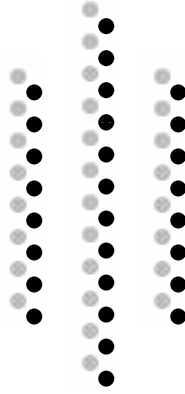


IMPACT OF INVENTORY POLICY ON PROFITABILITY

Thesis



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RECOMMENDATION

This is to certify that the thesis:

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“IMPACT OF INVENTORY POLICY ON PROFITABILITY” with special reference to (comparison study of Bottlers Nepal Ltd. & Unilever Nepal Ltd.)” has been prepared as approved by this department in the prescribed format of Faculty of Management. This thesis is forwarded for examination.

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DECLARATION

I hereby declare that the work reported in this thesis entitled “**IMPACT OF INVENTORY POLICY ON PROFITABILITY**” with special reference to (comparison study of **Bottlers Nepal Ltd. & Unilever Nepal Ltd.**)” submitted to Office of the Dean, Faculty of Management, RRM Campus, Janakpur Dham. Tribhuvan University, is my original work done in the form of partial fulfillment of the requirements for the Master of Business Studies(M.B.S) under the supervision, Mr. Gopal Prasad Sah R.R.M. Campus, Janakpur dham.

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This is really an appreciable curriculum of T.U. because it helps the students to express their theoretical concept gained during the study period into the practical field. So, being concerned to thesis, I have also got a chance to express my theoretical concept gained from class and library study into this practical field. The present study “**IMPACT OF INVENTORY POLICY ON PROFITABILITY**” with special reference to (comparison study of **Bottlers Nepal Ltd. & Unilever Nepal Ltd.**)” has been prepared for the partial fulfillment of the requirement for Master Degree in Business Studies.

At first, I would like to pay thanks to my father and mother as well as my brother who headed me towards the light of education and path of truth. Due to their non-stopping effort for guidance, today I come in this position. So I would like to share the credit of my success with them. I’m really indebted by them.

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(Researcher)

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ABBREVIATIONS

FIFO	:	First-in-First-out
LIFO	:	Last-in-First-out
U.S	:	United States
IFRS	:	International Financial Reporting System
GAAP	:	General Accepted Accounting Principle
USA	:	United State of America
VED	:	Vital, Essential and Desirable
EOQ	:	Economic Order Quantity
TCC	:	Total Carrying Cost
LC	:	Letter of Credit
TOC	:	Total ordering Cost
LTD.	:	Limited
PEs	:	Private Enterprises
HTI	:	Hetauda Textile Industries
I	:	Inventory
BNL	:	Bottlers of Nepal Ltd.
ULNL	:	Unilever Nepal Ltd.
ITR	:	Inventory Turnover Ratio
CA	:	Current Assets
ITA	:	Inventory Total Assets
RTA	:	Return on Total Assets
MBS	:	Master in Business Studies
ITR	:	Inventory Turnover Ratio

Chapter I

INTRODUCTION

1.1 General Background

The world is basically divided into two broad categories i.e. developed and underdeveloped countries. There is a gap between the rich and poor among the people of these countries. The people of the developed as well as the developing countries want to minimize the gap and finally to establish harmony between haves and have not. This gap can only be fulfilled by a revolution in various sectors in each country.

Nepal is one of the least developed countries in the world which lies between India and China. And progress of a country largely depends on growth and development of various sectors such as economic, social, cultural, and industrial and technology.

Inventory means the stock of the items of goods kept in reserve for certain period of time. Inventories form a link between production and sale of the product. Inventory management means management of inventory in proper and accurate way. Inventory management enables the management of industry to the production operation in such a way that labour and machine can be utilized efficiently and effectively.

Inventory refers to stores of goods and stocks. In other words, inventory is any stored resource that is used to satisfy a current or future need for smooth operations of the firm (*Shrestha and Manandhar, 2057:400*). Large amount of fund has been invested in inventory. So it must be considered that proper management of inventory is for using modern and scientific accounting system, techniques and methods. Inventory forms a link between production and sales of product. Inventories are the stock of the product a company is manufacturing for sale and components that make up the product. The various types of inventories are raw materials, work in progress, finished goods and inventory supplies.

Industrialization is one of the major activities which can play an important role in the economic development of a country. It is equally necessary for both the developed and developing countries but priority for establishment of industries may differ. Although Nepal is an agricultural country, nowadays Nepal cannot remain in isolation out of the business chain like industrialization. But manufacturing industries in Nepal has started making notable progress.

The purpose of manufacturing company is to change and to process materials which serves in different way to satisfy various requirement of human being converting the

commodities into a more useful form. Manufacturing industries is that industries with process materials or assemble components to produce finished products. Success of any organization depends on various components, one of them is inventory. Inventory plays a vital role in manufacturing companies.

Raw materials include the inventory purchased from suppliers; it is the material a firm purchases to transform into a finished product for sale. As long as the firm has an inventory of raw materials, delays in ordering and delivery from suppliers do not affect the production process. If a firm does not have raw materials, the first stage of production would have to be stopped until such materials are received.

Work-in-Process refers to inventory units that are at various stages of completion, some of the inventory in work-in-progress will be at beginning stages of completion and some will be nearly completed. If a firm has work in process at every stage of production process, then it will not have to completely shut down production if a problem arises at one of the previous production stages.

The Finished goods inventory represents products that are ready for sale. For these items, the production process is complete. Firms carry finished goods to ensure that orders can be filled when they are received. If a firm did not have a finished goods inventory, it would have to wait for the completion of the production process before inventory could be sold, thus, demand could not be satisfied when it arrived (Weston & Brigham, Eleventh Edition:426)

Inventory of parts and supplies includes spare parts such as bolt, knot, oil, lubricants, grease etc. These materials do not enter directly to the production but are most necessary for the production. Usually, these parts and supplies are small part of the total inventory and do not involve significant investment.

The management of developed countries like America, Japan, England and the like has better understanding of this aspect. They are paying serious attention in managing the inventory. Unfortunately less developed countries like Nepal have not fully realized importance of this aspect in comparisons to them. Timely modernized “inventory management” may result in the better service to customers by reducing total cost of production. This may also increase the profitability of the firm continuous supply of

inventory, sufficient stock of inventory and finally help to achieve the goal of owner's wealth maximization

Nowadays, competition and ever-changing system plays an important role. Effective management in inventory helps to reduce cost of production and other spoilage. Basically, in manufacturing company, inventory control plays a vital role. Generally manufacturing companies have to make attention in the inventory management of raw materials 10 o 20%. Inventory cost (carrying and ordering costs) can be reduced without any adverse effect on production and sales by using effective inventory planning and control techniques. Industrialization is the backbone for the economic development. If some industrial products are made easily available in the market as well as regular and sustainable industrial production has to be enhanced. Higher industrial growth rate and desirable quality improvement of the product is a major challenge of today.

A modern and scientific material inventory system must apply to meet the goal of any enterprises. Inventory management involves planning of the optimal level of the inventory and control of inventory cost supported by an appropriate organization structure, which is staffed by trained persons as directed by the top level management. It involves financial dimensions as well as physical dimension and these dimensions are interrelated and can't be looked in isolation.

1.2 Focus of the Study

Inventory management is the challenging job of the management in every organization engaged in holding inventory. It plays an important role for the success of the organization. Management always works against risks and uncertainties and faces various problems. Nepalese manufacturing enterprises have also not escaped this reality and are facing uncountable problems, which have caught up its success. One of the major problems that they are facing is sound and proper management of inventory.

Manufacturing companies are playing vital role in the economic development of our country. Therefore this study is basically based on the analysis of inventory management and its effect on profitability of some listed manufacturing companies. To analyze, compare and to present the prevailing condition of inventory management and its effect on profitability of some listed manufacturing companies is the main focus point of this study.

Most of the manufacturing enterprises have not given more attention in inventory management. More investment has been made on inventory purchases, they do not know

when they place an order, what is the economic size of inventory. So lack of these they fail to achieve their objective/goals. That's for why we are focusing on the inventory management aspect. Inventories are those basic inputs that converted into finished product through the manufacturing process. Inventories are those units which have been purchased and stored for future production and demand. One product output is material of other process. This management being a specialized function of general management has a great importance of manufacturing enterprises. If inventory problem like idle funds, storage and obsolesces difficulties exist etc. various problem will occur. Inventory management tries to manage all the above difficulties. Therefore, it is obvious that better inventory management helps in project promotion.

1.3 Statement of the Problem

The most neglected aspect of the Nepalese Enterprises is inventory management. Management experts claim inventory management in Nepal is probably the weakest aspect of management. The tools and techniques of controlling inventory have not been applied in Nepalese enterprises for controlling their physical as well as financial dimension (Agrawal, 2000:239).

Many manufacturing enterprises could not achieve their pre-established objectives and goals due to the lack of authority and communication of objectives and goals from top to lower level management. Moreover them they don't maintaining responsibilities and co-ordination between various developments and responsibility center. Beside team integration of different activities and motivated to employees are more challenging problems behind the every management. There are other various problems such as political interference, Bureaucratic tendency, poor profitability exposure to public enterprises, lack of continuity, stability, lack of enough investment, negligence of management, lack of effective managerial skills etc. Due to lack of study of inventory management, huge amount of money to be blocked on the inventory. How much money should the company invested in the inventory, how much inventories to be stocked, how can we minimize the ordering and carrying cost, what is to be EOQ, how many times we order that minimize the carrying costs are the same questions that evoke management always.

The general problems of inventory management facing by the manufacturing enterprises are as follows:-

- There is no particular department handling inventory management system. The quantity requirement necessary for the production and sales is found to be estimated unscientifically and they do not use any type of analytical tools to determine economic size, cost of inputs, handling cost, ordering cost, because of which they are bearing some unnecessary cost.
- There is lack of study on effective and efficient inventory management tools and techniques for controlling inventory in manufacturing companies.
- Manufacturing enterprises should determine and maintain optimum level of inventory investment, which lies between the danger point of excessive and inadequate inventories. Minimum safety and Minimum stock level help in maintaining optimum level of inventory, which are not given seriously consideration while deciding the size and level of inputs.

1.4 Objectives of the Study:

The major objective of this study is to analyze the inventory management and its effect on profitability of some Nepalese listed manufacturing companies. The specific objectives are as follows:-

1. To assess the present position of inventory management and its impact on profitability.
2. To analyze the maintained inventories and other consequence on sales and profit
3. To provide better suggestions and recommendations for the further improvement in inventory management.

1.5 Importance of the Study

The selected manufacturing enterprises spend huge amount of its investment on inventories, but there is lack of proper inventory management system. Small portion reduce in material inventory cost will help a significant change on profitability of the enterprises. It will also help to improve the quality of the product to increase its market. Considering the current situation of both enterprises, it is felt necessary that their management and control system should find out the inventory management system they are applying currently and improve it.

Inventory management is one of the important functions of the general management in any manufacturing companies. Without effective and efficient inventory management system no manufacturing company can achieve its goal. Proper management helps to maximize the profitability. A company should maintain adequate raw materials, work in process and finished goods. If slightly changes in the cost of materials, it will affect the profitability. So the company should keep adequate stock of inventory. By keeping adequate inventory the company able to supply whatever the demand.

1.6 Limitations of the Study:

The problem of data is very acute in Nepal. Even the financial statements of Nepalese enterprises published by them are not readily available. NEPSE Ltd. has published Financial Statement of some of the listed companies in Nepal, but it is still unable to provide required data of all listed enterprises from the years of listings.

The study has certain limitations due to lack of sufficient time and resources. They are as follows:-

- The study has been limited to the area of the inventory management and its impact on profitability of two manufacturing enterprises and has not covered other areas.
- The study has been carried out within a range of five fiscal year data starting from 2007/08 – 2011/12.
- The analysis is based on the secondary data only, which has been collected from Annual Report, Financial Report, of the concerned enterprises, SEBON, NEPSE Ltd.

1.7 Organization of the Study:

This study has been planned into five Chapters:

Chapter One deals with major issue to be investigated along with the background of the study, focus of the study, statement of the problem, objectives of the study, importance of the study and limitation of the study.

Chapter Two includes a discussion on the conceptual framework and review of the major empirical works as well as review of Nepalese study.

Chapter Three describes the research methodology employed in the study. This chapter deals with research design, nature and sources of data, selection of enterprises, method of data analysis and limitation of methodology.

Chapter Four consists of presentation and analysis of data, which deals with empirical analysis of the study. This section describes the effect of inventory management on profitability in the selected Nepalese listed manufacturing enterprises.

Chapter Five presents the summary, conclusion and recommendation of the study. For the completion of this study some reference section like annexure and bibliography has been included.

Chapter-II

REVIEW OF LITERATURE

Review of literature is an essential part of all studies, which helps in better understanding of the subject. This chapter focuses to review of theories, previous works performed by different writer and researchers in the field of inventory management, control system and its impact over profit.

2.1 Conceptual framework

2.1.1 Inventory Management

Inventory means the stocks of the items of goods kept in reserve for certain period of time. An organization holds a number of items at a time, ranging from small items like pen, pencil, paper nail, screws to large items like machines and equipment, vehicles, furniture and raw materials depending upon the nature of the organization's product. Thus, the stock of various items held by manufacturing or service sector is the "inventory".

Inventory management involves planning, of the optimal level of the material and cost control of material cost supported by an appropriate organization structure, which is staffed by trained person and directed by the top leveled management. It involves both financial dimension as well as physical dimension and these dimensions are interrelated and can't be looked in isolation.

Inventory in the form of raw materials, Work in progress and semi -finished goods are of great significance for the success of an enterprise. These can directly affect the efficiency of a system.

Inventory management is one of the aspects of production management. Production management is developed and handled by production engineer and procurement is handling by its specialist. Therefore later inventory management becomes a separate and significant management for the development of industries. Under the inventory management there is not only essential production approach but also need marketing management but actually inventory management is purely subject of production management.

Research Bulletin No 43 of the American Institute of Certified Public Accountants defines: Inventories are goods that are meant for eventual conversion into cash in the normal course of business. Inventories are "*assets*":

- (a) – held for sale in the ordinary course of business.
- (b) - in the process of production for such sale: or
- (c) - in the form of materials or supplies to be consumed in the production process or in the rendering of services.”

Item (a) refers to finished goods, (b) to semi-finished goods or work-in-progress, and (c) to raw materials, stores, spares, consumable items and packing materials. Inventory is one of the largest assets of a business concern. The major source of revenue is the sale of these inventories. Inventories should be properly compiled periodically and recorded in the books of account for proper measurement of profit.

From the above definition, it is clear that on stock that a firm keeps to meet its future requirement of production and sales is called inventory. Some inventories are in the form of raw materials and purchased items to be used in making products. Some inventories are supplies to be used up. Some are half manufactured items in Production departments; some are finished parts ready to be put into assembled products in shipping room and ware houses (American institute of Certified Public accountants, 1961:25).

Thus, material inventory management means not only branch of production management it is an integrated view of management" Companies devote a great deal of attention to the efficiency of their material and inventory management operation.

2.1.2 Objectives of Accounting for Inventories

A major objective of accounting for inventories is the proper determination of income through the process of matching appropriate costs against revenues (AICPA).

To ascertain the trading profit of a particular period, the revenues for the period must be matched or set off by all the related expenses in producing those revenues. Proper inventory accounting will help to determine what portion of the cost of goods available for sale should be deducted from the revenues of the current period and portion is to be carried forward as inventory to be matched against revenues in the next ‘accounting period’.

From above it is clear that the cost assigned to the ending inventory directly affects the determination of the cost of goods sold. Thus, if we assign a higher value to the ending inventory, the cost of goods sold will decrease and the gross profit will increase. In contrast, if we assign a lower value to the ending inventory, the cost of goods sold will increase and

the gross profit will decrease. In short, inventory valuation affects both the profit and loss account and balance sheet.

Efficient management of inventory should ultimately result in maximization of the owner's wealth. The objective of inventory management is to improve profitability by minimizing the costs associated with investment in inventory like most financial decision. The following are the objectives of Inventory Management:

1. To ensure continuous supply of materials spars and finished goods so the production should not suffer at any time and the customers demand should also be meet.
2. To avoid both over-stocking and under-stocking of inventory.
3. To maintain investment in inventories at the optimum level as required by the operational and sales activities.
4. To keep material cost under control.
5. Providing flexibility in production plans.
6. Making possible economies in transportation clearing and forwarding charges, (Banarjee and Prasad, 1985:343).

Therefore, the objectives of inventory management should be to avoid excessive and inadequate levels of inventories and maintain sufficient inventory for the smooth production and sales operations. Efforts should be made to place an order at the right time with the right sources to acquire the right quantity at the right price.

INVENTORY SYSTEMS

Perpetual Inventory System

The Perpetual Inventory method requires continuous records of addition to or reductions in materials, work-in-progress and Cost of Goods Sold on a day-to-day basis. Such records facilitate managerial control and preparation of interim financial statements. Physical inventory counts are usually taken at least once a year in order to check on the validity of the accounting records.

The Perpetual Inventory system may give such addition information as goods ordered, expected delivery date and units costs. Usually, these records are maintained on a quantity basis but values can be included. It is an essential feature of the Perpetual Inventory method that items of stock are checked periodically, normally at least once or twice each year. This ensures that the stock records tally with the physical stocks which is vital if the control procedure is to function properly.

Periodic Inventory System

Under the periodic method, the entire book inventory is verified at a given date by an actual count of materials on hand. This physical inventory is usually taken near the end of the accounting period. Some firms even suspend plant operations when this is done. This method provides for the recording of purchases, purchase return and purchase allowances on a daily basis but does not provide for a continuous inventory or for a daily computation of the goods sold. At the end of each accounting period, a physical count is made of the quantity of goods on hand and the value of the inventory is determined by using an inventory pricing method (*FIFO, LIFO or Average Cost*) and attaching costs to units counted. The Cost of Goods Sold is computed by deducting Closing Inventory from the sum of Opening Inventory and purchases made during the current period. It is assumed that goods not on hand at the end of accounting period have been sold. There is no system can be discovered only after the end of the period.

Taking a physical inventory at the year-end is an important task in the Periodic Inventory system. It must be ensured that all items have been counted accurately. Counting procedures usually involve teams of people assigned to specific sections of the factory, and to inventory storage areas. Large items are counted individually, while small items may be weight-counted. Counted items are tagged to prevent is recorded on the inventory sheet.

In contrasting the two Inventory Systems, following results appeared:

1. The Perpetual System uses no Purchase Account. It records all purchases in the Inventory Account.

The Periodic System uses a Purchases Account.

2. The Perpetual System records goods returned to suppliers by directly reducing the Inventory Account.

The Periodic System uses Purchases Returns Account.

3. The Perpetual System records cost of goods and reduces inventory when goods are sold.

The Periodic System calculates Cost of Goods Sold on the basis of the inventory remaining on hand at the end of the period and records Cost of Goods Sold through the closing process.

4. The Perpetual System records customer returns by reducing Cost of Goods Sold and increasing inventory. The Periodic System makes no entry in stock for goods returned.
5. The Cost of Goods Sold and inventory amounts are readily available at any time under the Perpetual System. Under Periodic System Cost of Goods Sold and inventory amounts are usually not available until they are calculated at the year end.

2.1.3 Types of Inventories

Generally, organization maintain following types of inventories:

A. Raw Material

The raw materials are those inventories which need to be purchased for obtaining finished product. Raw materials are those basic inputs, which are converted into finished products through the manufacturing process. Materials used in factory are traditionally classified as direct materials and indirect materials. Direct material is generally defined to include all materials and parts that are integral part of the finished product and their contribution can be directly identified. Indirect materials are generally defined as materials used in manufacturing process as supporting materials. e.g. for Nepal Bottlers, the raw materials are water, the concentration mix and bottle.

B. Work-in-Process

Work in process represents the semi-finished goods, they include those materials that have been committed to production process but haven't yet been converted into finished goods, (Jain and Narang 1988:4.1) For example in garment factories the clothes cut but not stitched are the work-in-process inventory.

C. Finished Goods

These are completed products waiting for sale. In the manufacturing firm, they are the final output of the production process. Firms carry finished goods to ensure that orders can be filled when they are received. If a firm doesn't have finished goods inventory, it would have to wait for the completion of the production process before inventory could be sold, thus demand couldn't be satisfied when it arrives. When demand arrives and there is no inventory to satisfy that demand, a stock-out situation exists. In such a situation, the firm will be in a dangerous position of losing customers to competitors permanently.

D. Spare Parts and Supplies

Firms also maintain the fourth kind of inventory, i.e., supplies. Supplies include office and plant cleaning materials (soap, broom, etc.), oil, fuel, lights, and bulbs, etc., which are used not directly in the production process but are important for a smooth production process in any organization. Usually, these supplies are a small part of the total inventory and don't involve significant investment.

2.1.4 Purpose of holding inventories

The fundamental reason for carrying inventories is that it is physically impossible and economically impractical for each stock item to arrive exactly where it is needed and when it is needed. Inventory is vitally important to almost every type of business; whether that is manufacturing or service business. There are basically two reasons that the organization should keep inventories.

- a) Primary
- b) Secondary

Primary Purpose

The primary purpose of holding inventory is that it is physically impossible to get the right amount of stock at the right time of need and economically impractical to get the right amount of stock at the exact time of need.

Secondary Purpose

The secondary purpose of holding inventory is to meet expected customer demand, to run production process smoothly, to decouple internal operations, as a hedge against stock out, to take advantage of economic lot size, and as a hedge against price increase etc.

2.1.5 Needs and Importance of Holding Inventory

Inventory management is vitally important to almost every type of business. Whether manufacturing or service oriented, inventory control touches almost every facet of operations.

The importance of inventory management can be realized when it is said that purchase account for nearly 50 % of an organizations annual expenditure. That nearly 80 % of the working capital is tied up in inventory and the carrying cost is almost 25% a year. That material represents 40 to 60 % of the sales price or 60 to 80% of the production cost of a product and that even a saving of 5% in material cost will substantially increase the profit margin of an enterprise.

Although holding inventories involves blocking of times funds or expensive to hold it, there are three general motives for holding inventories (Colin Drury, 5th Edition:994)

- The transaction motives occur whenever there is a need to hold stock to meet production and sales requirement, and it is not possible to meet these requirements instantaneously.
- The precaution motive applies only when future demand is uncertain a firm might also decide to hold additional amounts of stocks to cover the possibility that it may have underestimated its future production and sales requirements.
- The speculative motive arise when it is expected that future inputs prices may change, a firm might maintain higher or lower stock levels to speculate on the expected increase or decrease in future price.

2.1.6 Inventory Management Functions

"Inventories serve the vital function of developing the various operations in the sequence beginning with raw materials, extending through all the manufacturing operations and into finished goods storage and continuing to warehouse and retail stores." Thus, inventory management is one of the important functions of general management in any organization.

According to Richard I. Levin and Charles A. Kirkpatrick the functions of inventory can be summarized as below: -

- 1) Inventory fills gap between supply and demand.
- 2) Inventory makes possible lower production cost
- 3) Inventory allows organization to cope with the items that are not always available.
- 4) Inventory stores the labor costs

Generally, inventory management covers the *function* of:

- Purchasing
- Store keeping
- Issuing and pricing

2.1.6.1 Purchasing

"Purchasing is a managerial activity that goes beyond the simple act of buying and includes the planning and policy; objectives covering wide range of related and complimentary activity, included in such activities are the research and development required for the proper selection of materials and source from which these materials may be brought.

Purchasing department should take greater responsibilities and should analyze the existing procurement policy and should tune with the overall organizational objectives and policies. We can improve management of purchases by the help of standardization, value analysis, material substitution, transport saving, cost reduction of packing modification. "In India approximately 60% of every rupees of manufacturing is spent on material and about 90% of net working capital of industry is tied up in inventory".

The process of inventory management in fact begins with purchasing. The purchase department plays a very important role in an organization because purchasing has its effect on every vital factor concerning the manufacture, quality, cost, efficiency and prompt delivery of goods of customers.

Purchasing in simple sense is an act of buying something with money. But industrial purchasing has a broader sense", purchasing is the procuring of materials, tools and services required for the equipment maintenance and operation of a manufacturing plant."

Role of Purchasing

The purchasing function must be effective, because it is sometime concerned with receiving, inspection and storage of materials. Therefore, "to be really effective, this department must be an independent department directly responsible to the director in charge." Purchasing function in any organization is concerned with the cost of materials purchased. Therefore, the purchasing agent has an important role in industry for purchasing. The purchasing agent in the organization is a very important person, and therefore, he should be a man of quick decision, wide vision, good personality, versatile, a good leader and clear foresight.

In the very beginning, purchasing was considered as one of the activity of the production management, but now it is regarded as a separate and important sphere of industrial management. "The modern thinking is that purchasing is a separate branch of industrial management, which closely works with other department, which closely works with other departments for achieving common objective of maximizing profit."

Objectives of Purchasing

Purchasing is the most important function of materials management as the moment an order is placed for the purchase of materials; a substantial part of the company's finance is committed which affects cash flow position of the company. In the word of L.N. Gupta, "the responsibility of the purchasing department is to buy materials of the right quality in the right quantity at the right price from the right source, with delivery at the right place. This is the way of stating the objectives of sound purchasing."

Summarizing above to ensure the objectives a large number of parameters such s right price, right quality, right contractual terms, right time, source, right material, right place and right mode of transportation, right quantity and right attitude have to be considered jointly.

Thus, the main objective of the purchasing should be uninterrupted and smooth production to provide regular service to the customers at the lowest possible cost.

2.1.6.2 Store-keeping

The following are the main objectives of the purchasing:

- To make continuous availability of materials.
- To make purchases competitively and wisely at the most economical prices.
- Procurement of materials.
- To develop good terms of supply of materials. Supplier relationship which will ensure the best.
- To develop alternate sources of supply.
- To adopt the most advantageous method of purchase to ensure smooth delivery of materials from suppliers and to avoid the risks of any disputes or financial loss.
- Maintenance of company's competitive position in the market by having company's quality standards in accordance with the demand of the customer.
- To serve as an information center on the materials knowledge relating to prices, sources of supply, specifications mode of delivery etc.
- Developing full co-operation and co-ordination and, maintenance of internal relationship among various department of the company.
- Avoidance of duplication of material and leading to waste of materials and equipment.

The best method of maintaining materials properly is store keeping. Store keeping is the aspects of inventory control, which is concerned with the physical storage of goods. The responsibilities of Store keeping management are to receive materials, to protect them in storage from unauthorized removal, to issue the materials in the right quantity at the right time, in the right place and provide these services prompt and at least cost.

Store keeping refers to the safe custody of all materials stocked in stores for which the store keeper acts as a trustee. It simply means that the materials are to be stored in store in such a manner that there is least possibility of theft, fire, damaged and they may be easily located and issued whenever required for use.

Store keeping embraces all the activities right from the receipt of supplies of raw materials spare parts, equipments, their proper storage and issue to used department. This is also includes the storage of finished products before dispatch to dealers. These activities involves maintenance of proper records of all the transactions

Objective of Store Keeping

The major objectives of store keeping may be stated as follows:

- Receiving, handling and issuing goods economically and efficiently.
- Using the storage available space and labour effectively.
- Protection of all goods in stores against from all losses from fire, theft and obsolesce.
- Minimizing the investment on inventories.
- Maintaining regular supply of raw materials at all times when properly authorized.
- Minimizing the inventory holding cost.

To achieve the above said objectives, a firm generally uses bin cards and store ledger as a store controlling devices.

Bin Cards

A bin card makes a record a receipt and issue of materials is kept for each items of stores carried. Store keeper maintains these cards and a store keeper is answerable for any difference between the physical store and balance shown in the bin cards. These cards are used not only recording receipt and issue of stores but also assists the store keeper to control the stock.

Store Ledger

The ledger is kept in the costing department and is identical with the bin cards except that receipt, issue and balance are shown along with their money values. These contents as account for every item of stores and makes for records of the receipt issued and the balance, both in quantity and value. Thus this ledger provides the information for the pricing of materials issued and the money value at any time of each item of storage, (Jain and Narayan 1991:2.27).

2.1.6.3 Issuing and Pricing

Pricing the inventory is one of the most interesting and widely subject matters in accounting process. Many organizations are interested in the various methods of pricing inventory because it has a direct effect on the net income. Inventory valuation approach is important in

the aspect of income tax problem. One method of inventory valuation may lead lower tax liability than other inventory valuation method. There are many method of inventory valuation but most significant method is cost and other method is lower of cost or market. Both methods give different results.

2.1.7 Inventory valuation method under Cost basis

"The primary basis of accounting of inventory is cost, which has been defined generally as the price paid or consideration given to acquire an asset. As applied to inventories, cost means in principle the sum of the applicable expenditure and charges directly or indirectly incurred in bringing an article to its existing condition and location, (American Institute of Certified Public accountants, 1961:28).

Conceptually, the process of valuing the inventory is simple. We can calculate inventory value that multiplying physical quantity of goods by cost per unit. But in practice, many organizations purchase different type of raw materials at different price at different time. Price of materials changes time to time. If the same purchase price is paid for all lots of a given material, no difficulty would be encountered in the valuation of that material when it is issued to jobs or work orders.

However, that is not the case and the price always changes in accordance with the market conditions. The stock of a given material will, therefore, consist of purchases made at different times at different process, which possess a problem as to what should be the price when the material is issued. In this situation there are many methods, which are based on historical cost, used in determining the value of inventory are:

2.1.7.1 Specific Identification Method

Under this method, materials issued to production are priced at their purchase prices. The basic assumption in following this method is that materials in the stores are capable of being identified as belonging to specific lot. In this method, the items have serial numbers or are distinguishable by model, color or size to identify the particular items but specific items separate at first and recorded in stock book. This method is more suitable to low volume, high cost item such as automobiles. It is not very practical when the firm purchases large quantities of identical units of various times and prices. It is mainly suited to the needs of a

small business enterprise when a small number of items of materials are purchased and stored which can be easily identified.

2.1.7.2 Weighted Average Cost/End-Of-The Month Method

It assumes that goods are removed from the beginning inventory and purchase group in proportion to the number of units in these groups. The weighted average cost is computed by dividing the total cost of goods available for sale by the total no of units available for sale for during the period.

$$\text{Weighted Average} = \frac{\text{Total cost of goods available for sale}}{\text{Total units available for sale}}$$

This method is widely used by organizations that hold item of inventory long periods of time because it averages out of the effects of price increases and decreases. In addition, weighted averaging process is satisfactory when there are both increases and decreases in cost within the accounting period. It is better to issue the material at weighted average price method because it recovers the cost price of the materials from production is that it attaches no more significance to current prices than to prices that prevailed several months earlier.

Conclusion

WAC is appropriate when the inventory units involved are homogeneous or when it is difficult to make a cost (price) assumption. Besides, the cost figure for the ending inventory reported under this method is influenced by all the purchase prices paid during the year and thus evens out the effect of price increases and decreases on ending inventory value. The major criticism of WAC is that it assigned no more importance to current prices than to past prices paid several months ago.

2.1.7.3 First-In-First-Out (FIFO) Method

Under this method material is first issued from the earliest consignment on hand and priced at the cost at which that consignment was placed in the stores. In other words, materials received first and issued first. This method is most suitable in times of falling prices because the issue price of materials to jobs or works orders will be high while the cost of replacement of materials will be low. But in case of rising prices this method is not suitable because the issue price of materials to production will be low while the cost of replacement of materials

will be high. It is simple to use and appears to coincide with the established merchandising principle of selling the oldest items first.

2.1.7.4 Last-In-First-Out (LIFO) Method

This method assumes cost flow is exactly the opposite of FIFO method. The title of this method assumed that the cost of the items sold was attributable to the most recent items purchased. As against the First in First out method the issues under this method are priced in the reverse order of purchase i.e. the price of the latest available consignment is taken. This method is suitable in times of rising prices because material will be issued from the latest consignment at a price that is closely related to the current price levels.

This method has become popular since the procedure became an acceptable method for use in determining the income taxes. Unlike weighted average, these separate purchase groups can't be averaged in the inventory records. They must be maintained separately in the event that the ending inventory is less than the beginning inventory. In such case, the firm must be able to identify the oldest remaining items for inventory valuation purposes.

LIFO is permitted in the US. But it is not an acceptable method in many accounting systems, including IFRS. Indian GAAP does not permit LIFO.

2.1.7.5 Standard Cost method

LIFO, FIFO and Average Cost Method are often awkward to work within the subsidiary records for materials under a perpetual inventory system. For this Standard Cost Method may be used in accounting for individual items in materials inventory.

Standard price is the predetermined price and both the receipts and issues will be valued at this price. This method charges material unit into the factory at a predetermined budgeted or estimated price reflecting a normal or an expected future price. Receipts and issues of materials are recorded in quantities only on materials cared thereby greatly simplifying the record keeping. Then, there is a basis for comparing existing costs from day-to-day, which should exist under normal condition.

2.1.7.6 Base Stock Method

Each concern always maintains a minimum quantity of material in stock. This minimum quantity is known, as safety or base stock and this should be used only when as emergency

arises. The base stock is created out the first lot of the material purchased and therefore, it is always valued at the cost price of the first lot and it is carried forward as fixed asset. This method works with some other method and is generally used with FIFO or LIFO method. The objective of this method is to issue the material according to the current prices. This objective will be achieved only when the LIFO method is used together with the Base stock method.

All the methods have their advantages and disadvantages. However, the method chosen is significant for efficient inventory management especially in its financial dimension.

2.1.8 Inventory Control

" The technique of maintaining the size of the inventory at some desired level, keeping in view the best economic interest of an organization is known as inventory control."

Every organization holds inventory at necessary level. The under and over stocking of any inventory is evil for business. Therefore," Inventory control may be defined as the planning, ordering, and scheduling of materials used in the manufacturing process. It is possible to exercise control over the three types of inventories recognized by accountants i.e. raw materials, work in process and finished goods.

S.C. Kuchal in his book, "*Financial Management*" clearly states the motive of inventory control as, to provide customer service in the face of sales and production fluctuations, to take action against expected increase in sales, to handle production variations, to manufacture goods in economic production, run, to promote flexibility in plant scheduling, to make advantage of favorable to raw material price, to take advantage of distribution cost, to keep storage equipment, operational, to speculate against cost and price changes, to minimized cost and maximize profit (Kuchal, 1982:203).

More specifically “ The purpose of inventory control is the stock of an adequate balanced inventory of materials and to reduced storage and handling costs, obsolescence and deterioration costs, insurance and interest charges and risk of price level changes.”

Therefore, "the technique of maintaining the size of the inventory at some desired level, keeping in view the best economic interest of an organization is known as inventory control.”

Inventory control is the activity that maintains stock keeping items at desired levels. In manufacturing sector, inventory control focuses on material control, similarly in service sector the focus is on the service i.e. inventory control focuses more on supplies and less on

materials. As the term inventory control have two functions, which are quite different but related to each other only in that they both require the maintenance of adequate records of inventories as well as receipt and issues. These functions are accounting control and operating control.

- Accounting control of inventories is concerned with the safeguarding of the undertakings property in the form of raw materials, work-in-progress and semi-finished as well a finished products, and the proper recording of finished products, and the proper recording of receipt and consumption of materials as well as flow of the goods through the plant into finished stock and eventually to customer.
- Operating control of inventories is concerned with maintaining inventories at the optimum level keeping in view the operational requirements and financial resources of the business.

2.1.8.1 Objectives of Inventory Control

Inventory control refers unit controls and value controls. On the other hand, financial managers are mainly concerned with control of inventories. They have to think resources invested in inventory will be efficiently and effectively utilizes.

A fundamental objective of a goods system of operating control of inventories is to be able to place at the right time from the right source to acquire the right quantity at right price. Overall objectives of Inventory control may be amplified into the following objectives, which have to be kept in view while developing and maintaining a system of inventory control.

- Service to customer
- Effective use of capital
- Promotion of manufacturing efficiency
- Economy in purchasing

2.1.8.2 Selective Inventory Control (ABC Analysis)

Manufacturing organizations finds it useful to divide materials into three categories for the purpose of exercising selective control on materials. An analysis of the materials costs will show that a smaller percentage of items of materials in the store may contribute to a large percentage of the value of consumption and on the other hand a large percentage of items may represent a smaller percentage of the value of items consumed between these two

extremes will fall those items the percentage number of which is more or less equal to their value of consumption .Items falling in the first category are treated as "A" items and items of the second category as "B" items and items of third category are taken as" C" items. Such an analysis of material is known as ABC analysis.

The report of the Indian productivity team on "stores and inventory control in USA, Japans, and West Germany "gives the following example of ABC analysis.

Group	Percentage of items	Percentage of costs
A	8 %	75 %
B	25 %	20 %
C	67 %	5 %

The significance of this analysis is that a very close control is exercised over the items of "A" group which account for a high percentage of costs while less stringent control is adequate for categories "B' and very little control would sufficient for category "C" items (Jain & Narang 1997:2.43).

It is understandable that all the items in the inventory are not of equal importance in terms of money invested profit potential, sales volume of usage volume and stock out penalties. Therefore, it is unrealistic to devote equal attention to each of these items. Rather, it is more reasonable to pay attention to the items according to their relative importance in the total inventory system. The system of giving priority to the items is called priority system or “ABC Inventory system,” The ABC system classifies all the items in the inventory into A,B,C, criteria’s according to their relative importance or priority.

“A-criteria” includes those few items, which share maximum investment of the firm.

“B-criteria” includes those items with moderate unit and moderate volume.

“C-criteria” includes those large numbers of items, which account for very small money values.

Graphical Presentation of ABC Analysis

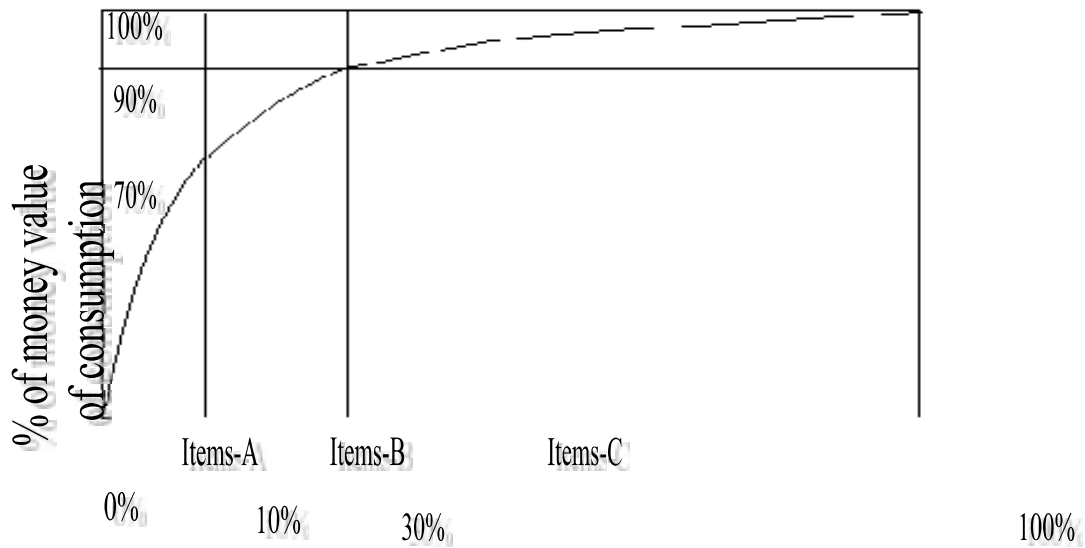


FIG.1. ABC ANALYSIS

2.1.8.3 VED Analysis

VED – Vital, Essential and Desirable analysis is used primarily for control of spare parts. The spare parts can be divided into three categories –vital, essential or desirable keeping in view the critically to production. The spares, the stock –out of which even for a short time will stop production for quite some time and where the cost of stock- out is very high are known as vital spares. The spares, the absence of this cannot be tolerated for more than a few hours or a day and costs of lost production are high and which are essential for the production to continue are known as essential spares.

The desirable spares are those spares, which are needed, but their absence for even a week or so will not lead to stoppage of production to continue and require constant attention. Such spares may not receive the attention they deserve if they are maintained according to ABC analysis because their value of consumption is small. So in their cases, VED analysis is made to get the effective results (Goel, 1992:433).

2.1.9 Inventory Management Techniques

"To manage its inventories effectively, a firm should use a systems approach to inventory management. A system approach considers in a single model that affect the inventory. A

system for effective inventory management involves three sub-systems i.e. economic order quantity, re-order point and stock level (Hampton, 1998:233).

A primary objective of the firm is the maximization of wealth. To achieve this objectives firm should maintain optimum level of inventory. Optimum level of inventory could be set on the basis of trade-off between cost and benefit to maximize the owner's wealth. To manage inventories efficiently and effectively answer should be sought to the following questions:

- i) How much should be the order?
- ii) When should be the ordered?

The first question, how much to order, relate to the problem of determining Economic Order Quantity (EOQ) and is answered with an analysis of cost of maintaining certain level of inventories. Whereas the second question, when should be the ordered relate to the re-order point.

2.1.9.1 Economic Order Quantity Sub-system

A decision about how much to order has great significance in inventory management. EOQ is the size of the lot to be purchased which is economically viable. This is the quantity of materials, which can be purchased a minimum costs. Generally EOQ is the point at which inventory-carrying costs are equal to ordering costs.

H.N. Broom has also the similar views as stated above. In his words, "The order size associated with such minimized annual cost is called economic order quantity. Hence economic order quantities are the number of units to be ordered a time to minimize the cost of order and carrying of the year."

Furthermore he states the importance of economic order quantity as if a firm places unnecessary order it will incur unneeded order costs. If it places too few orders, it must maintain large stock of goods and will have excessive carrying costs. By calculating an

economic order quantity, the firm identifies the number of units to order that results in the lowest total of these costs.”

John J. Hampton defines economic order quantity as “The order size that will result in the lowest total of order and carrying costs for an item of inventory.

It refers to the order size that will results in the lowest total cost (total ordering cost + total carrying cost) for an item of inventory. If a firm places many orders it will incurred needed ordering costs. If it places too few orders, it will have excessive carrying costs. By EOQ model we can identify the number of units to order that results in the lowest total costs. EOQ seeks that how much units of inventory should purchase at an order, which minimizes the total cost. When we are going to calculate EOQ one thing should be keep in mind to calculate the cost involve in the carrying and ordering costs will introduce a much smaller error (10%) in the determination of the EOQ. We can compute EOQ with the help of forecasting usage, ordering and carrying costs. In EOQ calculation, we must use marginal cost only, do not include fixed costs.

$$EOQ= Q = \sqrt{2AO/C}$$

Where, Q = Economic Order Quantity

A =Annul demand /sales

O = ordering cost

C = carrying cost per unit

Assumptions

The EOQ model is intuitively attractive because it minimizes the total cost associated with the inventory replenishment in applying the model however here are some important assumptions (Baffu and Sarin, 1998:124).

- Average demand is continuous and constant represented by a distribution that doesn't change with time
- Supply lead-time is constant and known. The lead time from order placement to order delivery is therefore always a fixed number of days.

- This is independence between inventory items. The EOQ model assumes that the replenishment of one-inventory item has not effect on the replenishment of any other inventory items.
- Purchase price and cost parameters are constant.
- The order of the EOQ is equal to the delivery quantities. If delivery lots are smaller, the average inventories in the EOQ model are not valid.

Approaches to set the EOQ

The EOQ model can be illustrated by:

- ❖ The long analytical approach or Trial and Error Approach
- ❖ Formula Approach (mathematical)
- ❖ Graphical Approach

Trial and Error Approach

A firm has different alternatives to purchase its inventories. For instances it can buy its entire requirements in one single lot at the beginning of the inventory planning period. Alternatively, the inventory may be procured in small lots periodically, weekly, monthly, and quarterly and so on. If the purchase is made on one big lot, the firm's average inventory holding would be relatively large. High average inventory would involve high carrying costs. On the other hand low the inventory holdings are associated with high ordering cost. The trial and error approach for the determination of EOQ uses different permutation and combination of lots of inventory purchases as to find out the least ordering and carrying cost combination. In other words, according to this approaches the carrying and ordering cost for different sizes of order to purchase inventories are computed and the order size with the lowest total cost (ordering plus carrying) of inventory is the economic order quantity.

Formula Approach

The trial and error or long analytical approach is tedious to calculate the economic order quantity. As easy way to determine, EOQ is to use the order formula approach.

The Economic order Quantity can be calculated by the following equation,

$$EOQ = \sqrt{2AO \div C}$$

Where,

A= Total annual requirement

O= ordering cost per order

C= carrying cost per unit

The Graphic Approach

The Economic Order Quantity can also be found graphically.

The following figure illustrates the EOQ functions.

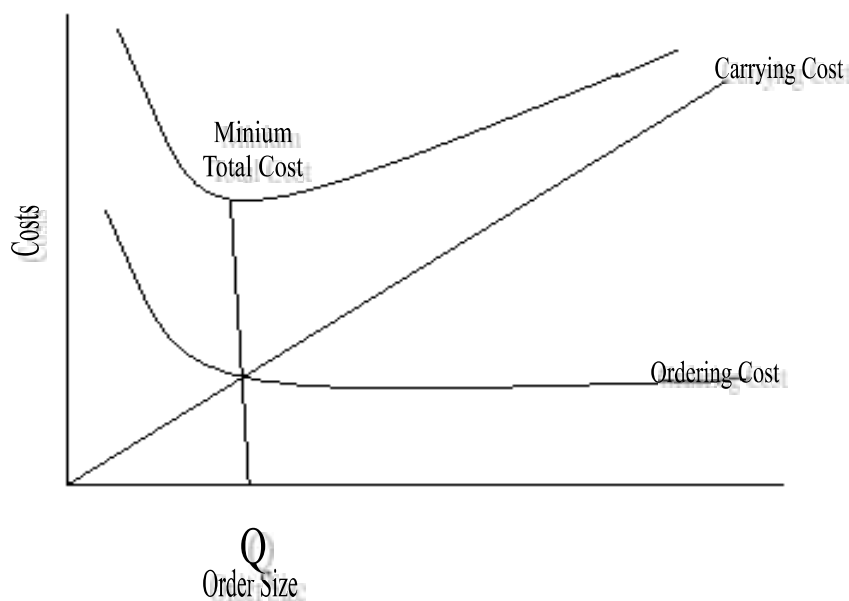


Fig.2 EOQ FUNCTIONS

In figure carrying, ordering and total costs are plotted on vertical axis and horizontal axis is used to represent the order sizes. Total carrying cost increases as the order size increases because on an average a large inventory level will be maintained and ordering cost decline with increase in order size. The behavior of total cost line is noticeable since it is a sum of two types of costs that behave differently with order size (Pandey, 1989:400).

The total cost decline in the first stage, but they start rising when the decrease in average ordering cost is more than offset by the increase in carrying cost. The economic order

quantity occurs at the point Q where the total cost is minimum. If the order size increases, carrying costs exceeds ordering costs that are saved. Thus, the firm operating profit is maximized at point Q. Therefore the Q is the optimum point and is called Economic Order Quantity (EOQ).

2.1.9.2 Re-order Point subsystem

“It is the point at which, if stock of material in store approaches, the store-keeper should initiate the purchase requisition for fresh supplies of materials. This level is fixed somewhere between the maximum and minimum level in such a way that the difference of quantity of the materials between the reordering level and the minimum level will be sufficient to meet the requirements of production up to the time the fresh supply of the materials is received (Jain and Narang, 1979:56).

Re-order point subsystem answers the important questions in any organization inventory management. The question is “when an order should be placed so that the firm does not run out of stock.”

“The re-order point is the level of inventory at which the firm places an order in the amount of the economic order quantity. If the firm places the order when the inventory reaches the re-order point, the new goods will arrive before the firm's runs out of goods to sell.” Information's as below are needed as inputs to design the re-order sub-system. They are:

a. Usage rate

This is per day at which the items are consumed in production or they are sold to customers

b. Lead time

This is the length of the time between placing an order and receiving the goods or receiving an order and delivers the goods to the customers.

2.1.9.3 Safety Stock Level

This minimum of inventory stock may be expressed in terms of several day's production and sales. Safety stock is necessary for an uncertain demand of the customers. The demand for goods may fluctuate day by day or from week to week. If the actual usage or sales go up and delivery of goods is delayed, the provision of safety stock makes the organization able to face the problem of stock out.

Here it would be better to state Louis J. Rago for better understanding. According to him "Safety quantity, which the plan, must keep to make sure that the line never runs out of materials, which could help up the movement of the production line as a whole.

2.1.9.4 Stock level sub-system

"This stock level sub-system keeps track of the goods held by the firm, the issuance of goods, and the arrival of the orders. It is made-up of the records accounting for the goods in stock. Thus the stock level sub-system maintains record of the current level of inventory. "

Stock level can be divided into following headings.

- ❖ Maximum Stock level
- ❖ Minimum Stock level
- ❖ Danger Stock level
- ❖ *Maximum stock level*

Maximum Stock level represents the maximum quantity of an item of material, which can be held in stock at any time. Stock should not exceed this quantity. The quantity is fixed so that there may be no overstocking. The maximum stock level is fixed by taking into account the following factors.

- Amount of capital available for maintaining stores.
- Go down space available
- Maximum requirement of the stores for production purpose at any point of time.
- Rate of consumption of the material during the lead-time.
- The time lag between indenting and receiving of the inventory.
- Possibility of loss in stores by deterioration evaporation etc.
- Cost of maintaining stores.
- Fluctuation in price
- The seasonal nature of supply of material.
- Restrictions imposed by the government or local authority in regard to material in which there are inherent risks e.g. Fire and explosion.
- Possibility of change in fashion and habit.

The formula for the calculation of maximum stock level is given by:

Maximum stock level = Reordering level + re-ordering quantity –
(Minimum Consumption x Minimum Re-ordering period).

Minimum Stock level

This represents the minimum quantity of the material, which must be maintained in hand at all times. The quantity is fixed so that production may not be held up due to shortage of the material. In fixing this level, the following factors are taken into consideration: -

- Lead-time i.e. time lag between indenting and receiving of the inventory. It is the time required to replenishing the supply.
- Rate of consumption of the inventory during the lead-time.
- Nature of inventory, minimum level is not required in case of a special inventory, which is required against customer's specific orders.

Formula for calculation of minimum stock level is given by:-

Minimum stock level = Re-ordering level – (Normal consumption x Normal Re-order period)

Danger stock level

This is a level at which normal issue of the material are stopped and issues are made only under specific instructions. The firms will make special arrangement to get the materials, which reach at their danger levels so that the production may not stop due to shortage of materials.

Danger level = Average consumption x Maximum reorder period

2.1.10 Inventory costs

The goal of the inventory management is to provide the inventories for sustaining operation at the lowest possible cost. The first step in inventory management is to identify all the costs involved in purchasing and, maintaining inventories typical costs associated with the inventories are described below.

2.1.10.1 Carrying/Holding costs

The carrying cost or holding cost includes the cost of maintaining the inventory warehouse and protecting the inventory items. Typical costs include insurance, security, rent, heat, and light, taxes, lost due to pilferage, spoilage or brokerages. The holding cost also includes opportunity cost associated with having funds tied up in inventory that could be used elsewhere. These costs generally increases in proportion to the average amount of inventory held.

To illustrate it if a firm sales S unit per year and if it places equal order N times per year. Then $Q = S/N$ unit will be purchased with each order. If the inventory is used evenly over the year and if no safety stocks are carried then the average inventory A will be,

$$\begin{aligned}\text{Average inventory (A)} &= \text{Unit per order}/2 \\ &= (S/N)/2 \\ &= Q/2\end{aligned}$$

Now,

Defining the annual percentage carrying costs as C, annual total carrying costs (TCC) as the percentage carrying cost C times, price per unit PP times the average inventory in units A.

$$\begin{aligned}\text{Total carrying costs TCC} &= C*PP*A \\ &= C*PP*Q/2\end{aligned}$$

The inventory carrying costs are further explained as below

➤ *Capital/Opportunity cost*

This consists of expenses of raising funds (interest on capital) to finance the acquisition of the inventory. If funds were not locked up in inventory, they would have earned a return. This is opportunity cost of the funds or financial cost components of the cost.

➤ *Handling cost*

The size of consignments and the materials handling facilities in the store determines the costs up to a certain level of inventory size per unit. Handling cost decreases with the increases in size of inventory, but beyond that level per unit handling cost starts increasing (Goel, 1992:279).

➤ ***Storage cost***

The cost associated with maintenance of inventory is storage cost. These include expenditure made on inventory staff, expenditure to provide various facilities like heating, lightning, floor space, shelves and racks, bins and containers, materials handling equipments and other provisions for safe and proper storage of items. These costs generally depend upon the volume to value ratio of an item.

➤ ***Spoilage and shortage cost***

Many products deteriorate over time in storage. The precise nature of deterioration varies from product to product but whatever the causes, it represents reduction in company's assets and such is a cost of holding inventories. This is term as a spoilage cost. Sometimes spoilage and shortage cost may increases because of shrinkage and pilferage of inventory.

➤ ***Depreciation cost***

In every organization, the value of the capital investment decreases with time. Thus, there is a tendency among organization to reduce its capital investment on machines and other equipments. The depreciation costs are thus reduced. Naturally the desired among of production with reduced number of machines can be obtained by running the machines in slack period thus increasing the size of inventory.

➤ ***System cost***

Another type of inventory carrying cost, which is associated with the administration of inventory system, is known as system cost. These costs incurred for gathering information, supervision, and physical stock checking, and maintaining the record keeping equipment cost. It is difficult to determine whether these expenses will be high or low except by making a comparison amount actual inventory system.

2.1.10.2. Ordering cost

The "ordering cost" includes cost of placing an order, set up cost, cost of postage, telephone made to vendor, fax, email lab our cost involved in purchasing and accounting receiving cost. Ordering cost are generally expressed as a fixed cost amount per order size.

Furthermore, ordering costs are the cost involved in placing and receiving an order or purchased items. The expenses involved in this cost are: -

-)Cost of placing an order
-)Requisitioning cost
-)Transportation/shipping cost
-)Receiving, inspecting and storing costs
-)Sales tax, customs etc
-)Clearing and forwarding cost
-)Insurance of raw materials
-)Stationary cost
-)Bank commission/LC charges etc
-)Telephone/fax/postage expenses to follow up
-)Cost incurred when raw materials are in transit.

Ordering cost increases with the number of orders, thus more frequency in inventory acquired higher the firms ordering cost. On the other hands if the firm maintains large inventories levels there will be a few orders placed and ordering cost will be relatively small. Thus, ordering cost decrease with the increasing size of inventory. The fixed costs associated with ordering inventories as O and if we placed N orders per year, the total ordering cost is given as,

$$\begin{aligned} \text{Total ordering cost (TOC)} &= O \times N \\ &= O (A/Q) \end{aligned}$$

Where, TOC=Total ordering cost

- O = Fixed cost per order
- N = Number of orders placed per year
- Q = Inventory quantity for each order.
- A = Annual demand

2.1.10.3 Stock out costs

Stock out cost is associated with demand. The depletion in stock results in loss of sales or back order costs. When the sales are lost due to stock out, the firm losses both the profit margin on unmade sale and the firm's goodwill. If the customer uses another business else where, future profit margin may also be lost and back order cost is needed to convince customers to use again after inventories have been replenished. Backorder cost includes loss of goodwill, money paid to re-order goods and notification to customers when goods arrive (Adams and Ronald 2000:462)

2.1.11 Inventory cost control

Cost control aims at reducing inefficiencies and wastages and setting up predetermined costs and in achieving them. Inventory cost control is exercised through setting standards or targets and comparing actual performance there with a view to ascertaining deviation from set targets or standards and taking corrective action to ensure that future performance conforms to the set standards or norms or targets.

Dr. Govinda Ram Agrawal has stated that the process of inventory cost control as below:-

- Predetermining the standards for each item inventory both in terms of cost and quantity, the establishment of standard specifications for material is the starting point in cost control.
- Measuring actual performance of each item of inventories both in terms of cost and quantity
- Comparing actual performance with standard to isolate variance, analyzing variance as to their incidences and causes.
- Taking corrective action to eliminate variance.

Most of the inventories costs are controllable cost all aspect of inventory management like material planning, purchasing, receiving, store keeping, issuing are the primary areas of controlling. Cost control can be effectively exercised on acquisition, holding and stock out costs of inventories.

Cost reduction

The chartered institute of management Accountants, London defines cost reduction as follows: -

"Cost reduction is to be understood as the achievement of real and permanent reduction in the unit cost of goods manufactured or services rendered without impairing their suitability for the use intended".

Pusker and Durgesh suggest the several ways to achieve cost reduction through inventory management, they are: -

- Incurring loss expenditure on purchased materials and services by:
 -) Reducing cost of purchased items by a continuous search for materials, which are cheaper, more reliable in quantity and obtainable from sources, which facilitate smooth delivery.
 -) Using less material per unit of production or increasing yield and reducing waste.
 -) Reducing cost of storage including interest on capital invested, space, insurance and handling by proper inventory control.
 -) Reducing the cost of acquisition and procession of materials by
 -) Reducing cost of buying i.e. reducing the administrative costs associated with securing materials
- Effective receiving, banding and storage operation.
 - Reducing the cost of being with out by providing for continuity of supply (Bajracharya,& Shrestha, 1988:41).

2.2 Review of selected studies in Nepal

Inventory management is a wide subject but no one pays attention in this field. Many modern techniques to control inventory management have been realized. Still many problems and difficulties have faced by the manufacturing company. In Nepal, there are numbers of public enterprises have been established and analysis has been made but only the aspect of financial performance. A few researchers made the research in inventory management of manufacturing company. Among them some selected are reviewed.

Mr. Pant has studied on the “impact of inventory over the profit of Gorkhapatra Corporation” for his degree thesis. Some major points stated by MR. Pant are reviewed below.

The main objectives of the study are to analyze the present system of inventory management in Gorkhapatra Corporation. This Study is based upon quality as well as price aspect.

- To examine the existing inventory system applied by GPC.
- To determine optimal inventory level of major raw materials.

- To assess the relevant financial ratios.
- To analyze the relationship between inventory/material cost and profit.

From the analysis and interpretation of available data the following Mr. Pant has made conclusion as the major findings of the study is derived:

- Gorkhapatra Corporation has not been used the optimal inventory Level.
- Inventory turnover Ratio is flexible over the study period.
- Net Profit margin is inconstant in various years.

Mr. Dinesh Kumar Pant has studied on "Inventory management: A case study of Gorkhapatra Corporation (Pant, " Inventory Management , A case study of Gorkhapatra Corporation," An unpublished Master's Dissertation, submitted to faculty of Management, Central Department, T.U Kirtipur , 1999) in 1999 to highlight in the aspect of effect on the cost and profit due to inventory management to find out which techniques were used to control inventory system in the corporation and how much inputs are maintained and how many times the corporation place an order.

"A study on Inventory management in of Nepal Lever Ltd.(Lamichhane), "A study on Inventory Management of Nepal Lever Ltd." , An unpublished Master's Dissertation, submitted to Faculty of Management, Central Department, TU Kirtipur, 2005)

The main objective of this study is to identify the problem underlying in inventory management of Nepal Lever Ltd. In order to meet the main objectives the following specific objectives have been proposed.

- To identify the present inventory position of Nepal Lever Ltd.
- To examine the techniques being employed to manage inventory of Nepal Lever Ltd.
- To know the relationship of sales and inventories with identifying their trends.
- To suggest over the better practice of inventory Management.

From the analysis and interpretation of available data Mr. Lamichhane has made conclusion as the major findings of the study is that inventory management and controlled system followed by manufacturing companies is ABC analysis, Perpetual inventory management system (physical checking), EOQ etc. It is found that the inventory management and control system followed by NLL are ABC analysis and physical checking system.

Similarly, "Inventory Management, A case study of Royal Drugs Ltd,(Kandel, "Inventory Management " A case study of Royal Drugs Ltd., An unpublished Master's Dissertation, submitted to faculty of Management, Central Department, TU,Kirtipur,2004.)

In this study Mr. Kandel has used primary and secondary data and nature of data are descriptive and analytical. The general objectives of this study are to identify the problems underlying the inventory management and control system of Royal Drugs Limited. Along with the aforesaid objectives of the following are specific objectives that have been embodied in this study.

- To assess the types of inventory maintained on the Royal Drugs Ltd.
- To examine the techniques employed to manage inventory in Royal Drugs Ltd.
- To suggest proper inventory model to Royal Drugs Ltd. Based on analysis.

Mr. Kandel found there is the highest degree of correlation between selling and cost price. The inventory management was not sound, weak inventory control in the production department. Factory does not follow Economic Order Quantity and ABC Analysis. From the analysis following findings are extracted about the inventory management and control system of Royal Drugs Ltd.

- When and how much order is estimated haphazardly by the Royal Drugs Ltd. In other words, the purchase quantity made by the company differs from year to year and is not in economic order quantity.
- The Royal Drugs Ltd. has established as separate unit for management although the separate unit is unable to manage the inventory.
- In the Royal Drugs Ltd. the economic order quantity model is not applied and the company has maintained the safety which is highly fluctuated and estimated roughly.
- The company has been able to produce the good quality medicines because of its quality control.

"A study on inventory management in manufacturing public enterprises in Nepal".(Banarjee," A Study on Inventory Management in manufacturing public enterprises in Nepal", An unpublished Master's Dissertation, submitted to Faculty of Management, Central Department, TU, 2004.) has been conducted by Manoj Kumar Banarjee to study the present

practice of collection, procurement procedure of raw materials, analyze the present position of inventory and identify the problems faced by Manufacturing public enterprises in Nepal.

The overall objectives of this study are to analyze the inventory management practices in manufacturing PEs. The specific objectives of this study are as follows.

- To analyze the relationship between targeted and actual production, targeted and actual sales, sales revenue, production cost, profit/loss, raw material consumption, raw material purchased and closing.
- To analyze the inventory management and control system.
- To provide suggestions based on findings of the study.

The researcher finds no proper target for material purchase. PEs doesn't follow Economic Order Quantity, Re-order level to control inventory management, overstocking of raw materials and work in process has maintained. No proper co-ordination between production of cement with sales and procurement planning. From the analysis following findings have drawn about the inventory management of manufacturing PEs.

- The manufacturing PEs have purchased some material from others then listed suppliers.
- PEs are practicing store control device such as bin cards, store ledger but PEs have not applied ABC analysis technique to control the various types of inventory in the store.
- Manufacturing PEs was not using scientific models of inventory management.

A study on "Financial Analysis of Hetauda Textile Industry Ltd," (Dahal, "Financial Analysis of Hetauda Textile Industry (HTI)."An unpublished Master's Dissertation, submitted to Faculty of Management, Central Department, T U, Kirtipur, 1999.) Was conducted by Bishnu Prasad Dahal, and used both primary and secondary data for research by collecting with the help of interview, personal observation, meeting with concern officials, published and unpublished official record of the factory, financial statement i.e. balance sheet and P/L account.

From the analysis and interpretation of available data the following Mr. Pant has made conclusion as the major findings of the study is derived:

- i) Inventory turnover ratio was very low.
- ii) The current assets turnover, fixed asset turnover, total assets turnover and profitability ratio were seemed very poor and unsatisfactory.
- iii) There was no relationship between material cost and net profit, labour cost and profit trends.

Chapter III

RESEARCH METHODOLOGY

Research methodology describes the method and process applied in the entire aspect of the study. Research methodology is a way to systematically solve the research problem. It refers to the various steps that are generally adopted by a researcher in studying his problem along with logic behind them. In other words research methodology describes the method and process to be followed during the research work.

This selection has been divided into five subsections. Section 1 presents the research design of the study while Section 2 deals with the nature and sources of data. Section 3 represents selection of enterprises, whereas Section 4 explains the methods of analysis employed in this study. Similarly limitation of the study is provided in the Section 5.

3.1 Research design

The research design refers to the entire process of planning and carrying out a research study. It describes the general framework for collecting, analysis and evaluating data after identifying: (i) What the researcher want to know and (ii) What has to be dealt with in order to obtain required information. In order to conduct this study, descriptive cum analytical research design have been adopted. Descriptive research design has been utilized mainly for conceptualization of the problem. Analytical research design has been followed mainly to analyze the inventory and its impact on profitability and other variables.

3.2 Nature and Sources of data:-

This study is based on secondary data only. Nepal stock exchange Ltd. complies the annual financial reports which contain the balance sheets and profit and loss account of the listed Nepalese manufacturing enterprises. The necessary data and information on Inventory, Profit, Sales and other variables used in this study have been collected from Annual Report of NEPSE Ltd. The major sources of data and information are as follows.

- Annual report 2007/2008 – 2011/2012, SEBON
- Trading report 2007/2008 – 2011/2012, NEPSE Ltd.
- Previous research studies, dissertation, and articles on the subject.

3.3 Population and sample

There are 29 Nepalese manufacturing and processing enterprises listed in the NEPSE Ltd, by the end of FY 2007/2008. Which regarded as size of population for the study? This study doesn't cover all the Nepalese manufacturing enterprises. The study period begins from 2007/2008 only. The earlier years are not considered, as they will make the study very tedious. Due to various limitations, the company selected for the study does not provide the homogenous of observation. The data taken are between 2007/2008 – 2011/2012. Among the manufacturing enterprises, the study has been confined to only 2 enterprises.

Table 3.1

Number of enterprises selected for the study

S.N	Sector	N	n	n/N (%)
1.	Manufacturing enterprises	29	2	6.90

NOTE: N indicate the total number of Nepalese manufacturing enterprises listed in NEPSE Ltd. and n indicates the number of enterprises selected for the study.

Twenty seven out of twenty nine have been excluded from this study because of data complexion. Thus only two enterprises selected for the study. Table 3.2 shows the number of observation of two manufacturing enterprises taken under study.

Table 3.2

Number of observation selected from manufacturing enterprises

S.N	Name of enterprises	years	observation
1.	Unilever Nepal Ltd.	2007/2008 – 2011/2012	5
2.	Bottlers Nepal Ltd. (Balaju)	2007/2008 – 2011/2012	5

Total sample observation selected is 10 observations for the study out of the grand total population observations. Therefore this study uses maximum of 10 observations for the analysis of different variables with the help of pooled cross-sectional data of two companies for the period of 2007/2008 – 2011/2012.

3.4 Method of Analysis

Analysis is the careful study of variables facts, so that one can understand and draw conclusion from them on the basis of established principles and sound logic. The analysis of data consists of organizing, tabulating and performing statistical analysis. Ratio analysis has been used as a financial tool. Similarly percentage, index, standard deviation, correlation, regression analysis and test of hypothesis have been used as statistical tools.

3.4.1 Ratio Analysis

Ratio analysis is a technique of analyzing and interpreting the financial statement through mathematical expression. In other words, Ratio analysis is one of the important techniques of financial analysis, which analyze the financial statement with the help of ratios. It is powerful tool to identify the financial strength and weaknesses of the company. The relevant ratios used in this study are as follows:

i) Inventory turnover Ratio

The inventory turnover ratio indicates the efficiency of the firm's inventory management. This ratio explains the relationship between sales and inventory. It shows the number of times inventory is replaced during the year. Higher inventory turnover indicates the good inventory management system whereas lower inventory turnover implies excessive inventory level has not been used efficiently. The inventory turnover ratio indicates whether the inventory has been properly managed or not in an organization. Mathematically,

$$\text{I T R} = \frac{\text{Cost of goods sold}}{\text{Average inventory}} \text{ or } \frac{\text{Sales}}{\text{Inventory}} = (\text{times})$$

ii) Inventory To Current Assets Ratio

This ratio explains the relationship between the current assets and the inventory. It shows the actual percentage of current assets in the form of inventory. The increase in the ratio is an indication of Liberal investment policy followed by company. If the percentage of ratio increases, it means greater part is occupied by inventory. The ratio of inventory to current assets of manufacturing company should be 45-50%.

Mathematically,

$$\text{Inventory to current asset ratio} = \frac{\text{Inventory}}{\text{Current assets}} = (\%)$$

iii) Inventory to Total assets Ratio

This ratio explains the relationship between the total assets and the inventory. It shows the actual percentage of total assets in the form of the inventories. The increase in the ratio is an indication of Liberal policy and demonstrates that the firm is willing to increase its working capital in order to have sufficient material in stock. According to Weston S Brigham, a company should hold 15-30% inventory to total asset.

Mathematically,

$$\text{Inventory to Total assets ratio} = \frac{\text{Inventory}}{\text{Total assets}} = (\%)$$

iv) Return on Net Worth

The return on Net worth or shareholder's equity is calculated by dividing the net profit after tax by the net worth. This ratio indicates how well the firm has used the resource of the owners.

Mathematically,

$$\text{Return on net worth} = \frac{\text{Net Profit after tax}}{\text{Net Worth}} = (\%)$$

V) Return on Total assets

The return on total assets ratio is a useful measure of the profitability of all financial resources invested in the firm's assets. It evaluates the use of total funds without any regard to the sources of funds. It is obtained dividing the net income by total assets.

Mathematically,

$$\text{Return on Total Assets} = \frac{\text{Net Profit after tax}}{\text{Total assets}} = (\%)$$

vi) Net Profit Margin

This ratio establishes a relationship between net profit and sales and indicates management's efficiency in manufacturing administering and selling the products. This ratio is the overall measure of the firm's ability to turn each rupee of sales into net profit. If the net profit margin is inadequate, the firm will fail to achieve satisfactory return on owner's equity.

Mathematically,

$$\text{Net Profit margin} = \frac{\text{Net Profit after tax}}{\text{Sales}} = (\%)$$

3.4.2 Percentage and Index

These statistical tools are used to indicate the variations in the variables in different interval of time. They are also used to compare two different variables during the analysis process.

The analysis on the following topics was made:-

- Trend of inventory stock position
- Trend of sales and Total manufacturing cost
- Trend of sales and profit

3.4.3 Mean

An average is the statistical measure of central tendency; it represent the entire series by a single value, which can be substituted for each and every value in the series without causing any change in the total magnitude of the series. So, mean in a given set of observation is the sum of all the observations divided by the total number of observations.

$$\text{Mean}(X) = \frac{\text{Sum of observation (EX)}}{\text{No. of observation (n)}}$$

3.4.4 Standard deviation

The standard deviation is defined as the positive square root of the arithmetic mean of the squares of the deviations of the given observations from their arithmetic mean. The greater the amount of dispersion, greater the standard deviation. A small standard deviation means high degree of uniformity of the observation as well as homogeneity of a series and vice versa. It is calculated as-

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

3.4.5 Coefficient of Correlation (r)

Correlation may be defined as the degree of linear relationship existing between two or more variables. Correlation analysis involves various methods and techniques used for studying

and measuring the extent of the relationship between the two variables. Two variables are said to be correlated when the change in the value of one variable is accompanied by the change of another variable. The correlation coefficient can either be in positive or negative and can have the value between -1 to +1. If both the variables are changing in the same direction, then positive correlation exists. Whereas, when both variables are changing in the opposite direction, the correlation between them is said to be negative.

Mathematically,

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

3.4.6 Coefficient of Determination (r^2)

Coefficient of Determination is a very useful and better measure for interpreting the value of correlation coefficient. It measures the percentage variation in the dependent variables explained by independent variable. Its value can have ranging from 0 to 1. Coefficient of Determination is the square of the correlation coefficient.

$$\text{Coefficient of Determination } (r^2) = [\text{correlation coefficient } (r)]^2$$

3.4.7 Regression Analysis

Regression analysis is a mathematical measure of the average relationship between two or more variables in terms of the original units of the data. The regression analysis studying the relationship between one dependant and one independent variable is known as simple regression analysis, and relationship between one dependent and set of two or more independent variable is known as multiple regressions. The models of simple regression as well as multiple regressions used in this study are described as follows:-

Model-1

Simple Regression Analysis

The regression equation of y on x which is used to describe the variation in the value of y for given change in the value of x.

$$Y = a + b_1X \text{ ----- [Regression equation of y on x]}$$

In this model the inventory is regressed against sales and profit separately. Similarly net worth regressed against profit and profit is regressed against sales. The equations are:-

$$I = a + b_1S \text{ ----- (i)}$$

$$I = a + b_1P \text{ ----- (ii)}$$

$$NW = a + b_1P \text{ ----- (iii)}$$

$$P = a + b_1S \text{ ----- (iv)}$$

Where y = Dependent variable, a = Regression constant

x = Independent variable, b = slope of regression line or regression coefficient of y on x and measures the change in y per unit change in x,

I = inventory, S = sales, P = Net Profit, NW = Net Worth.

Model - II

Multiple regressions Analysis

The multiple regression equation of the dependent variable y on independent variables x_1 and x_2 is given by

$$Y = a + b_1x_1 + b_2x_2 \text{ (multiple regression equation of y on } x_1 \text{ and } x_2\text{)}$$

In this model Inventory is regressed against sales together with profit. Inventory is taken as the function of sales and profit may stated as follow-

$$I = F(S, P)$$

The multiple regression equation of the model is:

$$I = a + b_1 S + b_2P \text{ ----- (V)}$$

Similarly, this study examine the relationship of Profit with inventory and sales of two Nepalese manufacturing companies and Profit may be regarded as subject to the constraints and dependent variable and other variables as independent. The equation is:-

$$P = a + b_1I + b_2S \text{ ----- (VI)}$$

3.5 Limitation of the methodology-

The problem of data is very acute in Nepal. Even the Financial statement of Nepalese enterprises published by them is not readily available since they are treated as confidential. NEPSE Ltd. has published financial statement of some listed companies in its website: <http://www.nepalstock.com>. It is still unable to provide required data of all listed enterprises from the year of listing. There is no database, which makes it difficult to carry out any research on Nepalese enterprises. Sometimes, the same data provided by NEPSE Ltd. SEBON, Nepal government (Ministry of Finance) and individual companies may also differ. That affects the accuracy and reliability of the data.

This study does not cover all the Nepalese manufacturing enterprises; it therefore, implies that the conclusion drawn are of a tentative nature. Since the study is preliminary analyzed based on statistical tools, the errors caused by small size has been tried to be minimized. The findings of this study remain valid as far as the tools used in this study are accepted. The statistical calculation used here made by SPSS 11.5 software.

Chapter – IV PRESENTATION AND ANALYSIS OF DATA

Presentation and analysis of data is an important stage of the research study. The main process of analysis of data is to change it from an unprocessed form in an understandable presentation. Thus in this context, this section analyze the relevant secondary data and information regarding inventory management and its effects on profitability of Nepal Bottlers Ltd. and Unilever Ltd; which are presented in suitable format and comparison is made.

4.1. Percentage and Index.

4.1.1. Inventory stock position of Bottlers Nepal Ltd., and Unilever Nepal Ltd.

The following table shows the inventory stock position of both manufacturing companies.

Table 4.1
Inventory stock position of BNL and ULNL

BNL [Rs. in Million]				ULNL [Rs in Million]			
FY	Inventory	Actual increment (%)	Index	FY	Inventory	Actual increment (%)	Index
2007/2008	121.11	-	100.00	2007/2008	132.47	-	100.00
2008/2009	142.73	17.85	117.85	2008/2009	293.93	121.88	221.88
2009/2010	185.34	29.85	147.70	2009/2010	144.45	(50.86)	171.02
2010/2011	227.22	22.60	170.30	2010/2011	126.11	(12.70)	158.32
2011/2012	184.98	(18.60)	151.70	2011/2012	124.22	(1.50)	156.82
Mean	172.28	-	-	Mean	176.24	-	-
Std. Dev.	41.36	-	-	Std. Dev.	69.56	-	-

Table 4.1 shows the stock position of Inventory of BNL and ULNL for different fiscal year, their mean, standard deviation, and percent increase or decrease in inventory is calculated in above table.

According to the table 4.1, highest percentage increase in inventory stock is in 2009/2010 with 29.85% and lowest percent increase in the year 2008/2009 with 17.85%. Stock maintenance rate is reduced by 18.60% in the year 2011/2012. Mean average of the inventory of Bottlers Nepal Ltd is 172.28 million and standard deviation is 41.36. It shows the deviation between the stock positions of inventory of study period.

Similarly, for Unilever Ltd, the highest percentage increase in inventory stock is in 2008/2009 with 121.88% and inventory maintenance rate is reduced by 50.86%, 12.70% and 1.50% in the FY 2009/2010, 2010/2011 and 2011/2012 respectively. The mean average of inventory is 176.24 million and deviation is calculated 69.56% for Unilever Ltd.

4.1.2 Trend of profit and sales in BNL

The following table shows the trend in profit and sales of BNL

Table 4.2
Trend of profit and sales in BNL

[Rs in million]					
FY	Profit	Changes (%)	FY	Sales	Changes (%)
2007/2008	55.91	-	2007/2008	372.78	-
2008/2009	35.38	(36.72)	2008/2009	414.58	11.21
2009/2010	48.61	37.39	2009/2010	535.49	29.16
2010/2011	19.37	(60.15)	2010/2011	609.65	13.85
2011/2012	37.80	95.15	2011/2012	632.11	3.68
Mean	39.51		Mean	512.92	
Std. dev	13.91		Std. dev.	115.52	

Table 4.2 shows the trend of profit and sales of Bottlers Nepal Ltd for the period of 2007/2008 – 2011/2012 above table is presented in following graph.

Above shows the trend of profit and sales of Bottlers Nepal Ltd during the study period. The mean average of profit during the study period is 39.51 million and the deviation on the profit is 13.91%. The highest percentage increase in profit is in 2011/2012, with 95.15% but the profit rate decreased in 2010/2012 and 2008/2009 by 60.15% and 36.72% respectively.

Similarly, the mean average of sales is 512.92 million, and the deviation between the sales during the study period is relatively very high, it is 115.52%. The highest percentage increase in sales is in 2009/2010 by 29.16%, and the lowest percentage increase in sales in 2011/2012 by 3.68%. There was not any percentage decreased in sales in Bottlers Nepal Ltd.

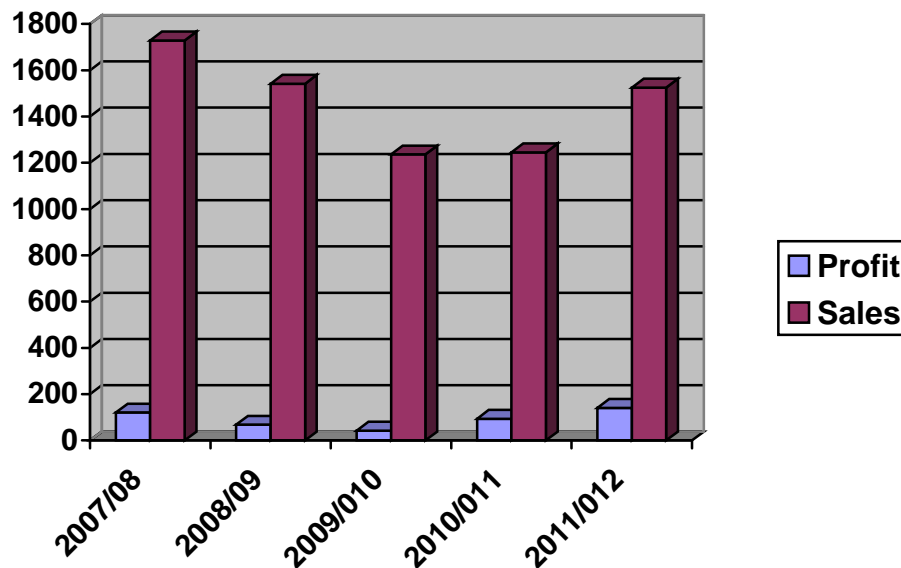
4.1.3 Trend of profit and sales in ULNL

The following table shows the trend of profit and sales in UNL

Table 4.3
Trend of profit and sales in ULNL

FY	Profit	Changes (%)	FY	Sales	Changes (%)
2007/2008	120.58	-	2007/2008	1728.63	-
2008/2009	68.04	(43.57)	2008/2009	1540.99	(10.85)
2009/2010	42.61	(37.38)	2009/2010	1236.05	(19.79)
2010/2011	93.17	118.66	2010/2011	1244.73	.70
2011/2012	140.78	51.10	2011/2012	1524.90	22.51
Mean	93.04	-	Mean	1455.06	-
Std. dev.	39.39	-	Std. dev.	211.72	-

Above table shows the trend of profit and sales in Unilever Ltd. which is presented in the following graph.



Above table and graph explain the trend of profit and sales in Unilever Nepal Ltd. According to table 4.3, the mean average of profit during the study period is 93.04 million, and the deviation between profits is 39.39%. The profit is reduced by 43.57% and 37.38% in 2008/2009 and 2009/2010 respectively. But the trend of profit increased by next year. It is increased by 118.66% and 51.10% in 2010/2011 and 2011/2012 respectively. The highest percentage increase in profit is in 2010/2011 by 118.66%.

Similarly, the mean average of sales in Unilever is 1455.06 million during the study period, but the deviation is very high between sales trends. It is 211.72%. Trend of sales decreased by 10.85% and 19.79% in 2008/2010 and 2009/2011 respectively. After 2009/2010

the sales trend of ULNL is increased by .70% and 22.51% in 2010/2011 and 2011/2012 respectively. The highest percentage increase in sales is in 2011/2012 by 22.51%.

4.1.4 Trend of sales and total cost in BNL

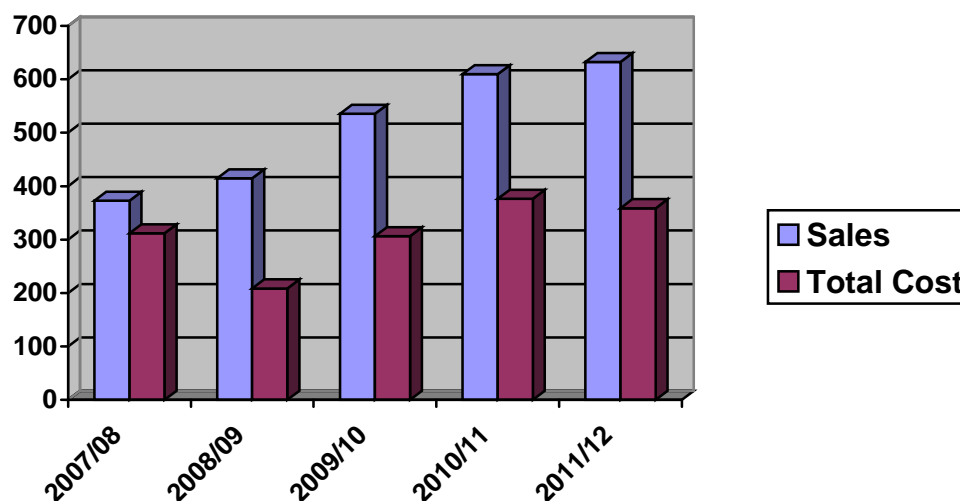
Following table shows the trend of sales and total cost in Bottlers Nepal Limited [Balaju].

Table 4.4
Trend of sales and total cost in BNL

[Rs in million]

FY	Sales	Changes (%)	FY	Total Cost	Changes (%)
2007/2008	372.78	-	2007/2008	311.58	-
2008/2009	414.58	11.21	2008/2009	208.54	(33.07)
2009/2010	535.49	29.16	2009/2010	306.48	46.96
2010/2011	609.65	13.85	2010/2011	376.26	22.77
2011/2012	632.11	3.68	2011/2012	358.38	(4.75)
Mean	512.92	-	Mean	312.25	-
Std. dev.	115.52	-	Std. dev	58.33	-

Table 4.4 shows the trend of sales and total cost in Bottlers Nepal Ltd. for the period of FY 2007/2008 – 2011/2012. Above table is presented in the following graph.



Above table and graph shows the trend of sales and total cost in Bottlers Nepal Ltd. during the study period. According to table 4.4, the mean average of sales is 512.92 million, and the deviation between the sales is 115.52%. The highest percentage increase in sales is in 2009/2010 by 29.16%, and the lowest percentage increase is in 2011/2012 by 3.68%.

Similarly, the mean average of total cost of Bottlers Nepal Ltd is 312.25 million during the study period and its deviation is 58.33%. The trend of sales decreased by 33.07% and 4.75% in 2008/2009 and 2011/2012 respectively. But the trend is increased by 46.96% and 22.77% in 2009/2010 and 2010/2011 respectively. The highest percentage increased and decreased is 46.96% and 4.75% respectively.

4.1.5 Trend of sales and total cost in ULNL

Following table shows the trend of sales and total cost of Unilever Nepal Ltd for the period of 2004/2005 – 2008/2009.

Table 4.5
Trend of sales and total cost in ULNL

[Rs in million]					
FY	Sales	Changes (%)	FY	Total cost	Changes (%)
2007/2008	1728.63	-	2007/2008	1420.97	-
2008/2009	1540.99	(10.85)	2008/2009	1287.70	(9.38)
2009/2010	1236.05	(19.79)	2009/2010	891.44	(30.77)
2010/2011	1244.73	.70	2010/2011	846.30	(5.06)
2011/2012	1524.90	22.51	2011/2012	980.16	15.82
Mean	1455.06	-	Mean	1085.31	-
Std. dev	211.72	-	Std. dev.	227.77	-

Table 4.5 shows the trend of sales and total cost in Unilever Nepal Ltd for the period of 2007/2008 – 2011/2012. Above table is presented on following graph.

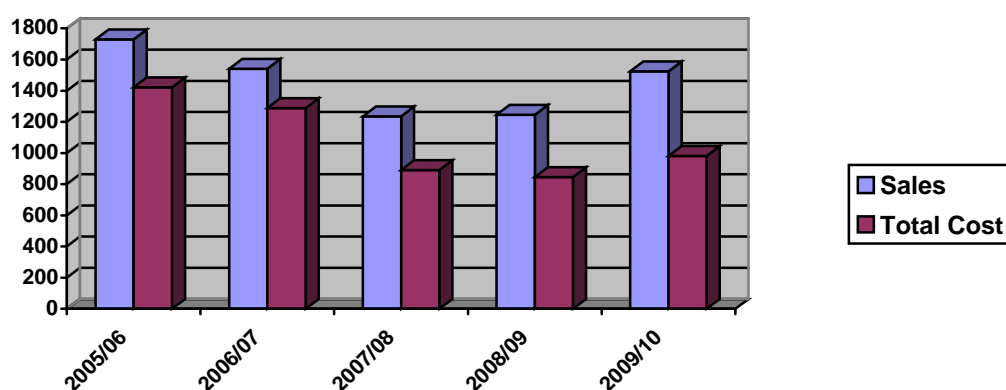


Table 4.5 and graph determined the trend of sales and total cost of Unilever Nepal Ltd. According to above table the mean average of sales during the study period is 1455.06 million, and the deviation between the sales is 211.72%. The sales trend decreased by 10.85%

and 19.79% in 2007/2008 and 2009/2010 respectively. After 2009/2010 the percentage of sales is increased. It is increased by .70% and 22.51% in 2010/2011 and 2011/2012 respectively. The highest percentage increased and decreased is in 2011/2012 and 2008/2009 by 22.51% and 10.85% respectively.

Similarly, the mean average of total cost of Unilever Nepal Ltd is 1085.31 million during the study period. The deviation between the total cost is 227.77%. Total cost increased only in 2011/2012 by 15.82%, otherwise the trend of total cost is decreased. It is decreased by 9.38%, 30.77% and 5.06% in 2008/2009, 2009/2010 and 2010/2011 respectively.

4.2 Ratio Analysis

4.2.1 Inventory turnover ratio

The relationship between cost of goods sold or sales and inventory is known as inventory turnover ratio. The table below shows the relationship between sales and inventory of Bottlers Nepal Ltd (BNL) and Unilever Nepal Ltd (ULNL). It is calculated as,

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

Table 4.6

Inventory turnover ratio

Bottlers Nepal Ltd (BNL)				Unilever Nepal Ltd (ULNL)			
FY	Sales	Inventory	ITR	FY	Sales	Inventory	ITR
2007/2008	372.78	121.11	3.08	2007/2008	1728.63	132.47	13.05
2008/2009	414.58	142.73	2.90	2008/2009	1540.99	293.93	5.24
2009/2010	535.49	185.34	2.89	2009/2010	1236.05	144.45	8.56
2010/2011	609.65	227.22	2.68	2010/2011	1244.73	126.11	9.87
2011/2012	632.11	184.98	3.42	2011/2012	1524.90	184.22	8.28
Average			2.99	Average			9.00

Table 4.6 shows the relationship between sales and inventory, which is inventory turnover ratio. The mean average of ITR of BNL is 2.99 times. The highest ITR of BNL is 3.42 times in 2011/2012, and lowest ITR is 2.68 times in 2010/2011.

Similarly, the mean average of ITR of ULNL is 9.00 times which is relatively higher than BNL. The highest ITR of ULNL is 13.05 times in 2007/2008 and the lowest ITR is 5.24

times in 2008/2009. All ITR of ULNL is relatively higher than BNL during the study period which implies that ULNL has good turnover ratio than BNL.

4.2.2 Inventory to CA Ratio

Following table shows the relationship between Inventory and current assets of Bottlers Nepal Ltd. and, Unilever Nepal Ltd. Mathematically,

$$\text{Inventory to CA Ratio} = \frac{\text{Inventory}}{\text{CurrentAssets}}$$

Table 4.7
Inventory to CA Ratio

[Rs in million]

BNL				ULNL			
FY	Inventory	CA	ICA	FY	Inventory	CA	ICA
2007/2008	121.11	369.41	32.78	2007/2008	132.47	451.88	29.32
2008/2009	142.73	393.85	36.24	2008/2009	293.93	567.58	51.79
2009/2010	185.34	506.43	36.60	2009/2010	144.45	399.14	36.19
2010/2011	227.22	544.18	41.75	2010/2011	126.11	589.89	21.38
2011/2012	184.98	462.45	40.00	2011/2012	184.22	724.24	25.44
Average			37.47	Average			32.82

According to data presented in table 4.7, the mean average of inventory to current ratio of Bottlers Nepal Ltd is 37.47%. The highest ICA ratio is 41.75% in 2010/2011, and the lowest ratio is 32.78% in 2007/2008.

Similarly the highest inventory to current assets ratio of Unilever Nepal Ltd. is 51.79% in 2008/2009, and the lowest ratio is 21.38% in 2010/2011. The mean average of inventory to current assets ratio of ULNL is 32.82%.

4.2.3 Inventory to Total assets Ratio-

Following table explains the relationship between Inventory and Total assets of Bottlers Nepal Ltd. and Unilever Nepal Ltd. It is calculated as :

$$\text{Inventory to Total assets Ratio} = \frac{\text{Inventory}}{\text{TotalAssets}}$$

Table 4.8
Inventory to total assets Ratio
[Rs in million]

BNL				ULNL			
FY	Inventory	TA	ITA	FY	Inventory	TA	ITA
2007/2008	121.11	842.65	14.37	2007/2008	132.47	629.75	21.04
2008/2009	142.73	951.87	14.99	2008/2009	293.93	760.42	38.65
2009/2010	185.34	1034.05	17.92	2009/2010	144.45	571.34	25.28
2010/2011	227.22	1038.41	21.88	2010/2011	126.11	784.88	16.07
2011/2012	184.98	901.17	20.53	2011/2012	184.22	939.71	19.60
Average			17.94	Average			24.13

Table 4.8 shows the relationship between inventory and Total assets. According to above table, the mean average of ITA of BNL is 17.94%. The highest ratio is 21.88% and lowest ITA ratio is 14.37% in 2010/2011 and 2007/2008 respectively.

Similarly, the mean average of ITA of Unilever Nepal Ltd. is 24.13% with highest ratio of 38.65% and lowest ratio of 16.07% in 2008/2009 and 2010/2011 respectively. Above table shows that ITA of ULNL has higher ratios than BNL during the study period.

4.2.4 Return on Net Worth

Following table represents the relationship between Net profit and Net worth of BNL and ULNL. It is calculated by dividing Net profit after tax (NP) by Net worth (NW)

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

Table 4.9
Return on Net Worth

[Rs in million]

BNL				ULNL			
FY	NP	NW	RNW	FY	NP	NW	RNW
2007/2008	55.91	650.42	8.60	2007/2008	120.58	324.94	37.11
2008/2009	35.88	666.81	5.38	2008/2009	68.04	342.35	19.87
2009/2010	48.61	695.93	6.98	2009/2010	42.61	348.13	12.24
2010/2011	19.37	705.56	2.75	2010/2011	93.17	358.43	25.99
2011/2012	37.80	727.15	5.20	2011/2012	140.78	396.01	35.55
Average			5.78	Average			26.15

Above table explains the relationship between Net profit and Net worth of Bottlers Nepal Ltd. and Unilever Nepal Ltd. According to data presented in above table, the RNW of ULNL is relatively higher than BNL.

The mean average of return on Net worth of BNL is 5.78%, while it is 26.15% for ULNL. The highest ratio of BNL is 8.60% and lowest ratio is 2.75% in 2007/2008 and 2010/2011 respectively. Similarly the highest and lowest return on net worth of ULNL is 37.11% and 12.24% in 2007/2008 and 2009/2010 respectively.

4.2.5 Return on Total assets

Following table explains the relationship between Net profit and total assets of Bottlers Nepal Ltd. and Unilever Nepal Ltd. The relation between net profit after tax and total assets is called return on total assets. It is calculated as

$$\text{Return on Total assets} = \frac{\text{Netprofitaftertax}}{\text{TotalAssets}}$$

Table 4.10
Return on Total assets

[Rs in million]

BNL				ULNL			
FY	NP	TA	RTA	FY	NP	TA	RTA
2007/2008	55.91	842.65	6.64	2007/2008	120.58	629.75	19.15
2008/2009	35.88	951.87	3.77	2008/2009	68.04	760.42	8.95
2009/2010	48.61	1034.05	4.70	2009/2010	42.61	571.34	7.46
2010/2011	19.37	1038.41	1.87	2010/2011	93.17	784.88	11.87
2011/2012	37.80	901.17	4.19	2011/2012	140.78	939.71	14.98
Average			4.23	Average			12.48

Table 4.10 represents the data of Bottlers Nepal Ltd. and Unilever Nepal Ltd. about the relationship between Net profit and total assets. According to data presented in above table the average ratio of return on total assets of BNL is 4.23%, where as this ratio is 12.48% for ULNL, which is relatively higher than BNL.

The highest ratio of BNL is 6.64% in 2007/2008 but the highest RTA of ULNL is 19.15% in 2007/2008. Similarly the lowest RTA of BNL is 1.87% in 2010/2011, where as the lowest RTA of ULNL is 7.46% in 2009/2010.

4.2.6 Net Profit Margin

Following table explains the relationship between Net profit and sales with net profit margin of Bottlers Nepal Ltd. and Unilever Nepal Ltd. It is calculated by dividing the net profit after tax by sales. Mathematically,

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

Table 4.11
Net Profit margin

BNL				ULNL			
FY	NP	Sales	NPM	FY	NP	Sales	NPM
2007/2008	55.91	372.78	15.00	2007/2008	120.58	1728.63	6.98
2008/2009	35.88	414.58	8.65	2008/2009	64.04	1540.99	4.16
2009/2010	48.61	535.49	9.08	2009/2010	42.61	1236.05	3.45
2010/2011	19.37	609.65	3.18	2010/2011	93.17	1244.73	7.49
2011/2012	37.80	632.11	5.98	2011/2012	140.78	1524.90	9.23
Average			8.38	Average			6.26

According to data presented in above table, which shows the relationship between Net profit and sales of both enterprises. Above table shows that the average net profit margin of Bottlers Nepal Ltd. is 8.38% but the average net profit margin of Unilever Nepal Ltd is 6.26% during the study period. BNL has higher net profit margin than Unilever Nepal Ltd.

The highest ratio of Net profit margin of BNL is 15.00% in 2007/2008, and the lowest net profit margin is 3.18% in 2010/2011. Similarly, the highest ratio of net profit margin of ULNL is 9.23% and the lowest ratio is 3.45% in 2011/2012 and 2009/2010 respectively.

4.3 Correlation Analysis

The descriptive statistics only shows the average and possible deviation in average of all the variables under study. The following table represents the correlative figures as well as analysis of variables under study.

4.3.1 Correlation between Inventory and Profit

Following table shows the correlation between Inventory and profit of both, [Bottlers Nepal Ltd. and Unilever Nepal Ltd.] enterprises.

Table 4.12
Correlation between Inventory and profit

		BNL		ULNL	
		I	P	I	P
INVENTORY	Pearson Correlation	1	-.757	1	-.198
	Sig. (2-tailed)	.	.138	.	.750
	N	5	5	5	5
PROFIT	Pearson Correlation	-.757	1	-.198	1
	Sig. (2-tailed)	.138	.	.750	.
	N	5	5	5	5

Above table 4.12 determine the correlation analysis between Inventory and profit of Bottlers Nepal Ltd. and Unilever Nepal Ltd. According to table Inventory and profit are negatively correlated with each other of both enterprises. Both results are statistically not significant at 0.01 and 0.05 level.

4.3.2 Correlation between Sales and Inventory.

Table 4.13
Correlation between Sales and Inventory

		BNL		ULNL	
		S	I	S	I
SALES	Pearson Correlation	1	.900(*)	1	.275
	Sig. (2-tailed)	.	.037	.	.654
	N	5	5	5	5
INVENTORY	Pearson Correlation	.900(*)	1	.275	1
	Sig. (2-tailed)	.037	.	.654	.
	N	5	5	5	5

*Correlation is significant at the .05 level (2-tailed)

Table 4.13 explains the relationship between sales and Inventory. According to above table sales and inventory are positive correlated with each other for both BNL and ULNL enterprises but only in BNL it is statistically significant. It is significant at 0.05 levels.

4.3.3 Correlation between Inventory and Current Assets

Following tables how the correlation between Inventory and Current Assets for both enterprises.

Table 4.14
Correlation between Inventory and CA

		BNL		ULNL	
		CA	I	CA	I
CA	Pearson Correlation	1	.972(**)	1	.298
	Sig. (2-tailed)	.	.005	-	.626
	N	5	5	5	5
INVENTORY	Pearson Correlation	.972(**)	1	.298	1
	Sig. (2-tailed)	.005	.	.626	-
	N	5	5	5	5

** Correlation is significant at the 0.01 level (2-tailed)

Above table clearly shows that the correlation between Inventory and current assets is positive for both enterprises. In BNL they are highly positive correlated with each other and statistically significant. The correlation is statistically significant at 0.01 level of significance.

4.3.4 Correlation between Inventory and Total assets.

Table 4.15 determines the correlation between Inventory and Total assets by Bottlers Nepal Ltd. and Unilever Nepal Ltd.

Table 4.15
Correlation between Inventory and TA

		BNL		ULNL	
		I	TA	I	TA
INVENTORY	Pearson Correlation	1	.768	1	.298
	Sig. (2-tailed)	.	.129	-	.626
	N	5	5	5	5
CA	Pearson Correlation	.768	1	.298	1
	Sig. (2-tailed)	.129	.	.626	-
	N	5	5	5	55

Above table explains the correlation between Inventory and Total assets of BNL and ULNL. The result shown in table explains that the inventory and total assets are positively correlated with each other, but they are not significant at any level of significance.

4.3.5 Correlation between Net worth and Net profit.

Following table shows the correlation results of Net worth and Net profit for both [i.e. BNL and ULNL] enterprises.

Table 4.16
Correlation between Net worth and Net profit

		BNL		ULNL	
		P	NW	P	NW
PROFIT	Pearson Correlation	1	-.521	1	.430
	Sig. (2-tailed)	.	.368	-	.470
	N	5	5	5	5
NW	Pearson Correlation	-.521	1	.430	1
	Sig. (2-tailed)	.368	.	.470	-
	N	5	5	5	5

Table 4.16 determines the result of correlation between Net worth and Net profit. Above table shows that the correlation is negative in BNL, and positive in ULNL enterprises. It indicates that Net worth is negatively correlated and positively correlated with Net profit for Bottlers Nepal Ltd. and Unilever Nepal Ltd. respectively. Both results are statistically not significant at any level of significance.

4.3.6 Correlation between Net profit and Total assets.

Following table analyze the correlation between Net profit and Total assets of Bottlers Nepal Ltd. and Unilever Nepal Ltd.

Table 4.17
Correlation between Net profit and Total Assets.

		BNL		ULNL	
		P	TA	P	TA
PROFIT	Pearson Correlation	1	-.573	1	.639
	Sig. (2-tailed)	-	.313	.	.245
	N	5	5	5	5
TA	Pearson Correlation	-.573	1	.639	1
	Sig. (2-tailed)	.313	-	.245	.
	N	5	5	5	5

Above table 4.17 determines the correlation between Net profit and Total assets for both enterprises. Above result presented in table shows that total assets are negatively correlated with Net profit in BNL but they are positive correlated in ULNL. Both results are statistically not significant at any level of significance.

4.3.7 Correlation between Sales and Net profit.

The table presented below is the correlation analysis between sales and net profit for both organization.

Table 4.18
Correlation between Sales and Net profit

		BNL		ULNL	
		S	P	S	P
SALES	Pearson Correlation	1	-.605	1	.592
	Sig. (2-tailed)	.	.280	-	.293
	N	5	5	5	5
PROFIT	Pearson Correlation	-.605	1	.592	1
	Sig. (2-tailed)	.280	.	.293	-
	N	5	5	5	5

Above table shows the correlation between Sales and Net profit of both enterprises. The result shown in table 4.18 indicates that the correlation between Sales and Net profit is negative in Bottlers Nepal Ltd. and Sales is positively correlated with Net profit in Unilever Nepal Ltd. But both results are statistically not significant at any level of significance.

4.4 Simple regression Analysis

Regression analysis is a mathematical measure of the average relationship between two or more variables in terms of the original units of the data. The regression analysis studying the relationship between one dependant and one independent variable is known as simple regression analysis

4.4.1 Simple regression Analysis of Inventory on sales-

Following table shows the simple regression analysis of Inventory on sales of BNL and ULNL.

Table 4.19
Simple Regression Analysis of Inventory on Sales

Name of the enterprises	Model	Constant	Beta	R²	Ad. R²	t-stat	F	S.E	sig
BNL	I=a+b1s	7.013	0.90	0.81	0.747	0.149	12.79	20.82	0.037
ULNL	I=a+b1s	44.754	0.275	0.076	-0.23	0.167	0.246	77.22	0.65

According to table 4.19 the simple regression coefficient of Inventory of both enterprises is positive with sales. R square is relatively high in BNL which was found 0.81, which indicates that 81% of total variation on dependent variable inventory is explained by independent variable sales. Similarly, for ULNL, R square was found 0.076, which indicates that only 7.60% of total variation on dependent variable inventory is explained by independent variable sales. Result of simple regression analysis of Inventory on sales for BNL is statistically significant at 0.05 levels but it was not significant at 0.01 and 0.05 level of significance for ULNL.

4.4.2 Simple Regression Analysis of Inventory on Profit

Following table shows the simple regression analysis of inventory on Profit for both enterprises.

Table 4.20
Simple Regression Analysis of Inventory on Profit

Name of the enterprises	Model	Constant	Beta	R ²	Ad. R ²	t-stat	F	S.E.	sig
BNL	I=a+b1p	261.23	-0.757	0.573	0.431	5.62	4.025	31.21	0.138
ULNL	I=a+b1p	208.769	-0.198	0.039	-0.28	-0.35	0.122	78.73	0.75

According to data presented in Table 4.20 the simple regression coefficient of Inventory of both enterprises is Negative with Profit which indicates that the profit can be increased with reduce in proportion of inventory. But t. statistics is not statistically significant at 0.01 and 0.05 level of significance. R square of BNL was found 0.573, which indicate that 57.30% of total variation on inventory is explained by profit. Similarly, R square of ULNL was found relatively lower which was 0.039, indicate that only 3.90% of total variation on inventory is explained by profit.

4.4.3 Simple Regression Analysis of profit on sales

The table presented below explains the simple regression analysis of profit on sales for both, BNL and ULNL enterprises.

Table 4.21
Simple Regression Analysis of profit on sales

Name of the enterprises	Model	Constant	Beta	R ²	Ad. R ²	t-stat	F	S.E.	sig
.BNL	P=a+b1s	76.87	-0.605	0.366	0.155	2.66	1.73	12.78	0.28
ULNL	P=a+b1s	-67.13	0.592	0.35	0.133	-0.53	1.62	36.67	0.29

Table 4.21 determines the simple regression analysis of profit on sales. According to above table the simple regression coefficient of profit of BNL is Negative and of ULNL is positive with sales. R square of both enterprises were found 0.366 and 0.35 which indicates that 36.60% and 35% of total variation on profit is explained by sales in BNL and ULNL

respectively. But these results were statistically not significant at 0.01 and 0.05 level of significance.

4.4.4 Simple Regression Analysis of Net worth on Profit

Following table represents the simple regression analysis of Net worth on profit for Bottlers Nepal Ltd. and Unilever Nepal Ltd.

Table 4.22
Simple Regression Analysis of Net worth on Profit

Name of the enterprises	Model	Constant	Beta	R ²	Ad. R ²	t-stat	F	S.E.	sig
BNL	NW=a+b1P	734.53	-0.521	0.271	0.028	16.32	1.116	30.22	0.368
ULNL	NW=a+b1P	327.09	0.43	0.185	-0.087	9.39	0.68	25.57	0.47

The above table 4.22 describes the results of simple regression analysis of net worth on Profit. The simple regression coefficient of Net worth of BNL is negative, which indicates that any increase in Net worth will result to decrease in profit, but for ULNL, it was positive which indicates that any increase in Net worth will lead to increase in profit. After considering the error term R square of both enterprises was found 0.271 and 0.185 which indicate that 27.10% and 18.50% of total variation on Net worth is explained by profit for BNL and ULNL respectively. But both results were statistically not significant at any level of significance.

4.5 Multiple Regression Analysis

Profit of the company depends upon various factors. Some of the factors of manufacturing companies are inventory, production, sales, and manufacturing cost. Therefore, the multiple regression analysis is presented to explain the relationship between these variables.

Here, dependent variable inventory and independent variables profit and sales of manufacturing companies are taken for analysis, and after that dependent variable profit and independent variable inventory and sales are taken for analysis.

4.5.1 Multiple Regression Analysis of Inventory on Sales and Profit.

For Bottlers Nepal Ltd.

Table 4.23 explains the multiple regression analysis of inventory on sales and profit of Bottlers Nepal Ltd.

Table 4.23

Multiple Regression Analysis of Inventory on Sales and Profit

Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	PROFIT, SALE(a)	.	Enter

a. All requested variables entered.

b. Dependent Variable: INVENTOR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.939(a)	.881	.762	20.16430

a. Predictors: (Constant), PROFIT, SALE

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6028.630	2	3014.315	7.413	.199(a)
	Residual	813.198	2	406.599		
	Total	6841.829	4			

a. Predictors: (Constant), PROFIT, SALE

b. Dependent Variable: INVENTORY

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	83.614	83.578		1.000	.422
	SALE	.250	.110	.697	2.277	.150
	PROFIT	-.996	.911	-.335	-1.094	.388

Table 4.23 shows the dependency of Inventory on Sales and Profit. The multiple regression coefficient of profit is negative; it implies that negative relationship of inventory with profit. But the regression coefficient of sale is positive. It shows the positive relationship of inventory with sales. After considering the error term, the R Square value was found 0.881 which indicates that 88.10% of the total variation in the dependent variable inventory has been explained by the two independent variable sales and profit. Thus it can be concluded that sales and profit is a strong determinant of inventory.

Similarly, ANOVA table shows that the result presented in above table was not significant at 0.01 and 0.05 levels.

For Unilever Nepal Ltd.

Following table determine the multiple regression analysis of inventory on Sales and Profit of Unilever Nepal Ltd.

Table 4.24

Multiple regression analysis of inventory on Sales and Profit

Variables Entered/ Removed (b)

Model	Variables Entered	Variables Removed	Method
1	PROFIT, SALES(a)	.	Enter

a. All requested variables entered.

b. B. Dependent Variable: INVENTORY

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525(a)	.276	-.448	83.70908

a. Predictors: (Constant), PROFIT, SALES

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5339.630	2	2669.815	.381	.724(a)
	Residual	14014.421	2	7007.210		
	Total	19354.050	4			

a. Predictors: (Constant), PROFIT, SALES

b. Dependent Variable: INVENTORY

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	- 21.053	303.267		- .069	.951
	SALES	.198	.245	.603	.809	.504
	PROFIT	-.980	1.318	-.555	- .744	.535

a. Dependent Variable: INVENTORY

Table 4.24 shows the dependency of inventory on Sales and Profit. The multiple regression coefficient of profit is negative. It determines the negative relationship of Inventory with profit. But the regression coefficient is positive with sales. It indicates the positive relation of Inventory with sales. After considering the error term the R Square value was found 0.276 which indicates that only 27.60% of the total variation in the dependent variable Inventory has been explained by the two independent variable sales and profit.

Similarly ANOVA table shows that the result presented in above table was statistically not significant at any level of significance. The result of Inventory volume of sales and volume of profit resulted relatively lower level of “F” statistic. The lower level of “F” statistic resulted relatively higher level of significance and vice versa.

4.5.2 Multiple Regression Analysis of Profit on inventory and sales

For Bottlers Nepal Ltd

Following table explains the result of multiple regression analysis of profit on inventory and sales of Bottlers Nepal Ltd.

Table 4.25

Multiple Regression Analysis of profit on inventory and sales

Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	INVENTORY, SALE(a)	.	Enter

a All requested variables entered.

b Dependent Variable: PROFIT

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.777(a)	.603	.207	12.38343

a Predictors: (Constant), INVENTOR, SALE

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	466.792	2	233.396	1.52 2	.397(a)
	Residual	306.699	2	153.349		
	Total	773.491	4			

a Predictors: (Constant), INVENTOR, SALE

b Dependent Variable: PROFIT

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	79.506	28.147		2.825	.106
	SALE	.048	.123	.401	.393	.733
	INVENTORY	-.376	.343	-1.118	-1.094	.388

a Dependent Variable: PROFIT

Table 4.25 shows the dependency of profit on inventory and sales. The multiple regression coefficient of profit is negative with inventory and positive with other variable sales which show the negative and positive relationship of profit with inventory and sales respectively. After considering the Error term, the R Square was found 0.603 which indicate that 60.30% of the total variation in the dependent variable. Profit has been explained by the two independent variable sales and inventory.

Similarly, ANOVA table shows that the result is statistically not significant at any level of significance. “F” statistic is relatively lower. The lower level of “F” statistic resulted relatively higher level of significance.

For Unilever Nepal Ltd.

Following table presents the multiple regression analysis of profit on sales and profit for Unilever Nepal Ltd.

Table 4.26

**Multiple Regression analysis of profit on Inventory and Sales
Variables Entered/ Removed (b)**

Model	Variables Entered	Variables Removed	Method
1	INVENTORY, SALES(a)	.	Enter

a. All requested variables entered.

b. Dependent Variable: PROFIT.

Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	.701(a)	.491	-.018	39.74566

a. Predictors: (Constant), INVENTORY, SALES.

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3046.325	2	1523.163	.964	.509(a)
	Residual	3159.435	2	1579.718		
	Total	6205.761	4			

a. Predictors: (Constant), INVENTORY, SALES

b. Dependent Variable: PROFIT

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-57.241	138.368		-.414	.719
	SALES	.130	.098	.699	1.332	.314
	INVENTORY	-.221	.297	-.390	-.744	.535

Dependent Variable: PROFIT

Above table explains the dependency of profit on inventory and sales. According to above table 4.26, the multiple regression coefficient of profit is negative with inventory and positive with sales. It indicates that negative and positive relationship between them respectively. After considering the Error term the value of R Square was found 0.491 which indicates that only 49.10% of the total variation in the dependent variable has been explained by the two independent variables.

Similarly, ANOVA table shows that the result presented in above table was statistically not significant at 0.01 levels and 0.05 level of significance.

4.6 Major findings

This study observed the two Nepalese listed manufacturing companies. After all these analysis of data with different variables and by using different tools following major findings could be made:

- The average amount of inventory of BNL is Rs. 172.28 million and for ULNL is Rs. 172.24. Both figures are near to each other, but inventory fluctuation rate is higher in ULNL than BNL.
- The mean amount of profit is Rs. 39.51 million and sales are Rs. 512.92 million, and the deviation between sales is very high in BNL. Similarly, the mean average of profit and sales are Rs. 93.04 million and Rs. 1455.06 million of ULNL respectively. But the deviation between sales is too high. It is greater than BNL.
- Although there was fluctuation in sales amount and total cost of BNL, the average amount of sales and total cost is Rs. 512.92 million and Rs. 312.25 million respectively. Similarly, it is 1455.06 million and 1085.31 million for ULNL. Total cost is in decreasing rate with sales in ULNL.
- The highest turnover ratio of BNL is 3.42 times and of ULNL It is 13.05 times. Average ITR is 2.99 times and 9.00 times for BNL and ULNL respectively. It implies that BNL has poor ITR.

- The mean average of Inventory to current assets ratio is 37.47% and 32.82% of BNL and ULNL respectively which are acceptable ratio.
- Both enterprises have closest inventory to total assets ratio. The mean average of ITA of BNL is 17.94% and, of ULNL is 24.13%, which are also acceptable ratio.
- Return on Net worth, Return on total assets and Net profit margin ratios are poor in BNL. But Unilever have satisfactory result, for three ratios.
- The correlation between Inventory and profit is negative for both firm. It shows that increase in inventory will cause decrease in profit.
- The correlation coefficient of sales is positively correlated with sales for both enterprises. It determines that increase in inventory will cause increase in sales.
- The correlation coefficient of Inventory is highly positive correlated with current assets of both listed manufacturing enterprises.
- The correlation between Inventory and total assets is positive with each other of both manufacturing enterprises.
- The correlation coefficient of Net worth has negative correlation with Net profit for BNL, but it has positive correlation for ULNL.
- The correlation coefficient of Net Profit has negative correlation with total assets of BNL, but it has positive correlation for ULNL.
- The correlation between sales and Net Profit is negative in BNL, but it has positive correlation for ULNL.
- The regression coefficient of Inventory with sales of BNL is positive, as well as the regression coefficient of inventory with sales of ULNL is also positive. It indicates that increase in inventory cause increase in sales and vice versa.

- The simple regression analysis of Inventory on Profit shows that the coefficient of regression of Inventory with profit is negative for both organizations.
- The simple regression results of Profit with sales indicate that, it is negative in BNL and positive in ULNL.
- The simple regression results of Profit with sales indicate that, it is negative in BNL and positive in ULNL.
- The simple regression coefficient of net worth of BNL is negative, which indicate that any increase in net worth will result to decrease in profit. But for ULNL it was positive, which indicate that any increase in net worth will lead to increase in profit.
- The multiple regression analysis of inventory on profit and sales shows negative relationship between inventory and profit and positive relationship between inventory and sales in both firms.
- The multiple regression analysis of profit on inventory and sales shows the negative relationship in between profit and inventory and positive relationship in between profit and sales.

Chapter 5

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Inventory management is the most important part for any organization. The company has invested the most of the amount for inventory, where the functions are associated as purchasing, storing, selling and distribution etc. Inventory management involves determining how much inventory to hold, when to place orders and how many units to order. In context of inventory management, the firm is faced with the problem of meeting two conflicting needs:

- To maintain a large size of inventory for efficient and smooth production and sales operations and,
- To maintain a minimum investment in inventories to maximize profitability.

Inventory management helps the management in manufacturing sufficient level of inventory for the smooth production and sales operations avoiding excessive and inadequate levels of inventory. It controls excess investment in inventories and minimizes carrying and holding cost and time. It also minimizes wastage of inventory and ultimately helps to increase the profitability.

Inventories are the stocks of the product a company is manufacturing for sale and the components that make up the product. The various forms in which inventories exist in manufacturing companies are: raw materials, work in process (or semi finished goods) and finished goods.

Success of any enterprises basically depends on the efficiency and effectiveness of systematic management, while achieving its objectives with effectively and efficiently.

The aim of this study is to access the present position of inventory management system and its impact on profitability of two listed manufacturing enterprises. Manufacturing enterprises play an important role on the economy of the country. Both the enterprises use a huge amount of investment in their inventories.

For the purpose of this study, two listed manufacturing companies were selected. They are Bottlers Nepal Ltd. and Unilever Nepal Ltd. The comparative study between them has been done in this study. The necessary data of Inventories, Sales, Profit, total

manufacturing cost and other relative. Variables were collected for the period, FY 2007/2008 to 2011/2012. The financial statement mainly the profit and loss account and balance sheets are collected from the Annual report of Concern Company, which is available in SEBON.

For the analysis purpose descriptive and analytical approach is used to clarify the situation. Ratio analysis tools and percentage index, standard deviation, correlation, simple regression and multiple regressions as statistical tools have been employed to analyze and interpret the data. The scope of the study has been limited to inventory management aspect and its impact on profitability of two selected listed manufacturing companies.

5.2 Conclusions

All the basic data of the study and observation of researchers are taken from the interview of the office holders, records of the companies and published book, questionnaire and financial statement of Nepalese listed manufacturing companies in the calculation and presentation of obtained data. It seems that all the field like collection, selling, production and management have so many levelness for this reason manufacturing enterprises have to bear loss in every year. The study observed the two Nepalese listed manufacturing companies.

Finally summarizes the overall main findings; most of the calculation shows that the inventory and profit has negative relationship. So considering above finding, it should be concluded that inventory affects the profitability of enterprises.

Effect of Inventory Error

An error in the value of the year-end inventory will misrepresent the cost of goods sold, gross profit and net profit, current assets and equity. As we know as above the inventory valuation affects both the profit and loss account and balance sheet. An inventory error means inventory is either understated or overstated. The closing inventory of one year becomes the opening inventory for the next year. The affect are as under:

- (a) If the closing inventory is understated, the net profit for the period will also be understated. The above effect will be reversed when the closing inventory is overstated.
- (b) If the opening inventory is understated, the net profit for the period will be overstated. The above will be reversed when the opening inventory is overstated.

5.3 Recommendations

The study has focused on the inventory management and its effect on profitability of the selected listed manufacturing enterprises. To achieve the entire objective, the efficient management of inventory is essential. Based on the analysis of data, the researcher presents the following recommendations, which might be valuable and will help the manufacturing enterprises in its management.

- The selective inventory model should apply by the company for control the inventories.
- Separate inventory management department should be opened so that the strategic plan and an effective decision can be taken to regulate purchase, production, sales and inventory management in the competitive market.
- The management executives, of the concern manufacturing enterprises, should be made aware of inventory management aspects on profitability by various case studies, researches, market studies and so on.
- For the effective and efficient inventory management, scientific inventory management techniques should apply by the company for purchasing varieties, types of raw materials so as to maintain optimum level of inventory and to minimize the total inventory cost i.e. carrying cost and holding cost.
- There should be up to date record of inventory kept by factory and store department.
- To penetrate the market, market survey should be done as huge capacity of production is kept utilized.

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APPENDIX-I

Table 3.1

Number of enterprises selected for the study

S.N	Sector	N	n	n/N (%)
1.	Manufacturing enterprises	29	2	6.90

Table 3.2

Number of observation selected from manufacturing enterprises

S.N	Name of enterprises	years	observation
1.	Unilever Nepal Ltd.	2007to 2012	5
2.	Bottlers Nepal Ltd. (Balaju)	2007to 2012	5

APPENDIX-II

Table 4.1

Inventory stock position of BNL and ULNL

BNL [Rs. in Million]				ULNL [Rs in Million]			
FY	Inventory	Actual increment (%)	Index	FY	Inventory	Actual increment (%)	Index
2007/2008	121.11	-	100.00	2007/2008	132.47	-	100.00
2008/2009	142.73	17.85	117.85	2008/2009	293.93	121.88	221.88
2009/2010	185.34	29.85	147.70	2009/2010	144.45	(50.86)	171.02
2010/2011	227.22	22.60	170.30	2010/2011	126.11	(12.70)	158.32
2011/2012	184.98	(18.60)	151.70	2011/2012	124.22	(1.50)	156.82
Mean	172.28	-	-	Mean	176.24	-	-
Std. Dev.	41.36	-	-	Std. Dev.	69.56	-	-

Table 4.2
Trend of profit and sales in BNL

[Rs in million]

FY	Profit	Changes (%)	FY	Sales	Changes (%)
2007/2008	55.91	-	2007/2008	372.78	-
2008/2009	35.38	(36.72)	2008/2009	414.58	11.21
2009/2010	48.61	37.39	2009/2010	535.49	29.16
2010/2011	19.37	(60.15)	2010/2011	609.65	13.85
2011/2012	37.80	95.15	2011/2012	632.11	3.68
Mean	39.51		Mean	512.92	
Std. dev	13.91		Std. dev.	115.52	

Table 4.3
Trend of profit and sales in ULNL

FY	Profit	Changes (%)	FY	Sales	Changes (%)
2007/2008	120.58	-	2007/2008	1728.63	-
2008/2009	68.04	(43.57)	2008/2009	1540.99	(10.85)
2009/2010	42.61	(37.38)	2009/2010	1236.05	(19.79)
2010/2011	93.17	118.66	2010/2011	1244.73	.70
2011/2012	140.78	51.10	2011/2012	1524.90	22.51
Mean	93.04	-	Mean	1455.06	-
Std. dev.	39.39	-	Std. dev.	211.72	-

Table 4.6
Inventory turnover ratio

Bottlers Nepal Ltd (BNL)				Unilever Nepal Ltd (ULNL)			
FY	Sales	Inventory	ITR	FY	Sales	Inventory	ITR
2007/2008	372.78	121.11	3.08	2007/2008	1728.63	132.47	13.05
2008/2009	414.58	142.73	2.90	2008/2009	1540.99	293.93	5.24
2009/2010	535.49	185.34	2.89	2009/2010	1236.05	144.45	8.56
2010/2011	609.65	227.22	2.68	2010/2011	1244.73	126.11	9.87
2011/2012	632.11	184.98	3.42	2011/2012	1524.90	184.22	8.28
Average			2.99	Average			9.00

Table 4.7

Inventory to CA Ratio

[Rs in million]

BNL				ULNL			
FY	Inventory	CA	ICA	FY	Inventory	CA	ICA
2007/2008	121.11	369.41	32.78	2007/2008	132.47	451.88	29.32
2008/2009	142.73	393.85	36.24	2008/2009	293.93	567.58	51.79
2009/2010	185.34	506.43	36.60	2009/2010	144.45	399.14	36.19
2010/2011	227.22	544.18	41.75	2010/2011	126.11	589.89	21.38
2011/2012	184.98	462.45	40.00	2011/2012	184.22	724.24	25.44
Average			37.47	Average			32.82

Table 4.9
Return on Net Worth

[Rs in million]

BNL				ULNL			
FY	NP	NW	RNW	FY	NP	NW	RNW
2007/2008	55.91	650.42	8.60	2007/2008	120.58	324.94	37.11
2008/2009	35.88	666.81	5.38	2008/2009	68.04	342.35	19.87
2009/2010	48.61	695.93	6.98	2009/2010	42.61	348.13	12.24
2010/2011	19.37	705.56	2.75	2010/2011	93.17	358.43	25.99
2011/2012	37.80	727.15	5.20	2011/2012	140.78	396.01	35.55
Average			5.78	Average			26.15

Table 4.11
Net Profit margin

BNL				ULNL			
FY	NP	Sales	NPM	FY	NP	Sales	NPM
2007/2008	55.91	372.78	15.00	2007/2008	120.58	1728.63	6.98
2008/2009	35.88	414.58	8.65	2008/2009	64.04	1540.99	4.16
2009/2010	48.61	535.49	9.08	2009/2010	42.61	1236.05	3.45
2010/2011	19.37	609.65	3.18	2010/2011	93.17	1244.73	7.49
2011/2012	37.80	632.11	5.98	2011/2012	140.78	1524.90	9.23
Average			8.38	Average			6.26