CHAPTER I
INTRODUCTION

1.1 General Background

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.

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 labor 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: 40). 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.

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 and Brigham, 2005: 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.

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 both financial dimensions as well as physical dimension and these dimension and these dimensions are interrelated and can't be looked in isolation.

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.

1.2. General Overview of Unilever Nepal Limited (UNL)

1.2.1 Introduction

Due to the liberal economic policy of government, Unilever Nepal Limited **(formerly known as Nepal Lever Limited)** was formed as a subsidiary company with Hindustan Lever ltd., India. The Factory is situated at Basamadi V.D.C. of Makawanpur District, 6 km far from Hetauda of the central development region of Nepal and the registered office of the company is situated at Kathmandu, it was formed as a public limited company in 1993 and production started from last December 1994. It was registered according to company act, 1964(New company act 2053) as a joint venture company of foreign Investment and Technology Transformation with an authorized capital of Rs.30,00,00,000 (Three Hundred Million) divided into 30,00,000 (Three Millions) number of shares of Rs.100 each, paid up capital of Rs.9,20,70,000 (Ninety Two Million

Seventy Thousand) divided into 9,20,700 (Nine Hundred Twenty Thousand Seven Hundred) shares of Rs.100 each.

Hindustan Lever limited, major holding company of UNL, was formed as subsidiary company of Unilever group of co. of England, with a 51% share. It was started around 1940 in India. Its head office is in Mumbai, India. Its total turnover is more than Nepal's budget and products are more than 110 consumer goods. Out of them its current sales policy is 30% in Nepal and 70% in India and its future plan is to be planned as a 40% in Nepal and 60%in India.

The objectives of the company are to establish and carry on the business of Soaps, Detergents, Cosmetics, Toiletries and Personal care products, Toothpaste and Household cleaners, to export and otherwise deal with products and also to perform all such other activities which may be related, and to carry out other objectives as set in the Memorandum and Articles of Association of the company. At present, the current products of Nepal Lever ltd. are as follows: -

1. Toilet Soap	: -	Liril, Lux, Jaya & Lifebouy
2. Detergents	: -	Wheel & Vim
3. Cosmetics	: -	Fair & Lovely
4. Toothpaste	: -	Pepsodent & Close-up
5. Scourers	: -	Vim
6. Laundry shop	: -	OK (Introduction Bulletin of NLL, 2052: 37)

1.2.2 Objectives of UNL

Many companies follow their own objectives. Every organization should catch the targeted objectives, for this purpose the activity of the company are constructed. The main objectives of the UNL are: -

-To fulfill the daily wants of the customers.

-To anticipate the aspirations of the customers and to respond creatively and competitively with branded products and services, which raise the quality of life.

The deep root of the company in local culture and markets are unparallel inheritance of the company and it is also the foundation of the future growth of the companies. The company assures to bring it's wanted of knowledge and international experience to the service of local customers.

The long-term success requires commitment to exceptional standard of performance and productivity, to work together effectively and to willingness to embrace new idea and learn continuously.

The company believes that its success requires the good relation to wards its employees, consumes, the societies, and the world, which we live.

1.2.3 Current plan and Policy of UNL by the Report of the Board of Director

Export policy of Unilever Nepal Limited: - Exports were on decline in the previous year itself consequent to the fiscal changes introduced in the Indian Budget and with the emergence of many new tax-exempt zones in India. Further withdrawal of the rebate on income tax on profit on exports and the imposition of the new special tax on export in Nepal have made the exports business unviable.

Export volumes were lowered by 42.3% i.e. 5907 tons in the current year in comparison to 10236 tons of the previous years. The export turnover is decreased to 3543.34(Rs lakhs) from 8366.88 (RS lakhs) of last year i.e. a reduction of 57.6%.

Environment, Safety and Energy Conservation: - Safety and Environment management continues to be a key result area for the company. The corporate vision for safety envisages "Zero Accidents" as the only acceptable standard of performance. The factory has crossed over 3.7 million man-hours without any "Lost Time Accidents" over the last five years in a row. This has been possible through continues improvements in safety performance. This company has, therefore qualified for the Unilever 'Silver Excellence Trophy' for safety.

Through an ongoing program of continues reduction on the environmental impact of operation, the liquid effluent generation has come down from 80 tpd to 55 tpd, a fall of 30%. With the reduced effluent load we are able to use the treated effluent for gardening & other purposes within the factory premises.

Similarly, energy conservation is a key result area for the company. Various initiatives are being driven in this direction and as a result, energy cost in the company has been comparable with the most efficient units of Hindustan Lever Limited. In spite of reduced volumes during the year, the company is able to bring about near proportionate reduction in energy cost. Efforts are on to get further reduction through energy audit and others identified measures.

Corporate Social Responsibility in UNL: - This Company endeavors to be a good corporate citizen, maintaining high standards of corporate governance and repaying to the society in terms of corporate social responsibility. This company is proud of its role in the income and employment generation opportunities in the country. It is already one of the largest corporate Taxpayer of the country. It provides direct employment to over 120 Nepalese citizens while generating indirect employment for over 10 times that number through its network of suppliers, distributors and ancillaries.

This company has maintained over the years its contribution to the community in various ways. Its participation in the initiative for restoration of heritage sites in collaboration with the Kathmandu valley preservation trust is progressing well. The "Miles of healthy smiles" program, the company's ambition project for contacting school children throughout Nepal to impact Oral health education, has covered more than 150,000 children so far. This company also tied up with Sajha Prakashan to carry its message of health, hygiene and sanitation to 500,000 children all over Nepal on the back of school copy books. This company also tied up with UNICEF to participate in their sanitation week program. The UNL employee trust's mobile medical unit is extensively used in Makawanpur District in providing emergency medical service.

Personnel Program in UNL: -This Company had harmonious employee relation during the year. Training and department continue to be a key priority for the company. In addition to continue on-the-job training, all employee are put through at least 5 days of training annually to upgrade their skill-base, productivity, occupational health & safety and personal effectiveness. During the year they have reaffirmed there commitment to the company value of action, courage, caring and truth. A number of initiatives to reinforce these values at all levels in the organization have been started. The board desires to place on record its appreciation to employees at all levels for their hard work, dedication and commitment, which has in no small measure contributed to the success of the company.

Financial program in UNL: -The fiscal year Ashad 2059 which commenced with 140 million loan balance has now been ended with 'zero debt' and positive bank balance. Receipt of dues from HMG/N with improved collections from the domestic business has made this turnaround possible. However, Rs.120 million. of funds due to the company remain blocked with HMG/N and this is putting enormous pressure on the operations.

Despite establishing credentials as a responsible corporate citizen, this company is disappointed with the treatment it has received from the Inland Revenue department. Several adverse income tax orders were passed on incorrect or wrong facts and even contained arithmetic inaccuracies. These orders as also did not adhere to law and procedures including principals of natural justice. Neither the notice issued by the IRD, nor the orders passed by the IRD specify the grounds for disallowances made by it. The authorities also did not provide your company, the opportunity for personal hearing before passing such adverse orders. The unexpected adhoc and arbitrary tax decisions by the IRD have imposed unjustified additional financial burden on this company. This has been obliged to deposit disputed amounts under protest. Unless the HMG/N takes urgent steps to correct such arbitrary actions of IRD, it will tend to erode the confidence of international business in the Inland Revenue administration of the country. They earnestly hope that HMG/N will take note of our concern and device administrative/legal measures, which will prevent recurrence of such incidents. Such steps will go a long way in re-establishing investor confidence in an environment where company is required to operate against all odds.

Future outlook of UNL:- In less than a decade this company grew its domestic business from a modest Rs.350 million in 2055 to Rs.1260 million in 2061. The company is again determined to build profitable growth driven by the domestic business. This will have to be achieved despite the difficult business environment in Nepal. In this, we seek the active support and indulgence of the HMG/N and the trade partners in this endeavor.

1.2.4. Ownership

Unilever Nepal Limited Company is the first subsidiary company of Hindustan Lever limited outside of India with holding 80% ownership and has invested Rs73.7 million in equity. The authorized capital of the company is Rs.300 Million divided in to 3 Million ordinary share of Rs.100 each and it has issued, subscribed and paid up capital is Rs.9, 20,70,000 divided in to 9,20,700ordinary share of Rs.100 each fully paid up. The percentage of share capital holding is as follows:

Group	Name of Company	% of Share Capital
A	Hindustan Lever Limited, India	80%
B	Sibkrim Land and Ind. Co.(Pvt.) Ltd., Kathmandu	5%
C	General Public	15%

Out of the 920,700 issued equity shares   of Rs.100 each fully paid up:
1. Hindustan Lever limited, Mumbai, the holding company hold 736,560 shares.
2. Sibkrim land and Industrial co. Pvt. Ltd., the Nepalese collaborator, holds 46,035 shares.
3. Public Shareholders hold 138,105 shares.

1.2.5. Existing Capital Structure of UNL

Capital is the most scare and sensitive commodity everywhere and it can be obtained by issuing equity share capital, preference share capital, borrowed capital etc. The efficient management should mix these various source of capital in proper way. It means the
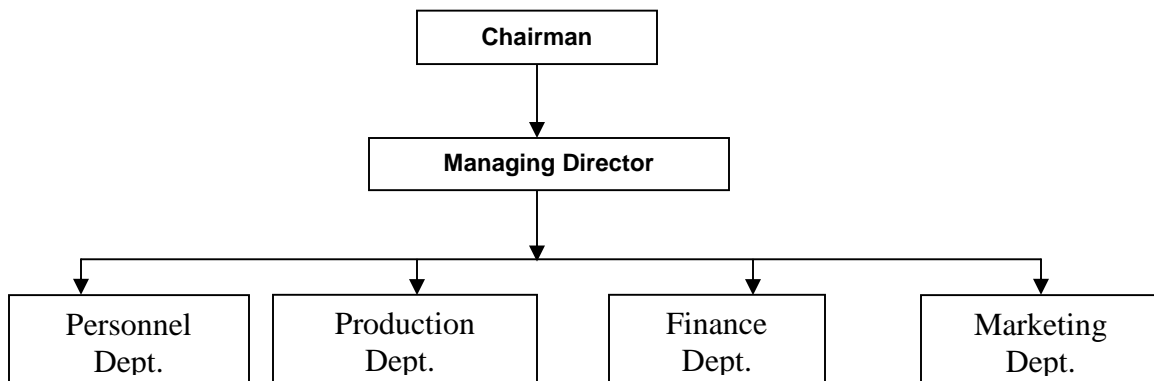
optimal capital structure is essential for growth and development of company. Optimal capital structure helps the company to maxi mime its value and earning per share and minimize its overall cost of capital. Optimal character also helps company to achieve its target. The existing capital structure of UNL is shown below

Equity capital: -	Amount (Rs.)
Share capital	92,070,000
Reserve and retained earning	**303,943,822**
	396,013,822
Debt capital: -	
Secured loan	-
Unsecured loan	-

UNL is an unlever firm. It has not used any debt capital to raise loan term source of fund since 3 years. It has not any burden to pay the interest to its bondholders. It raises the entire fund through the issue of equity share capital. Unlever situation is not a most favorable condition for the company. The proper mix of debt and equity share capital is essential for the most favorable condition.

1.2.6 Organizational Structure of ULL

Near about 200 personnel (administration and production) are engaged in this company. The organizational structure of the company is as follows:

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                    ┌──────────────┐
                    │   Chairman   │
                    └──────┬───────┘
                           │
                           ▼
              ┌─────────────────────────┐
              │   Managing Director     │
              └───────────┬─────────────┘
                          │
    ┌──────────┬──────────┼──────────┬──────────┐
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┌─────────┐ ┌──────────┐ ┌─────────┐ ┌───────────┐
│Personnel│ │Production│ │ Finance │ │ Marketing │
│  Dept.  │ │  Dept.   │ │  Dept.  │ │   Dept.   │
└─────────┘ └──────────┘ └─────────┘ └───────────┘
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(Annual Reports and Accounts of UNL, 2060/61: 24-27)

1.3 Focus of the Study

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.

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.

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.

1.4 Statement of the Problems

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 there physical as well as financial dimension (Dr. 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 teem 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. 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.

1.5 Objectives of the Study

This study attempts to draw a vital conclusion about Nepalese manufacturing companies regarding their management capability respect to inventory management. The main objective of this study is to study and examine the practice of inventory management in the UNL. However, following are specific objectives:

⟩ To find out the gap between theory and practice of inventory management.
⟩ To study and examine the present procurement procedure and stocking system.
⟩ To show profitability effect due to change of inventory.
⟩ To analyze and compare the inventory management using various tools and techniques.
⟩ To find out the difficulties in application of inventory management.
⟩ To make recommendations to overcome the difficulties in inventory management in Nepalese manufacturing companies.

1.6 Importance of the Study

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 effect the profitability. So the company should keep adequate stock of inventory. By keeping adequate inventory the company able to supply whatever the demand.

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.

1.7 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 carried out within a range of five fiscal year data starting from 2003/04-2007/08.
> ➢ The study has been limited to the area of the inventory management and its impact on profitability of ULNL.
> ➢ The analysis is specially based on the secondary data, not enough secondary data that has been collected from annual report, financial report, of the concerned enterprises, SEBON, NEPSE Ltd.

1.8 Organization of the Study

The study will be form of five chapters; each will be devoted to some aspects of the study of inventory management and its effect on profitability. Chapter one to five will consists of introduction, review of the literature, research methodology, presentation and analysis of data and summary, conclusion and recommendation of the study.

Chapter One will deal 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 if 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

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".

Accounting research Bulletin No 43 of the American Institute of Certified Public Accountants define the term inventory of stock as the aggregate of those items of tangible assets which are:-
   i)   Held for sale in the ordinary course of business
   ii)   In the process of production for such sale
   iii) To be currently consumed in the production of goods or services to be available for sale.

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 warehouses (Accounting Resources and Terminology Bulletins, 1961: 25).

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 level ed 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.

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 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: 41) 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. Firm carry finished goods to ensure that order can be filled when they are received. If a firm don'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 arrive. When demand arrives and there is no inventory to satisfy that demand a stock out situation exists. In such situation, the firms will be in danger position of losing the customers to competitors permanently.

D. Spare Parts and Supplies

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

2.1.3 Objectives of Inventory Management

The main objective of inventory management is operational and financial. The operational objectives mean that materials and spares should be available in sufficient quantity so that work is not disrupted for want of inventory. The financial objectives means that investment in inventories should not remain idle and minimum working capital should be locked in it. The following are the objectives of inventory management.

   i)   To ensure continuous supply of materials spears and finished goods so the production should not suffer at any time and the customers demand should also be meet.

   ii) To avoid both over-stocking and under-stocking of inventory

   iii) To maintain investment in inventories at the optimum level as required by the operational and sales activities.

   iv) To keep material cost under control.

   v)   Providing flexibility in production plans.

   vi) Making possible economies in transportation clearing and forwarding charges (Banargee and Lallan, 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.

2.1.4 Purpose of Holding Inventories

The fundamental reason for carrying inventories is that it is physically impossible and economical impractical for each stock item to arrive exactly where it is needed and when it 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 right amount of stock at right time of need and economically impractical to get right amount of stock at 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 fact of operations.

The important 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 labour costs (Kirk, P., Charles, A. and Levin, R. I., 1996: 190).

5) Inventory facilitates smooth production and making operation.

Generally, inventory management covers the function of:

⌡ Purchasing

⌡ Store keeping

⌡ Issuing and pricing

2.1.6.1 Purchasing

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."

"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".

Role of Purchasing

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.

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."

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."

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.

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 Storekeeping

Store keeping refers to the safe custody of all materials stocked in stores for which the storekeeper 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 labor 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. Storekeeper 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

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.

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2.1.7 Inventory Valuation Method under Cost Basis

"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." (Accounting Resources and Terminology Bulletins, 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 posses a problem as to what should be the price when the material is issued. In this situation there are may 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.

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.

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

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.

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.

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

 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

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.

"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. Kucchal 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."

2.1.8.1 Objectives of Inventory Control

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
| Avoidance out-of stock danger

2.1.8.2 Selective Inventory Control (ABC Analysis)

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

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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, and Narang, 1997: 2.43).

"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
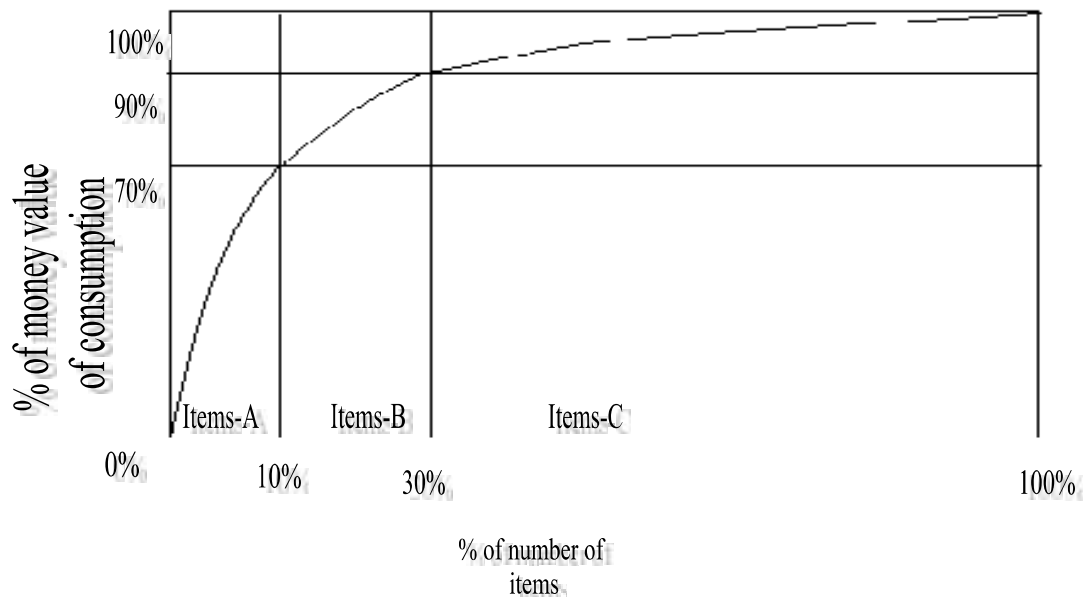
2.1.8.3 VED Analysis

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

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?

"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).

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.

Further more he states the importance of economic order quantity as if a firm places unnecessary orders 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 umber of units to order that results in the lowest total of these 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."

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 incur un 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

Ñ *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.

Ñ *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,

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

Where,

A = Total annual requirement

O = ordering cost per order

C = carrying cost per unit

Ñ *The Graphic Approach*

The Economic Order Quantity can also be found graphically.

The following figure illustrates the EOQ functions.
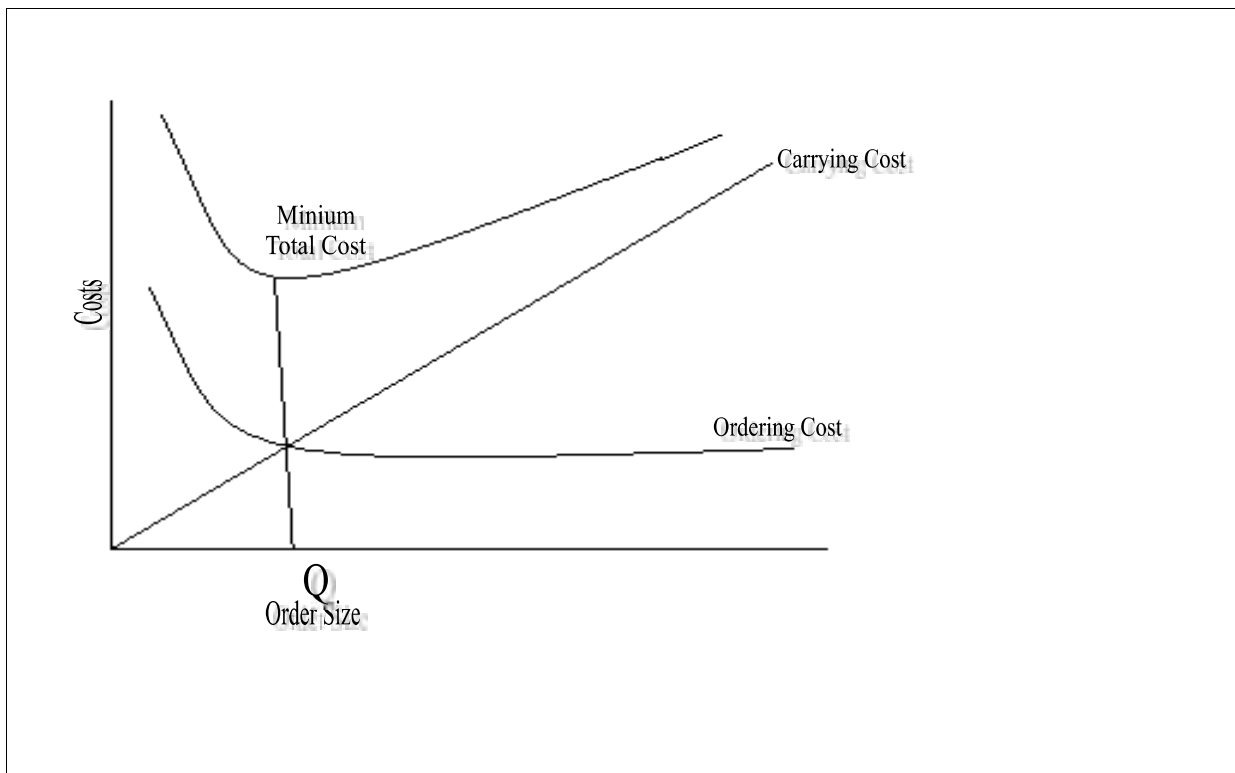
In figure carrying, ordering and total costs are plotted on vertical axis and horizontal axis is used to represent the order sizes. Total carrying cost increases as the order size increases because on an average a large inventory level will be maintained and ordering cost decline with increase in order 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 delivery 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.

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

Ñ *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)

Ñ *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)

Ñ *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

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,

Average inventory (A) = Unit per order/2

$$= (S/N)/2$$

$$= Q/2$$

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.

$$Total\ carrying\ costs(\ TCC)\ = C * PP * A$$
$$= C * PP * Q/2$$

The inventory carrying costs are further explained as below

È *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.

È *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).

 È *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.

 È *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.

È *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.

È *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 (Hading, G. and Whitin, T. M., 1987 : 17)

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,

Total ordering cost (TOC) = O x N

$$= O (A/Q)$$

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, E. and Ronald J., 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. Agrawal (2007) 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".

Bajracharya, and Shrestha, (2005) 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, P. M. and Shrestha, D. K., 2005: 41)

2.2   Review of Previous Theses

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.

Dahal (2000) "A study on "Financial Analysis of Hetauda Textile Industry Ltd," was conducted by and refined the following findings.

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.

Balika (2001) "A study on inventory management in Hetauda Cement Industries Ltd". has been conducted by to study the present practice of collection, procurement procedure of raw materials, analyze the present position of inventory and identify the problems faced by cement industries Ltd.

Primary and secondary data are collected with the help of interviews with concern officials and report, published /unpublished official records and magazines/articles. To interpret the data, percentage, ratio analysis average, trend analysis approaches are used.

The researcher finds no proper target for material purchase. Factory 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. And major things she finds that Hetauda Cement Industries is running in loss due to defective purchasing and production planning, low capacity utilization etc. And cement production capacity is high but even there is no production up to its total capacity.

Shrestha (2002) has studied on "Inventory Management: A case study of Gorkhapatra Corporation" 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

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corporation and how much inputs are maintained and how many times the corporation place an order.

Mr. Shrestha has used both primary and secondary data. The tools that were applied are interview, personal observation. Similarly, different published and unpublished materials, reports, financial statements i.e. balance sheet, P/L Account etc were consulted by him. In order to collect primary and secondary data for six years study period (Fiscal year 1994/1995 to 2000/2001) further for analysis purpose, EOQ model Re-order point approaches were employed in financial tools. He conducted that the poor situation of procedure of reordering stock out and back order cost of the corporation. No techniques of inventory management were applied to calculate buying decision. Finally the tentative solution has been made for how much to buy and when to buy for maintaining proper level of inventory of the corporation.

Pokhrel (2004) "A study on Inventory Management in Janakpur Cigarette Factory", was carried out by to examine the performance of Janakpur Cigarette Factory, collection procedures of raw materials, materials consumption, comparison between profit and production and present inventory position of the factory.

Mr. Pokharel has used both primary and secondary data for analysis about the inventory management system of JCF. He applied accounting and financial records, published and unpublished information, and direct contact with the concern officials for data collection. He concludes that Janakpur Cigarette Factory has no proper target for material purchase in the factory. For raw material of JFC is highly dependent upon India, selling and cost prices of cigarette are increasing from year to year.

Dhungana (2006) "Inventory Management and its impact on Profitability, a case study of Udayapur Cement Industry Limited (UCIL)" to identify the applied techniques used to acquire and to manage the inventories**,** to examine the profitability & efficiency of Udayapur Cement Industry Ltd. due to inventory management and to analyze the different aspects of inventory management in Udayapur Cement Industry Ltd. with the

help of statistical & financial tools to provide logical suggestion for improvement on the basis of the study diagnosis. The study has been carried out within a range of latest fiscal year data starting from 2053/54 to 2062/2063.

Baral (2007) "Inventory Management, A Case Study of Gandaki Noodles Pvt. Ltd," was introduced by to highlight the inventory management and their consequences on cost and profit, inventory management system.

In this study Mr. Baral has used primary and secondary data and nature of data are descriptive and analytical. To collect data and related information, he uses personal observation, interview, reports, published and unpublished data and financial statement i.e. balance sheet P/L account.

To analyze and interpret the data, percentage index, average and correlation approaches are used. This study covers years from the fiscal year 2000/01 to 2005/06.

Mr. Baral 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.

2.3 Research Gap

These days, the new inventory management tools and techniques have been increased dramatically. Progress in computer application and software development has made to the point that powerful and advanced computer software available in the market to control the inventories. Besides it, there are many inventory control tools and techniques that have been developed to optimize the inventories reduce inventory costs.

Many studies have reported that, implementation of scientific inventory management is essential in Nepalese business organizations. However, there has been very little research reported on the effectiveness of scientific inventory management and its impact on

profitability. The purpose of the present study is therefore to ascertain the effective use of scientific inventory management tools to reduce costs and increase profitability of Organization.

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.

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 2003/04 – 2007/08, SEBON
- ➢ Trading Report 2003/04 – 2007/08, NEPSE Ltd.
- ➢ Previous research studies, dissertation, and articles on the subject.

3.3   Population and Sample

There are 39 Nepalese manufacturing and processing enterprises listed in the NEPSE Ltd, by the end of FY 2007/08 *(Source:NEPSE).* Which regarded as size of population for the study. This study doesn't cover all the Nepalese manufacturing enterprises. The study period begins from 2003/04 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 2003/04–2007/08. Among the manufacturing enterprises, the study has been confined to only one enterprises.

Table 3.1

Number of Enterprises Selected for the Study

S.N.	Sector	N	n	n/N (%)
1.	Manufacturing Enterprises	39	1	2.56%

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

Thirty-eight out of thirty nine have been excluded from this study because of data complexion. Thus only one enterprise is selected for the study. Table 3.2 shows the number of observation of one manufacturing enterprises taken under study.

The research has been conducted to identify the applied techniques used to acquire and to manage the inventories, to examine the profitability & efficiency, and to analyze the different aspects of inventory management in Uniliver Nepal Ltd. As it is a case study, the population as well as sample associated with ULNL.

Table 3.2

Number of Observation Selected from Manufacturing Enterprises

S.N	Name of Enterprises	Years	Year of Observation
1.	Unilever Nepal Ltd.	2003/04-2007/08	5

Total sample observation selected is 5 observations for the study out of the grand total population observations. Therefore this study uses maximum of 5 observations for the analysis of different variables with the help of pooled cross-sectional data of this company for the period of 2003/04 to 2007/08.

3.4   Method of Analysis

Secondary data collected in raw form are classified and tabulated in the required form. The following accounting/financial tools and statistical tools have been used for analysis and interpretation of data.

(A) Accounting/Financial Tools

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.

(B) Statistical Tools

Many kinds of statistical tools can be applied to examine the relationship between financial data of a company. Statistical tools have been considered as statistical tools i.e percentage, index, standard deviation, correlation, regression analysis and test of hypothesis etc.

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,

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods sold}}{\text{Average inventory}} \quad or \quad \frac{\text{Sales}}{\text{Inventory(at Sales Price)}} = (\text{times})$$

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 (Gupta, 1998 : 236)

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

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-

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

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.

Coefficient of Determination (r^2) = [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 regression. The models of simple regression as well as multiple regression 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

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

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:

$I = a + b_1 S + b_2 P$ ------------- (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:-

$P = a + b_1 I + b_2 S$ ------------ (VI)

3.5   Limitations 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.

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 Unilever Ltd; which are presented in suitable format and comparison is made.

4.1 Percentage and Index

4.1.1 Inventory Stock Position of Unilever Nepal Ltd.

The following table shows the inventory stock position of ULNL.

Table 4.1

Inventory Stock Position of ULNL

FY	Inventory	Actual Increment (%)	Index
2003/2004	132.47	-	100.00
2004/2005	293.93	121.88	221.88
2005/2006	144.45	(50.86)	171.02
2006/2007	126.11	(12.70)	158.32
2007/2008	184.22	(1.50)	156.82
Mean	176.24	-	-
Std. Dev.	69.56	-	-

Table 4.1 shows the stock position of Inventory of 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, for Unilever Ltd, the highest percentage increase in inventory stock is in 2004/05 with 121.88% and inventory maintenance rate is reduced by 50.86%, 12.70% and 1.50% in the F.Y. 2005/06, 2006/07 and 2007/08 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 ULNL

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

Table 4.2

Trend of Profit and Sales in ULNL

FY	Profit	Changes (%)	FY	Sales	Changes (%)
2003/2004	120.58	-	2003/2004	1728.63	-
2004/2005	68.04	(43.57)	2004/2005	1540.99	(10.85)
2005/2006	42.61	(37.38)	2005/2006	1236.05	(19.79)
2006/2007	93.17	118.66	2006/2007	1244.73	.70
2007/2008	140.78	51.10	2007/2008	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.

Figure No. 4.1

Trend of Profit and Sales in ULNL
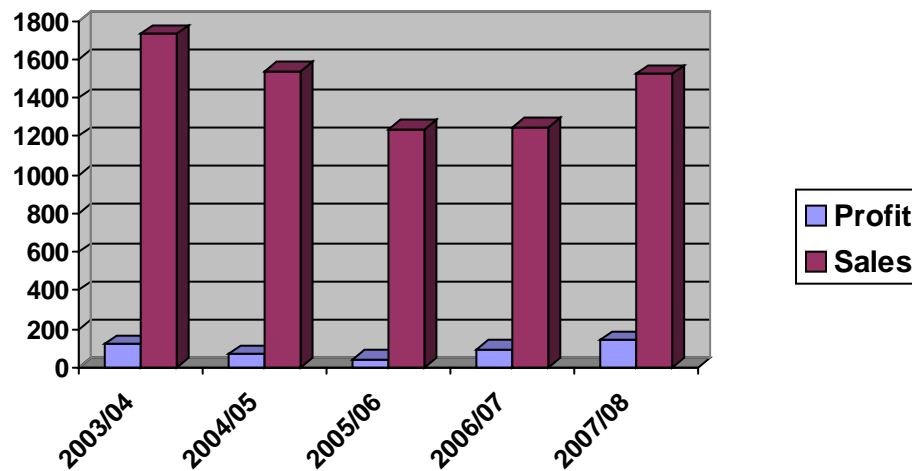
Above table and graph explain the trend of profit and sales in Unilever Nepal Ltd. According to table 4.2, the mean average of profit during the study period is 93.04 million, and the deviation between profits is 39.39%. The profit is reduced by 43.57% and 37.38% in 2004/05 and 2005/06 respectively. But the trend of profit increased by next year. It is increased by 118.66% and 51.10% in 2005/06 and 2007/08 respectively. The highest percentage increase in profit is in 2006/07 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 2004/05 and 2005/06 respectively. After 2005/06 the sales trend of ULNL is increased by .70% and 22.51% in 2006/07 and 2007/08 respectively. The highest percentage increased in sales is in 2007/08 by 22.51%.

4.1.3   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 2003/04 – 2007/08.

Table 4.3
Trend of Sales and Total Cost in ULNL

[Rs in million]

FY	*Sales*	Changes (%)	FY	Total cost	Changes (%)
2003/2004	1728.63	-	2003/2004	1420.97	-
2004/2005	1540.99	(10.85)	2004/2005	1287.70	(9.38)
2005/2006	1236.05	(19.79)	2005/2006	891.44	(30.77)
2006/2007	1244.73	.70	2006/2007	846.30	(5.06)
2007/2008	1524.90	22.51	2007/2008	980.16	15.82
Mean	1455.06	-	Mean	1085.31	-
Std. dev	211.72	-	Std. dev.	227.77	-

Table 4.3 shows the trend of sales and total cost in Unilever Nepal Ltd for the period of 2003/04 – 2007/08. Above table is presented on following graph.

Figure No. 4.2
Trend of Sales and Total Cost in ULNL
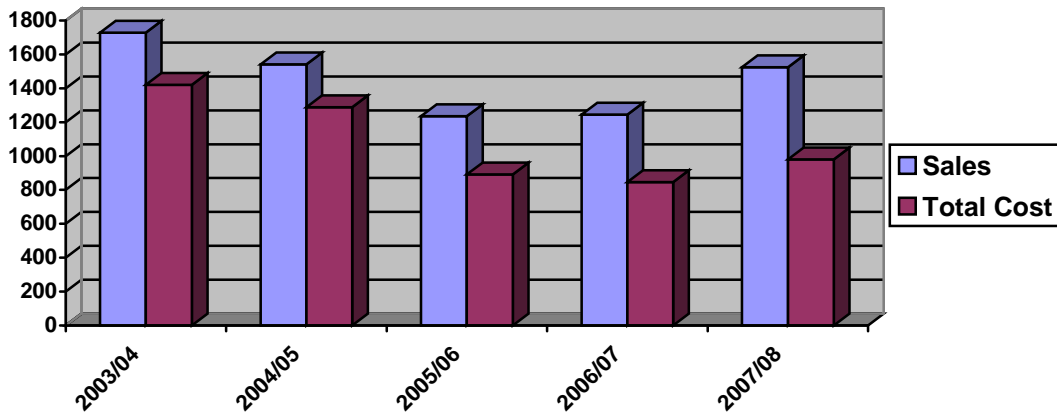
Table 4.3 and graph determined the trend of sales and total cost of Unilever Nepal Ltd. According to above table the mean average of sales during the study period is 1455.06 million, and the deviation between the sales is 211.72%. The sales trend decreased by 10.85% and 19.79% in 2003/04 and 2005/06 respectively. After 2005/06 the percentage of sales is increased. It is increased by .70% and 22.51% in 2006/07 and 2007/08 respectively. The highest percentage increased and decreased is in 2007/08 and 2004/05 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 2007/08 by 15.82%, otherwise the trend of total cost is decreased. It is decreased by 9.38%, 30.77% and 5.06% in 2004/05, 2005/06 and 2006/07 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 Unilever Nepal Ltd (ULNL).It is calculated as,

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

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FY	Sales	Inventory	ITR
2003/2004	1728.63	132.47	13.05
2004/2005	1540.99	293.93	5.24
2005/2006	1236.05	144.45	8.56
2006/2007	1244.73	126.11	9.87
2007/2008	1524.90	184.22	8.28
Average			9.00

Table 4.4 shows the relationship between sales and inventory, which is inventory turnover ratio. The mean average of ITR of ULNL is 9.00 times. The highest ITR of ULNL is 13.05 times in 2003/04 and the lowest ITR is 5.24 times in 2004/05. All ITR of ULNL is relatively higher during the study period which implies that ULNL has good turnover ratio.

4.2.2   Inventory to CA Ratio

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

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

Table 4.5

Inventory to CA Ratio

[Rs in million]

FY	Inventory	CA	ICA
2003/2004	132.47	451.88	29.32
2004/2005	293.93	567.58	51.79
2005/2006	144.45	399.14	36.19
2006/2007	126.11	589.89	21.38
2007/2008	184.22	724.24	25.44
Average			32.82

According to data presented in table 4.5, the highest inventory to current assets ratio of Unilever Nepal Ltd. is 51.79% in 2004/05, and the lowest ratio is 21.38% in 2006/07. 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 Unilever Nepal Ltd. It is calculated as

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

Table 4.6

Inventory to Total Assets Ratio

[Rs in million]

FY	Inventory	TA	ITA
2003/2004	132.47	629.75	21.04
2004/2005	293.93	760.42	38.65
2005/2006	144.45	571.34	25.28
2006/2007	126.11	784.88	16.07
2007/2008	184.22	939.71	19.60
Average			24.13

Table 4.6 shows the relationship between inventory and Total assets. According to above table, 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 2004/05 and 2006/07 respectively. Above table shows that ITA of ULNL has high ratio during the study period.

4.2.4   Return on Net Worth

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

$$\text{Return on Net Worth} = \frac{Net\,Pr\,ofitafterTax}{NetWorth}$$

Table 4.7
Return on Net Worth

[Rs in million]

FY	NP	NW	RNW
2003/2004	120.58	324.94	37.11
2004/2005	68.04	342.35	19.87
2005/2006	42.61	348.13	12.24
2006/2007	93.17	358.43	25.99
2007/2008	140.78	396.01	35.55
Average			26.15

Above table explains the relationship between Net profit and Net worth of Unilever Nepal Ltd. According to data presented in above table, the RNW of ULNL is satisfactory level.

The mean average of return on Net worth of ULNL is 26.15%. Similarly the highest and lowest return on net worth of ULNL is 37.11% and 12.24% in 2003/04 and 2005/06 respectively.

4.2.5   Return on Total Assets

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

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

Table 4.8

Return on Total Assets

<div align="right">[Rs in million]</div>

FY	NP	TA	RTA
2003/2004	120.58	629.75	19.15
2004/2005	68.04	760.42	8.95
2005/2006	42.61	571.34	7.46
2006/2007	93.17	784.88	11.87
2007/2008	140.78	939.71	14.98
Average			12.48

Table 4.8 represents the data of 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 ULNL is 12.48%.

The highest ratio of ULNL is 19.15% in 2003/04. Similarly the lowest RTA of ULNL is 7.46% in 2005/06.

4.2.6 Net Profit Margin

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

$$\text{Net Profit Margin} = \frac{Net\,\Pr ofitAfterTax}{Sales}$$

Table 4.9

Net Profit Margin

FY	NP	Sales	NPM
2003/2004	120.58	1728.63	6.98
2004/2005	68.04	1540.99	4.16
2005/2006	42.61	1236.05	3.45
2006/2007	93.17	1244.73	7.49
2007/2008	140.78	1524.90	9.23
Average			**6.26**

According to data presented in above table, which shows the relationship between Net profit and sales of ULNL. Above table shows that the average net profit margin of Unilever Nepal Ltd is 6.26% during the study period.

The highest ratio of Net profit margin of ULNL is 9.23% and the lowest ratio is 3.45% in 2007/08 and 2005/06 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 Unilever Nepal Ltd.

Table 4.10

Correlation between Inventory and Profit

		ULNL	
		I	P
INVENTORY	Pearson Correlation	1	-.198
	Sig. (2-tailed)	.	.750

		5	5
PROFIT	Pearson Correlation	-.198	1
	Sig. (2-tailed)	.750	.
	N	5	5

Above table 4.10 determine the correlation analysis between Inventory and profit of Unilever Nepal Ltd. According to table Inventory and profit are negatively correlated with each other of ULNL. It is statistically not significant at 0.01 and 0.05 level.

4.3.2 Correlation between Sales and Inventory

Table 4.11

Correlation between Sales and Inventory

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

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

Table 4.11 explains the relationship between sales and Inventory. According to above table sales and inventory are positive correlated with each other.

4.3.3 Correlation between Inventory and Current Assets

Following tables how the correlation between Inventory and Current Assets.

Table 4.12

Correlation between Inventory and CA

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

4.3.4   Correlation between Inventory and Total Assets

Table 4.13 determines the correlation between Inventory and Total assets by Unilever Nepal Ltd.

Table 4.13

Correlation between Inventory and TA

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

Above table explains the correlation between Inventory and Total assets of 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 ULNL.

Table 4.14

Correlation between Net Worth and Net Profit

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

Table 4.14 determines the result of correlation between Net worth and Net profit. Above table shows that the correlation is positive in ULNL. It indicates that Net worth is positively correlated with Net profit for Unilever Nepal Ltd. It is 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 Unilever Nepal Ltd.

Table 4.15

Correlation between Net Profit and Total Assets

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

Above table 4.15 determines the correlation between Net profit and Total assets for ULNL. Above result presented in table shows that total assets positive correlated in ULNL. It is 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 ULNL.

Table 4.16

Correlation between Sales and Net profit

		ULNL

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

Above table shows the correlation between Sales and Net profit of ULNL. The result shown in table 4.16 indicates that the correlation between Sales is positively correlated with Net profit in Unilever Nepal Ltd. But result is 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 ULNL.

Table 4.17

Simple Regression Analysis of Inventory on Sales

Name of the enterprises	Model	Constant	Beta	R^2	Ad. R^2	t-stat	F	S.E	sig
ULNL	I=a+b1s	44.754	0.275	0.076	-0.23	0.167	0.246	77.22	0.65

According to table 4.17 the simple regression coefficient of Inventory of ULNL is positive with sales. R square was found 0.076 for ULNL, 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 UNL is not significant at 0.01 and 0.05 level of significance.

4.4.2 Simple Regression Analysis of Inventory on Profit

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

Table 4.18

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
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 4.18 the simple regression coefficient of Inventory of the firm 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 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 ULNL.

Table 4.19

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
ULNL	P=a+b1s	-67.13	0.592	0.35	0.133	-0.53	1.62	36.67	0.29

Table 4.19 determines the simple regression analysis of profit on sales. According to above table the simple regression coefficient of profit of ULNL is positive with sales. R square of ULNL was found 0.35 which indicates that 35% of total variation on profit is explained by sales. But the 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 Unilever Nepal Ltd.

Table 4.20

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
ULNL	NW=a+b1P	327.09	0.43	0.185	-0.087	9.39	0.68	25.57	0.47

The above table 4.20 describes the results of simple regression analysis of net worth on Profit. The simple regression coefficient of Net worth of ULNL was positive which indicates that any increase in Net worth will lead to increase in profit. After considering the error term R square of found 0.185 which indicate that 18.50% of total variation on Net worth is explained by profit. But 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

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

Table 4.21

Multiple Regression Analysis of Inventory on Sales and Profit

72

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 4.21 showed 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

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

Table 4.22

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 level and 0.05 level of significance.

4.6 Major Findings of the Study

The inventory management of ULNL and its impact on profitability has been analyzed by using various financial and analytical tools. The various ratio and financial have noticed amicable performance of the factory. However, data analysis and interpretation of ULNL reveals the major findings as follows:

- The average amount of inventory of ULNL is Rs. 172.24. The inventory fluctuation rate is high in ULNL.

- The mean amount of profit is Rs. 93.04 million and sales is Rs. 1455.06 million, and the deviation between sales is too high.

- The average amount of sales and total cost is Rs. 1455.06 million and Rs. 1085.31 million respectively. Total cost is in decreasing rate with sales in ULNL.

- The highest turnover ratio of ULNL is 13.05 times. Average ITR is 9.00 times for ULNL.

- The mean average of Inventory to current assets ratio is 32.82% of ULNL , which is acceptable ratio.

- ULNL has closest inventory to total assets ratio. The mean average of ITA of ULNL is 24.13%, which is also acceptable ratio.

- Return on Net worth, Return on total assets and a net profit margin ratio is satisfactory result, for three ratios.

- The correlation between Inventory and profit is negative ULNL. It shows that increase in inventory will cause decrease in profit.

- The correlation coefficient of sales is positively correlated with sales. It determines that increase in inventory will cause increase in sales.

- The correlation coefficient of Inventory is highly positive correlated with current assets.

- The correlation between Inventory and total assets is positive with each other of ULNL.

- The simple regression coefficient of Inventory of the firm 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 ULNL was found relatively lower which was 0.039, indicate that only 3.90% of total variation on inventory is explained by profit.

- The correlation coefficient of Net worth has positive correlation for ULNL.

- The correlation coefficient of Net Profit has positive correlation for ULNL.

- The correlation between sales and Net Profit has positive correlation for ULNL.

- The regression coefficient of Inventory with sales of ULNL is positive. It indicates that increase in inventory cause increase in sales and vive versa.

- The simple regression analysis of Inventory on Profit shows that the coefficient of regression of inventory with profit is negative.

- The simple regression results of Profit with sales indicate that, it is positive in ULNL.

- The simple regression results of Profit with sales indicate that, it is positive in ULNL.

- The simple regression coefficient of net worth of ULNL 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 ULNL.

- The multiple regression analysis of profit on inventory and sales showed the negative relationship in between profit and inventory and positive relationship in between profit and sales.

CHAPTER V

V) *SUMMARY, CONCLUSION AND RECOMMENDATIONS*

5.1   Summary

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.

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.

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

For the purpose of this study, ULNL has been selected. The Inventory Management 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

2003/04 to 2007/08. 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 selected manufacturing companies.

5.2 Conclusion

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 ULNL is Rs. 172.24. The inventory fluctuation rate is high in ULNL.

- The mean amount of profit is Rs. 93.04 million and sales is Rs. 1455.06 million, and the deviation between sales is too high.

- The average amount of sales and total cost is Rs. 1455.06 million and Rs. 1085.31 million respectively. Total cost is in decreasing rate with sales in ULNL.

- The highest turnover ratio of ULNL is 13.05 times. Average ITR is 9.00 times for ULNL.

- The mean average of Inventory to current assets ratio is 32.82% of ULNL , which is acceptable ratio.

- ULNL has closest inventory to total assets ratio. The mean average of ITA of ULNL is 24.13%, which is also acceptable ratio.

- The simple regression coefficient of Inventory of the firm 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 ULNL was found relatively lower which was 0.039, indicate that only 3.90% of total variation on inventory is explained by profit.

- Return on Net worth, Return on total assets and net profit margin ratios is satisfactory result, for three ratios.

- The correlation between Inventory and profit is negative for ULNL. It shows that increase in inventory will cause decrease in profit.

- The correlation coefficient of sales is positively correlated with sales. It determines that increase in inventory will cause increase in sales.

- The correlation coefficient of Inventory is highly positive correlated with current assets.

- The correlation between Inventory and total assets is positive with each other of ULNL.

- The correlation coefficient of Net worth has positive correlation for ULNL.

- The correlation coefficient of Net Profit has positive correlation for ULNL.

- The correlation between sales and Net Profit has positive correlation for ULNL.

- The regression coefficient of Inventory with sales of ULNL is positive. It indicates that increase in inventory cause increase in sales and vive versa.

- The simple regression analysis of Inventory on Profit shows that the coefficient of regression of inventory with profit is negative.

- The simple regression results of Profit with sales indicate that, it is positive in ULNL.

- The simple regression results of Profit with sales indicate that, it is positive in ULNL.

- The simple regression coefficient of net worth of ULNL 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 ULNL.

- The multiple regression analysis of profit on inventory and sales showed the negative relationship in between profit and inventory and positive relationship in between profit and sales.

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

5.3   Recommendations

The study has focused on the inventory management and its effect on profitability of ULNL. 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.

- 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.

- 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 ULNL should be made aware of inventory management aspects on profitability by various case studies, researches, market studies and so on.

- To penetrate the market, market survey should be done as huge capacity of production is kept utilized.

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Annexure A

Uniliver Nepal Ltd. (ULNL)

Balance Sheet and P/L A/C

Rs. In million (000,000)

	060/061 (2003/2004)	061/062 (2004/2005)	062/063 (2005/2006)	063/064 (2006/2007)	064/065 (2007/2008)
Fixed Assets	177.87	192.84	172.20	194.99	215.47
Current Assets	451.88	567.58	399.14	589.89	724.24
Inventory	132.47	293.93	144.45	126.11	184.22
Net Worth	324.94	342.35	48.13	358.43	396.01
Current Liabilities	304.81	418.07	223.21	426.45	543.70
Total Assets	629.75	760.42	571.34	784.88	939.71
Sales	1728.63	1540.99	1236.05	1244.73	1524.90
Total Cost	1420.97	1287.70	891.44	846.30	980.16
Net Profit	120.58	68.04	42.61	93.17	140.78

Annexure B

Correlation between Inventory and Sales

Descriptive Statistics

	Mean	Std. Deviation	N
SALES	1455.0600	211.72283	5
INVENTORY	176.2360	69.55942	5

Correlations

		SALES	INVENTORY
SALES	Pearson Correlation	1	.275
	Sig. (2-tailed)	.	.654
	N	5	5
INVENTOR	Pearson Correlation	.275	1
	Sig. (2-tailed)	.654	.
	N	5	5

Annexure C

Correlation between Profit and Total assets

Descriptive Statistics

	Mean	Std. Deviation	N
PROFIT	93.0360	39.38833	5
TA	737.2200	143.94260	5

Correlations

		PROFIT	TA
PROFIT	Pearson Correlation	1	.639
	Sig. (2-tailed)	.	.245
	N	5	5
TA	Pearson Correlation	.639	1
	Sig. (2-tailed)	.245	.
	N	5	5

Annexure D

Correlation between Inventory and Total assets

Descriptive Statistics

	Mean	Std. Deviation	N
TA	737.2200	143.94260	5
INVENTORY	176.2360	69.55942	5

Correlations

		TA	INVENTORY
TA	Pearson Correlation	1	.298
	Sig. (2-tailed)	.	.626
	N	5	5
INVENTORY	Pearson Correlation	.298	1
	Sig. (2-tailed)	.626	.
	N	5	5

Annexure E

Correlation between Inventory and Current Assets

Descriptive Statistics

	Mean	Std. Deviation	N
INVENTORY	176.2360	69.55942	5
CA	546.5460	127.06934	5

Correlations

		INVENTORY	CA
INVENTORY	Pearson Correlation	1	.298
	Sig. (2-tailed)	.	.626
	N	5	5
CA	Pearson Correlation	.298	1
	Sig. (2-tailed)	.626	.
	N	5	5

Annexure F

Correlation between Net worth and profit

Descriptive Statistics

	Mean	Std. Deviation	N
NW	353.9720	26.45337	5
PROFIT	93.0360	39.38833	5

Correlations

		NW	PROFIT
NW	Pearson Correlation	1	.430
	Sig. (2-tailed)	.	.470
	N	5	5
PROFIT	Pearson Correlation	.430	1
	Sig. (2-tailed)	.470	.
	N	5	5

Annexure G

Correlation between profit and sales

Descriptive Statistics

	Mean	Std. Deviation	N
PROFIT	93.0360	39.38833	5
SALES	1455.0600	211.72283	5

Correlations

		PROFIT	SALES
PROFIT	Pearson Correlation	1	.592
	Sig. (2-tailed)	.	.293
	N	5	5
SALES	Pearson Correlation	.592	1
	Sig. (2-tailed)	.293	.
	N	5	5

Annexure H

Correlations between Inventory and Profit

Descriptive Statistics

	Mean	Std. Deviation	N
INVENTORY	176.2360	69.55942	5
PROFIT	93.0360	39.38833	5

Correlations

		INVENTORY	PROFIT
INVENTORY	Pearson Correlation	1	-.198
	Sig. (2-tailed)	.	.750
	N	5	5
PROFIT	Pearson Correlation	-.198	1
	Sig. (2-tailed)	.750	.
	N	5	5

Simple Regression Analysis of Inventory on Sales

Variables Entered/Removed (b)

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

a All requested variables entered.

b Dependent Variable: INVENTOR

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1464.082	1	1464.082	.246	.654(a)
	Residual	17889.969	3	5963.323		
	Total	19354.050	4			

a Predictors: (Constant), SALES

b Dependent Variable: INVENTOR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.275(a)	.076	-.232	77.22255

a Predictors: (Constant), SALES

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.754	267.593		.167	.878
	SALES	.090	.182	.275	.495	.654

a Dependent Variable: INVENTOR

Annexure J

Simple Regression Analysis of Profit on Sales

Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	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	.592(a)	.350	.133	36.66581

a Predictors: (Constant), SALES

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2172.615	1	2172.615	1.616	.293(a)
	Residual	4033.146	3	1344.382		
	Total	6205.761	4			

a Predictors: (Constant), SALES

b Dependent Variable: PROFIT

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-67.132	127.055		-.528	.634
	SALES	.110	.087	.592	1.271	.293

a Dependent Variable: PROFIT

Annexure K

Simple Regression Analysis of Net worth on Profit

Variables Entered/Removed (b)

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

a All requested variables entered.

b Dependent Variable: NW

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.430(a)	.185	-.087	27.57430

a Predictors: (Constant), PROFIT

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	518.097	1	518.097	.681	.470(a)
	Residual	2281.027	3	760.342		
	Total	2799.124	4			

a Predictors: (Constant), PROFIT

b Dependent Variable: NW

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	327.090	34.822		9.393	.003
	PROFIT	.289	.350	.430	.825	.470

a Dependent Variable: NW

Annexure L

Simple Regression Analysis of Inventory on Profit

Variables Entered/Removed (b)

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

a All requested variables entered.

b Dependent Variable: INVENTORY

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.198(a)	.039	-.281	78.72995

a Predictors: (Constant), PROFIT

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	758.835	1	758.835	.122	.750(a)
	Residual	18595.215	3	6198.405		
	Total	19354.050	4			

a Predictors: (Constant), PROFIT

b Dependent Variable: INVENTORY

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	208.769	99.424		2.100	.127
	PROFIT	-.350	.999	-.198	-.350	.750

a Dependent Variable: INVENTORY

Annexure M

Multiple Regression Analysis of Inventory on Profit and Sales

Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	PROFIT, SALES(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	.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: INVENTOR

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: INVENTOR

Annexure N

Multiple Regression Analysis of Profit on Inventory and Sales

Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method
1	INVENTOR, 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), INVENTOR, 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), INVENTOR, 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
	INVENTOR	-.221	.297	-.390	-.744	.535

a Dependent Variable: PROFIT