of the working capital: - (Mathur, 2001:96- 97)

- a) **Short Life:** - Working capital is characterized by assets with a life span of less than 1 year such as cash marketable securities, accounts receivables and inventories etc. this short life span leads to high volatility of the investments as required to finance working capital.
  
- b) **Nearness to cash or liquidity:** - This basic characteristic constitutes the first line of defense against technical insolvency. Cash is the most liquid assets having zero conversion time and 100% conversion rate. But for inventory and marketable securities two factors that is, (i) nearness to cash or amount of time required converting assets into cash, and (ii) Price realized on conversion must be considered.
  
- c) **Lack of Synchronization:** - Since the enterprise cannot produce on order only and cannot insist on cash payments, there is always the problem of synchronization in cash receipts and disbursements. It is also due to the level of investments in working capital that is affected by the sales volume, production policies and collection policies.

The basic characteristics of working capital as mentioned above indicate that it is a term of capital intended to be kept moving or circulating and its potential for earning comes from movements. Though the expenditures cannot be controlled and planned its income is usually subject to random variation and is not controllable.

## 2.1.2 Determinations of Working Capital

The total working capital requirement is determined by a variety of factors, each having a different importance. They also vary from time to time. In general, the following factors are involved in a proper assessment of the quantum of working capital required: -

- a) **Nature of Business:** - Nature and size of the business greatly affect the need of working capital. Greater the size of firm, greater will be the need of working capital. Similarly the trading business needs more working capital than that of service type business.
- b) **Manufacturing Cycle:** - Longer the manufacturing the cycle greater will be the working capital need.
- c) **Business Fluctuation:** - Business fluctuation is another determinant of working capital need. Naturally the recession needs more working capital than in the period of boom.
- d) **Credit Policy and Availability of Credit:** - If the firm has liberal credit policy it has to invest more in working capital. In the other hand if the firm gets credit, it has to invest fewer amounts in working capital.
- e) **Growth and Expansion Activities:** - The higher the volume and expansion activities, the higher the needs of working capital as it cost more and vice versa.
- f) **Turnover of Circulating Capital:** - How frequently and rapidly the working capital is converted into cash also determines the need of working capital. And such turnover is determined by demand and sales policy of the particular enterprise.
- g) **Price level Change:** - Generally rising price levels will require a firm to maintain higher amount of working capital. Same level of CAs will need increased investment when price increases.

- h) **Operating Efficiency:** - The lower degree of wastage and higher the operating efficiency, lower will be the working capital and vice versa.
- i) **Others:** - Factors such as coordination between production and distribution activities, conservative dividend policy as well as liberal depreciation policy strengthen the working capital position of the enterprise.

Basically a firm's requirement for working capital is effected by four factors which can be studied from the following table:

**Table 2.1**  
**Source of Changes in Working Capital Needs**

<b>Source of Change</b>	<b>Working affected</b>	<b>Reason</b>
Sales Volume	Permanent	Different levels of cash, receivables and Inventory needed at new sales level.
Seasonal and Cyclic factors	Variable	Receivables and Inventory must be available on temporary basis.
Technology	Permanent	Level of inventory must support the new production capability.
Policies of Firm	Both	Some policies tie up working capital, others free it.

(Source: - Financial Decision Making, Concept, Problems and Cases John J. Hampton)

### **2.1.3 Working Capital Financing (Sources of Working Capital)**

The working capital is needed to maintain various types of current assets. The magnitude of current assets needed is not always the same, it increases and decreases over time. However, there is always a minimum level of current assets, which is continuously required by the firm to

carry on its business operations. This minimum level of current assets referred to as permanent, or fixed, working capital. Any amount over and above the permanent level of working capital is temporary, fluctuating or variable working capital. This portion of the required working capital is needed to meet fluctuations in demand consequent upon changes in production and sales as a result of seasonal changes, temporary working capital is created to meet liquidity requirements that are of a purely transient nature.

A source or a combination of various sources of financing to be used depends on the type of current assets (permanent and temporary) to be maintained. The following is the list of sources of short term and long-term finance for working capital: - (Pradhan, 2003:144-145)

**Short Term:** - Short-term sources are used to finance the temporary working capital. The Short-term sources are: -

- a) Operating sources- i.e. accounts payable or trade credits.
- b) Banking sources- i.e. accounts receivables loans, inventory loans, short-term loans and notes payable, line of credit and overdraft provision.

**Long term:** - Long-term sources are used to finance the permanent assets. The long-term sources of financing are: -

- a) Long-term debt- term loans and bonds
- b) Stock issues- common stock and preferred stocks
- c) Retained earnings.

## **2.1.4 Working Capital Policy**

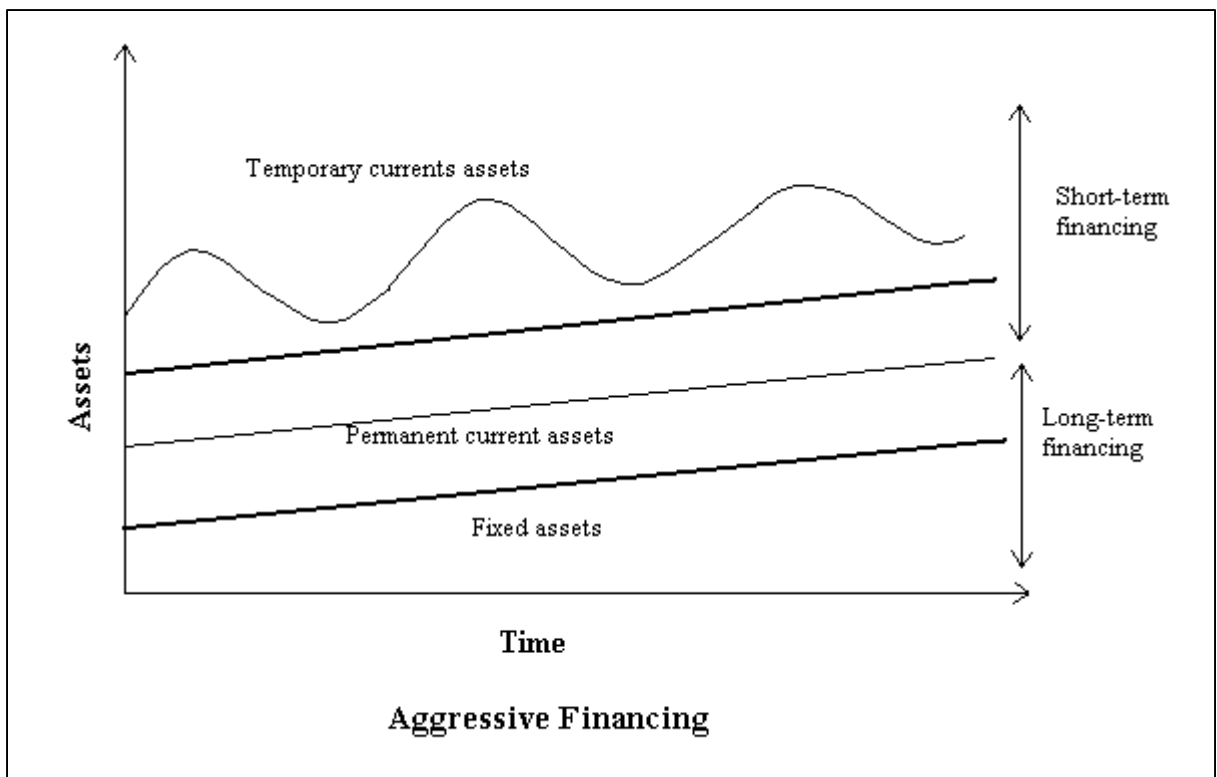
Deciding how current liabilities should be used to finance current assets is one of the most important decisions concerning working capital management. (Pradhan, 2003:23). Determining an appropriate financing mix is a matter of risk-return trade-off. A number of financing mixes are available to financial manager ranging from low-liquidity high profitability policies to high-liquidity low profitability policies and his job is to pick the one that properly balances profitability and liquidity. (Lawrence, 1998:10)

In an enterprise the level and quality of CAs and CLs is guided by the working capital policy and management adopted by it. Working Capital management involves all aspects of administration of CAs and CLs.

Working capital investment policy refers to the policy that regulates current assets. The policy provides guidelines to monitor and manage current assets. working capital refers to the firm's policies regarding (I) target levels for each category of current assets and (II) how current assets will be financed. (Brigam & Houston, 2001:695)

- a) **Aggressive Approach:** - Under the aggressive policy, the firm finances a part of its permanent current assets with short-term financing. Some extremely aggressive firms may even finance a part of their fixed assets with short-term financing. (I.M.Pandey: P-829). Firms are said to follow aggressive policy if they depend more on short-term credit to finance the whole of CAs and a part of the FAs. Although the short-term financing involve less cost, it is more risky than long-term financing, thus the aggressive financing mix is quite risky leading to high profitability and low liquidity.

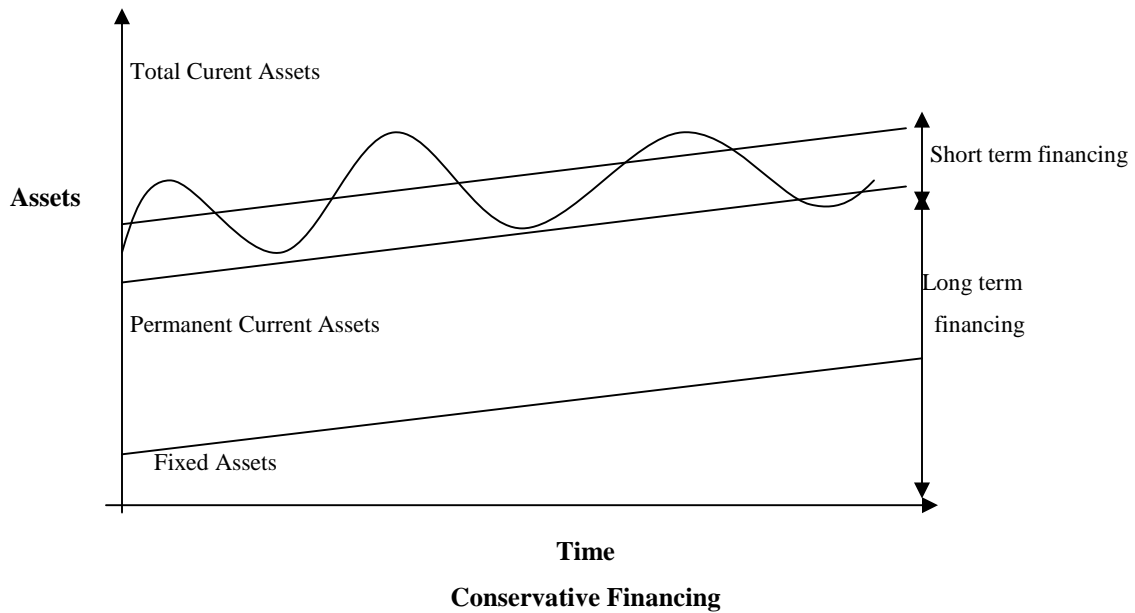
**Figure 2.2**



**b) Conservative Approach:** - The financing policy of a firm is said to be conservative when it depends more on long term funds for financing needs. Under this approach the firm finances its permanent assets and a part of temporary current assets with long-term financing (I.M .Pandey, 1996:828). This approach restricts the use of short-term funds to only emergency situation or when there is an unexpected outflow of funds (M.Y.Khan &

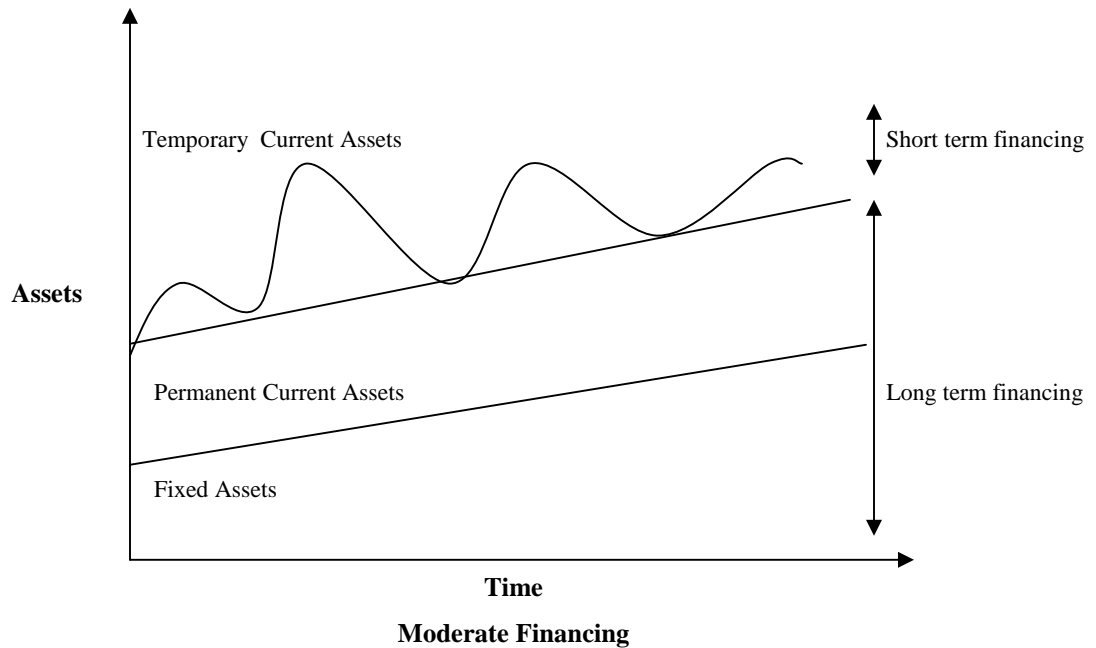
P.K.Jain, 1998:622). This approach relies heavily on long-term financing, therefore it implies greater liquidity and lower risk of technical solvency, all other things held constant.

**Figure 2.3**



c) **Moderate Approach:** -A moderate approach to CA financing involves making, to the extent possible, the maturities of assets and liabilities, so that temporary current assets are financed with short-term non-spontaneous debt, and permanent current assets are financed with long-term debt or equity, plus spontaneous debt. This approach therefore divides the requirements of total funds into permanent and seasonal components, each being financed by a different source. Moderate working capital policies follow the medium way between aforementioned two extreme working capital policies. This policy helps public enterprises to consider both profitability and risk with adequate liquidity position.

**Figure 2.4**



## **Goals of working capital policies**

The firm's policies for managing its working capital should be designed to achieve three goals: -

- I) Adequate Liquidity:** - If a firm lacks sufficient cash to pay its bills when due, it will experience continuing problems. The most important goal is to achieve adequate liquidity for conduct of day-to-day operations.
- II) Minimization of Risk:** - In selecting its source of financing, payables and other short-term liabilities may involve relatively low costs. The firm must ensure that these near-term obligations do not become excessive compared to the CAs on hand to pay them. The matching of assets and liabilities among current accounts is a task of minimizing the risk of being unable to pay bills and other obligations.



**III) Contribute to Maximizing Firm's Value:** - The firm holds working capital for the same purpose as it holds any other assets, that is, to maximize the present value of common stock and value of the firm. It should not hold idle CAs any more than it should have idle FAs. The investment of excess cash, minimizing of inventories, speedy collection of receivables, and elimination of unnecessary and costly short-term financing all contribute to maximizing the value of the firm.

### **The Cost Trade-Off**

The firm's decision about the level of investment in CAs involves a trade-off between risk and return. When the firm invests more in CAs it reduces the risk of illiquidity but loses in terms of profitability since the opportunity of earning from the excess investment in CAs is lost. Thus, the cost of liquidity (through low rates of return) increases with the level of CAs.

Similarly, the cost of illiquidity is the cost of holding insufficient CAs. The firm will not be in a position to honor its obligations if it carries too little cash. This may force the firm to borrow at higher rate of interest, which adversely affects the firm's credit worthiness and threaten solvency of firm.

In determining the optimum level of CAs, the firm should balance the profitability-solvency tangle by minimizing total costs-cost of liquidity and cost of illiquidity. The firm should maintain its CAs at that level where the sum of these two costs is minimized.

### **Adequacy of Working Capital**

The proper functioning of business operation will be ensured only when the management would maintain the right amount of working capital on continuous basis. Both excessive as well as inadequate working capital positions are dangerous from the firm's point of view which is reflected below: -

The dangers of excessive working capital are: -

- It results in unnecessary accumulation of inventories. Thus, chances of inventory mishandling, waste, theft and losses increase.
- It is an indication of defective credit policy and stock collection period. Consequently, higher incidence of bad debts results, which adversely affects profit.
- Excessive working capital makes management complacent, which degenerates, into managerial inefficiency.
- Tendencies of accumulating inventories tend to make speculative profits grow. This may tend to make dividend policy liberal and difficult to cope with in future when the firm is unable to make speculative profits.

**The dangers of inadequate Working Capital are: -**

- It stagnates growth. It becomes difficult for the firm to undertake profitable projects for non-availability of working capital funds.
- It becomes difficult to implement operating plans and achieve the firm's profit target.
- Operating inefficiencies creep in when it becomes difficult even to meet day-to-day commitments.
- FAs are not efficiently utilized for the lack of working capital funds. Thus, the firm's profitability would deteriorate.

- Paucity of working capital funds render the firm unable to avail attractive credit opportunities etc.
- The firm loses its reputation when it is not in a position to honor its short-term obligations.

### **Need for working capital**

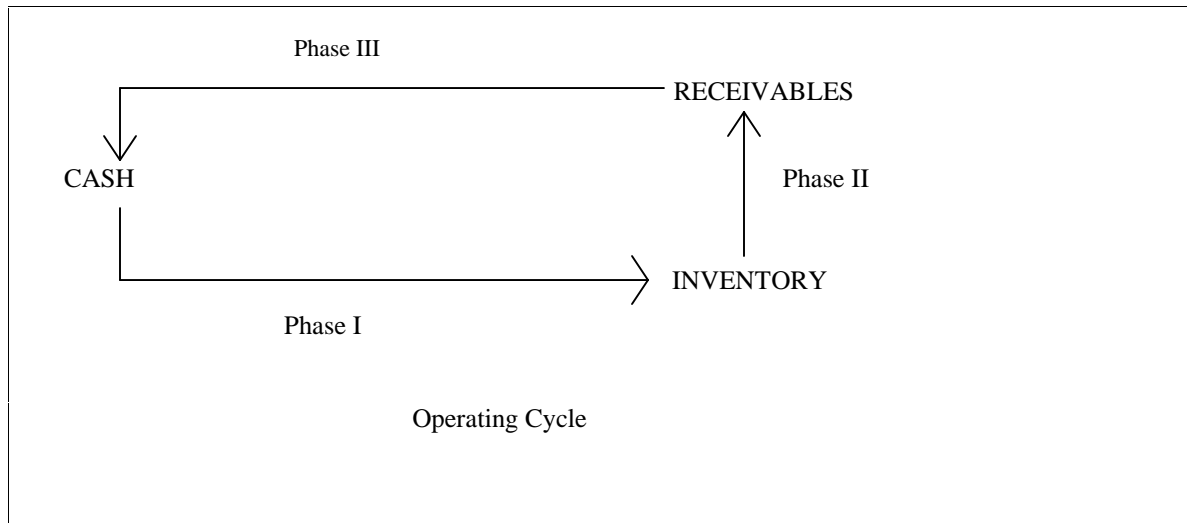
The need for working capital to run the day-to-day business activities cannot be overemphasized. The objective of financial decision-making is to maximize the shareholders' wealth. To achieve this, it is necessary to generate sufficient profits. The extent to which profits can be earned will naturally depend upon the magnitude of the sales, among other things. However, sales do not convert into cash instantly, there is invariably a time lag between the sale of goods and the receipt of cash, which is referred to as the operating or cash-cycle. Therefore, sufficient working capital is necessary to sustain sales activity.

Operating cycle can be said to be at the heart of the need for working capital. "The continuing flow from cash to suppliers, to inventory, to accounts receivable and back into cash is what is called the operating cycle"(Joy O.M, P-406). "Operating cycle is the time duration required to convert sales, after the conversion of resources into inventories, into cash" (I.M.Pandey, 1996: 809). Thus, the term cash cycle refers to the length of time necessary to complete the following cycle of events: -

- a) Conversion of cash into inventory
- b) Conversion of inventory into receivables
- c) Conversion of receivables into cash.

This is presented in the following figure: -

**Figure 2.5**



(Source: - M.Y.Khan &P.K.Jain, Financial Mgmt: Text & Problems, Second Edition)

In phase I, cash gets converted into inventory. This would include purchase of raw materials into work-in- progress, finished goods and terminate in the transfer of goods to stock at the end of the manufacturing process. In the case of trading organization, cash will be converted into inventory directly. In phase II of the cycle, the inventory is converted into receivables credit sales are made to customers. The last phase i.e. phase III represents the stage when receivables are collected. This phase completes the operating cycle. Thus, the firm has moved from cash to inventory, to receivables and to cash again.

If it were possible to complete the sequences instantaneously, there would be no need for current assets (Working Capital). But since it is not possible, the firm is forced to have current assets. Since cash inflows and cash outflows do not match, firms have to necessarily keep cash or invest in short term liquid securities so that they will be in a position to meet obligations when they become due. Thus, adequate working capital is absolutely necessary for smooth sales activity, which in turn enhances the owner's wealth.

## **2.2 Review of Related Studies**

### **a) Review of Journals/ Articles**

This part is mainly focused on the review of Journals and articles published by different management experts about working capital management. It is not possible to estimate working capital needs accurately, the firm must decide about levels of current assets to be carried. The current holding of the firm depends upon the working capital policy. It may follow a conservative or an aggressive policy. These policies have different risk return implications (Van Horne, 1970:18). Working capital management is usually described as involving the administration of these assets namely cash, marketable securities, receivable, inventories and the administration of current liabilities. It means the working capital management is concerned with the problem that arises in attempting to manage current assets, current liabilities and the interrelationship that exists between them (Van Horne, 1970:25).

The financing manager should determine the optimum level of current assets so that the wealth of shareholders will be maximized. In fact, optimum level of each type of current assets should be fixed (Walker, 1964:94-96). The value represented by current assets circulates among several balance sheet accounts, cash is used to purchase raw material and pay the labor and the other manufacturing cost to produce product, which are then carried as inventories. When the inventories are sold, account receivables are created. The collection of the receivable brings cash into the firm and process starts over again. Because of the circulating nature of the current assets working capital is interrelated changeable used as circulating assets (Hampton, 1986: 54).

**Pradhan (1982)** has published a book i.e. management of working capital in Nepalese PEs. This book is based on the study of nine manufacturing enterprises of Nepal from the duration of ten years from 1973 A.D. to 1982 A.D. The major objective of this study is to examine the behavior and management of working capital in manufacturing PEs of Nepal. The specific objectives undertaken in his study are: -

- a) To conduct risk-return analyzes of working capital position.
- b) To assess the financial liquidity position of the enterprises.
- c) To determine the structure and utilization of working capital and
- d) To estimate transactions demand functions of working capital and its various components.

His Study has mentioned the following findings: -

- a) It reveals that most of the selected enterprises achieved a trade-off between risk and return, there by following neither an aggressive nor a conservative approach.
- b) The liquidity measures showed a poor liquidity position in majority of Manufacturing PEs. It has been noticed as the enterprises have either negative cash flows or negative earnings before tax or they have excessive net current debts, which cannot be paid within a year.
- c) The Nepalese manufacturing PEs have on an average half of their total assets in the form of CAs. Of all the different components of CAs, the share of inventories in total assets, on an average, is largest followed by receivable, and cash in most of the selected enterprises.
- d) It has also noticed that the adjustment speed of actual to desired balance had been observed as the highest for cash followed by inventories, Net working capital

receivable and Gross working capital. However, the speed of adjustment was much slower in all these cases.

- e) The regression results suggest strongly that the demand for working capital and its components is a function of both sales and their capital cost. The effect of capital costs has been observed for receivables, Gross and Net Working Capital.

His study is concerned with interrelationships that exist between managing CAs and CLs. The study has employed ratio analysis, discriminate analysis and econometric models for its analysis. In short, the study provides an extensive and comprehensive survey on the overall liquidity position, working capital policy, and working capital utilization and demand functions of the Current Assets.

**Pradhan and Koirala (2003)** jointly prepared a research study on the “Aspect of Working Capital Management in Nepalese Corporations”. In a research study, they focus on evaluating working capital position of selected manufacturing and non-manufacturing corporations of Nepal. Altogether eleven enterprises, five manufacturing and six non-manufacturing corporations had been considered and comparison had been made for the fiscal year 2031/32 and 2035/36. The problem dealt in this study were size of investment, trend of investment and need to control investment in current assets management and it also dealt with the motive for holding cash and inventory and the major factors affecting the size of investment. The study concluded that investment in CAs had declined over the period of time in both types of corporations. However, the non-manufacturing corporations had consistently more investment in cash and receivables as compared to manufacturing PEs due to more liberal and less consistent credit policies. Thus, Inventory management is of great significance to manufacturing corporations and the management of cash and receivables is of great significance to Non-manufacturing

Corporation. They found that the major motive for holding cash in Nepalese corporations was to provide a research for routine net outflows of cash and for holding inventories was to facilitate smooth operation of production and sales. Moreover, they concluded that working capital was more difficult to manage than fixed capital as it takes more time to manage.

Further more, the inventories in manufacturing corporations and cash and receivables in non-manufacturing ones were more problematic to manage. With reference to the above problems and findings, they recommended the need to control investment in Working Capital as a whole for Manufacturing Corporation as the average proportion of working capital to sales increased over time. Since, manufacturing and non-manufacturing Corporation had been trying to control investment in receivable the focus of attention must diverted towards the control of investment in cash and inventory. Manufacturing Corporation should pay attention to control the investment in inventory.

**Shrestha (2003)** in his study “Working Capital management in PEs: A study on financial results and constraints,” has considered ten selected PEs and studied the working capital management of those PEs. He states that managers often lack basic knowledge of working capital and its overall impact on the operative efficiency and financial viability of public enterprises. He has focused on the liquidity, turnover and profitability position of sampled enterprises. Based on these factors, he has brought certain policy issues of Nepalese PEs such as lack of suitable financial planning, negligence towards Working Capital management, deviation liquidity and turnover of assets, and inability to show positive relationship between turnover and return on net working capital. He has also suggested the measures to overcome such policy issues like identification of needed funds, regular checks, and development of management information system, positive attitude towards risk and profit, and determination of right combination of short-term and long-term sources to finance working capital requirements.



**Shrestha (1987)** in his study “Accounts Receivables Management” states that accounts receivables constitutes a dominant liquid asset covering significant percentage of investment in current assets. The study clears out that account receivable is connoted with act of waiting assets, payment delaying assets, business creating asset, operationalizing asset etc. To provide the conceptual glimpse of accounts receivable, he has introduced the four conceptual paradigmatic sketch of accounts receivable i.e. operation concept, payment postponement concept, collection cycle concept and viability concept. The study points out that the objective focused receivable management is directed towards the maximization of sales to achieve accelerated increase in profit through defensive measure of overcoming competition. In order to achieve these objectives he has also focused on the determinants of accounts receivable, which serve as the legato of operational funds flow cycle, they are: establishment of credit granting decisions and collection implications. The study suggests the methods of collection and types of credit policies that can be adopted by PEs.

**Acharya (1985)** in his article “Problems and impediments in the management of working capital in Nepalese enterprises” has described the two major problems- operational problems and organizational problems, regarding the working capital management in Nepalese PEs. The operational problem that are listed in the first part of the study are: increase of current liabilities than current assets, not following the current ratio 2:1, low rate of inventory turnover, change in working capital in relation to fixed capital had very low impacts over the profitability, not following the conventional debt equity ratio as 1:1, thin transmutation of capital employed to sales, absent of apathetic management information system, and ineffective use of performance evaluation tools and techniques. Similarly, monitoring of proper functioning of working capital management has never been considered a managerial job. In the second part he has listed the

organizational problems of the PEs, such as: lack of regular internal and external audit system as well as evaluation of financial results in most of the PEs, similarly very few PEs are able to present their capital requirement, functioning of finance department is not satisfactory and some PEs are even facing the under utilization of capacity.

To make an efficient use of funds for minimizing the risk of loss to attain profit objectives, he has made some suggestions. They are: - the PEs should avoid the system of crisis decision which prevailed frequently in their operation, avoid fictitious holding of assets, the finance staff should be acquainted with the modern scientific tools used for the presentation and analysis of data. At last, he has given emphasis to optimize its level of investment at a point of time, neither over nor under investment in working capital is desired by the management of an enterprise because both of these situations will erode the efficiency of the concern.

The synthesized report on the performance of public enterprises states that as the management of working capital has been regarded as one of the contributing factors in decision-making issues. It is very difficult to point out as to how much working capitalizes needed by a particular company, but it is very essential to analyze and find out the solution to make an efficient of funds to minimizing risk of loss attain profit objective.

Working capital management involves the relationship between a firm's short term assets and its short term liabilities. The goal of working capital management is to ensure that a firm is able to continue its operations and that it has sufficient ability to satisfy the both maturing short term debt and upcoming operational expenses. The management of working capital involves managing inventories, account receivable and payable and cash.

The faster a business expands the more cash it will need for working capital and investment. The cheapest and best sources of cash exist as working capital right within business. Good management of working capital will generate cash will help improve profits and reduces risks. Bear in mind that the cost of providing credit to the customers and holding stocks can represent a substantial proportion of a firm's total profits.

There are two elements in the business cycle that absorb cash-inventory (stock and work-in-progress) and receivables (debtors owing you money). The main sources of cash are payables (your creditors) and equity and loans. Each component of working capital (namely inventory, receivable and payables) has two dimensions time and money. When it comes to managing working capital-time is money.

## **2.3 Review of Thesis**

A number of studies have been made by students of MBA, relating to working capital management in different PEs and Private sector of Nepal. This section reviews some of these dissertations.

Shailesh Man Shrestha (1992), on his study on "Working capital management of Dairy Development Corporation (DDC) Nepal" considered the financial statement of DDC for five years period (1985-1989). On the study he found that there was high level of investment in each type of current assets, of which inventory held the highest proportion followed by cash and receivables respectively. DDC had very low level of working capital turnover and high liquidity position. He also found out that the total assets did not depend on current assets and current assets on cash and receivables. The working capital, receivables and inventory were not affected

by sales volume, but there was proper relation between current assets and share of inventory on it. On the study he recommended that DDC should determine certain rate of return on its investment, and sales target should be set to overcome the problem of perpetual loss. It should make regular checks to identify both excess and short current assets. The huge amount of inventory kept by DDC should be reduced. Marketing policy should be integrated with credit policy. The DDC should give attention to manpower planning.

Bimal Kumar Acharya (1997) on his study “Working capital management of manufacturing public Enterprises in Nepal” has set the main objective as to examine the working capital policy of MPEs in Nepal. Besides this, other specific objectives are to assess the liquidity, profitability, sources of working capital financing and determinants of working capital in selected MPEs. He has selected 4 MPEs as a sample for the study and covered the period of ten years i.e. from 2040 to 2049 B.S. Based on findings, he concludes that the selected MPEs don’t have well determined working capital policy, however some of them have tried to achieve the moderate working capital policy. Although the selected MPEs have high liquidity, the ever increasing and dominant share of inventories in CAs indicates a poor quality of CAs. There is improvement in the use of CAs in selected MPEs. Moreover, there is high turnover of cash and receivables in comparison of inventory. Due to operating inefficiency and low capacity utilization in production, the MPEs are suffering from heavy losses.

To overcome the shortcomings in the area of working capital of the selected MPEs, the researcher has suggested as: HMG/N must insist on the compulsory formulation of working capital policy for the MPEs, suitable sales promotion policy should be followed to reduce the ever increasing share of inventories in the form of Cas, MPEs should also adopt modern inventory techniques and enforce them from time to time to improve the utilization of

inventories, to control and reduce the high operating expenses the MPEs should utilize their full production capacity and must adopt the standard and marginal costing techniques, and similarly MPEs should organize seminar, workshop from time to time to acquaint the financial personnel with latest development in the area of working capital.

Naresh Kunwar (2000) conducted the next recent case study on “Working capital management of pharmaceutical Industry of Nepal with special reference to RDL” has taken the six year data (2049-2055) to examine the overall working capital management of RDL. He found that the pharmaceutical industry is suffering from huge losses due to poor working capital management and lack of special working capital policy which reduces risk but hamper in profitability. The proportion of Cas with respect to total asset shows that Cas absorbs higher percentage of total assets, which adversely affects the RDL’s wealth maximization goal in the long run. Inventory and receivables also constitute an important part of Cas, but these are not properly managed by the co. RDL is following liberal credit policy, so its receivable collection period is too long of 57 days. Due to inefficient management of inventory, receivables and cash conversion cycle, RDL takes more than one year to turn its working capital into sales. At last, the researcher recommends that RDC can overcome these problems and improve its financial performance if it undertake the measures like: identification of need funds, regular checks, development of MIS, positive attitude towards risk and profit, right combinations of short term and long term sources of funds to finance working capital needs, appropriate combination of investment in CA, minimizing production and operating cost, prepare effective sales plan improving liquidity, speedy cash conversion and proper inventory control techniques.

Another case study done by Deependra Raj Sharma (2001) “A study on working capital management of Nepal Battery Co. Ltd. has found that inventory and receivables should be proper.

The non-moving and obsolete items should be discarded to avoid unnecessary blockage up. Inventory and management should be integrated with credit policy. Credit policy largely affects the sales. Certain target should be set for credit policy. He has suggested employing affective inventory control techniques. Working Capital should be arranged in such a way that, it generates maximum turnover. It is better to adopt appropriate working capital policy rather than conservative working capital policy, so that it can improve it's profitability in short run as well as long run. Company should be liberal in its credit policy.

Yam Prasad Sharma (2003) in his study of "Working capital management of manufacturing companies in Nepal" (Listed on Nepal Stock Exchange Ltd.) has tried to analyze the management of working capital of manufacturing industries of selected 16 companies. The researcher found out that the most of the Nepalese manufacturing companies are suffering from huge losses due to their administrative negligence in day-to-day operation, unnecessary blockage of inventory or lack of specific working capital policy. The analysis of working capital policy shows that most of manufacturing companies are following aggressive policy but facing opposite impact on revenue. It means that risk-return trade-off is not matched in Nepalese manufacturing companies. Similarly liquidity, profitability and turnover position are also found unfavorable. High inventory conversion period, receivable conversion period and extremely high payable periods leads to negative cash conversion cycle that is not favorable at all for the long run. The predicting power of success/failure analysis shows that most of the companies are financially unsound. The DU point analysis shows that turnover ratio is very low and profit margin on sales is also negative and ultimately ROI is also negative. So, overall profitability of the Nepalese manufacturing companies is negative. Nepalese manufacturing companies in the present context are facing certain policy issues like deficient financial planning, neglect of working capital mgmt, deviations between liquidity and turnover etc. These policy issues must be overcomes by

manufacturing companies. For this he has suggested that MPEs must determine the appropriate financing mix. He concludes that listed manufacturing companies cannot neglect the mgmt of working capital, otherwise it will seriously erode their financial viability. Thus, managers should understand the factor determining working capital needs, so that such understanding enables to have proper mgmt of working capital.

Janga Bahadur Hamal (2006) has carried out study on ‘Working capital management of manufacturing companies listed in NEPSE’. He found out that: -

- ) The ratio of the main component of current assets to CA varies widely among the manufacturing companies during the study period from 2000-2004.
- ) There is no consistency in average of current assets to total assets among the manufacturing companies.
- ) The liquidity position of Nepalese manufacturing companies was found good in average.

The above mentioned studies in the context of Nepalese manufacturing companies were conducted in the past. Many changes have taken place in the recent years. Therefore, an effort has been made to bring out some latest and fresh study on ‘Working Capital Management of Uni Lever Ltd. and Bottlers Nepal Ltd.’. This research study is carried out with the perfect selection of two sample companies. The main reason for selecting only two manufacturing companies is to conduct the detailed study on their working capital policy. The companies are sampled rationally and data are analyzed using correlation coefficient, regression equation and various ratios from FY 2001/06. An effort has been made to analyze the working capital management of manufacturing companies using various financial as well as statistical tools and techniques.

## **2.4 Research Gaps**

In this section, we exhibit the various issues and gaps that are found in the process of analyzing the data of selected companies. The major problems relating to working capital management are as follows: -

Proper management of current assets is the basic need of any organization to achieve its principle objective to earn maximum profit and maximize the shareholders wealth. But it is observed that there is no concrete current assets management system in these public enterprises to determine working capital needs as all components of current assets are highly fluctuating.

The percentage of cash, receivables and inventories to total assets shows that major portion of assets are occupied by less liquid asset i.e. inventory in both public enterprises. As the excess inventory cause unnecessary working capital blockage and short inventory results irregularity in manufacturing process, public enterprises must try to maintain the optimum level of inventory.

In manufacturing companies, working capital is difficult to manage as compared to fixed capital, because the needs of working capital fluctuates from time to time depending upon the increase or decrease in the volume of business activities. So much attention is required to determine the working capital needs. But in most of the Nepalese manufacturing companies, decisions are taken randomly and on adhoc basis in the field of working capital management that creates imbalance in working capital policy of these manufacturing public enterprises.

Both the public enterprises are following conservative financing policy, this shows the absolute need of public enterprises to finance current assets from appropriate combination of short and long term sources. Matching an item of working capital to a single, specific source must be



carefully done. This also requires bringing change on the management attitude toward risk and return.

The managers of manufacturing companies fail to give some regards and attention to working capital as they have given to fixed capital. Administrative negligence in day-to-day operation, high blockage of inventory in production process, fluctuations in amount of receivables, huge amount of payable, fluctuations in cash conversion cycle show that there is no good perception and concrete rules towards the working capital management.

These companies must be in a position to recognize signs of declining or increasing liquidity position and how to deal with such situations because both shortage and uncontrolled over expansion on liquidity cause hamper on the image and profitability of organization.

# **CHAPTER III**

## **RESEARCH METHODOLOGY**

### **3.1 Research Design**

Research design includes important procedures and techniques for guiding, analyzing and evaluating the study. It is the plan, structure and strategy for the collection and analysis of data. Research design guides to sufficient way for analyzing and evaluating the study. In order to achieve the pre determined objectives of the study, secondary data have been used. This study tries to make comparison and establish the relationship between two or more variables. So, it could be termed as analytical and descriptive study.

### **3.2 Population and Sample**

The total number of listed manufacturing companies in Nepal is 21 according to 2006/07 Annual report of SEBO. Out of these companies, the researcher selects the following two manufacturing companies to analyze its working capital management practice on the basis of top ranking in the manufacturing sector.

- a) Bottlers Nepal Limited
- b) Uni Lever Nepal Limited

These two companies are selected because they are known as most efficient, best performer and well managed company. Also among 21 companies, only few companies are having profits and these two companies are the most profitable companies in Nepal.

Data are collected for five years (from 2002/03 to 2006/07) to analyze the effectiveness of working capital management of these two manufacturing companies.

### **3.3 Nature and Sources of Data**

The analysis and presentations are mainly based on annual reports (Balance Sheet and P/L a/c) and other important documents of the companies. Most of the data in the study are secondary in nature, which includes the annual reports of companies, articles, and publications of security board and other related documents like unpublished thesis of Tribhuvan University.

All the data are collected in crude form in the initial stage and then, properly synthesized, arranged, tabulated and calculated to arrive at the realistic analytical steps.

### **3.4 Tool for Analysis of Data**

To study the working capital management of specified manufacturing companies, following financial and statistical tools are employed to achieve the prescribed results.

#### **3.4.1 Financial Tools**

The major tools employed for the analysis in this study are ratio analysis, which establishes the quantitative or numerical relationship between two variables of the financial statements. Ratio-analysis is widely used tool of financial analysis. Various ratios are employed and grouped for the analysis of Composition of Working Capital Turnover Position, Liquidity Position and Profitability Position. All these are briefly described below:

#### **A. Composition of Working Capital**

The Composition of Working Capital has been studied by analyzing following ratios: -

**I. Ratio of Cash and Bank balance to Total Current Assets**

The working capital is directly affected by it. Higher ratio indicates the poor cash management and vice versa. It is calculated as: -

$$\text{Cash and bank balance to total assets ratio} = \frac{\text{Cash and Bank Balance}}{\text{Current Assets}} \times 100$$

**II. Ratio of Inventory to Total Current Assets**

This ratio implies the percentage of Current Assets that is in form of Inventory. If the ratio increases or percentage increases, it means greater part of current assets is occupied by inventory. So the increase in the ratio is an indication of weak current assets management of the enterprises. It is derived as:

$$\text{Inventory to total assets ratio} = \frac{\text{Inventory}}{\text{Current Assets}} \times 100$$

**III. Ratio of Receivables to Total Current Assets (RCA)**

This ratio indicates the share of receivables on current assets. Higher ratio indicates the inability of company to collect receivables promptly. Thus, high percentage indicates the greater working capital. It is calculated as:

$$\text{Receivables to total current assets ratio} = \frac{\text{Receivables}}{\text{Current Assets}} \times 100$$

### **III. Ratio of Cash and Bank balance to Total Assets**

This ratio indicates what percent of total assets is invested in Cash and Bank balance. As the ratio increases, the risk and profitability would decrease. It is derived as: -

$$\text{Cash and Bank balance to Total Assets Ratio} = \frac{\text{Cash and Bank Balance}}{\text{Total Assets}} \times 100$$

### **IV. Ratio of Inventory to Total Assets**

This ratio shows the percentage of Inventories to total assets. With the increase in ratio, working capital also increases. The increase in ratio also indicates the liberal policy or blocking of materials in stock. It is calculated as: -

$$\text{Inventory to Total Assets ratio} = \frac{\text{Inventory}}{\text{Total Assets}} \times 100$$

### **V. Ratio of Receivables to Total Assets**

This ratio indicates the percentage of total assets invested in the form of receivables. The increase in the ratio indicates the liberal credit policy followed by the company. As receivable is a part of working capital, if the ratio increases the working capital also increases. It is calculated as: -

$$\text{Receivables to Total Assets ratio} = \frac{\text{Receivables}}{\text{Total Assets}} \times 100$$

#### **VI. Ratio of Current Assets to Total Assets**

The ratio of current assets to total assets indicates what percentage of an enterprise's total assets invested in the form of current assets. As the ratio increases, the risk and profitability of enterprise would decrease. It is calculated as: -

$$\text{Current Assets to Total Assets ratio} = \frac{\text{Current Assets}}{\text{Total Assets}} \times 100$$

#### **VII. Ratio of Current Assets to Fixed Assets**

This ratio presents the relationship between the current assets and fixed assets. If the ratio is large, it indicates the sound working capital. It is calculated as: -

$$\text{Current Assets to Fixed Assets ratio} = \frac{\text{Current Assets}}{\text{Fixed Assets}} \times 100$$

#### **VIII. Ratio of Current Liabilities to Total Liabilities**

The ratio of current liabilities to total liabilities shows the percentage of total liabilities that are financed from short-term sources. It is calculated as: -

$$\text{Current Liabilities to Total Liabilities} = \frac{\text{Current Liabilities}}{\text{Total Liabilities}} \times 100$$

### **IX. Financing of Current Assets:**

This is calculated to find out whether the current assets are all financed with short term financing or the long term financing is also used to. This helps to find out the financing policy that is adopted by the companies.

$$\text{Long term financing} = \text{Current Assets} - \text{Short term financing}$$

(Used to finance Current assets)

### **B. Turnover Position**

These ratios are very important for a concern to judge how well facilities at the disposal of the concern are being used or to measure the effectiveness with which a concern uses its resources at its disposal. Higher the ratio, the better the profitability and use of capital or resources will be. The following are the important turnover ratios that are calculated to analyze the company's turnover position:

#### **I. Current Assets Turnover Ratio**

This ratio indicates the number of times the current assets are turned over during the year. The increase in ratio shows the good utilization of current assets. Low ratio indicates

greater working capital and high ratio indicates lower working capital. It is computed by dividing sales by current assets, i.e. gross working capital.

$$\text{Current Assets Turnover ratio} = \frac{\text{Sales}}{\text{Current Assets}}$$

## **II. Net Working Capital Turnover Ratio**

Here, the higher ratio shows the utilization of net working capital and lower ratio vice-versa. It is computed by dividing sales by net working capital, i.e. difference of current assets and current liabilities.

$$\text{Net Working Capital Turnover ratio} = \frac{\text{Sales}}{\text{Net Working Capital}}$$

## **III. Cash Turnover Ratio**

This ratio shows the number of times the average cash balance is turned over during the year. It is computed by dividing sales by cash balance and it measures the speed with which cash moves through an enterprise's operations.

$$\text{Cash Turnover Ratio} = \frac{\text{Sales}}{\text{Cash Balance}}$$

## **IV. Receivable Turnover Ratio**

The ratio indicates the number of times the receivables are turned over during the year. It gives the general measure of the productivity of the receivable investment. The higher ratio



indicates the higher amount of working capital and lower ratio vice-versa. This ratio is computed by dividing sales by the total amount of receivables.

$$\text{Receivable Turnover ratio} = \frac{\text{Sales}}{\text{Receivables}}$$

For the complimentary of this ratio, there is a ratio called **Average Collection Period (ACP)** or receivable conversion period that indicates the number of days it takes on an average to collect account receivables. It is calculated as:

$$\text{Average Collection Period} = \frac{\text{Days in a Year (365)}}{\text{Receivable Turnover}}$$

## **V. Inventory Turnover Ratio**

This ratio shows the number of times inventory is replaced during the year. Higher inventory turnover indicates the good inventory management and lower turnover suggest the management should manage its inventory properly. It is computed by dividing sales by inventory.

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

## **C. Liquidity Position**

It reveals the solvency and financial strength of the firm. Liquidity ratios measure the firm's ability to meet its current obligations. Thus, following ratios are computed to find out the firm's liquidity position:

## I. Current Ratio

Current Ratio is the basic yardstick of measuring the liquidity position of the firm. When this ratio reaches to 2:1, it indicates good liquid position of the firm. It is determined as follows:

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

## II. Quick Ratio

This ratio establishes a relationship between quick or liquid assets and current liabilities, i.e. it ignores the inclusion of inventories in current assets and thus, is regarded as more liquid than current ratio. Generally, the quick ratio of 1:1 of the company is considered to be sound. It is calculated as:

$$\text{Quick Ratio} = \frac{\text{Current Assets- Inventories}}{\text{Current Liabilities}} \quad \text{i.e.} \quad \frac{\text{Quick Ratio}}{\text{Current Liabilities}}$$

## D. Profitability Position

Profitability ratios are calculated to enlighten the end results of business activities that are the sole criterion of the overall efficiency of a business concern. The following are the important profitability ratios:

### I. Gross Profit Margin Ratio

The gross profit margin reflects the efficiency with which company produces each unit of product. The higher percentage indicates the better efficiency of the company. It assesses the relationship between Gross profit or losses with sales. Gross profit is obtained by deducting cost of goods sold from net sales.

$$\text{Gross Profit Margin ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

## **II. Net Profit Margin Ratio**

This ratio is the overall measurement of the company's ability to earn net profit. This ratio is very useful to the proprietors and prospective investors because it reveals the overall profitability of the concern. This is the ratio of net profit after taxes to net sales and is calculated as follows:

$$\text{Net Profit Margin ratio} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

## **III. Return on Total Assets**

It is useful measure of the profitability of all financial resources invested in the company's assets. The increase in the ratio indicates the good utilization of total assets or efficiency of the enterprises. It is derived as:

$$\text{Return on Total Assets} = \frac{\text{Net Profit after Tax}}{\text{Total Assets}} \times 100$$

#### **IV. Return on Net Worth**

It indicates the return to the shareholders, how well the firm has used the resources of the owners. It judges whether the firm has earned satisfactory return for its shareholders or not.

Higher the ratio higher is the return to the shareholders and vice-versa. It is computed as:

$$\text{Return on Net Worth} = \frac{\text{Net Profit after Tax}}{\text{Net Worth}} \times 100$$

#### **V. Return on Working Capital**

It measures the profit with respect to current assets. Higher the ratio, higher is the utilization of current assets to earn profit and vice-versa. It is computed by dividing net profit after tax by current assets or working capital.

$$\text{Return on Working Capital} = \frac{\text{Net Profit after Tax}}{\text{Current Assets}} \times 100$$

#### **E. Cash Conversion Cycle**

Cash flow concept is used for analyzing the effectiveness of a firm's working capital management. The cash conversion cycle model reflects the length of time between when the company makes payments and when it receives cash. The following terms in this model:

##### **I. Inventory Conversion Period**

This period indicates the average length of time required to convert materials into finished goods and then to sell those goods. It is calculated by dividing inventory on hand by sales per day.

$$\text{Inventory Conversion Period} = \frac{\text{Inventory}}{\text{Sales}} \times 365$$

## **II. Receivable Collection Period**

This period determines the average length of time required to convert receivables into cash, that is, to collect cash following a sale. It is calculated by dividing accounts receivable by the average credit sales per day.

$$\text{Receivable Collection Period} = \frac{\text{Receivables}}{\text{Sales}} \times 365$$

## **III. Payables Deferral Period**

The payable deferral period is the average length of time between the purchase of materials and labor and the payment of cash for them. This period is calculated as:

$$\text{Payable Deferral Period} = \frac{\text{Payables}}{\text{Cost of Goods Sold}} \times 365$$

## **IV. Cash Conversion Cycle**

The cash conversion cycle nets out the three periods just defined and thus equals the length of time between the firm's actual cash expenditures for productive resources and its own cash receipts from the sale of products. The cash conversion cycle equals the average length of time cash is tied up in current assets.

Cash Conversion Cycle is calculated as: -

$$\begin{array}{ccccccc}
 \text{I} & + & \text{II} & - & \text{III} & & \text{IV} \\
 \text{Inventory} & & \text{Receivable} & & \text{Payables} & & \text{Cash} \\
 \text{Conversion} & + & \text{Collection} & - & \text{Deferral} & = & \text{Conversion} \\
 \text{Period} & & \text{Period} & & \text{Period} & & \text{Cycle}
 \end{array}$$

### 3.4.2 Statistical Tools

Some statistical tools that are used in this study are briefly described below: -

#### A. Mean

The most popular and widely used measure of representing the entire data by one value is what most laymen call an "average" and what the statisticians call the arithmetic mean. Its value is obtained by adding together all items and by dividing this total by the number of items. The mean value of ratios of study period of both the manufacturing companies has been calculated to compare their results. The formula used for calculating mean was as follows:

$$\bar{X} = \frac{\sum X}{N}$$

## B. Standard Deviation (S.D.)

The standard deviation measures the absolute dispersion (or variability) of distribution. The greater the amount of dispersion (or variability) the greater the standard deviation, and the greater will be magnitude of deviations of the values from their mean. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a series, a large standard deviation means just the opposite. Standard deviation is extremely useful in judging the representatives of the mean. In this study standard deviations of ratios of both the Public Enterprises has been calculated to analyze and compare the dispersion within and in between the series of ratios of NLLtd and BNLtd.

The formula used to calculate standard deviation is given as: -

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

Where,

N = number of observations

## C. Coefficient of Variation (C.V.)

The standard deviation as stated above is an absolute measure of dispersion, the corresponding relative measure is known as the coefficient of variation. It is used in such problems where we want to compare the variability of two or more than two series. The series for which the coefficient of variation is greater is said to be more variable or

conversely less consistent, less uniform, less stable or less homogeneous and vice versa. Since the present study is related with the two series of ratios of corresponding manufacturing public enterprises, coefficient of variation has been calculated to compare the variability of the series of ratios. The formula used for determining the coefficient of variation is as follows:

$$\text{C.V.} = \frac{\text{S.D.}}{\text{Mean}} \times 100$$

#### **D. Correlation Coefficient (r)**

Correlation analysis is the statistical tools generally used to describe the degree to which one variable is linearly related to other variables. Correlation is an analysis of the covariance between two or more variables and Correlation analysis deals to determine the degree of relationship between two or more variables. It enables only to determine the degree and direction of relationship or association between the variables. It does not tell about causes and effects relationship between the variables.

Interpretation of Correlation Coefficient: -

- I. It lies always between +1 and -1.
- II. When  $r = +1$ , there is perfect positive correlation.
- III. When  $r = -1$ , there is perfect negative correlation.



- IV. When  $r = 0$ , there is no correlation.
- V. When  $r$  lies between 0.7 to 0.6999 (-0.7 to -0.999) there is high degree of positive (or negative) correlation.
- VI. When  $r$  lies between 0.5 to 0.699, there is a moderate degree of correlation.
- VII. When  $r$  is less than 0.5, there is low degree of correlation

The Formula used to calculate Correlation Coefficient is given as: -

$$r = \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}}$$

where,

$N$  = number of observation

**Probable Error (P.E.) of Correlation coefficient**

The probable error is the measure of ascertaining the reliability of the value of Pearsonian coefficient of correlation. P.E. is worked out as under for Karl Pearson’s Coefficient of correlation:

$$P.E. = 0.6745 \times \frac{1-r^2}{n}$$

The probable error is used to test whether the calculated value of sample correlation coefficient is significant or not. A few rules for the interpretation of the significance of correlation coefficient are as follows:

- I. If  $r < P.E.(r)$ , then the value of  $r$  is not significant (i.e. Insignificant)
- II. If  $r > 6 \times P.E. (r)$ , then  $r$  is definitely significant
- III. In other situations, nothing can be calculated with certainty.

## E. Simple Regression Analysis

Regression analysis is the technique of studying how the variations in one series are related to variations in another series. In other words, regression is that statistical tool with the help of which the unknown value of one variable can be estimated on the basis of known values of other variables.

The known value, which is used for prediction (or estimation), is called independent variable and unknown value that is to be estimated (or predicted) by known value is called dependent variable. The equation of regression line where the dependent variable Y is determined by the independent variable X is

$$Y = a + b X$$

Where,

a= Y-intercept

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

The above formula is extended to: -

$$Y = na + b X \dots\dots\dots (i)$$

$$XY = a X + b X^2 \dots\dots\dots(ii)$$

where,

n = number of observation

## F. Test of Hypothesis

Hypothesis is usually considered as the principal instrument in research. A method of statistics, which helps in arriving at the criterion for decision-making is called test of

hypothesis. Different approach is applied in accordance with the sample size. For small sample i.e. ( $n < 30$ ), researcher 't' distribution is used to test whether the taken sample signifies the whole population or not.

To support this study for arriving at decision, null hypothesis and alternative hypothesis statement are set and to justify the statement, the formula of test statistic i.e. 't' test is used.

The computed value of 't' is compared to its 't' distribution value. If the computed value of 't' is greater than that of table value, the null hypothesis is rejected and vice-versa.

The formula used to determine t value is given as: -

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n - 1}}}$$

where,

$\bar{X}$  = Population Mean

$\mu$  = Sample Mean

SD = Standard Deviation

n = Number of Observation

### **3.5 Key terms used in this Chapter**

To avoid ambiguity, confusion and miss-understanding the key terms have been used in this study which is defined as follows:

## **I. Current Assets**

It includes the cash and bank balance and those other assets which can be converted into cash within a year such as: inventory, debtors or receivables, advances to employees, deposits, prepaid rent and insurance, interest receivable on bonds and other misc. current assets.

## **II. Current Liabilities**

All the payment that has to be made by the company within an accounting period are included in current liabilities. It includes sundry creditors, provision for taxation, unclaimed dividend, provision for bonus, housing, income tax etc.

## **III. Working Capital**

The term working capital here refers to the gross working capital. It includes the total volume of current assets.

## **IV. Net Working Capital**

The net working capital refers to the difference between the company's Current Assets and Current Liabilities.

## **V. Fixed Assets**

It consists of the assets of the company like land and buildings, plant and machinery, furniture and fixtures, long term investments, office equipments, computers and miscellaneous assets related to administration and construction works in progress.

## **VI. Total Assets**

It includes the total of current assets, net fixed assets and misc. assets (which includes the capital expenditure in progress).

#### **VII. Cash and Bank balance**

It includes the cash in hand and cash at bank.

#### **VIII. Receivables**

It includes the trade debtors and other debtors.

#### **IX. Inventory**

It includes the raw-materials at cost, scrap raw material at direct standard cost, work-in-progress at direct standard cost, stores and spares at cost and finished goods at direct standard cost.

#### **X. Net Worth**

It includes the paid up capital, general reserve, housing reserve and other reserve of the company.

# **CHAPTER IV**

## **PRESENTATION AND ANALYSIS OF DATA**

### **4.1 Introduction**

The main objective of this chapter is to present and analyze the types of data's, which throw lights on working capital position of selected manufacturing companies. For this the data collected are shown in tabular and graphic form and they are analyzed with the help of financial and statistical tools.

### **4.2 Composition of working capital**

Working capital is the portion of an enterprises total capital, which is, employed in short term operation that is current assets. Every type of business organization needs to invest its funds on short-term assets like cash, inventories, marketable securities, and receivables to run day-to-day business activities efficiently and affectively.

The efficient management of current assets is an integral part of overall financial management and has the greater impact on maximization of owner's capital. Thus, it is necessary to have

proper analysis for current assets management. The proper analysis of current assets of industrial concern reflects the nature of performance and operation of its management. So the overall current assets are firstly analyzed with the help of following calculations.

#### 4.2.1 Investment in Current Assets

The level of investment in the current assets mostly depends upon the nature of business and the attitude of the management towards the risk. The effective composition of CAs has the greater impact on the whole working capital management as well as the success or failure of the organization. For qualitative consideration i.e. liquidity of CAs, its composition should be seriously examined.

#### Composition of Current Assets

**Table 4.2**

**Unilever Nepal Limited Co.**

(Rs. in Million)

Fiscal Year	Cash and Bank Bal.		Sundry Debtors		Inventories		Misc. Current Assets		Total CA
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	
2002/03	31.74	10.43	64.77	21.29	126.11	41.45	81.60	26.82	304.22
2003/04	39.15	10.53	97.06	26.10	184.22	49.54	51.43	13.83	371.86
2004/05	44.33	9.00	157.72	32.03	229.76	46.66	60.62	12.31	492.43
2005/06	59.02	10.58	138.32	24.80	256.17	45.91	104.45	18.71	557.96
2006/07	101.60	16.32	136.45	21.91	304.33	48.88	80.29	12.89	622.67
<b>Total</b>	<b>275.84</b>		<b>594.32</b>		<b>1100.59</b>		<b>378.39</b>		<b>2349.14</b>
<b>Average</b>	<b>55.168</b>	<b>11.37</b>	<b>118.86</b>	<b>25.22</b>	<b>220.12</b>	<b>46.49</b>	<b>75.68</b>	<b>16.91</b>	<b>469.83</b>
<b>SD</b>	<b>27.81</b>		<b>37.41</b>		<b>68.21</b>		<b>20.61</b>		<b>131.02</b>
<b>CV (%)</b>	<b>50.41</b>		<b>31.47</b>		<b>30.99</b>		<b>27.23</b>		<b>27.89</b>

(Source: - Appendix 1)

**Table 4.3****Bottlers Nepal Limited**

(Rs. in million)

Fiscal Year	Cash and Bank Bal.		Sundry Debtors		Inventories		Misc. Current Assets		Total CA
	Amt.	%	Amt.	%	Amt.	%	Amt.		
2002/03	5.34	0.98	88.04	16.18	226.86	41.69	212.15	38.99	544.18
2003/04	13.8	3.08	124.18	27.73	184.98	41.31	124.92	27.89	447.83
2004/05	14.86	4.98	57.25	19.17	119.27	39.93	107.31	35.93	298.69
2005/06	35.92	9.30	9.46	2.45	176.94	45.83	163.72	42.41	386.04
2006/07	3.46	0.74	52.82	11.25	189.26	40.29	224.16	47.72	469.70
<b>Total</b>	<b>73.38</b>		<b>331.75</b>		<b>897.31</b>		<b>832.26</b>		<b>2146.44</b>
<b>Average</b>	<b>14.68</b>	<b>3.82</b>	<b>66.35</b>	<b>15.22</b>	<b>179.46</b>	<b>41.31</b>	<b>166.45</b>	<b>38.00</b>	<b>429.29</b>
<b>SD</b>	<b>12.89</b>		<b>42.76</b>		<b>38.74</b>		<b>51.60</b>		<b>92.33</b>
<b>CV (%)</b>	<b>87.84</b>		<b>64.46</b>		<b>21.58</b>		<b>31.00</b>		<b>21.51</b>

(Source: - Appendix 1)

The above Table 4.2 & 4.3 respectively represents the current assets position of Unilever Nepal Ltd. and Bottlers Nepal Ltd. In this Table, percentage indicates the proportion of individual current assets in total current assets. The above table presents the investment pattern of current assets and their fluctuations in different periods.

The above table reveals that both manufacturing PEs have maintained consistency in cash holding only by the Bottlers Nepal Limited in the final year where there has been very vast decrease. The average cash to CAs ratio of UNLtd is 11.37% and of BNLtd. is 3.82%. Thus both the UNLtd and BNLtd. have maintained different level of cash and bank balance percentage. The UNLtd has highest cash balance in the fiscal year 2006/07 i.e. 16.32% and lowest in 2004/05 where it is 9.00%. The yearly cash and bank balance percentage of BNLtd is fluctuating. It was



highest in 2005/06 i.e. 9.30% and lowest in 2006/07 i.e. 0.74%. The CV shows that there is more fluctuation in yearly cash balance for BNLtd than UNLtd.

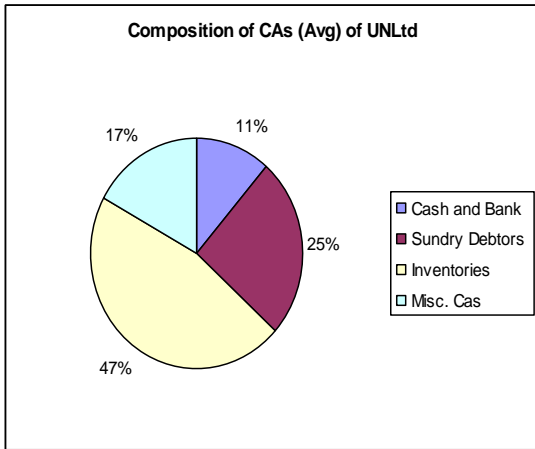
The receivables ratio (%) is important because receivables stand next to cash so far liquidity is concerned. The average receivables ratio varies widely within the enterprises also. It varies from 21.29% to 32.03% for UNLtd and from 2.45 to 27.73% for BNLtd. The CV % shows that BNLtd has more fluctuation in collection compared to UNLtd.

The average ratio of inventories to CAs is 46.49% for UNLtd and 41.31% for BNLtd. Thus, it indicates that inventory constitutes a dominant share on CAs in these PEs. The table shows that UNLtd has higher CAs in inventory than BNLtd in the study period. The UNLtd fluctuates from 41.45% to 49.54% and BNLtd from 39.93% to 45.83%. Thus, BNLtd has more consistency in its inventory to CAs ratio compared to UNLtd. CV also proves it, as it is only 21.58% for BNLtd and is 30.99% for UNLtd.

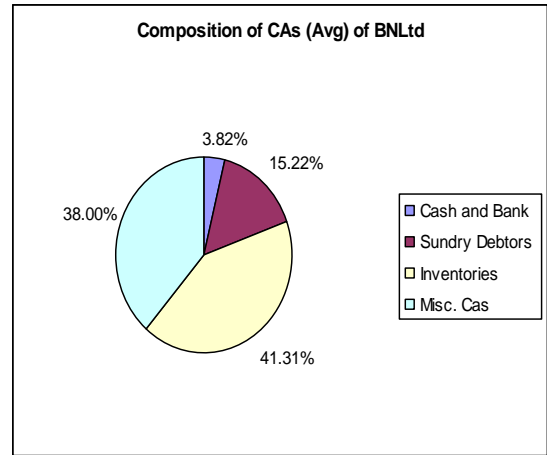
Miscellaneous current assets are other major components of current assets. It includes the amount of prepaid expenses, advances to employees, deposits, investment in government bonds and other current assts. The proportion of Misc. current assets shows the increasing and decreasing tendency after end of each FY. The average percentage of Misc. current assets is 16.91% for UNLtd and 38.00% for BNLtd.

In overall observations, working capital mgmt requires better balancing of cash mgmt, optimum investment in inventory and good collection policy to avoid fluctuations in the mgmt of CAs so as to make working capital mgmt effective. More about this will be discussed in concluding chapter.

**Figure 4.6**



**Figure 4.7**



A comparison of ratios of cash, receivables and inventories shows that the ratio of inventories to current assets is the largest followed by the ratio of cash and bank to current assets and the ratio of receivables to current assets for both the enterprises. It can be made clear by comparing the average values as shown below:

$$\text{UNLtd: } CCA < RCA < ICA$$

$$\text{BNLtd: } CCA < RCA < ICA$$

Where,

RCA= is the average ratio of Receivables to Current Assets.

CCA= is the average ratio of Cash and Bank bal. to Current Assets.

ICA= is the average ratio of Inventories to Current Assets.

From above, it is clear that the average size of inventory is the largest for UNL as compared to the average size of either cash or receivables. The average size of inventory is largest for BNL as compared to cash or receivables. Thus, Nepalese public enterprises should give considerable importance to its receivables and cash management, as the share of inventories in CAs is largest for both UNL and BNL respectively.

#### 4.2.2 Proportion of each components of CAs in TAs

Here, the attempt is made to determine the size of each component of CAs, that is, the size of Cash and Bank bal, Receivables and Inventories to total assets structure. This sort of analysis has been presented in the following table:

**Table 4.4**  
**Ratio of Cash, Receivables and Inventory to Total Assets**

Fiscal Year	UNLtd			BNLtd		
	Cash to TAs	Receivables to TAs	Inventory to TAs	Cash to TAs	Receivables to TAs	Inventory to TAs
2002/03	4.90	8.25	16.07	0.52	8.61	22.19
2003/04	5.14	10.33	19.6	1.56	14.01	20.86
2004/05	5.80	14.35	20.91	2.40	9.25	19.27
2005/06	6.10	14.30	26.48	3.41	0.90	16.82
2006/07	10.31	13.84	30.89	2.76	4.22	15.11
<b>Total</b>	<b>32.25</b>	<b>61.07</b>	<b>113.95</b>	<b>10.65</b>	<b>36.99</b>	<b>94.25</b>
<b>Average</b>	<b>6.45</b>	<b>12.21</b>	<b>22.79</b>	<b>2.13</b>	<b>7.40</b>	<b>18.85</b>
<b>SD</b>	<b>2.22</b>	<b>2.78</b>	<b>5.88</b>	<b>1.16</b>	<b>5.02</b>	<b>2.89</b>
<b>CV</b>	<b>34.42</b>	<b>22.73</b>	<b>25.78</b>	<b>54.26</b>	<b>67.88</b>	<b>15.34</b>

(Source: - Appendix 2)

The above Table 4.4 shows the percentage of Cash, Receivables and Inventories to TAs. The ratio of Cash to TAs fluctuates widely within the individual enterprises. CV is very high for both enterprises, which shows that there is high fluctuation in Cash to TAs ratio over the period of study. It fluctuates from 10.31% to 4.90% for UNLtd and from 0.52% to 3.41% for BNLtd. The

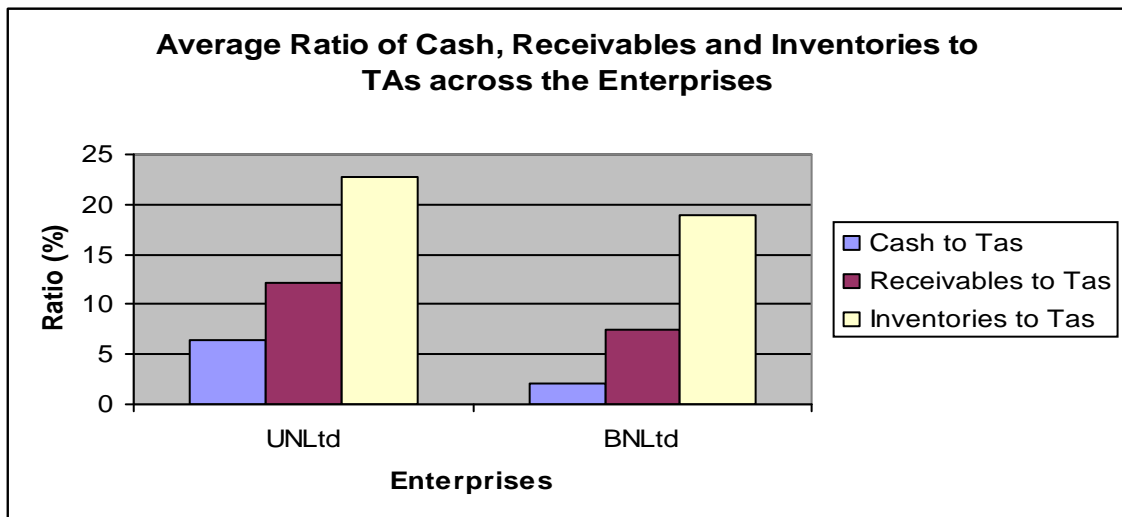
size of cash held by the enterprises varies widely from one enterprise to another. On an average, UNLtd & BNLtd has invested 6.45% and 10.65% respectively of total assets in Cash.

The ratio of receivables to TAs is calculated to indicate how large the investment in receivables is done. The average ratio of receivables to TAs is smaller for BNLtd (7.40%) than UNLtd (12.21%). UNLtd has adopted tight credit policy till FY 2002/03 and became little liberal on FY 2004/05 as its receivables to TAs ratio reached to 14.35% but slightly tight again in 2006/07. The size of receivables varies from 8.25% to 14.35% for UNLtd and from 0.90% to 14.01% for BNLtd. UNLtd has maintained tight credit policy in the fiscal year 2005/06. UNLtd has maintained consistency in its receivables but it fluctuates greatly on BNLtd as CV of receivables to TAs of UNLtd and BNLtd is 22.73% and 67.88% respectively.

The average ratio of inventories to TAs is 25.78% for UNLtd and 18.85% for BNLtd. Thus the size of inventory is smaller for BNLtd than UNLtd. It fluctuates from 16.07% to 30.89% for UNLtd and from 15.11% to 22.19% for BNLtd. This shows that BNLtd tried to maintained consistency in its investment in inventory.

A comparison of ratios of cash, receivables and inventories shows that the ratio of inventories to total assets is larger followed by the ratio of receivables to total assets, and the ratio of cash to total assets for both UNLtd and BNLtd enterprises. It is indicated more clearly in figure (8):

#### **Figure 4.8**



### 4.2.3 Proportion of Current Assets to Total Assets

The size of investment in CAs can be seen by computing the ratio of current assets to total assets. Higher percentage of CA in TAs says the greater the liquidity of a firm, the lower the risk of technical insolvency, and vice versa for lower percentage. Although high level of CA to TAs indicates good liquidity position, it adversely affects the profitability of the factory because idle money can earn nothing. Thus companies should take care of CA to TAs proportion very carefully.

**Table 4.5**  
**Ratio of Current Assets to Total Assets**

Fiscal Year	UNLLtd				BNLtd			
	CA	TA	Ratio	%	CA	TA	Ratio	%

			(%)	Change			(%)	Change
2002/03	304.22	784.88	38.76	-	544.18	1022.41	53.23	-
2003/04	371.86	939.72	39.57	0.81	447.83	886.56	50.51	-2.72
2004/05	492.43	1098.96	44.81	5.24	298.69	618.92	48.26	-2.25
2005/06	557.96	967.15	57.69	12.88	386.04	1052.05	36.70	-11.56
2006/07	622.67	985.12	63.21	5.52	469.70	1252.31	37.51	0.81
<b>Total</b>	<b>2349.14</b>	<b>4775.83</b>			<b>2146.44</b>	<b>4832.25</b>		
<b>Avg.</b>	<b>469.83</b>	<b>955.17</b>	<b>48.81</b>		<b>429.29</b>	<b>966.45</b>	<b>45.24</b>	
<b>SD</b>			<b>11.05</b>				<b>7.64</b>	
<b>CV</b>			<b>22.64</b>				<b>16.88</b>	

(Source: - Appendix 3)

The above Table 4.5 represents the proportion of current assets investment in total assets investment of selected enterprises over five year of study period. The overall proportion of current assets on total assets is in increasing trend for both enterprises except for the year 2006/07 for UNLtd where it is decreased by 5.52% and 2005/06 for BNLtd where it is decreased by 11.56%.

The average ratio of current assets to total assets is 48.81% for UNLtd and 45.24% for BNLtd. UNLtd has more average value than BNLtd i.e.  $48.81 > 45.24$  of its TAs in CAs form for all 5 years. However only UNLtd is in the increasing trend and BNLtd is in fluctuating trend when we look at the ratio of CAs on TAs. The C.V. of UNLtd is higher than the BNLtd i.e.  $22.64 > 16.88$  which shows that UNLtd has more fluctuation than the BNLtd.

#### **4.2.4 Proportion of Current Assets to Fixed Assets**

For the purpose of success of any manufacturing concerns, firm should invest in both current assets and fixed assets to support a particular level of output. The level of current assets can be

measured by relationship between current assets to fixed assets (FA), which helps to find out the current assets investment policy. Assuming a constant level of fixed assets, a higher CA to FA ratio indicate an aggressive current assets policy, conversely lower ratio indicates the conservative current assets policy. A conservative policy (i.e. higher CA/FA ratio) indicates greater liquidity and lower risk and return, while an aggressive policy (i.e. lower CA/FA ratio) implies higher return and risk and poor liquidity.

**Table 4.6**  
**Ratio of Current assets to Net Fixed assets**

Fiscal Year	UNLtd				BNLtd			
	CA	FA	Ratio (%)	% Change	CA	FA	Ratio (%)	% Change
2002/03	304.22	146.16	208.14	-	544.18	377.39	144.20	-
2003/04	371.86	133.48	278.59	70.45	447.83	326.10	137.33	-6.87
2004/05	492.43	125.52	392.31	113.72	298.69	409.43	72.95	-64.38
2005/06	557.96	145.78	382.74	-9.57	386.04	323.57	119.31	46.36
2006/07	622.67	148.93	418.09	35.35	469.70	631.54	74.37	-44.94
<b>Total</b>	<b>2349.14</b>	<b>699.87</b>			<b>2146.44</b>	<b>2068.03</b>		
<b>Avg.</b>	<b>469.83</b>	<b>139.97</b>	<b>335.97</b>		<b>429.29</b>	<b>413.61</b>	<b>109.63</b>	
<b>SD</b>			<b>89.08</b>				<b>34.08</b>	
<b>CV</b>			<b>26.51</b>				<b>31.09</b>	

(Source: - Appendix 4)

The above table presents the ratio of current assets to fixed assets of UNLtd and BNLtd. The ratio of CA/FA is increasing every year of UNLtd except in 2005/06 which was decreased by 9.57%. In BNLtd the ratio of CAs to FAs is in decreasing trend except in FY 2005/06 it got increased with 44.94%. The ratio varies from 208.14% to 418.09% for UNLtd and 72.95% to 144.20% for BNLtd. The average ratio of UNLtd is 335.97% and of BNLtd is 109.63%. Similarly, the CV of UNLtd is 26.51% and CV of BNLtd is 31.09%. Thus ratio fluctuates more on BNLtd than UNLtd

Throughout the study period current assets is greater than fixed assets in UNLtd and it was same with BNLtd. This indicates that both the companies followed the conservative CAs investment policy.

#### 4.2.5 Financing of Current assets (Working Capital)

Every manufacturing concern needs the working capital for its regular operation. Working capital is divided into two parts- permanent and temporary. The operation of permanent and temporary working capital depends upon the nature and size of the firm and it is also affected by attitude of the management towards risk and return. The source of financing these assets must be matched with the type of assets. Therefore, firm has to raise funds for working capital from different types of sources, they are- short term, long term and spontaneous financing. However, the firm uses different financing sources according to their policy- aggressive, conservative and moderate. Firm should try to follow proper financing policy by financing the current assets from appropriate sources.

**Table 4.7**  
**Financing of Current Assets**

Fiscal Year	UNLtd			BNLtd		
	Current Assets	Short-term Financing	Long-term Financing	Current Assets	Short-term Financing	Long-term Financing
2002/03	304.22	155.85	148.37	544.18	299.80	244.38
2003/04	371.86	360.88	10.98	447.83	174.02	273.81
2004/05	492.43	480.96	11.47	298.69	228.99	69.70
2005/06	557.96	550.89	7.07	298.69	275.48	23.21
2006/07	622.67	580.12	42.55	469.70	302.69	167.01



Table 4.7 shows that UNLtd and BNLtd have financed their working capital with both short-term and long term financing. Both public enterprises has used long term obligation to maintain the optimum level of working capital. This shows that both enterprises are following conservative financing policy.

### 4.3 Turnover Position

Turnover ratio reflects the speed and rapidity with which assets are converted into sales thereby resulting in the efficiency of the enterprise. Though there is no standard or ideal measurement, a great turnover is regarded as efficient utilization of the assets. Manufacturing companies with higher turnover of assets need lesser working capital as compared to manufacturing companies having lower turnover. Thus, following turnover ratios are calculated to examine whether the working capital has been efficiently utilized in the enterprise or not.

#### 4.3.1 Current Assets Turnover Ratio (Gross Working Capital turnover)

This ratio indicates the number of times the total current assets is turned over during the year in relation to its sales. When this ratio increases over time, one can see the improvement in current assets utilization.

**Table 4.8**  
**Turnover of current Assets (in times)**

Fiscal Year	UNLtd			BNLtd		
	Sales	CAs	Ratios	Sales	CAs	Ratios
2002/03	1244.73	304.22	4.09	609.65	544.18	1.12
2003/04	1524.9	371.86	4.10	632.11	447.83	1.41
2004/05	1481.56	492.43	3.00	614.74	298.69	2.06

2005/06	1434.94	557.96	2.57	621.83	386.04	1.61
2006/07	1818.53	622.67	2.92	634.19	469.70	1.35
<b>Total</b>	<b>7504.66</b>	<b>2349.14</b>		<b>3112.52</b>	<b>2146.44</b>	
<b>Average</b>	<b>1500.93</b>	<b>469.83</b>	<b>3.34</b>	<b>622.50</b>	<b>429.29</b>	<b>1.51</b>
<b>SD</b>			<b>0.71</b>			<b>0.35</b>
<b>CV</b>			<b>21.31</b>			<b>23.31</b>

(Source: - Appendix 5)

The above Table no. 4.8 represents the current assets or gross working capital turnover during the study period in UNLtd and BN Ltd. The table shows that average CAs turnover ratios maintained by both MPEs varies widely from one another. On average, UNLtd has 3.34 times and BN Ltd has 1.51 times CAs turnover ratio. The year wise ratios shows that it fluctuates from 2.57 times to 4.09 times for UNLtd and from 1.12 to 2.06 times for BN Ltd. CV shows that there is more consistency in turnover of CAs in UNLtd than BN Ltd as CV of UNLtd is lower than BN Ltd i.e. 21.31% < 23.31%.

### 4.3.2 Net Working Capital Turnover Ratio

The improvement in net working capital utilization has been assessed by examining the behavior of net working capital turnover over a period of time. The negative turnover of net working capital shows that the manufacturing companies have to meet working capital needs by raising capital from suitable sources. Net working capital i.e. excess amount of current assets over current liabilities, is the margin of safety maintained by the company.

**Table 4.9**  
**Net Working Capital turnover Ratio (In Times)**

Fiscal Year	UNLtd			BN Ltd		
	Sales	NWC	Ratios	Sales	NWC	Ratios
2002/03	1244.73	229.00	5.43	609.65	244.38	2.49
2003/04	1524.9	243.28	6.27	632.11	273.81	2.31

2004/05	1481.56	93.90	15.78	614.74	69.70	8.82
2005/06	1434.94	204.65	7.01	621.83	175.34	3.55
2006/07	1818.53	254.19	7.15	634.19	-42.80	-14.82
<b>Total</b>	<b>7504.66</b>	<b>1025.02</b>		<b>3112.52</b>	<b>720.43</b>	
<b>Average</b>	<b>1500.93</b>	<b>205.00</b>	<b>8.31</b>	<b>622.50</b>	<b>144.09</b>	<b>0.47</b>
<b>SD</b>			<b>4.22</b>			<b>8.95</b>
<b>CV</b>			<b>50.80</b>			<b>1904.39</b>

(Source: -Appendix 6)

The above table shows the number of times the average net working capital is turned over during the year. The average turnover varies widely between both the companies. The highest turnover is observed for BN Ltd i.e. 0.47 times on an average. However, there is a wide fluctuation in Net working capital turnover of BN Ltd as its CV is 1904.39%. Although UN Ltd is able to maintain its consistency compared to BNL on Net working capital turnover, as its CV is 50.80%, its average turnover ratio is only 8.31%.

### 4.3.3 Cash Turnover Ratio

Cash is one of the main parts of current assets that have greatest value to meet the current obligations that occurs in the business. It should be just adequate to run the business and excess cash has no meaning, as it earns nothing. Thus, this ratio is calculated as it suggests the cash balance to be held. Once the sales forecasts for various periods have been made, the required cash balance can be calculated by using the historical cash turnover figures. A low turnover of cash implies a larger cash balance required and a high turnover of cash implies a lower cash balance required. The higher rate of cash turnover will enable the enterprise to expand its sales volume without adding extra Cash and also to reduce the investment in cash if sales are not growing. The Cash turnover ratio of following table indicates the number of times the average cash balance is turned over during the year.

**Table 4.10**  
**Cash Turnover Ratio (In Times)**

<b>Fiscal Year</b>	<b>UNLtd</b>			<b>BNLtd</b>		
	<b>Sales</b>	<b>Cash bal</b>	<b>Ratios</b>	<b>Sales</b>	<b>Cash bal</b>	<b>Ratios</b>
2002/03	1244.73	31.74	39.22	609.65	5.34	114.17
2003/04	1524.90	39.15	38.95	632.11	13.80	45.81
2004/05	1481.56	44.33	33.42	614.74	14.86	41.37
2005/06	1434.94	59.02	24.31	621.83	35.92	17.31
2006/07	1818.53	101.60	17.90	634.19	3.46	183.29
<b>Total</b>	<b>7504.66</b>	<b>275.84</b>		<b>3112.52</b>	<b>73.38</b>	
<b>Average</b>	<b>1500.93</b>	<b>55.168</b>	<b>30.76</b>	<b>622.50</b>	<b>14.68</b>	<b>80.39</b>
<b>SD</b>			<b>9.39</b>			<b>67.87</b>
<b>CV</b>			<b>30.53</b>			<b>84.43</b>

(Source: - Appendix 7)

The above table 4.10 shows the turnover position of Cash and Bank balance maintained by UNLtd and BNLtd during the period of the study. The average cash turnover of UNLtd is 30.76 times and for BNLtd is 80.39 times of sales. The year-wise average cash turnover shows wide fluctuations for both PEs. This can be clearly seen by CV of Companies. The inconsistent variation in this ratio during the periods indicates that the minimum cash balance to be held by company can't be easily forecasted.

#### **4.3.4 Receivable Turnover Ratio (Average collection period)**

Receivable is another major component of current assets. In order to increase the business activities the company has to increase the sales volume. The sales volume can be increased by giving products in credit to the customers. In such a case the level of receivables goes up. In order to indicate the utilization of receivables investment in selected enterprises, Receivable Turnover Ratio and Average Collection Period is calculated and presented in Table below:

**Table 4.11**

### Receivable Turnover and Average Collection Period (In Times)

Fiscal Year	UNLtd				BNLtd			
	Sales (Million.)	Receivables (Million.)	Turn- Over Ratio (Times)	Avg. Coll. Period (Days)	Sales (Million.)	Receivables (Million.)	Turn- Over Ratio (Times)	Avg. Coll. Period (Days)
2002/03	1244.73	64.77	19.22	19	609.65	88.04	6.92	52
2003/04	1524.9	97.06	15.71	23	632.11	124.18	5.09	71
2004/05	1481.56	157.72	9.39	38	614.74	57.25	10.73	34
2005/06	1434.94	138.32	10.37	35	621.83	9.46	65.73	5
2006/07	1818.53	136.45	13.33	27	634.19	52.82	12.00	30
<b>Total</b>	<b>7504.66</b>	<b>594.32</b>			<b>3112.52</b>	<b>331.75</b>		
<b>Average</b>	<b>1500.93</b>	<b>118.86</b>	<b>13.60</b>	<b>28.40</b>	<b>622.50</b>	<b>66.35</b>	<b>20.09</b>	<b>38.40</b>
<b>SD</b>			<b>4.01</b>	<b>7.99</b>			<b>25.66</b>	<b>24.76</b>
<b>CV</b>			<b>29.47</b>	<b>28.12</b>			<b>1.28</b>	<b>64.49</b>

(Source: - Appendix 8)

Receivable turnover indicates the number of times the average receivables is turned over during the year. The higher the enterprises accounts receivable turnover, the more favourable it is. As per Table 4.11, the receivable turnover of UNLtd (13.60 times on average) is unfavourable than BNLtd (20.09 times on average). CV shows the wide fluctuations in collection process of UNLtd but it is acceptable for BNLtd as the CV of UNLtd is higher than BNLtd i.e.  $29.47 > 1.28$ .

Average collection period is a meaningful measure in evaluating an enterprise's credit and collection policies. When the ACP figures are compared over time, they would show whether an enterprise has become more liberal or conservative with respect to its credit policy. The increase in the average collection period over time would indicate a liberal credit policy adopted by the enterprise. Both the receivable turnover and ACP yield a similar conclusion. The only difference is that whenever there is a decline in accounts receivable turnover, there is an increase in average collection period. The collection period of credit sales has found best in FY 2002/03 for UNLtd where it was only 19 days and FY 2005/06 for BNLtd where it was 5 days.

### 4.3.5 Inventory Turnover Ratio

Inventory occupies a dominant share on current assets that should be maintained effectively and efficiently. The utilization of inventory investment can be determined by computing the inventory turnover ratio. The inventory turnover ratio measures rate of speed with which inventories move through and out of the enterprise. In other words, it indicates the number of times the average stock is turned over during the year. Thus, the increase in inventory turnover ratios indicates improvement in the utilization of inventory investment.

**Table 4.12**  
**Inventory Turnover Ratio (In Times)**

<b>Fiscal Year</b>	<b>UNLtd</b>			<b>BNLtd</b>		
	<b>Sales</b>	<b>Inventory</b>	<b>Ratios</b>	<b>Sales</b>	<b>Inventory</b>	<b>Ratios</b>
2002/03	1244.73	126.11	9.87	609.65	226.86	2.69
2003/04	1524.9	184.22	8.28	632.11	184.98	3.42
2004/05	1481.56	229.76	6.45	614.74	119.27	5.15
2005/06	1434.94	256.17	5.60	621.83	176.94	3.51
2006/07	1818.53	304.33	5.98	634.19	189.26	3.35
<b>Total</b>	<b>7504.66</b>	<b>1100.59</b>		<b>3112.52</b>	<b>897.31</b>	
<b>Average</b>	<b>1500.93</b>	<b>220.12</b>	<b>7.24</b>	<b>622.50</b>	<b>179.46</b>	<b>3.62</b>
<b>SD</b>			<b>1.79</b>			<b>0.92</b>
<b>CV</b>			<b>24.80</b>			<b>25.18</b>

(Source: - Appendix 9)

Table 4.12 shows the inventory turnover position of UNLtd and BNLtd. The table reflects that there is wide variation in inventories turnover between both the enterprises. The average inventory of UNLtd is 7.24 times whereas it is 3.62 times for BNLtd.

When the inventory turnover ratio is compared over a period of time for individual enterprises, it can be seen that it varies from 5.60 to 9.87 times for UNLtd and from 2.69 to 5.15 times for BNLtd. Thus, it is noticed that it is almost constant for BNLtd and is increasing and decreasing after each year of UNLtd. The CV of BNLtd is 25.18% and for UNLtd it is 24.80%.

## 4.4 Liquidity Position

The first and foremost objective of adopting appropriate working capital policy is to maintain appropriate and optimum liquidity in order to enable the enterprise to meet current short-term obligations when they became due for payment. Liquidity is a pre-requisite for the avoidance of technical insufficiency and ultimately for the very survival of the enterprise. However, it is a very crucial problem in maintaining the appropriate liquidity in any enterprise as it involves risk-return trade-off with higher or lower liquidity level. This section attempts to measure the ability of MPEs in paying the obligations with established standards in liquidity ratios.

### 4.4.1 Current Ratio

Current ratio measures the short-term solvency of the firm. It is the simple relationship of current assets to current liabilities. Current assets include cash and bank balance, inventory, receivables and other Misc. current assets. The current liabilities include creditors, cash credit taken, provision for taxation, unclaimed dividend and misc. current liabilities. The current ratio of selected enterprises for the period of study is calculated in the Table-13 presented below:

**Table 4.13**  
**Current Ratio**

Fiscal Year	UNLtd			BNLtd		
	Current Assets	Current Liabilities	Ratio	Current Assets	Current Liabilities	Ratio

2002/03	304.22	360.88	0.84	544.18	299.80	1.82
2003/04	371.86	480.96	0.77	447.83	174.02	2.57
2004/05	492.43	882.02	0.56	298.69	228.99	1.30
2005/06	557.96	742.23	0.75	386.04	275.48	1.40
2006/07	622.67	750.47	0.88	469.70	576.40	0.81
<b>Total</b>	<b>2349.14</b>	<b>3216.56</b>		<b>2146.44</b>	<b>1554.69</b>	
<b>Average</b>	<b>469.83</b>	<b>643.31</b>	<b>0.76</b>	<b>429.29</b>	<b>310.94</b>	<b>1.58</b>
<b>SD</b>			<b>0.123</b>			<b>0.66</b>
<b>CV</b>			<b>16.19</b>			<b>41.75</b>

(Source: - Appendix 10)

The above table 4.13 shows that average current ratio of UNLtd and BNLtd are 0.76 and 1.58 times respectively, which is below the standard current ratio 2:1. The ratio fluctuates from 0.56 to 0.88 times on UNLtd and from 0.81 to 2.57 on BNLtd. Thus, current ratio fluctuates on both UNLtd and BNLtd. BNLtd has maintained the sufficient liquidity in comparison to UNLtd. In FY 2003/04, BNLtd has increased their liquidity than any other year which is 2.57 times and UNLtd. has increased its liquidity to highest in FY 2003/04 which is 0.88. BNLtd fluctuates more than UNLtd as the CV of BNLtd is higher than UNLtd i.e. 41.75% > 16.19%.

#### 4.4.2 Quick Ratio

Quick ratio or acid test ratio is the relationship in between quick assets and current liabilities. It is the measurement of company's ability to convert its current assets quickly into cash in order to meet its current liabilities. Though current ratio is high, if more amount is hold by inventory then the company may suffer of paying current obligations. So the study of quick ratio is reliable. It can be computed by dividing quick assets by current liabilities. While calculating quick assets, inventories are excluded from total current assets.

**Table 4.14**  
**Quick Ratio**

Fiscal Year	UNLtd			BNLtd		
	Quick Assets	Current Liabilities	Ratio	Quick Assets	Current Liabilities	Ratio
2002/03	178.11	360.88	0.49	317.32	299.80	1.06



2003/04	187.64	480.96	0.39	262.85	174.02	1.51
2004/05	262.67	882.02	0.30	179.42	228.99	0.78
2005/06	301.79	742.23	0.41	209.10	275.48	0.76
2006/07	318.34	750.47	0.42	280.44	576.40	0.49
<b>Total</b>	<b>1248.55</b>	<b>3216.56</b>		<b>1249.13</b>	<b>1554.69</b>	
<b>Average</b>	<b>249.71</b>	<b>643.31</b>	<b>0.40</b>	<b>249.83</b>	<b>310.94</b>	<b>0.92</b>
<b>SD</b>			<b>0.068</b>			<b>0.39</b>
<b>CV</b>			<b>7.09</b>			<b>42.02</b>

(Source: - Appendix 11)

The above table 4.14 depicts that on average UNLtd maintained liquidity position of 0.40: 1 and BNLtd maintained liquidity position of 0.92:1, the standard liquidity position that a sound organization should maintain 1:1. The table shows that BNLtd has its better liquidity position in FY 2003/04 i.e. 1.51: 1 and UNLtd has its better liquidity position in FY 2002/03 i.e. 0.49:1. It shows that UNLtd liquidity position is very weak and is not able to meet short term obligations.

## 4.5 Profitability Position

The objective behind the establishment of a manufacturing company is to earn profit or get maximum return on investment. An ability to earn maximum from the maximum use of available resources by the business organization is known as profitability. It is the measure of efficiency and the search for it provides an incentive to achieve efficiency.

### 4.5.1 Gross Profit Margin Ratio

This ratio is the relationship between gross profits to net sales that explain the percentage return of gross profit out of total sales. Here, this ratio measures the efficiency of the company and soundness of the management. Higher percentage indicates the better efficiency.

**Table 4.15**  
**Gross Profit Margin**

Fiscal Year	UNLtd			BNLtd		
	Gross Profit	Sales	Ratio (%)	Gross Profit	Sales	Ratio (%)
2002/03	401.59	1244.73	32.26	233.39	609.65	38.28
2003/04	555.79	1524.9	36.45	273.74	632.11	43.31
2004/05	547.08	1481.56	36.93	257.39	614.74	41.87
2005/06	494.70	1434.94	34.47	270.75	621.83	43.54
2006/07	536.91	1818.53	29.52	244.93	634.19	38.62
<b>Total</b>	<b>2536.07</b>	<b>7504.66</b>		<b>1280.20</b>	<b>3112.52</b>	
<b>Average</b>	<b>507.21</b>	<b>1500.93</b>	<b>33.93</b>	<b>256.04</b>	<b>622.50</b>	<b>41.12</b>
<b>SD</b>			<b>3.08</b>			<b>2.53</b>
<b>CV</b>			<b>9.07</b>			<b>6.14</b>

(Source: - Appendix 12)

The above table 4.15 shows the relationship in between gross profit earned by the company during the study period and sales made thereof. The table depicts that Gross profit margin ratio of UNLtd is in increasing trend and then decreasing trend, but for BNLtd the Gross profit margin ratio is fluctuating over the years. BNLtd has better margin on sales than UNLtd as BNLtd's average gross profit margin is 41.12% and UNLtd's average Gross profit margin is 33.93%.

There is inconsistency in gross profit margin of both enterprises as CV of UNLtd is 9.07% and of BNLtd is 6.14%.

#### 4.5.2 Net Profit Margin Ratio

The ratio of Net Profit to Sales essentially expresses the cost price effectiveness of the operation. Thus, this ratio indicates the management ability to operate the business with sufficient success.

**Table 4.16**  
**Net Profit Margin**

Fiscal Year	UNLtd			BNLtd		
	Net Profit	Sales	Ratio (%)	Net Profit	Sales	Ratio (%)
2002/03	93.17	1244.73	7.49	25.67	609.65	4.21
2003/04	140.78	1524.9	9.23	37.80	632.11	5.98
2004/05	189.20	1481.56	12.77	34.74	614.74	5.65
2005/06	238.16	1434.94	16.60	24.96	621.83	4.01
2006/07	263.06	1818.53	14.46	-27.28	634.19	-4.30
<b>Total</b>	<b>924.37</b>	<b>7504.66</b>		<b>95.89</b>	<b>3112.52</b>	
<b>Average</b>	<b>184.87</b>	<b>1500.93</b>	<b>12.11</b>	<b>19.18</b>	<b>622.50</b>	<b>3.11</b>
<b>SD</b>			<b>3.73</b>			<b>4.23</b>
<b>CV</b>			<b>30.83</b>			<b>136.06</b>

(Source: - Appendix 13)

The above Table 4.16 shows the net profit margin of UNLtd and BNLtd during the study period. It is irregular during the study period as it varied from 7.49% to 16.60% incase of UNLtd and is in decreasing trend for BNLtd except for year 2003/04 where it was increased. BNLtd has incurred negative ratio in the year 2006/07 as it has incurred loss in that fiscal year. The average Net Profit Margin of UNLtd (i.e. 12.11%) is better than that of BNLtd (i.e. 3.11%). CV of UNLtd is 30.83% and of BNLtd is 136.06%, which shows that there is great fluctuation in ratio of BNLtd in both enterprises.

### 4.5.3 Return on Total assets

It measures the percentage return on the overall total assets employed for every activities of the company. It gives the profit earning efficiency of the company in relation to total assets.

**Table 4.17**  
**Return on Total Assets**

<b>Fiscal Year</b>	<b>UNLtd</b>			<b>BNLtd</b>		
	<b>Net Profit</b>	<b>Total Assets</b>	<b>Ratio (%)</b>	<b>Net Profit</b>	<b>Total Assets</b>	<b>Ratio (%)</b>
2002/03	93.17	784.88	11.87	25.67	1022.41	2.51
2003/04	140.78	939.72	14.98	37.80	886.56	4.26
2004/05	189.20	1098.96	17.22	34.74	618.92	5.61
2005/06	238.16	967.15	24.62	24.96	1052.05	2.37
2006/07	263.06	985.12	26.70	-27.28	1252.31	-2.18
<b>Total</b>	<b>924.37</b>	<b>4775.83</b>		<b>95.89</b>	<b>4832.25</b>	
<b>Average</b>	<b>184.87</b>	<b>955.17</b>	<b>19.08</b>	<b>19.18</b>	<b>966.45</b>	<b>2.51</b>
<b>SD</b>			<b>6.34</b>			<b>2.94</b>
<b>CV</b>			<b>33.25</b>			<b>117.32</b>

(Source: - Appendix 14)

The above Table 17 presents the return on total assets employed by UNLtd and BNLtd. Average Return on TAs ratio shows that UNLtd's return on TAs (i.e. 19.08%) is better than BNLtd return on TAs (i.e. 2.51%). The ratio shows that the PEs performance is better in year 2006/07 compared to other year for the UNLtd but worst for BNLtd as the ratio is in negative because the BNLtd has incurred loss in that year. Ratio fluctuates more on BNLtd than UNLtd as CV of UNLtd is 33.25% and of BNLtd is 117.32%.

#### 4.5.4 Return on Net Worth

It gives the percentage return on the owners invested capital. The conclusions drawn on the basis of preceding ratios may not be enough because they give profit in terms of Sales and TAs only. So, return on investments i.e. Net Worth is needful to study. The Table-18 presented below shows the rate of return on owner's capital employed during the period of study in UNLtd and BNLtd.

**Table 4.18**  
**Return on Net Worth**

Fiscal Year	UNLtd			BNLtd		
	Net Profit	Net Worth	Ratio (%)	Net Profit	Net Worth	Ratio (%)
2002/03	93.17	424.00	21.97	25.67	722.61	3.55
2003/04	140.78	458.76	30.69	37.80	712.54	5.30
2004/05	189.20	216.94	87.21	34.74	389.93	8.91
2005/06	238.16	224.92	105.89	24.96	143.3	17.42
2006/07	263.06	254.47	103.37	-27.28	178.98	-15.24
<b>Total</b>	<b>924.37</b>	<b>1579.09</b>		<b>95.89</b>	<b>2147.36</b>	
<b>Average</b>	<b>184.87</b>	<b>315.82</b>	<b>69.83</b>	<b>19.18</b>	<b>429.47</b>	<b>3.99</b>
<b>SD</b>			<b>40.46</b>			<b>12.00</b>
<b>CV</b>			<b>57.95</b>			<b>130.82</b>

(Source: - Appendix 15)

The above table 4.18 shows that the rate of return on net worth fluctuates widely every year. It fluctuates from 21.97% to 105.89% of UNLtd and from -15.24% to 17.42% of BNLtd. The CV of UNLtd and BNLtd is 57.95% and 130.82% respectively. The average rate varies greatly between both enterprises. It is 69.83% for UNLtd and 3.99% for BNLtd. The Bottlers Nepal has incurred loss in the last fiscal year 2006/07 due to which great variation in the C.V. can be observed.

#### 4.5.5 Return on Current Assets (Working Capital)

The rate of return on current assets measures the profit with respect to its total current assets. It gives the utilization of current assets effectiveness.

**Table 4.19**  
**Return on Working Capital (Current Assets)**

Fiscal Year	UNLtd			BNLtd		
	Net Profit	Current Assets	Ratio (%)	Net Profit	Current Assets	Ratio (%)
2002/03	93.17	304.22	30.62	25.67	544.18	4.72
2003/04	140.78	371.86	37.86	37.80	447.83	8.44
2004/05	189.20	492.43	38.42	34.74	298.69	11.63
2005/06	238.16	557.96	42.68	24.96	386.04	6.46
2006/07	263.06	622.67	42.25	-27.28	469.70	-5.81
<b>Total</b>	<b>924.37</b>	<b>2349.14</b>		<b>95.89</b>	2146.44	
<b>Average</b>	<b>184.87</b>	<b>469.83</b>	<b>38.36</b>	<b>19.18</b>	429.29	<b>5.01</b>
<b>SD</b>			<b>4.85</b>			<b>6.61</b>
<b>CV</b>			<b>12.63</b>			<b>131.96</b>

(Source: - Appendix 16)

The above table 4.19 shows the percentage return on Gross Working Capital employed. The average return on working capital of UNLtd is 38.36% and of BNLtd is 5.01%. Thus, both the MPEs are able to utilize its CAs properly to earn profit. The ratio has increased of selected PEs over the study period. For UNLtd, it fluctuates from 30.62% to 42.68% and for BNLtd it fluctuates from -5.81 to 11.63%. CV shows more fluctuations in BNLtd than UNLtd as BNLtd ratio is negative in the fiscal year 2005/06.

#### 4.6 Correlation and Regression Analysis

Only the calculation of ratios is not sufficient. The relationships between these ratios develop the actual conclusion. As we know that working capital is the function of Liquidity, Profitability and Turnover ratio, Correlation and Regression analysis is calculated here to show the relationship

between following ratios. The calculations are done from statistical tool of Microsoft word excel and fitted in the table bellow: -

I.Current Ratio and Net Profit Margin

II. Net working Capital and Net Profit Margin

III.Current Assets Turnover Ratio and Return on Net Worth

IV.Receivable turnover Ratio and Return on Total Assets

V.Inventory Turnover Ratio and Return on Total Assets

### **I. Relationship between Current Ratio and Net Profit Margin**

Theoretical relationship between these two variables should be adverse as higher liquidity implies lower profitability. Thus to show the relationship between these variables, Karl Pearson’s coefficient of correlation( $r$ ) is determined. Also to test the significance of the calculated correlation coefficient, the probable error (P.E.) is also calculated and shown below:

**Table 4.20**  
**Correlation Analysis of Current Ratio and Net Profit Margin**

MPEs	r	P.E	6P.E	Remark
UNLtd	-0.1602	0.2939	1.7634	Insignificant
BNLtd	0.6975	0.1549	0.9293	Insignificant

(Source: - Appendix 17)

From the above table we can find that coefficient of correlation between current ratio and net profit margin in UNLtd ‘ $r$ ’ is -0.1602, which shows negative correlation between these two ratios. On the other hand we observe coefficient of correlation ‘ $r$ ’ between current ratio and net profit margin in case of BNLtd is 0.6975, which shows positive but lower relationship between

these two variables. Thus, the principle of adverse relationship between profitability and liquidity exist in case of UNLtd and this relationship does not exist in BNLtd.

A regression line also can be fitted to show the degree of relationship between Current ratio and Net profit margin ratio. For this purpose, current ratio is taken as independent variable and Net profit margin ratio as dependent variable. The regression line of net profit margin ratio (Y) on current ratio (X) is given below:

$$Y = a + b X$$

**Table 4.21**  
**Simple Regression result of Net Profit Margin on Current Ratio**

	a	b	t-stat	T-Value	Remark
UNLtd	15.78	-4.83	0.415	2.31	Insignificant
BNLtd	-4.06	4.54	0.370	2.31	Insignificant

(Source: - Appendix 18)

In the above table the value of a is positive and b is negative in case of UNLtd. As the value of b is negative, more the value of (X) current ratio increases it decreases the value of (Y) i.e. Net Profit margin. We can conclude that current ratio has negative or adverse relationship with the net profit margin. The value of a is constant for both the companies. On the other hand the value of a is negative and b is positive, as the current ratio (X) increases the value of (Y) Net profit margin also increases. It has positive relationship between these two variables. Similarly, the value of t for both UNLtd and BNLtd is less than the tabulated value i.e. it is insignificant for both the companies. Thus,  $H_0$  is accepted i.e. there is no relationship between net profit margin and current ratio.

## **II. Relationship between Net Working Capital and Net profit Margin**

As Net Working capital is the margin of safety maintained by Company and Net profit margin ratio shows the cost price effectiveness of the operation, there must be negative relationship



between these two variables. So to show the relationship between these variables, Karl Pearson's coefficient of correlation(r) is determined. Also to test the significance of the calculated correlation coefficient, the probable error (P.E.) is calculated and shown below:

**Table 4.22**  
**Correlation Analysis of Net Working Capital and Net Profit Margin**

MPEs	r	P.E	6P.E	Remark
UNLtd	0.2608	0.2811	1.6867	Insignificant
BNLtd	0.9422	0.0338	0.2032	significant

(Source: - Appendix 19)

The above table shows that correlation between net working capital and net profit margin ratio is positive for both UNLtd and BNLtd. As the value of 'r' is less than P.E. for UNLtd, the relationship is insignificant and for BNLtd. 'r' is more than 6 P.E, hence, the relationship is significant. It can be concluded that for both the companies there is positive correlation between net working capital and net profit margin but the correlation of BNLtd is highly correlated than UNLtd.

To show the degree of relationship between Net Working capital and Net profit margin, a simple regression line is drawn below. For this purpose, Net working capital is taken as independent variable and Net profit margin ratio as dependent variable. The regression line of net profit margin ratio (y) on return on working capital (x) is given below:

$$Y = a + b X$$

**Table 4.23**  
**Simple Regression result of Net profit Margin Ratio on Return on Working Capital**

	a	b	t-stat	T-Value	Remark
UNLtd	10.22	0.228	1.96	2.31	Insignificant

BNLtd	2.90	0.452	1.75	2.31	Insignificant
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(Source: - Appendix 20)

In the above table the value of a and b is positive for both the companies UNLtd and BNLtd. As the value of b is positive, more the value of (X) return on working capital increases greater it increases the value of (Y) i.e. Net Profit margin. We can conclude that return on working capital has positive relationship with the net profit margin. Similarly, the value of t for both UNLtd and BNLtd is less than the tabulated value i.e. it is insignificant for both the companies. Thus,  $H_0$  is accepted i.e. there is no relationship between net profit margin and return on working capital.

### III Relationship between Current Assets Turnover Ratio and Return on Net Worth

Theoretical relationship between these two variables must be positive. Thus to show the relationship between these variables, Karl Pearson's coefficient of correlation (r) is determined. And to test the significance of the calculated correlation coefficient, the probable error (P.E.) is also calculated and shown below:

**Table 4.24**

#### **Correlation Analysis of Current Assets Turnover and Return on Net Worth**

MPEs	r	P.E	6P.E	Remark
UNLtd	-0.9774	0.0135	0.0673	Insignificant
BNLtd	0.4213	0.2481	1.4885	Insignificant

(Source: - Appendix 21)

The above table shows the coefficient of correlation between Current Assets turnover Ratio and Return on Net worth of UNLtd is -0.9774, which shows very high negative relationship between these two variables. Similarly, r is 0.4213 for BNLtd, i.e. there is positive relationship between these two variables in BNLtd. Since the value of r is less than 6 P.E. for both the companies, it can be concluded that in both case, UNLtd and BNLtd, there is insignificant relationship between Current Assets Turnover Ratio and Return on Net Worth..

To see the linear relationship current assets turnover ratio is taken as dependent variable and Return on net worth as an independent variable. Based on above assumptions, the regression line of return on net worth (y) on current assets turnover ratio (X) is shown below:

$$Y = a + b X$$

**Table 4.25**

**Simple Regression of Return on Net Worth and Current Assets Turnover Ratio**

	a	b	t-stat	T-Value	Remark
UNLtd	4.606	-0.018	-0.93	2.31	Insignificant
BNLtd	1.47	0.12	-1.02	2.31	Insignificant

(Source: - Appendix 22)

In the above table the value of a is positive for both the companies but the value of b is negative in case of UNLtd and positive in case of BNLtd. As the value of b is negative, more the value of (X) current assets turnover ratio increases greater it decreases the value of (Y) i.e. Return on net worth and vice-versa in case of BNLtd. We can conclude that current assets turnover ratio has negative or adverse relationship with the Return on net worth. Similarly, the value of t for both UNLtd and BNLtd is less than the tabulated value i.e. it is insignificant for both the companies. Thus,  $H_0$  is accepted i.e. there is no relationship between Return on net worth and current assets turnover ratio.

#### IV Relationship between Inventory Turnover Ratio and Return on Total Assets

Theoretically, the relationship between Inventory turnover and Return on total assets is also negative. Karl Pearson's coefficient of correlation(r) is used to find out the correlation between Inventory Turnover and Return on Total assets, which is shown below: -

**Table 4.26**

**Correlation Analysis of Inventory turnover and Return on total assets**

MPEs	r	P.E	6P.E	Remark
UNLtd	-0.9977	0.3002	1.8015	Insignificant

BNLtd	0.6504	0.1740	1.0443	Insignificant
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(Source: - Appendix 23)

From the above table, we find that coefficient of correlation between Inventory turnover Ratio and Return on Total Assets in UNLtd 'r' is -0.9977, which shows negative relationship between these two variables. By considering the probable error, where r is less than 6P.E, we can say that value of 'r' is not significant. On the other hand, when we observe coefficient of correlation between Inventory Turnover Ratio and Return on Total Assets in case of BNLtd, it is 0.6504 which shows positive relationship between these two variables. Value of r in BNLtd is less than 6 P.E. even though it is greater than P.E., so the relationship between those two variables is insignificant.

To show the degree of relationship between Inventory turnover and Return on Total assets, a simple regression line is drawn below. For this purpose, Return on total assets is assumed to be dependent upon Inventory turnover ratio. The regression line of Return on Total assets (Y) on Inventory Turnover ratio (X) is as follows:

$$Y = a + b X$$

**Table 4.27**

**Simple Regression result of Return on total assets and Inventory turnover ratio**

	a	b	t-stat	T-Value	Remark
UNLtd	42.54	-3.24	-0.64	2.31	Insignificant
BNLtd	-3.53	1.67	-0.78	2.31	Insignificant

(Source: - Appendix 24)

In the above table 4.27, the value of a is positive and b is negative in case of UNLtd. As the value of b is negative, more the value of (X) inventory turnover ratio increases greatly it decreases the value of (Y) i.e. Return on total assets. We can conclude that inventory turnover ratio has negative or adverse relationship with the Return on total assets. On the other hand for

BNLtd the value of a is negative and b is positive, as the value of X increases the value of Y also increases i.e. it has positive relationship between these two variables. Similarly, the value of t for both UNLtd and BNLtd is less than the tabulated value i.e. it is insignificant for both the companies. Thus,  $H_0$  is accepted i.e. there is no relationship between Return on total assets and Inventory turnover ratio.

## V Relationship between Receivable Turnover Ratio and Return on Total Assets

Theoretically, the relationship between receivable turnover and Return on total assets is negative. Karl Pearson's coefficient of correlation(r) is used to find out the correlation between Receivable turnover and Return on Total Assets, which is shown below:

**Table 4.28**

### **Correlation Analysis of Receivable Turnover ratio and Return on total assets**

MPEs	r	P.E	6P.E	Remark
UNLtd	-0.5984	0.1936	1.1617	Insignificant
BNLtd	-0.0769	0.2998	1.7991	Insignificant

(Source: - Appendix 25)

The above table shows that correlation between Receivable Turnover Ratio and Return on Total Assets 'r' is -0.5984 and -0.0769 for UNLtd and BNLtd respectively. Also the value of r is not significant as r is less than P.E.

A regression line is fitted to show the degree of relationship between Receivable Turnover ratio and Return on Total Assets. For this purpose, receivable turnover ratio is taken as independent variable and Return on Total Assets as dependent variable. The regression line of Return on Total Assets (y) on Receivable Turnover Ratio (x) is given below:

$$Y = a + b X$$

**Table 4.29**

### Simple Regression result of Return on Total Assets on Receivable Turnover Ratio

	a	b	t-stat	T-Value	Remark
UNLtd	31.89	-0.94	-1.29	2.31	Insignificant
BNLtd	2.89	-0.009	9.476	2.31	Significant

(Source: - Appendix 26)

In the above table the value of a is positive and b is negative in case of both the companies. As the value of b is negative, more the value of (X) Receivable turnover ratio increases greatly, it decreases the value of (Y) i.e. Return on total assets. We can conclude that current ratio has negative or adverse relationship with the net profit margin. Similarly, the value of t for UNLtd is negative and has less than tabulated value it is insignificant. Thus,  $H_0$  is accepted i.e. there is no relationship between Return on total assets and receivable turnover ratio. On the other hand, the value of t for BNLtd is greater than Tabulated value so it is significant and null hypothesis is rejected i.e. there is significant relationship between Return on total assets and Receivable turnover ratio.

## 4.7 Testing of Hypothesis

A hypothesis is a tentative generalization, the validity of which remains to be tested. A hypothesis is a conjectural statement of the relation between two or more variables.

As the data for 5 years have been taken for the study, small sample test (i.e.-test) will be used to test the different hypothesis. For applying t-test in the contest of small sample, the t-value is calculated first and compared with the table value of 't' at a certain level of significance (say on 5%) for the given degree of freedom. If calculated value of "t" exceeds the table value we infer that the null hypothesis is rejected i.e. the difference is significant at 5% level of significance. But if 't' is less than the table value of 't', the null hypothesis is accepted i.e. the difference is not treated as significant.

### 4.7.1 Composition of Working Capital

To test whether there is significant difference in composition of working capital between UNLtd and BNLtd, following null and alternative hypothesis are formulated and tested: -

$H_0$ : There is no significant difference in composition of working capital between UNLtd and BNLtd, i.e.  $\mu_1 = \mu_2$ . To test this hypothesis following sub null hypothesis are fitted: -

1. There is no significant difference in cash and bank bal. between UNLtd and BNLtd.
2. There is no significant difference in Sundry Debtors between UNLtd and BNLtd.
3. There is no significant difference in Inventories between UNLtd and BNLtd.
4. There is no significant difference in Misc. Current Assets between UNLtd and BNLtd.

$H_1$ : There is significant difference in composition of working capital between UNLtd and BNLtd, i.e.  $\mu_1 \neq \mu_2$ . Following sub-alternative hypothesis are fitted for this hypothesis:

1. There is significant difference in cash and bank bal. between UNLtd and BNLtd
2. There is significant difference in Sundry Debtors between UNLtd and BNLtd.
3. There is significant difference in Inventories between UNLtd and BNLtd.
4. There is significant difference in Misc. Current Assets between UNLtd and BNLtd.

The following table exhibits the mean value (in percentage of total CAs) measuring the Composition of working capital of UNLtd and BNLtd and students 't' value.

**Table 4.30**

**t-test of Composition of Working Capital**

S.N	Composition of Working Capital	UNLtd (Avg % of CAs)	BNLtd (Avg % of CAs)	Calculated t-value	Tabulated t-value	Result/ Decision
1	Cash & Bank bal.	11.37	3.82	3.13	2.31	$H_0$ is rejected

2	Sundry Debtors	25.22	15.22	0.15	2.31	H <sub>0</sub> is accepted.
3	Inventories	46.49	41.31	2.90	2.31	H <sub>0</sub> is rejected
4	Misc. CAs	16.91	38.00	0.10	2.31	H <sub>0</sub> is accepted

(Source: - Appendix 27)

From the table, it is clear that the t value of Cash and Bank balance and Inventories of UNLtd and BNLtd is greater than the tabulated value. Thus null hypothesis is rejected i.e. there is significant difference in cash and bank balance and inventories between BNLtd and UNLtd. On the other hand, it is clear that the t value of Sundry Debtors and Misc. CAs is less than the tabulated value. Thus null hypothesis is accepted i.e. there is no significant difference in Sundry Debtors and Inventories between UNLtd and BNLtd.

#### 4.7.2 Liquidity Position

To test whether there is significant difference in liquidity position between UNLtd and BNLtd, following null and alternative hypothesis are formulated and tested:

H<sub>0</sub>: There is no significant difference in Liquidity position in terms of Current Ratio and Quick Ratio between UNLtd and BNLtd, i.e.  $\mu_1 = \mu_2$ .

H<sub>1</sub>: There is significant difference in Liquidity position in terms of Current Ratio and Quick Ratio between UNLtd and BNLtd, i.e.  $\mu_1 \neq \mu_2$ .

The following table exhibits the mean value of ratios measuring the Liquidity position of UNLtd and BNLtd:

**Table 4.31**  
**t-test of Liquidity Position**

S.N	Composition of Working Capital	UNLtd (Avg % of CAs)	BNLtd (Avg % of CAs)	Calculated t-value	Tabulated t-value	Result/ Decision
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1	Current Ratio	0.76	1.58	0.56	2.31	H <sub>0</sub> is accepted
2	Quick Ratio	0.40	0.92	0.78	2.31	H <sub>0</sub> is accepted.

(Source: - Appendix 28)

From the above table 4.31, it is clear that the t value of Current and Quick ratio is less than the tabulated value. Thus null hypothesis is accepted i.e. there is significant difference in current and Quick ratio between UNLtd and BNLtd.

### 4.7.3 Profitability Position

To test whether there is significance difference in Profitability position between UNLtd and BNLtd, following null and alternative hypothesis are formulated and tested:

H<sub>0</sub>: There is no significant difference in Profitability position in terms of Net Profit Margin Ratio, Return on TA, Return on Net Worth, and Return on TAs between UNLtd and BNLtd, i.e.  $\mu_1 = \mu_2$ .

H<sub>1</sub>: There is significant difference in Liquidity position in terms of Net Profit Margin Ratio, Return on TA, Return on Net Worth, and Return on TAs between UNLtd and BNLtd, i.e.  $\mu_1 \neq \mu_2$ .

The following table shows the mean value of various ratios measuring the profitability of UNLtd and BNLtd and their student's t-value:

**Table 4.32**  
**t-test of Profitability Position**

S.N	Profitability Position	UNLtd (Avg)	BNLtd (Avg)	Calculated t-value	Tabulated t value	Result/ Decision
1	Net Profit Margin Ratio	12.11	3.11	1.04	2.31	H <sub>0</sub> is accepted.

2	Return on TA	19.08	2.51	2.67	2.31	H <sub>0</sub> is rejected.
3	Return on Net Worth	69.83	3.99	0.12	2.31	H <sub>0</sub> is accepted.
4	Return on CAs	38.36	5.01	1.77	2.31	H <sub>0</sub> is accepted.

(Source: - Appendix 29)

From the above table 4.32, it is clear that the t value of only Return on TA of UNLtd and BNLtd is greater than the tabulated value. Thus null hypothesis is rejected i.e. there is significant difference in Liquidity position in terms of Return on Total Assets between BNLtd and UNLtd. On the other hand, it is clear that the t value of Net Profit Margin Ratio, Return on Net Worth and Return on CAs is less than the tabulated value. Thus null hypothesis is accepted i.e. there is no significant difference in Liquidity position in terms of Net Profit Margin Ratio, Return on Net Worth and Return on CAs between UNLtd and BNLtd.

## 4.8 Major Findings

The major components of current assets in UNLtd and BNLtd are Cash and Bank balance, Sundry Debtors, Inventory and Misc. Current Assets. Here, it is found that out of the total current assets, inventory holds the largest portion followed by misc. current assets, Sundry Debtors and Cash and Bank balance. In UNLtd, cash and bank balance, sundry debtors, inventories and misc. current assets fluctuate by 50.41%, 31.47%, 30.99% and 27.23% respectively. In BNLtd, the fluctuation rates are 87.84%, 64.46%, 21.58% and 31.00% for cash and bank balance, sundry debtors, inventories and misc. current assets respectively. Thus, all the components of current assets are highly fluctuating during the study period. Specially, cash and bank balance in UNLtd and sundry debtors in BNLtd needs proper balancing.

The average proportion of current assets to total assets during the study period is 48.81% and 45.24% for UNLtd and BNLtd respectively. Similarly, the proportion of current assets to net fixed assets in an average of UNLtd and BNLtd is 335.97% and 109.63% respectively with the CV of 26.51% and 31.09% respectively.

The proportion of current assets with respect to total assets and net fixed assets shows that the investment in current assets is high. As the higher ratio indicates the greater amount of working capital, the risk and profitability also decreases.

The average ratio of current liabilities to total liabilities shows that short-term financing is greater than long-term financing on total liabilities. From the analysis of financing of current assets, it can be concluded that UNLtd and BNLtd have financed their working capital need through both short term and long-term sources. This implies that both have followed the conservative financing policy during the study period.

Both public enterprises are trying to maintain consistency in its gross working capital turnover ratio. The ratio reflects better performance in utilization of current assets on UNLtd than BNLtd. So BNLtd should try to improve the utilization of current assets. However, UNLtd's turnover ratio is also in decreasing trend from FY 2004/05, so it should try to avoid fluctuations coming on gross working capital turnover ratio. Similar condition occurs in the analysis of net working capital turnover ratio.

Receivable turnover ratio reflects consistent and better turnover in UNLtd. UNLtd seem to be following good receivable than BNLtd because its average receivable turnover is 13.60 and BNLtd is 20.09 times. The average collection period of UNLtd is 28.40 days and BNLtd is 38.40

days. It shows that UNLtd is collecting money faster than BNLtd. Inventory turnover ratio shows wide fluctuation in utilization of inventory in UNLtd compare to BNLtd. However, the average inventory turnover ratio reflects better turnover of stock in UNLtd than BNLtd.

The liquidity position of companies is analyzed with current ratio and quick ratio. The average current ratio of UNLtd and BNLtd is 0.76 times and 1.58 times respectively. Similarly, UNLtd and BNLtd have maintained its quick ratio of 0.40 times and 0.92 times respectively in an average during the study period. Thus, the current ratio and quick ratio shows the sound liquidity position of BNLtd. In UNLtd these ratios are little bit lower than the standard ratio, which indicates that the management has not adopted proper policy to maintain adequate liquidity, so its liquidity position is not sound.

Profitability is the measure of efficiency. The Gross Profit Margin ratio of UNLtd is in increasing trend till third year and from that it is in decreasing trend and GPM of BNLtd is in increasing trend till second year and from that it is in decreasing trend. The Net Profit Margin was found to be in increasing trend in the beginning and than to the decreasing trend because due to the unstable political situation in the country. On an average the gross profit margin of UNLtd and BNLtd is 33.93% and 41.12% respectively and net profit margin of UNLtd and BNLtd is 12.11% and 3.11% respectively. Thus, gross profit margin and net profit margin seems to be satisfactory during the study period, but it is better on UNLtd compared to BNLtd. The return on the total assets, net worth and working capital of these companies are also found favorable but they are widely fluctuating so company should try to maintain consistency in these ratios.

**Table 4.33****List of Correlation and Regression Analysis**

Analysis	UNLtd			BNLtd		
	r	P.E.	b	r	P.E.	b
Current ratio & Net Profit Margin	-0.1602	0.2939	-4.83	0.6975	0.1549	4.54
Net Working Capital & Net Profit Margin	0.2608	0.2811	0.228	0.9422	0.0338	0.452
Current Assets Turnover Ratio & Return on Net Worth	-0.9774	0.0135	-0.018	0.4213	0.2481	0.12
Inventory Turnover Ratio & Return on TAs	-0.9977	0.3002	-3.24	0.6504	0.1740	1.67
Receivable Turnover Ratio & Return on TAs	-0.5984	0.1936	-0.009	-0.0769	0.2998	-0.94

The correlation coefficient (r) between current ratio and net profit margin shows negative correlation in UNLtd but positive correlation in BNLtd. In UNLtd, net working capital and net profit margin, current assets turnover ratio and return on net worth are positively correlated but in varying degrees and Inventory Turnover Ratio and Return on TAs and Receivable Turnover Ratio and Return on TAs are negatively correlated. In BNLtd, receivable turnover ratio and return on total assets is only negatively correlated rest all are positively correlated.

Probable Error (P.E.) value clears that the correlated correlation coefficient of current ratio and net profit margin, and net working capital and net profit margin current assets turnover ratio and

return on net worth is statistically insignificant but the r value of other ratios are statistically significant of UNLtd. On BNLtd, correlated correlation coefficients between all these ratios are statistically significant except receivable turnover ratio and return on TAs.

The result of regression analysis has showed that there is negative relationship between current ratio and net profit margin, net working capital and net profit margin, current assets turnover ratio and return on net worth, receivable turnover ratio and return on total assets, and inventory turnover ratio and return on total assets in UNLtd. But in BNLtd, regression coefficient between receivable turnover ratio and return on total assets is negative and all other ratios have positive regression coefficient.

While testing hypothesis of composition of working capital it is found that there is significant difference in cash and bank balance percentage and inventories percentage between UNLtd and BNLtd. But no significant difference exists in Sundry Debtors percentage and misc. current assets percentage between UNLtd and BNLtd. Similarly, from test of liquidity position, it is clear that there is significant difference in current and quick ratio between UNLtd and BNLtd. In the same way, profitability test proves that there exist significant difference in return on return on total assets between UNLtd and BNLtd, and no significant difference exist in net profit margin ratio, return on net worth and return on current assets between UNLtd and BNLtd.

# CHAPTER V

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

This is the final segment of the study, in which the researcher has presented the summary and findings along with some important suggestions and recommendations.

### 5.1 Summary

Success does not just happen, it should be planned and managed. Public manufacturing industries that carry out the economic activities are the backbone of the economy. Their activities affect the economy in one-way or the other. Every organization has limited resources. Working capital is a sensitive part of every business organization.

Manufacturing companies play very important role in this up growing economy. With its history, in Nepal, starting from B.S. 2036, it has come up a very long hike to today status. The first manufacturing company of Nepal is Biratnagar Jute mill which was established in 2036 B.S. from where the industrial revolution in Nepal took place. In general manufacturing companies are the industries which produce goods and services to the general public for consumption and use which may be in daily use or occasional use.

In the context of Nepalese manufacturing companies in general, working capital is not satisfactory due to the lack of effective management policy and the political instability in the country during the past. Among the 21 manufacturing companies listed in the SEBO, two companies Unilever Nepal and Bottlers Nepal Limited are taken for the study. The quantitative

and qualitative analysis, for the findings and conclusion, were made of the data collected from these two manufacturing companies.

The findings were drawn analysis the five years data of above mentioned two manufacturing companies. Different ratios were calculated to get the results for conclusions. Since the topic of the study revolves around the working capital, the ratios of composition of working capital, turnover position, liquidity position, profitability position etc and the ratios of those items that are related to the working capital are calculated.

## **5.2 Conclusion**

The most important aspects of the financial management for the success of any business enterprise is the proper management of working capital. Working Capital is said to be backbone of the manufacturing enterprises. Without proper working capital management business success cannot be even imagined. To run the daily production activities of the company, besides the manpower, equipment etc. one of the major components required is working capital. Thus, this study has attempted to analyze how far UNLtd and BNLtd are able to manage its working capital to achieve their goals.

The study reveals that the components of current assets are highly fluctuating during the study period. The less liquid asset inventory holds the largest portion of current assets. The proportion of current assets with respect to total assets and net fixed assets shows that current assets absorb higher percentage of total assets. As the higher ratio indicates the greater amount of working capital, both the risk and profitability decreases.



From the analysis, it is found that both the public enterprises are not following appropriate working capital policy, as they have adopted conservative financing policy. Turnover ratios reflect better utilization of current assets in UNLtd than BNLtd but these ratios are widely fluctuating on UNLtd. Liquidity position of BNLtd is sound but UNLtd need to adopt proper policy to have adequate level of liquidity. Profitability position is also analyzed by various ratios and seems to be satisfactory. But these ratios are widely fluctuating during the study period so company should try to maintain consistency in these ratios.

BNLtd needs to bring speed on its inventory conversion cycle and payable deferral period for better cash conversion cycle and to reduce the need for extra working capital. Cash conversion cycle on an average is satisfactory for UNLtd but it needs to maintain consistency on it.

Thus based on these findings, various policy issues are highlighted on this study, such as negligence on working capital management, absence of proper working capital financing policy, fluctuation in liquidity position, imbalance cash conversion cycle etc. To overcome such issues and gaps, various suggestion and recommendation, such as: techniques of effective working capital management, improving liquidity position, improvement in utilization of current assets i.e. turnover of assets, speed up cash conversion cycle, adopting moderate working capital policy, proper financing policy, effective sales plan and development of management information system etc. are stated in this study.

In short, the management of working capital cannot be neglected by public enterprises otherwise it will seriously erode their financial viability. Better working capital management results in better financial performance and helps to achieve the goals of enterprises effectively and efficiently.

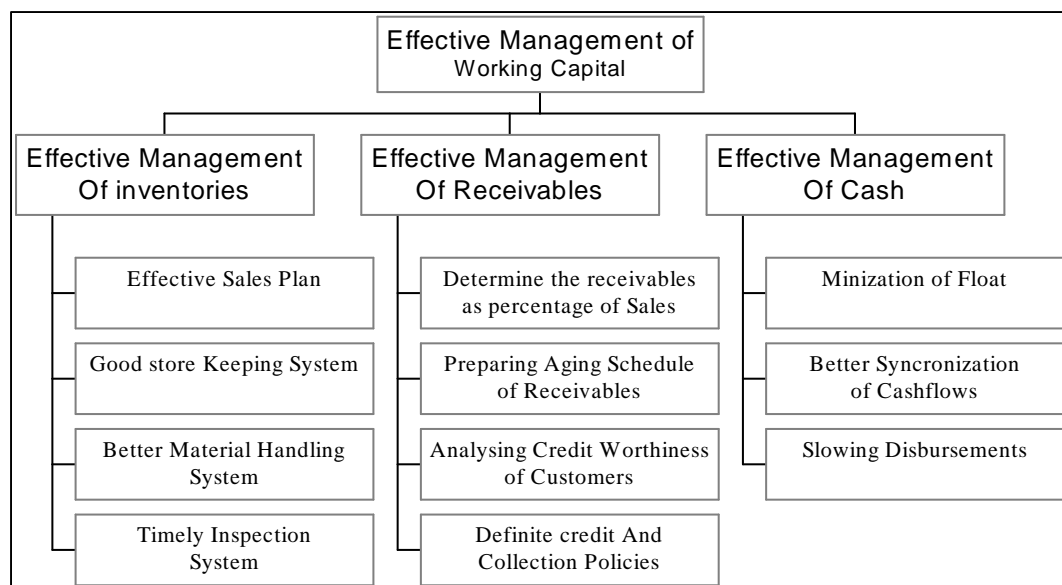
## 5.3 Recommendations

Based on the above findings and issues and gaps, some practicable recommendations and suggestions are as follows: -

### a) Effective working capital management

The fluctuation in the size of components of current assets indicates that the company should take a step to check regularly to identify both over and under investment on the components (i.e. inventory, receivable, cash, Misc. assets) of the current assets. In short, certain proportion of the components of current assets must be determined in order to improve the working capital management in future. Thus, for effective working capital management, companies must understand the various factors that leads to effective management of cash, inventories and receivable, which is presented in following model I:

#### Model I



- The motive behind the investment in money assets i.e. cash is to meet operational requirements in day to day business, to provide a reserve of liquidity for major schedule

outflows of cash, to exploit the opportunities, to avoid unexpected drains of cash and so on. So, the management of cash should be proper. Therefore to avoid the deficit or ideal cash balance, companies must consider the ways of effective cash management highlighted in Model I.

➤ Both lower and above investment in receivable leads to ineffective management of working capital. Policies concerning receivable management involve a trade off between risk and return. The main determinants of the size of investments in receivables are terms of sale, type of customers to be given credit, efficiency in collecting receivables etc. The most important ways to control investment on receivables are determining the receivables as percentage of sales, preparing aging schedule of receivables, analyzing credit worthiness of customers, minimizing float etc. Besides these, the most effective way is to adopt a definite credit and collection policies, as it involves trade-off between cost and profit because the credit sales increase the total sales volume and profit but it also increases collection cost, bad debts losses, administrative cost etc.

➤ The management of working capital highly depends upon the effective inventory management, as inventory absorbs the largest portion of current assets. For this, company should make effective sales plan, which help for immediate marketability and certainly decreases the problem of overstocking. As a result, investment in inventories and total cost of holding inventory also decreases. Also to manage inventory and minimize the wastage, there should be good store-keeping system, better material handling system and timely inspection system. Thus, an effective inventory control techniques must be introduced in order to control inventory in accordance with their value and importance.

## **b) Improving Liquidity position**

Liquidity position of public enterprises determines their working capital requirements. The higher the liquidity position, the lesser the needs for additional working capital since it will be better for them to have the best use of existing liquidity position and vice versa for lower liquidity position. Thus, the public enterprises should try to maintain current assets ratio and quick assets ratio in its standard norm of 2:1 and 1:1 respectively.

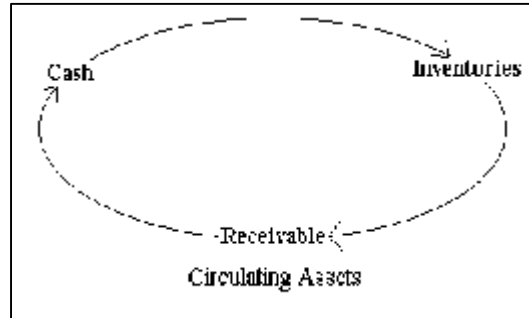
The rule for effective and efficient management of liquidity position is that “Increase the working capital when there is indication of low current ratio and decrease the working capital when there is higher current ratio over and above the standard ratio”.

## **c) Improvement in Turnover position**

The working capital should be arranged in such a way that it would generate maximum turnover. If manufacturing companies utilize the current assets and current liabilities in proper way, the working capital will be lower, and the turnover of current assets as well as net working capital will be higher. Manufacturing companies with higher turnover of assets need lesser working capital as compare to the manufacturing companies having lower turnover.

The companies must speed the circulating assets (shown in model II) to complete its round because it increases the turnover of assets and leads to lesser need of working capital. To increase turnover, the utilization of inventories those lying in the form of store and stock should be marketed as soon as possible. The preparation of cash budget, monitoring the aging schedule of receivable and their quick collection will result in higher turnover of assets.

## Model II

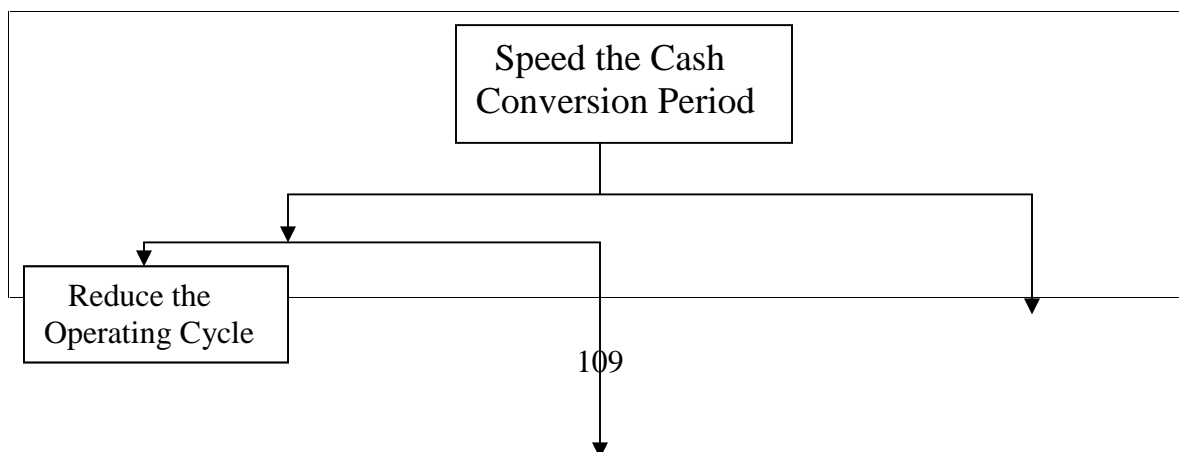


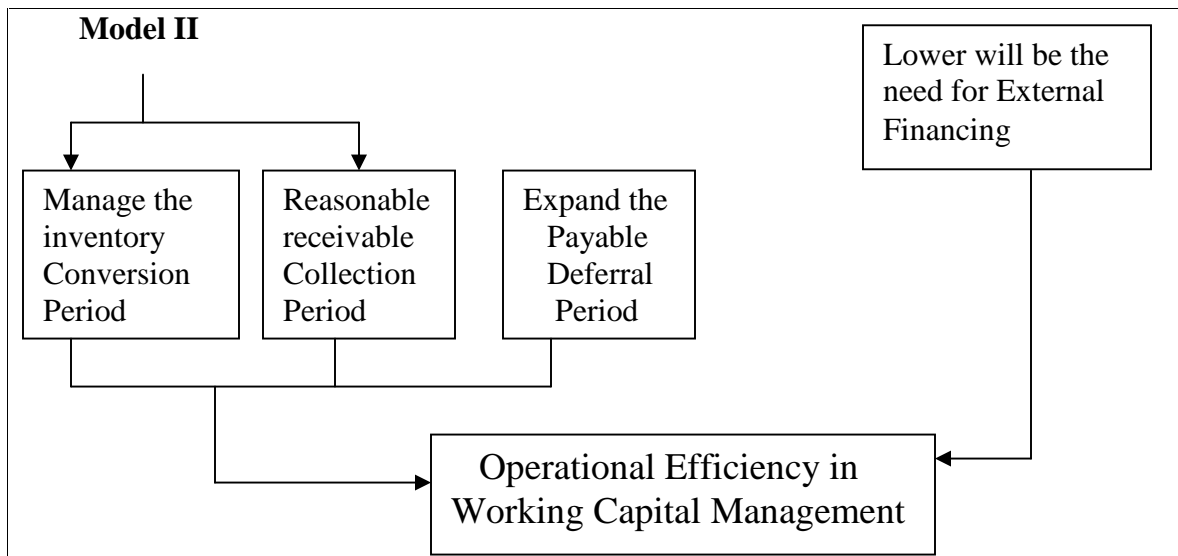
### d) Speed up the Cash Conversion Cycle

The firm's goal should be to shorten its cash conversion cycle as much as possible without hurting operation. The cash conversion cycle can be shortened (1) if the firm can reduce the inventory conversion period by processing and selling goods more quickly, (2) if it can reduce the receivable collection period by speeding up collection, or (3) if it lengthen the payable deferral period by slowing down its own payments. These actions can be taken to that extent where it don't increase cost or depress the sales.

This would improve profits because the longer the cash conversion cycle, the greater the need for external financing, and such financing has a cost. Thus, by speeding up cash conversion cycle, it can reduce the need for extra working capital and results in operating efficiency in working capital management as shown in model III.

## Model III

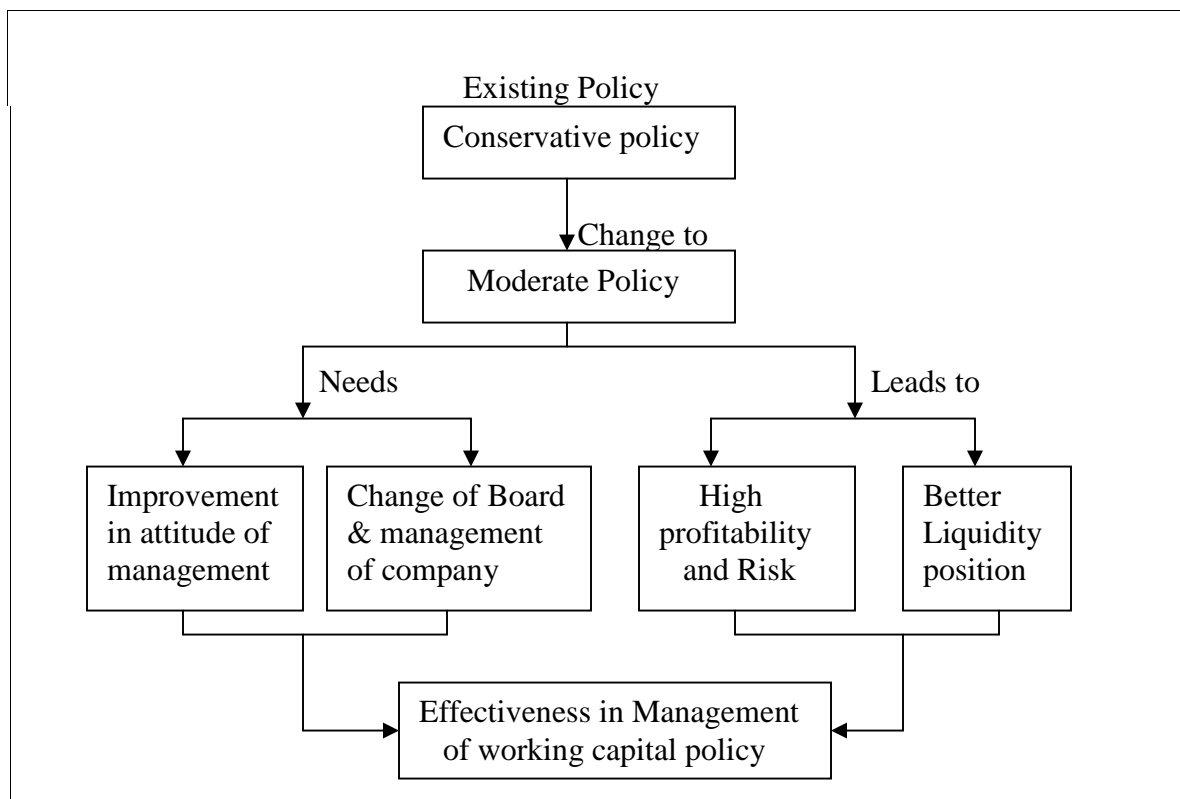




**e) Adopting Moderate Working capital policy**

By adopting matching working capital policy instead of adopting conservative working capital policy, the company can improve in its profitability in the short-run as well as in the long run. It is presented below in Model IV: -

**Model IV**



Moderate working capital policy creates better impact on firm's profitability and liquidity although it causes higher risk than conservative policy. Thus to move from the existing conservative policy to moderate policy, company needs to bring positive attitude of management towards risk. Since, risk is the opportunity for the business to make profit, the management should not consider it as dangerous. Sometimes public enterprises have to change its board of directors and management to improve the policy of company and to bring effectiveness in management of working capital policy.

**f) Managing Inventory Turnover**

The increase in inventory turnover ratios indicates improvements in the utilization of inventory investment. As a result, investment in inventories and the total cost of holding inventory also decrease. Thus, achievement of efficiency in inventory turnover leads to continuity in production and operation and brings economy of scale within the companies. The better coordination between seasonal demand forecast and checking the blockage of inventory, and between proper order placement and reorder of inventory also leads to continuity in business and economies of scale respectively, which ultimately creates favorable impact on working capital through the improvement in inventory turnover.

**g) Proper Financing Policy**

Manufacturing Public enterprises of Nepal don't have proper financing policy. They raised funds from whatever source they got. This leads to higher financing cost and higher the need of fund to bear these costs. Thus, these companies must prepare the work plan and determine the appropriate combination of short-term and long-term sources to finance the working capital. It is significant enough for public enterprises to finance

variable needs of current assets from short-term sources while the permanent working capital plus all the fixed assets should be financed from long-term sources. This helps to lower costs on one hand and reduce risks on the other hand. In short, proper financing policy enables the public enterprises to improve their liquidity position, to pay credit obligations on time and increase their credit worthiness.

#### **h) Effective Sales Plan**

Sales directly affect to the need of current assets or working capital. As the sales increases, the current assets level will also increase. In the absence of sales forecast, the level of current assets cannot be forecasted. And for it, the market and production condition should also be analyzed, as additional sales needs higher production level. Hence, there must be proper relation and interactions among production, marketing and sales department during the planning of sales, which help to meet sales target. Based on these sales levels, optimal size of current assets with respect to sales must be determined with proper planning and prediction.

#### **i) Other Basic Guidelines**

Skilled efficient manpower is the basic need of company. The skilled manpower decreases the operating costs and increases the profitability with compare to unskilled manpower. So to increase the efficiency of higher and lower level employees, training, seminar, workshops etc must be organized from time to time to acquaint the employees about the latest developments in the area of working capital management.



Similarly, public enterprises should develop appropriate information system by preparing timely reports as must of executives of today's make decisions based on adequate, accurate and timely available information. This aids in determining the amount of working capital needs. However, the costs of acquiring information should be reasonable and whatever information's collected must enable public enterprises to accomplish effective management of working capital.

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## APPENDIX 1

### Unilever Nepal Limited Cash and Bank Balance

### Sundry Debtors

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	31.74	-23.43	548.96	64.77	-54.09	2925.73
2003/04	39.15	-16.02	256.64	97.06	-21.80	475.24
2004/05	44.33	-10.84	117.50	157.72	38.86	1510.10
2005/06	59.02	3.85	14.82	138.32	19.46	378.69
2006/07	101.60	46.43	2155.74	136.45	17.59	309.41
<b>Total</b>	<b>275.84</b>		<b>3093.66</b>	<b>594.32</b>		<b>5599.17</b>

$$\bar{X} = \frac{275.84}{5} = 55.17$$

$$\bar{X} = \frac{594.32}{5} = 118.86$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{3093.66}{4}} = 27.81$$

$$SD = \sqrt{\frac{5599.17}{4}} = 37.41$$

$$\text{C.V.} = \frac{\exists}{\bar{X}} \times 100 = \frac{27.81}{55.17} = 50.41$$

$$\text{C.V.} = \frac{37.41}{118.86} = 31.47$$

### Inventories

### Misc. Current Assets

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	126.11	-94.01	8837.88	81.60	5.92	35.05
2003/04	184.22	-35.90	1288.81	51.43	-24.25	588.06
2004/05	229.76	9.64	92.93	60.62	-15.06	226.80
2005/06	256.17	36.05	1299.60	104.45	28.77	827.71
2006/07	304.33	84.21	7091.32	80.29	4.61	21.25
<b>Total</b>	<b>1100.59</b>		<b>18610.54</b>	<b>378.39</b>		<b>1698.87</b>

$$\bar{X} = \frac{1100.59}{5} = 220.12$$

$$\bar{X} = \frac{378.39}{5} = 75.68$$

$$\text{SD} = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{18610.54}{4}} = 68.21$$

$$\text{SD} = \sqrt{\frac{1698.87}{4}} = 20.61$$

$$\text{C.V.} = \frac{\exists}{\bar{X}} \times 100 = \frac{68.21}{220.12} = 30.99$$

$$\text{C.V.} = \frac{20.61}{75.68} = 27.23$$

### Bottlers Nepal Limited Cash and Bank Balance

### Sundry Debtors

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	5.34	-9.34	87.24	88.04	21.69	470.04
2003/04	13.8	-0.88	0.77	124.18	57.83	3344.31
2004/05	14.86	0.18	0.032	57.25	-9.10	82.81
2005/06	35.92	21.24	451.14	9.46	-56.89	3236.47
2006/07	3.46	-11.22	125.89	52.82	-13.53	1830.61
<b>Total</b>	<b>73.38</b>		<b>665.07</b>	<b>331.75</b>		<b>7316.69</b>

$$\bar{X} = \frac{73.38}{5} = 14.68$$

$$\bar{X} = \frac{331.75}{5} = 66.35$$

$$\text{SD} = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{665.07}{4}} = 12.89$$

$$\text{SD} = \sqrt{\frac{7316.69}{4}} = 42.76$$

$$\text{C.V.} = \frac{\exists}{\bar{X}} \times 100 = \frac{12.89}{14.68} = 87.84$$

$$\text{C.V.} = \frac{42.76}{66.35} = 64.46$$

Inventories				Misc. Current Assets		
F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	226.86	47.40	2246.76	212.15	45.70	2088.49
2003/04	184.98	5.52	30.47	124.92	-41.53	1724.74
2004/05	119.27	-60.19	3622.84	107.31	-59.14	3497.54
2005/06	176.94	-2.52	6.35	163.72	-2.73	7.45
2006/07	189.26	9.80	96.04	224.16	57.71	3330.44
<b>Total</b>	<b>897.31</b>		<b>6002.46</b>	<b>832.26</b>		<b>10648.66</b>

$$\bar{X} = \frac{897.31}{5} = 179.46$$

$$\bar{X} = \frac{832.26}{5} = 166.45$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{6002.46}{4}} = 38.74$$

$$SD = \sqrt{\frac{10648.66}{4}} = 51.60$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{38.74}{179.46} = 21.58$$

$$C.V. = \frac{51.60}{166.45} = 31.00$$

#### Total Current Assets

Unilever				Bottlers		
F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	304.22	-165.61	27426.67	544.18	114.89	13199.71
2003/04	371.86	-97.97	9598.12	447.83	18.54	343.73
2004/05	492.43	22.60	510.76	298.69	-130.60	17056.36
2005/06	557.96	88.13	7766.90	386.04	-43.25	1870.56
2006/07	622.67	152.84	23360.06	469.70	40.41	1632.97
<b>Total</b>	<b>2349.14</b>		<b>68662.51</b>	<b>2146.44</b>		<b>34103.33</b>

$$\bar{X} = \frac{2349.14}{5} = 469.83$$

$$\bar{X} = \frac{2146.44}{5} = 429.29$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{68662.51}{4}} = 131.02$$

$$SD = \sqrt{\frac{34103.33}{4}} = 92.33$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{131.02}{469.83} = 27.89$$

$$C.V. = \frac{92.33}{429.29} = 21.51$$

## APPENDIX 2

Unilever Nepal Limited  
Cash to TAs

Receivables to TAs

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	4.90	-1.6	2.56	8.25	-3.96	15.68
2003/04	5.14	-1.31	1.72	10.33	-1.88	3.53
2004/05	5.80	-0.65	0.4225	14.35	2.14	4.58
2005/06	6.10	-0.35	0.1225	14.30	2.09	4.37
2006/07	10.31	3.86	14.90	13.84	1.63	2.66
<b>Total</b>	<b>32.25</b>		<b>19.72</b>	<b>61.07</b>		<b>30.82</b>

$$\bar{X} = \frac{32.25}{5} = 6.45$$

$$\bar{X} = \frac{61.07}{5} = 12.21$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{19.72}{4}} = 2.22$$

$$SD = \sqrt{\frac{30.82}{4}} = 2.78$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{2.22}{6.45} = 34.42$$

$$C.V. = \frac{2.78}{12.21} = 22.73$$

### Bottlers Nepal Limited

#### Cash to TAs

#### Receivables to TAs

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	0.52	-1.61	2.59	8.61	1.21	1.46
2003/04	1.56	-0.57	0.32	14.01	6.61	43.69
2004/05	2.40	0.27	0.07	9.25	1.85	3.42
2005/06	3.41	1.28	1.64	0.90	-6.5	42.25
2006/07	2.76	-0.85	0.72	4.22	-3.18	10.11
<b>Total</b>	<b>10.65</b>		<b>5.34</b>	<b>36.99</b>		<b>100.93</b>

$$\bar{X} = \frac{10.65}{5} = 2.13$$

$$\bar{X} = \frac{36.99}{5} = 7.40$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{5.34}{4}} = 1.16$$

$$SD = \sqrt{\frac{100.93}{4}} = 5.02$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{1.16}{2.13} = 54.26$$

$$C.V. = \frac{5.02}{7.40} = 67.88$$

### Inventory to TAs

#### Unilever

#### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	16.07	-6.72	45.16	22.19	3.34	11.15
2003/04	19.6	-3.19	10.18	20.86	2.01	4.04
2004/05	20.91	-1.88	3.53	19.27	0.42	0.17



2005/06	26.48	3.69	13.62	16.82	-2.03	4.12
2006/07	30.89	8.1	65.61	15.11	-3.74	13.99
<b>Total</b>	<b>113.95</b>		<b>138.10</b>	<b>94.25</b>		<b>33.47</b>

$$\bar{X} = \frac{113.95}{5} = 22.79$$

$$\bar{X} = \frac{94.25}{5} = 18.85$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{138.10}{4}} = 5.88$$

$$SD = \sqrt{\frac{33.47}{4}} = 2.89$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{5.88}{22.79} = 25.78$$

$$C.V. = \frac{2.89}{18.85} = 15.34$$

### APPENDIX 3

#### Current Assets to Total Assets

##### Unilever

##### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	38.76	-10.05	101.00	53.23	7.99	63.84
2003/04	39.57	-9.24	85.38	50.51	5.27	27.77
2004/05	44.81	-4.00	16.00	48.26	3.02	9.12
2005/06	57.69	8.88	78.85	36.70	-8.54	72.93
2006/07	63.21	14.40	207.36	37.51	-7.73	59.75
<b>Total</b>	<b>244.05</b>		<b>488.59</b>	<b>226.20</b>		<b>233.41</b>

$$\bar{X} = \frac{244.05}{5} = 48.81$$

$$\bar{X} = \frac{226.20}{5} = 45.24$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{488.59}{4}} = 11.05$$

$$SD = \sqrt{\frac{233.41}{4}} = 7.64$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{11.05}{48.81} = 22.64$$

$$C.V. = \frac{7.64}{45.24} = 16.88$$

### APPENDIX 4

#### Current Assets to Net Fixed Assets

##### Unilever

##### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	208.14	-127.83	16340.51	144.20	34.57	1195.08
2003/04	278.59	-57.38	3292.46	137.33	27.70	767.29
2004/05	392.31	56.34	3174.19	72.95	-36.68	1345.42
2005/06	382.74	45.78	2188.36	119.31	9.68	93.70

2006/07	418.09	82.12	6743.69	74.37	-35.26	1243.27
<b>Total</b>	<b>1679.85</b>		<b>31739.21</b>	<b>548.15</b>		<b>4644.76</b>

$$\bar{X} = \frac{1679.85}{5} = 335.97$$

$$\bar{X} = \frac{548.15}{5} = 109.63$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{31739.21}{4}} = 89.08$$

$$SD = \sqrt{\frac{4644.75}{4}} = 34.08$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{89.08}{335.97} = 26.51$$

$$C.V. = \frac{34.08}{109.63} = 31.09$$

### APPENDIX 5

#### Turnover of Current Assets

##### Unilever

##### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	4.09	0.75	0.56	1.12	-0.39	0.15
2003/04	4.10	0.76	0.58	1.41	-0.10	0.01
2004/05	3.00	-0.34	0.12	2.06	0.55	0.30
2005/06	2.57	-0.77	0.59	1.61	0.10	0.01
2006/07	2.92	-0.42	0.18	1.35	-0.16	0.026
<b>Total</b>	<b>16.70</b>		<b>2.03</b>	<b>7.55</b>		<b>0.4956</b>

$$\bar{X} = \frac{16.70}{5} = 3.34$$

$$\bar{X} = \frac{7.55}{5} = 1.51$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{2.03}{4}} = 0.71$$

$$SD = \sqrt{\frac{0.4956}{4}} = 0.35$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{0.71}{3.34} = 21.31$$

$$C.V. = \frac{0.35}{1.51} = 23.31$$

### APPENDIX 6

#### Net Working Capital Turnover

##### Unilever

##### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	5.43	-2.88	8.29	2.49	2.02	4.08
2003/04	6.27	-2.04	4.16	2.31	1.84	3.38
2004/05	15.78	7.47	55.80	8.82	8.35	69.72
2005/06	7.01	-1.30	1.69	3.55	3.08	9.49
2006/07	7.15	-1.16	1.35	-14.82	-15.29	233.78
<b>Total</b>	<b>41.55</b>		<b>71.28</b>	<b>2.35</b>		<b>320.45</b>

$$\bar{X} = \frac{41.55}{5} = 8.31$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{71.28}{4}} = 4.22$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{4.22}{8.31} = 50.80$$

$$\bar{X} = \frac{2.35}{5} = 0.47$$

$$SD = \sqrt{\frac{320.45}{4}} = 8.95$$

$$C.V. = \frac{8.95}{0.47} = 1904.39$$

### APPENDIX 7

#### Cash Turnover Ratio

##### Unilever

##### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	39.22	8.46	71.57	114.17	33.78	1141.08
2003/04	38.95	8.19	67.07	45.81	-34.58	1195.78
2004/05	33.42	2.66	7.07	41.37	-39.02	1522.56
2005/06	24.31	-6.45	41.60	17.31	-63.08	3979.08
2006/07	17.90	-12.86	165.38	183.29	102.9	10588.41
<b>Total</b>	<b>153.80</b>		<b>352.69</b>	<b>401.95</b>		<b>18426.91</b>

$$\bar{X} = \frac{153.80}{5} = 30.76$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{352.69}{4}} = 9.39$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{9.39}{30.76} = 30.53$$

$$\bar{X} = \frac{401.95}{5} = 80.39$$

$$SD = \sqrt{\frac{18426.91}{4}} = 67.87$$

$$C.V. = \frac{67.87}{80.39} = 84.43$$

### APPENDIX 8

#### Unilever

##### Receivable Turnover

##### Average Collection period

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	19.22	5.62	31.58	19	-9.4	88.36
2003/04	15.71	2.11	4.45	23	-5.4	29.16
2004/05	9.39	-4.21	17.72	38	9.6	92.16
2005/06	10.37	-3.23	10.43	35	6.6	43.56
2006/07	13.33	-0.27	0.073	27	-1.4	1.96
<b>Total</b>	<b>68.00</b>		<b>64.25</b>	<b>142</b>		<b>255.20</b>

$$\bar{X} = \frac{68.00}{5} = 13.60$$

$$\bar{X} = \frac{142.00}{5} = 28.40$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{64.25}{4}} = 4.01$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{4.01}{13.60} = 29.47$$

$$SD = \sqrt{\frac{255.20}{4}} = 7.99$$

$$C.V. = \frac{7.99}{28.40} = 28.12$$

### Bottlers

#### Receivable Turnover

#### Average Collection period

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	6.92	-13.17	173.45	52	13.6	184.96
2003/04	5.09	-15.00	225.00	71	32.60	1062.76
2004/05	10.73	-9.36	87.61	34	-4.40	19.36
2005/06	65.73	45.64	2083.00	5	-33.4	1115.56
2006/07	12.00	-8.09	65.45	30	-8.4	70.56
<b>Total</b>	<b>100.45</b>		<b>2634.51</b>	<b>192.00</b>		<b>2453.20</b>

$$\bar{X} = \frac{100.45}{5} = 20.09$$

$$\bar{X} = \frac{192.00}{5} = 38.40$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{2634.51}{4}} = 25.66$$

$$SD = \sqrt{\frac{2453.20}{4}} = 24.76$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{25.66}{20.09} = 1.28$$

$$C.V. = \frac{24.76}{38.40} = 64.49$$

## APPENDIX 9

### Inventory Turnover

#### Unilever

#### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	9.87	2.63	6.92	2.69	-0.93	0.86
2003/04	8.28	1.04	1.08	3.42	-0.20	0.04
2004/05	6.45	-0.79	0.62	5.15	1.53	2.34
2005/06	5.60	-1.64	2.69	3.51	-0.11	0.012
2006/07	5.98	-1.26	1.59	3.35	-0.27	0.073
<b>Total</b>	<b>36.20</b>		<b>12.90</b>	<b>18.10</b>		<b>3.32</b>

$$\bar{X} = \frac{36.20}{5} = 7.24$$

$$\bar{X} = \frac{18.10}{5} = 3.62$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{12.90}{4}} = 1.79$$

$$SD = \sqrt{\frac{3.32}{4}} = 0.92$$

$$C.V. = \frac{\sum \frac{X}{\bar{X}}}{\bar{X}} \times 100 = \frac{1.79}{7.24} = 24.80$$

$$C.V. = \frac{0.92}{3.62} = 25.18$$

### APPENDIX 10

#### Current Ratio Unilever

#### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	0.84	0.08	0.006	1.82	0.24	0.058
2003/04	0.77	0.01	0.0001	2.57	0.99	0.980
2004/05	0.56	-0.2	0.04	1.30	-0.28	0.078
2005/06	0.75	-0.01	0.0001	1.40	-0.18	0.032
2006/07	0.88	0.12	0.0144	0.81	-0.77	0.592
<b>Total</b>	<b>3.80</b>		<b>0.0606</b>	<b>7.90</b>		<b>1.74</b>

$$\bar{X} = \frac{3.80}{5} = 0.76$$

$$\bar{X} = \frac{7.90}{5} = 1.58$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{0.0606}{4}} = 0.123$$

$$SD = \sqrt{\frac{1.74}{4}} = 0.66$$

$$C.V. = \frac{\sum \frac{X}{\bar{X}}}{\bar{X}} \times 100 = \frac{0.123}{0.76} = 16.19$$

$$C.V. = \frac{0.66}{1.58} = 41.75$$

### APPENDIX 11

#### Quick Ratio Unilever

#### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	0.49	0.09	0.0081	1.06	0.14	0.0196
2003/04	0.39	-0.01	0.0001	1.51	0.59	0.3481
2004/05	0.30	-0.1	0.01	0.78	-0.14	0.0196
2005/06	0.41	0.01	0.0001	0.76	-0.16	0.0256
2006/07	0.42	0.02	0.0004	0.49	-0.43	0.1849
<b>Total</b>	<b>2.00</b>		<b>0.0187</b>	<b>4.60</b>		<b>0.5978</b>

$$\bar{X} = \frac{2.00}{5} = 0.40$$

$$\bar{X} = \frac{4.60}{5} = 0.92$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{0.0187}{4}} = 0.068$$

$$SD = \sqrt{\frac{0.5978}{4}} = 0.39$$

$$\text{C.V.} = \frac{\exists}{\bar{X}} \times 100 = \frac{0.068}{0.40} = 17.09$$

$$\text{C.V.} = \frac{0.39}{0.92} = 42.02$$

### APPENDIX 12

#### Gross Profit Margin

##### Unilever

##### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	32.26	-1.67	2.79	38.28	-2.84	8.06
2003/04	36.45	2.52	6.35	43.31	2.19	4.80
2004/05	36.93	3.00	9.00	41.87	0.75	0.56
2005/06	34.47	0.54	0.29	43.54	2.42	5.86
2006/07	29.52	-4.41	19.45	38.62	-2.50	6.25
<b>Total</b>	<b>169.65</b>		<b>37.88</b>	<b>205.60</b>		<b>25.53</b>

$$\bar{X} = \frac{169.65}{5} = 33.93$$

$$\bar{X} = \frac{205.60}{5} = 41.12$$

$$\text{SD} = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{37.88}{4}} = 3.08$$

$$\text{SD} = \sqrt{\frac{25.53}{4}} = 2.53$$

$$\text{C.V.} = \frac{\exists}{\bar{X}} \times 100 = \frac{3.08}{33.93} = 9.07$$

$$\text{C.V.} = \frac{2.53}{41.12} = 6.14$$

### APPENDIX 13

#### Net Profit Margin

##### Unilever

##### Bottlers

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	7.49	-4.62	21.34	4.21	1.10	1.21
2003/04	9.23	-2.88	8.29	5.98	2.87	8.24
2004/05	12.77	0.66	0.44	5.65	2.54	6.45
2005/06	16.60	4.49	20.16	4.01	0.90	0.81
2006/07	14.46	2.35	5.52	-4.30	-7.41	54.91
<b>Total</b>	<b>60.55</b>		<b>55.75</b>	<b>15.55</b>		<b>71.62</b>

$$\bar{X} = \frac{60.55}{5} = 12.11$$

$$\bar{X} = \frac{15.55}{5} = 3.11$$

$$\text{SD} = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{55.75}{4}} = 3.73$$

$$\text{SD} = \sqrt{\frac{71.62}{4}} = 4.23$$

$$\text{C.V.} = \frac{\exists}{\bar{X}} \times 100 = \frac{3.73}{12.11} = 30.83$$

$$\text{C.V.} = \frac{4.23}{3.11} = 136.06$$

**APPENDIX 14****Return on Total Assets****Unilever****Bottlers**

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	11.87	-7.21	51.99	2.51	0.00	0.00
2003/04	14.98	-4.10	16.81	4.26	1.75	3.06
2004/05	17.22	-1.86	3.46	5.61	3.10	9.61
2005/06	24.62	5.54	30.69	2.37	-0.14	0.02
2006/07	26.70	7.62	58.06	-2.18	-4.69	22.00
<b>Total</b>	<b>95.40</b>		<b>161.01</b>	<b>12.55</b>		<b>34.69</b>

$$\bar{X} = \frac{95.40}{5} = 19.08$$

$$\bar{X} = \frac{12.55}{5} = 2.51$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{161.01}{4}} = 6.34$$

$$SD = \sqrt{\frac{34.69}{4}} = 2.94$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{6.34}{19.08} = 33.25$$

$$C.V. = \frac{2.94}{2.51} = 117.32$$

**APPENDIX 15****Return on Net Worth****Unilever****Bottlers**

F.Y	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	21.97	-47.86	2290.58	3.55	-0.44	0.19
2003/04	30.69	-39.14	1531.94	5.30	1.31	1.72
2004/05	87.21	17.38	302.06	8.91	4.92	24.21
2005/06	105.89	36.06	1300.32	17.42	13.43	180.36
2006/07	103.37	33.54	1124.93	-15.24	-19.23	369.80
<b>Total</b>	<b>349.15</b>		<b>6549.83</b>	<b>19.95</b>		<b>576.27</b>

$$\bar{X} = \frac{349.15}{5} = 69.83$$

$$\bar{X} = \frac{19.95}{5} = 3.99$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{6549.83}{4}} = 40.46$$

$$SD = \sqrt{\frac{576.27}{4}} = 12.00$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{40.46}{69.83} = 57.95$$

$$C.V. = \frac{12.00}{3.99} = 300.82$$

**APPENDIX 16**

**Return on Working Capital  
Unilever**

<b>Unilever</b>				<b>Bottlers</b>		
<b>F.Y</b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
2002/03	30.62	-7.74	59.91	4.72	-0.29	0.084
2003/04	37.86	-0.5	0.25	8.44	3.43	11.76
2004/05	38.42	0.06	0.0036	11.63	6.62	43.82
2005/06	42.68	4.32	18.66	6.46	1.45	2.10
2006/07	42.25	3.89	15.13	-5.81	-10.82	117.07
<b>Total</b>	<b>191.80</b>		<b>93.96</b>	<b>25.05</b>		<b>174.84</b>

$$\bar{X} = \frac{191.80}{5} = 38.36$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{93.96}{4}} = 4.85$$

$$C.V. = \frac{\exists}{\bar{X}} \times 100 = \frac{4.85}{38.36} = 12.63$$

$$\bar{X} = \frac{25.05}{5} = 5.01$$

$$SD = \sqrt{\frac{174.84}{4}} = 6.61$$

$$C.V. = \frac{6.61}{5.01} = 131.96$$

**Appendix 17**



Calculation of correlation coefficient of Current Ratio and Net Profit Margin of UNLtd

Current Ratio (X)	Net Profit Margin (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
0.84	7.49	0.7056	56.1001	6.2916
0.77	9.23	0.5929	85.1929	7.1071
0.56	12.77	0.3136	163.0729	7.1512
0.75	16.60	0.5625	275.5600	12.45
0.88	14.46	0.7744	209.0916	12.7248
<b>3.80</b>	<b>60.55</b>	<b>2.949</b>	<b>789.0175</b>	<b>45.7231</b>

Here,

$$\begin{aligned}
 r &= \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{5 \times 45.7231 - 3.80 \times 60.55}{\sqrt{[5 \times 2.949 - (3.8)^2] \cdot [5 \times 789.0175 - (60.55)^2]}} \\
 &= \frac{-1.4745}{\sqrt{0.305 \cdot 278.785}} \\
 &= \frac{-1.4745}{9.1990} \\
 &= -0.1602
 \end{aligned}$$

$$\begin{aligned}
 PE(r) &= \frac{0.6745 \times (1-r^2)}{n} \\
 &= \frac{0.6745 \times 1 - (-0.1602)^2}{5} \\
 &= \frac{0.6572}{2.2361} = 0.2939
 \end{aligned}$$

$$6 \times PE = 1.7634$$

Calculation of correlation coefficient of Current Ratio and Net Profit Margin of BNLtd

Current Ratio (X)	Net Profit Margin (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
1.82	4.21	3.3124	17.7241	7.6622
2.57	5.98	6.6049	35.7604	15.3686
1.30	5.65	1.6900	34.2225	7.345
1.40	4.01	1.9600	16.0801	5.614
0.81	-4.30	0.6561	18.4900	-3.5073
<b>7.90</b>	<b>15.55</b>	<b>14.2234</b>	<b>122.2771</b>	<b>32.4825</b>

Here,

$$\begin{aligned}
 r &= \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{5 \times 32.4825 - 7.9 \times 15.55}{\sqrt{[5 \times 14.2234 - (7.9)^2] \cdot [5 \times 122.2771 - (15.55)^2]}} \\
 &= \frac{39.5675}{\sqrt{8.707 \cdot 278.785}} \\
 &= \frac{39.5675}{56.7258} \\
 &= 0.6975
 \end{aligned}$$

$$\begin{aligned}
 PE(r) &= \frac{0.6745 \times (1-r^2)}{n} \\
 &= \frac{0.6745 \times 1 - (0.6975)^2}{5} \\
 &= \frac{0.3463}{2.2361} = 0.1549
 \end{aligned}$$

$$6 \times PE = 0.9293$$

## Appendix 18

### Simple Regression result of Net Profit Margin on Current Ratio for UNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b X \dots\dots\dots (i)$$

$$XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$60.55 = 5a + 3.80b$$

$$45.7231 = 3.80a + 2.949 b$$

By simplifying we get,

$$a = 15.78$$

$$b = -4.83$$

<b>F.Y</b>	<b>Current Ratio</b>	<b>Net Profit Margin</b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
2002/03	0.84	7.49	8.92	-7.53	56.70
2003/04	0.77	9.23	11.98	-4.47	19.98
2004/05	0.56	12.77	22.80	6.35	40.32
2005/06	0.75	16.60	22.13	5.68	32.26
2006/07	0.88	14.46	16.43	-0.02	0.0004
<b>Total</b>	<b>3.80</b>	<b>60.55</b>	<b>82.26</b>		<b>149.26</b>

$$\mu = \frac{82.26}{5} = 16.45$$

$$SD = \sqrt{\frac{\sum (X-\bar{X})^2}{N-1}} = \sqrt{\frac{149.26}{4}} = 6.10$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{18.50 - 16.45}{6.10 / 1.236} = 0.415$$

\*  $\bar{X}$  (population mean taken from SEBO)

### Simple Regression result of Net Profit Margin on Current Ratio for BNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b X \dots\dots\dots (i)$$

$$XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$15.55 = 5a + 7.90b$$

$$38.4825 = 7.90a + 14.2234b$$

By simplifying we get,

$$a = -4.06$$

$$b = 4.54$$

<b>F.Y</b>	<b>Current Ratio</b>	<b>Net Profit Margin</b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
2002/03	1.82	4.21	2.31	1.00	1.00
2003/04	2.57	5.98	2.33	1.02	1.04
2004/05	1.30	5.65	4.35	3.04	9.24
2005/06	1.40	4.01	2.86	1.55	2.40
2006/07	0.81	-4.30	-5.31	-6.62	43.82
<b>Total</b>	<b>7.90</b>	<b>15.55</b>	<b>6.54</b>		<b>57.50</b>

$$\mu = \frac{6.54}{5} = 1.31$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{57.50}{4}} = 57.38$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{18.50 - 1.31}{57.38 / 1.236} = 0.370$$

\* $\bar{X}$  (population mean taken from SEBO)

#### Appendix 19

### Calculation of correlation coefficient of Net Working Capital and Net Profit Margin of UNLtd

<b>Net Working Capital (X)</b>	<b>Net Profit Margin (Y)</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
5.43	7.49	29.4849	56.1001	40.6707
6.27	9.23	39.3129	85.1929	57.8721

15.78	12.77	249.0084	163.0729	201.5106
7.01	16.60	49.1401	275.5600	116.3660
7.15	14.46	51.1225	209.0916	103.3890
<b>41.55</b>	<b>60.55</b>	<b>418.0688</b>	<b>789.0175</b>	<b>519.8084</b>

Here,

$$\begin{aligned}
 r &= \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{5 \times 519.8084 - 41.55 \times 60.55}{\sqrt{[5 \times 418.0688 - (41.55)^2] \cdot [5 \times 789.0175 - (60.55)^2]}} \\
 &= \frac{83.1895}{\sqrt{364.9415 \cdot 278.785}} \\
 &= \frac{83.1895}{318.9667} \\
 &= 0.2608
 \end{aligned}$$

$$\begin{aligned}
 PE(r) &= \frac{0.6745 \times (1-r^2)}{n} \\
 &= \frac{0.6745 \times [1 - (-0.2608)^2]}{5} \\
 &= \frac{0.6918}{2.2361} = 0.2811
 \end{aligned}$$

$$6 \times PE = 1.6867$$

### Calculation of correlation coefficient of Net Working Capital and Net Profit Margin of BN Ltd

Net Working Capital (X)	Net Profit Margin (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
2.49	4.21	6.2001	17.7241	10.4829
2.31	5.98	5.3361	35.7604	13.8138
8.82	5.65	77.7924	34.2225	49.833
3.55	4.01	12.6025	16.0801	14.2355

-14.82	-4.30	219.6324	18.4900	63.7260
<b>2.35</b>	<b>15.55</b>	<b>321.5635</b>	<b>122.2771</b>	<b>152.0912</b>

Here,

$$\begin{aligned}
 r &= \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{5 \times 152.0912 - 2.35 \times 15.55}{\sqrt{[5 \times 321.5635 - (2.35)^2] \cdot [5 \times 122.2771 - (15.55)^2]}} \\
 &= \frac{723.9135}{\sqrt{1602.295 \cdot 278.785}} \\
 &= \frac{723.9135}{768.3417} \\
 &= 0.9422
 \end{aligned}$$

$$\begin{aligned}
 PE(r) &= \frac{0.6745 \times (1-r^2)}{n} \\
 &= \frac{0.6745 \times [1 - (0.9422)^2]}{5} \\
 &= \frac{0.0757}{2.2361} = 0.0338
 \end{aligned}$$

$$6 \times PE = 0.2032$$

## Appendix 20

### Simple Regression result of Net Profit Margin on Return on Working Capital of UNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b \sum X \dots\dots\dots (i)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$60.55 = 5a + 41.55b$$

$$519.8084 = 41.55a + 418.0688 b$$

By simplifying we get,

$$a = 10.22$$

$$b = 0.228$$

<b>F.Y</b>	<b>Net Working Capital</b>	<b>Net Profit Margin</b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
2002/03	5.43	7.49	1.38	-0.23	0.05
2003/04	6.27	9.23	1.47	-0.14	0.02
2004/05	15.78	12.77	0.81	-0.80	0.64
2005/06	7.01	16.60	2.37	0.76	0.58
2006/07	7.15	14.46	2.02	0.41	0.17
<b>Total</b>	<b>41.55</b>	<b>60.55</b>	<b>8.05</b>		<b>1.46</b>

$$\mu = \frac{8.05}{5} = 1.61$$

$$SD = \sqrt{\frac{\sum (X-\bar{X})^2}{N-1}} = \sqrt{\frac{1.46}{4}} = 0.60$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{2.56 - 1.61}{0.60 / 1.236} = 1.96$$

\* $\bar{X}$  (population mean taken from SEBO)

### **Simple Regression result of Net Profit Margin on Return on Working Capital of BNLtd**

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b \sum X \dots\dots\dots (i)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$60.55 = 5a + 41.55b$$

$$519.8084 = 41.55a + 418.0688 b$$

By simplifying we get,

$$a = 2.90$$

$$b = 0.452$$

<b>F.Y</b>	<b>Net Working Capital</b>	<b>Net Profit Margin</b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
2002/03	2.49	4.21	1.69	0.42	0.18
2003/04	2.31	5.98	2.59	1.32	1.74
2004/05	8.82	5.65	0.64	-0.63	0.40
2005/06	3.55	4.01	1.13	-0.14	0.02
2006/07	-14.82	-4.30	0.29	-0.98	0.96
<b>Total</b>	<b>2.35</b>	<b>15.55</b>	<b>6.34</b>		<b>3.30</b>

$$\mu = \frac{6.34}{5} = 1.27$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{3.30}{4}} = 0.91$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{0.91 / 1.236} = \frac{2.56 - 1.27}{0.91 / 1.236} = 1.75$$

\* $\bar{X}$  (population mean taken from SEBO)

#### Appendix 21

#### Calculation of correlation coefficient of Current Assets Turnover and Return on Net Worth of UNLtd

<b>Current Assets Turnover (X)</b>	<b>Return on Net Worth (Y)</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
21.97	4.09	482.6809	16.7281	89.8573
30.69	4.10	941.8761	16.81	125.829
87.21	3.00	7605.5841	9.00	261.63
105.89	2.57	11212.6921	6.6049	272.1373
103.37	2.92	10685.3569	8.5264	301.8404
<b>349.15</b>	<b>16.70</b>	<b>30928.1901</b>	<b>57.6694</b>	<b>1051.5297</b>

Here,

$$r = \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}}$$



$$\begin{aligned}
&= \frac{5 \times 1051.5297 - 349.15 \times 16.70}{\frac{[5 \times 30928.19 - (349.15)^2]}{5} \cdot \frac{[5 \times 57.6694 - (16.70)^2]}{5}} \\
&= \frac{-573.1565}{\frac{32735.22}{5} \cdot \frac{278.785}{5}} \\
&= \frac{-573.1565}{586.3940} \\
&= -0.9774
\end{aligned}$$

$$\begin{aligned}
PE(r) &= \frac{0.6745 \times (1-r^2)}{n} \\
&= \frac{0.6745 \times 1 - (-0.9774)^2}{5} \\
&= \frac{0.0301}{2.2361} = 0.0135
\end{aligned}$$

$$6 \times PE = 0.0673$$

### Calculation of correlation coefficient of Current Assets Turnover and Return on Net Worth of BNLtd

Current Assets Turnover (X)	Return on Net Worth (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
3.55	1.12	12.6025	1.2544	3.976
5.30	1.41	28.09	1.9881	7.473
8.91	2.06	79.3881	4.2436	18.3546
17.42	1.61	303.4564	2.5921	28.0462
-15.24	1.35	232.2576	1.8225	-20.574
<b>19.95</b>	<b>7.55</b>	<b>655.7946</b>	<b>11.9007</b>	<b>37.2758</b>

Here,

$$\begin{aligned}
r &= \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}} \\
&= \frac{5 \times 37.2758 - 19.95 \times 7.55}{\sqrt{[5 \times 655.7946 - (19.95)^2] \cdot [5 \times 11.9007 - (7.55)^2]}}
\end{aligned}$$

$$\begin{aligned}
&= \frac{35.7565}{\frac{2880.9705}{2.5010}} \\
&= \frac{35.7565}{84.87} \\
&= 0.4213 \\
\text{PE (r)} &= \frac{0.6745 \times (1-r^2)}{n} \\
&= \frac{0.6745 \times 1 - (0.4213)^2}{5} \\
&= \frac{0.5548}{2.2361} = 0.2481 \\
6 \times \text{PE} &= 1.4885
\end{aligned}$$

## Appendix 22

### Simple Regression result of Net Worth and Current Assets Turnover Ratio of UNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b \sum X \dots\dots\dots (i)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$16.70 = 5a + 349.15b$$

$$1051.5297 = 349.15a + 30928.1901 b$$

By simplifying we get,

$$a = 4.606$$

$$b = -0.018$$

F.Y	Current Assets Turnover	Return on Net Worth	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	21.97	4.09	0.19	0.11	0.012
2003/04	30.69	4.10	0.13	0.05	0.002

2004/05	87.21	3.00	0.03	-0.05	0.003
2005/06	105.89	2.57	0.02	-0.06	0.004
2006/07	103.37	2.92	0.03	-0.05	0.003
<b>Total</b>	<b>349.15</b>	<b>16.70</b>	<b>0.40</b>		<b>0.024</b>

$$\mu = \frac{0.40}{5} = 0.08$$

$$SD = \sqrt{\frac{(\bar{X}-\bar{X})^2}{N-1}} = \sqrt{\frac{0.024}{4}} = 0.08$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\frac{0.02 - 0.08}{0.08 / 1.236}} = -0.93$$

\* $\bar{X}$  (population mean taken from SEBO)

### Simple Regression result of Net Worth and Current Assets Turnover Ratio of BNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b X \dots\dots\dots (i)$$

$$XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$7.55 = 5a + 19.95b$$

$$37.2758 = 19.95a + 655.7946b$$

By simplifying we get,

$$a = 1.47$$

$$b = 0.012$$

<b>F.Y</b>	<b>Current Assets Turnover</b>	<b>Return on Net Worth</b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
2002/03	3.55	1.12	0.32	0.16	0.026
2003/04	5.30	1.41	0.27	0.11	0.012
2004/05	8.91	2.06	0.23	0.07	0.005
2005/06	17.42	1.61	0.09	-0.07	0.005

2006/07	-15.24	1.35	-0.09	-0.25	0.063
<b>Total</b>	<b>19.95</b>	<b>7.55</b>	<b>0.82</b>		<b>0.111</b>

$$\mu = \frac{0.82}{5} = 0.16$$

$$SD = \sqrt{\frac{(\bar{X}-\bar{X})^2}{N-1}} = \sqrt{\frac{0.111}{4}} = 0.17$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{0.02 - 0.16} = \frac{0.02 - 0.16}{0.17 / 1.236} = -1.02$$

\*  $\bar{X}$  (population mean taken from SEBO)

### Appendix 23

#### Calculation of correlation coefficient of Inventory turnover and Return on Total Assets of UNLtd

<b>Inventory Turnover (X)</b>	<b>Return on Total Assets (Y)</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
9.87	11.87	97.4169	140.8969	117.1569
8.28	14.98	68.5584	224.4004	124.0344
6.45	17.22	41.6025	296.5284	111.069
5.60	24.62	31.36	606.1444	137.872
5.98	26.70	35.7604	712.89	159.666
<b>36.20</b>	<b>95.40</b>	<b>274.6982</b>	<b>1980.8601</b>	<b>649.7983</b>

Here,

$$r = \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5 \times 649.7983 - 36.20 \times 95.40}{\sqrt{[5 \times 274.6982 - (36.20)^2] \cdot [5 \times 1980.8601 - (95.40)^2]}}$$

$$= \frac{-234.4885}{\sqrt{63.051 \cdot 803.1405}}$$

$$= \frac{-234.4885}{235.017}$$

$$= -0.9977$$

$$\begin{aligned} \text{PE (r)} &= \frac{0.6745 \times (1-r^2)}{n} \\ &= \frac{0.6745 \times 1 - (-0.9977)^2}{5} \\ &= \frac{0.6714}{2.2361} = 0.3002 \end{aligned}$$

$$6 \times \text{PE} = 1.8015$$

**Calculation of correlation coefficient of Inventory turnover and Return on Total Assets of BN Ltd**

<b>Inventory Turnover (X)</b>	<b>Return on Total Assets (Y)</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
2.69	2.51	7.2361	6.3001	6.7519
3.42	4.26	11.6964	18.1476	14.5692
5.15	5.61	26.5225	31.4721	28.8915
3.51	2.37	12.3201	5.6169	8.3187
3.35	-2.18	11.2225	4.7524	-7.303
<b>18.10</b>	<b>12.55</b>	<b>68.9976</b>	<b>66.2891</b>	<b>51.2283</b>

Here,

$$\begin{aligned} r &= \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}} \\ &= \frac{5 \times 51.2283 - 18.10 \times 12.55}{\sqrt{[5 \times 68.9976 - (18.10)^2] \cdot [5 \times 66.2891 - (12.55)^2]}} \\ &= \frac{28.9865}{\sqrt{17.378 \cdot 173.943}} \\ &= \frac{35.7565}{54.9786} \\ &= 0.6504 \end{aligned}$$

$$\begin{aligned}
 PE(r) &= \frac{0.6745 \times (1-r^2)}{n} \\
 &= \frac{0.6745 \times 1 - (0.6504)^2}{5} \\
 &= \frac{0.3892}{2.2361} = 0.1740
 \end{aligned}$$

$$6 \times PE = 1.0443$$

### Appendix 24

#### Simple Regression result of Return on Total Assets and Inventory Turnover ratio of UNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b \sum X \dots\dots\dots (i)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$95.40 = 5a + 36.20b$$

$$649.7983 = 36.20a + 274.6982b$$

By simplifying we get,

$$a = 42.54$$

$$b = -3.24$$

F.Y	Inventory Turnover	Return on Total Assets	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	9.87	11.87	2.00	-1.07	1.14
2003/04	8.28	14.98	1.81	-1.26	1.59
2004/05	6.45	17.22	2.67	-0.4	0.16
2005/06	5.60	24.62	4.40	1.33	1.76
2006/07	5.98	26.70	4.46	1.39	1.93
<b>Total</b>	<b>36.20</b>	<b>95.40</b>	<b>15.34</b>		<b>6.58</b>

$$\mu = \frac{15.34}{5} = 3.07$$

$$\sqrt{\frac{\sum (X-\bar{X})^2}{n}} = \sqrt{\frac{6.58}{5}}$$

$$SD = \frac{\quad}{N-1} = \frac{\quad}{4} = 2.11$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\quad} = \frac{1.98 - 3.07}{2.11 / 1.236} = -0.64$$

\* $\bar{X}$  (population mean taken from SEBO)

### Simple Regression result of Return on Total Assets and Inventory Turnover ratio of BN Ltd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b X \dots\dots\dots (i)$$

$$XY = a X + b X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$12.55 = 5a + 18.10b$$

$$51.2283 = 18.10a + 68.9976b$$

By simplifying we get,

$$a = -3.528$$

$$b = 1.67$$

F.Y	Inventory Turnover	Return on Total Assets	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	9.87	11.87	1.20	-1.71	2.92
2003/04	8.28	14.98	1.81	-1.10	1.21
2004/05	6.45	17.22	2.67	-0.24	0.06
2005/06	5.60	24.62	4.40	1.49	2.22
2006/07	5.98	26.70	4.46	1.55	2.40
<b>Total</b>	<b>36.20</b>	<b>95.40</b>	<b>14.54</b>		<b>8.81</b>

$$\mu = \frac{14.54}{5} = 2.91$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{8.81}{4}} = 1.48$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{1.98 - 2.91}{1.48 / 1.236} = -0.78$$

\*  $\bar{X}$  (population mean taken from SEBO)

#### Appendix 25

### Calculation of correlation coefficient of Receivable turnover ratio and Return on Total Assets of UNLtd

Receivable Turnover (X)	Return on Total Assets (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
19.22	11.87	369.4084	140.8969	228.1414
15.71	14.98	246.8041	224.4004	235.3358
9.39	17.22	88.1721	296.5284	161.6958
10.37	24.62	107.5369	606.1444	255.3094
13.33	26.70	177.6889	712.89	355.911
<b>68.00</b>	<b>95.40</b>	<b>989.6104</b>	<b>1980.8601</b>	<b>1236.3934</b>

Here,

$$r = \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5 \times 1236.3934 - 68.00 \times 95.40}{\sqrt{[5 \times 989.6104 - (68.00)^2] \cdot [5 \times 1980.8601 - (95.40)^2]}}$$

$$= \frac{-305.233}{\sqrt{324.052 \cdot 803.1405}}$$

$$= \frac{-305.233}{510.1152}$$

$$= -0.5984$$

$$PE(r) = \frac{0.6745 \times (1-r^2)}{n}$$

$$= \frac{0.6745 \times 1 - (-0.5984)^2}{5}$$

$$= \frac{0.4329}{2.2361} = 0.1936$$



$$6 \times PE = 1.1617$$

**Calculation of correlation coefficient of Receivable turnover ratio and Return on Total Assets of BNLtd**

Receivable Turnover (X)	Return on Total Assets (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
6.92	2.51	47.8864	6.3001	17.3692
5.09	4.26	25.9081	18.1476	21.6834
10.73	5.61	107.5369	31.4721	60.1953
65.73	2.37	4320.4329	5.6169	155.7801
12.00	-2.18	144.00	4.7524	-26.16
<b>100.45</b>	<b>12.55</b>	<b>4645.7643</b>	<b>66.2891</b>	<b>228.868</b>

Here,

$$\begin{aligned}
 r &= \frac{N \sum XY - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2] \cdot [N \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{5 \times 228.868 - 100.45 \times 12.55}{\sqrt{[5 \times 4645.7643 - (100.45)^2] \cdot [5 \times 66.2891 - (12.55)^2]}} \\
 &= \frac{-116.3075}{\sqrt{13138.619 \cdot 173.943}} \\
 &= \frac{-116.3075}{1511.744} \\
 &= -0.0769
 \end{aligned}$$

$$\begin{aligned}
 PE(r) &= \frac{0.6745 \times (1-r^2)}{n} \\
 &= \frac{0.6745 \times [1 - (-0.0769)^2]}{5} \\
 &= \frac{0.6705}{2.2361} = 0.2998
 \end{aligned}$$

$$6 \times PE = 1.7991$$

## Appendix 26

### Simple Regression result of Return on Total Assets on Receivable Turnover ratio of UNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b \sum X \dots\dots\dots (i)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$95.40 = 5a + 68.00b$$

$$1236.3934 = 68.00a + 989.6104b$$

By simplifying we get,

$$a = 31.89$$

$$b = -0.94$$

F.Y	Receivable Turnover	Return on Total Assets	X	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	19.22	11.87	0.62	-0.93	0.86
2003/04	15.71	14.98	0.95	-0.60	0.36
2004/05	9.39	17.22	1.83	0.28	0.08
2005/06	10.37	24.62	2.37	0.82	0.67
2006/07	13.33	26.70	2.00	0.45	0.20
<b>Total</b>	<b>68.00</b>	<b>95.40</b>	<b>7.77</b>		<b>2.17</b>

$$\mu = \frac{7.77}{5} = 1.55$$

$$SD = \sqrt{\frac{\sum (X-\bar{X})^2}{N-1}} = \sqrt{\frac{2.17}{4}} = 0.74$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{0.78 - 1.55}{0.74 / 1.236} = -1.29$$

\* $\bar{X}$  (population mean taken from SEBO)

### Simple Regression result of Return on Total Assets on Receivable Turnover ratio of BNLtd

For the Regression,

$$Y = a + Bx$$

For the calculation of a and b we have the following formula,

$$Y = na + b \sum X \dots\dots\dots (i)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots\dots(ii)$$

Putting value on the following equations, we get

$$12.55 = 5a + 100.45b$$

$$228.868 = 100.45a + 4645.7643b$$

By simplifying we get,

$$a = 2.89$$

$$b = -0.009$$

<b>F.Y</b>	<b>Receivable Turnover</b>	<b>Return on Total Assets</b>	<b>X</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
2002/03	6.92	2.51	0.36	0.04	0.002
2003/04	5.09	4.26	0.84	0.52	0.270
2004/05	10.73	5.61	0.52	0.20	0.040
2005/06	65.73	2.37	0.04	-0.28	0.078
2006/07	12.00	-2.18	-0.18	-0.50	0.250
<b>Total</b>	<b>100.45</b>	<b>12.55</b>	<b>1.58</b>		<b>0.64</b>

$$\mu = \frac{1.58}{5} = 0.32$$

$$SD = \sqrt{\frac{\sum (X-\bar{X})^2}{N-1}} = \sqrt{\frac{0.64}{4}} = 0.06$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{0.78 - 0.32}{0.06 / 1.236} = 9.476$$

\* $\bar{X}$  (population mean taken from SEBO)

### Appendix 27

#### t-test of Composition of Working Capital

##### Cash and Bank Balance

<b>F.Y</b>	<b>UNLtd (a)</b>	<b>BNLtd (b)</b>	<b>X = (a+b) / 2</b>	<b>X-<math>\bar{X}</math></b>	<b>(X-<math>\bar{X}</math>)<sup>2</sup></b>
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2002/03	10.43	0.98	5.70	-1.9	3.61
2003/04	10.53	3.08	6.80	-0.8	0.64
2004/05	9.00	4.98	7.00	-0.6	0.36
2005/06	10.58	9.30	9.94	2.34	5.47
2006/07	16.32	0.74	8.53	0.93	0.86
<b>Total</b>			<b>37.97</b>		<b>10.94</b>

$$\mu = \frac{37.97}{5} = 7.60$$

$$SD = \sqrt{\frac{(\bar{X} - \bar{X})^2}{N-1}} = \sqrt{\frac{10.94}{4}} = 1.65$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\frac{11.78 - 7.60}{1.65 / 1.236}} = 3.13$$

\* $\bar{X}$  (population mean taken from SEBO)

#### Sundry Debtors

F.Y	UNLtd (a)	BNLtd (b)	$X = (a+b) / 2$	$X - \bar{X}$	$(X - \bar{X})^2$
2002/03	21.29	16.18	18.73	-4.11	16.89
2003/04	26.10	27.73	26.91	6.62	43.82
2004/05	32.03	19.17	25.60	5.31	28.20
2005/06	24.80	2.45	13.62	-6.67	44.49
2006/07	21.91	11.25	16.58	-3.71	13.76
<b>Total</b>			<b>101.44</b>		<b>147.16</b>

$$\mu = \frac{101.44}{5} = 20.29$$

$$SD = \sqrt{\frac{(\bar{X} - \bar{X})^2}{N-1}} = \sqrt{\frac{147.16}{4}} = 6.06$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\frac{21.02 - 20.29}{6.06 / 1.236}} = 0.15$$

$$\bar{n} - 1$$

\* $\bar{X}$  (population mean taken from SEBO)

### Inventories

F.Y	UNLtd (a)	BNLtd (b)	$X = (a+b) / 2$	$X - \bar{X}$	$(X - \bar{X})^2$
2002/03	41.45	41.69	41.57	-2.58	6.66
2003/04	49.54	41.31	45.42	1.27	1.61
2004/05	46.66	39.93	43.29	-0.86	0.74
2005/06	45.91	45.83	45.87	1.72	2.96
2006/07	48.88	40.29	44.59	0.44	0.19
<b>Total</b>			<b>220.74</b>		<b>12.16</b>

$$\mu = \frac{220.74}{5} = 44.15$$

$$SD = \sqrt{\frac{(X - \bar{X})^2}{N-1}} = \sqrt{\frac{12.16}{4}} = 1.74$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{48.23 - 44.15}{1.74 / 1.236} = 2.90$$

\* $\bar{X}$  (population mean taken from SEBO)

### Misc. CAs

F.Y	UNLtd (a)	BNLtd (b)	$X = (a+b) / 2$	$X - \bar{X}$	$(X - \bar{X})^2$
2002/03	26.82	38.99	32.91	5.16	26.62
2003/04	13.83	27.89	20.86	-6.89	47.47
2004/05	12.31	35.93	24.12	-3.63	13.18
2005/06	18.71	42.41	30.56	2.81	7.90
2006/07	12.89	47.72	30.30	2.55	6.50

<b>Total</b>			<b>138.76</b>		<b>101.67</b>
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$$\mu = \frac{138.76}{5} = 27.75$$

$$SD = \sqrt{\frac{(\bar{X}-\bar{X})^2}{N-1}} = \sqrt{\frac{101.67}{4}} = 5.04$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\frac{SD}{\sqrt{n-1}}} = \frac{28.14 - 27.75}{5.04 / 1.236} = 0.10$$

\* $\bar{X}$  (population mean taken from SEBO)

### Appendix 28 t-test of Liquidity Position

#### Current Ratio

F.Y	UNLtd (a)	BNLtd (b)	$\bar{X} = (a+b) / 2$	$\bar{X}-\bar{X}$	$(\bar{X}-\bar{X})^2$
2002/03	0.84	1.82	1.33	0.16	0.03
2003/04	0.77	2.57	1.67	0.50	0.25
2004/05	0.56	1.30	0.93	-0.24	0.06
2005/06	0.75	1.40	1.08	-0.09	0.008
2006/07	0.88	0.81	0.85	-0.32	0.10
<b>Total</b>			<b>5.86</b>		<b>0.448</b>

$$\mu = \frac{586}{5} = 1.17$$

$$SD = \sqrt{\frac{(\bar{X}-\bar{X})^2}{N-1}} = \sqrt{\frac{0.448}{4}} = 0.33$$

$$t = \frac{\frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\frac{SD}{\sqrt{n-1}}} = \frac{1.32 - 1.17}{0.33 / 1.236} = 0.56$$

\* $\bar{X}$  (population mean taken from SEBO)

### Quick Ratio

F.Y	UNLtd (a)	BNLtd (b)	X = (a+b) / 2	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	0.49	1.06	0.78	0.12	0.01
2003/04	0.39	1.51	0.95	0.29	0.08
2004/05	0.30	0.78	0.54	-0.12	0.01
2005/06	0.41	0.76	0.59	-0.07	0.005
2006/07	0.42	0.49	0.46	-0.20	0.04
<b>Total</b>			<b>3.32</b>		<b>0.145</b>

$$\mu = \frac{3.32}{5} = 0.66$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{0.145}{4}} = 0.19$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{0.78 - 0.66}{0.19 / 1.236} = 0.78$$

\*  $\bar{X}$  (population mean taken from SEBO)

### Appendix 29

#### t-test of Liquidity Position

#### Net Profit Margin

F.Y	UNLtd (a)	BNLtd (b)	X = (a+b) / 2	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>
2002/03	7.49	4.21	5.85	-1.75	3.06
2003/04	9.23	5.98	7.57	-0.03	0.0009
2004/05	12.77	5.65	9.21	1.61	2.59
2005/06	16.60	4.01	10.31	2.71	7.34
2006/07	14.46	-4.30	5.08	-2.52	6.35
<b>Total</b>			<b>38.02</b>		<b>19.34</b>

$$\mu = \frac{38.02}{5} = 7.60$$

$$SD = \sqrt{\frac{(\overline{X-\bar{X}})^2}{N-1}} = \sqrt{\frac{19.34}{4}} = 2.20$$

$$t = \frac{\frac{\overline{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\frac{9.45 - 7.60}{2.20 / 1.236}} = 1.04$$

\* $\overline{X}$  (population mean taken from SEBO)

### Return on Total Assets

F.Y	UNLtd (a)	BNLtd (b)	$\overline{X} = (a+b) / 2$	$\overline{X-\bar{X}}$	$(\overline{X-\bar{X}})^2$
2002/03	11.87	2.51	7.19	-3.61	13.03
2003/04	14.98	4.26	9.62	-1.18	1.39
2004/05	17.22	5.61	11.42	0.62	0.38
2005/06	24.62	2.37	13.50	2.70	7.29
2006/07	26.70	-2.18	12.26	1.46	2.13
<b>Total</b>			<b>53.99</b>		<b>24.22</b>

$$\mu = \frac{53.99}{5} = 10.80$$

$$SD = \sqrt{\frac{(\overline{X-\bar{X}})^2}{N-1}} = \sqrt{\frac{24.22}{4}} = 2.46$$

$$t = \frac{\frac{\overline{X} - \mu}{\frac{SD}{\sqrt{n-1}}}}{\frac{16.11 - 10.80}{2.46 / 1.236}} = 2.67$$

\* $\overline{X}$  (population mean taken from SEBO)

### Return on Net Worth

F.Y	UNLtd (a)	BNLtd (b)	$\overline{X} = (a+b) / 2$	$\overline{X-\bar{X}}$	$(\overline{X-\bar{X}})^2$
2002/03	21.97	3.55	12.76	-24.15	583.22



2003/04	30.69	5.30	18.00	-18.91	357.59
2004/05	87.21	8.91	48.06	11.15	124.32
2005/06	105.89	17.42	61.65	24.74	612.07
2006/07	103.37	-15.24	44.07	7.16	51.26
<b>Total</b>			<b>184.54</b>		<b>1728.46</b>

$$\mu = \frac{184.54}{5} = 36.91$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{1728.46}{4}} = 20.79$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{38.87 - 36.91}{20.79 / 1.236} = 0.12$$

\*  $\bar{X}$  (population mean taken from SEBO)

### Return on CAs

F.Y	UNLtd (a)	BNLtd (b)	$X = (a+b) / 2$	$X-\bar{X}$	$(X-\bar{X})^2$
2002/03	30.62	4.72	17.67	-17.24	297.22
2003/04	37.86	8.44	46.30	11.39	129.73
2004/05	38.42	11.63	25.02	-9.89	97.81
2005/06	42.68	6.46	49.14	14.23	202.49
2006/07	42.25	-5.81	36.44	1.53	2.34
<b>Total</b>			<b>174.57</b>		<b>729.59</b>

$$\mu = \frac{174.57}{5} = 34.91$$

$$SD = \sqrt{\frac{(X-\bar{X})^2}{N-1}} = \sqrt{\frac{729.59}{4}} = 13.50$$

$$t = \frac{\bar{X} - \mu}{\frac{SD}{\sqrt{n-1}}} = \frac{54.25 - 34.91}{13.50 / 1.236} = 1.77$$

\*  $\bar{X}$  (population mean taken from SEBO)

### Appendix 30

#### List of Manufacturing companies listed in SEBO

S.No.	Name of the Companies
1.	Arun Banaspati Udyog Ltd.
2.	Biratnagar Jute Mill Ltd.
3.	Bottles Nepal (Balaju) Ltd.
4.	Bottlers Nepal (Terai) Ltd.
5.	Nepal Banaspati Ghee Udyog Ltd.
6.	Jyoti Spinning Mills Ltd.
7.	Gorakhkali Rubber Udhyog Ltd.
8.	Nepal Lube Oil Ltd.
9.	Morang Sugar Mills Ltd.
10.	Shree Raghupati Jute Mills Ltd.

11.	Harisiddhi Bricks & Tile Factory Ltd.
12.	Shree Bhrikuti Pulp & Paper (Nepal) Ltd.
13.	Nepal Bitumen & Barrel Udhog Ltd.
14.	Himalayan Distillery Ltd.
15.	Butwal Dhago Udhog Ltd.
16.	Birat Shoe Co. Ltd.
17.	Himgiri Textile Industries Ltd.
18.	Flour Himalayan Ltd.
19.	Shree Ram Sugar Mills Ltd.
20.	Nepal Welfare Co. Ltd.
21.	Khadhya Udyog Ltd.

### **Appendix 31**

#### **List of Selected Manufacturing companies**

##### **Bottlers Nepal Limited**

Bottlers Nepal limited was established in 1973 as a private limited company under the company Act, 1964. It was converted into a public limited company in 1984. The main objective of the company is to produce and bottle soft drinks under the brand name of Coca-Cola Company. The Co. makes the sales of the Coca-Cola that is managed by Singapore based F & N Coca-Cola pte. Ltd. Its registered office is located at Balaju, Ktm. and the head office being the same.

##### **Uni Lever limited**

Uni Lever Limited Co. was formed as a subsidiary co. of Hindustan Lever Limited, India. The factory's registered office is situated at Basamadi VDC-5 of Makwanpur district, which is about six kilometer far from Hetauda municipality, and its corporate office is situated at Heritage Plaza, Kamaladi, Kathmandu.

Uni Lever Limited was incorporated in 1992 and listed in 1994 as Joint-Venture Company. Shareholders are with 80% Hindustan Lever, with 5% local promoters and with 15% around 2500 public shareholders. The main purpose of the company is to meet the everyday needs of people everywhere- to anticipate the aspirations of consumers and customers and to respond creatively and competitively with branded products and services raise the quality of life.