CHAPTER - I
INTRODUCTION

1.1 Background

Nepal is sand-witched between two bigger and most popular countries of the world. China in the north and India in the east, west and south. The country is thus is landlocked. Nepal is landlocked country beside this it is the country of Himalayas and mountains. Powerful rivers rush out of the Himalayas, beautiful temples, culture and festivals and equally, exotic people really make Nepal the more beautiful nation of the world. Besides this Nepal is the Himalayas Hindus kingdom, land of the Buddha and the Everest has always existed as a sovereign nation. Ironically the country is under the vicious circle of poverty. Nepal stands at the bottom range of even among the least developed countries of the world. At present more then 32% of the population lies below the poverty line with basic items like food, clothing and shelter unfulfilled. The economic opportunities are not accessible to them because of Low quality of skill and sub-standard education with respect to human development index. Therefore Nepalese are in the search for the prospects of the new business sectors to upgrade the national level.

Industrialization is an important factor for achieving the basic objective of a country's economic and social progress. Now a day's industrialization is considered as an essential for the economic development of the country. It's facilitates on effective mobilization of resource such as capital and skill which might otherwise remain un-utilized. It also acts as a vehicle for fostering innovation and technological improvement industrial development, thus has a multiplier effect on the economic (Panta, 2003:250).

It is believed than in order to achieve security, stability and high standard of living the country must became industrialized. The must important reason for embarking on a performance of industrialization is to inn-ease the national income. The manufacturing and trading sector have to face various problems which have acted constraints in growth of industries. Such problems arc arises due to the country being landlocked and underdeveloped, lack of trained and skilled manpower, financial resources inconvenience in transport and communication networks, non-availability of assured energy at reasonable rate, shortage of capital, small size of market, unawareness of (he industrial potential, higher cost of production, low productivity of inputs, technology, instability government policies etc (Pradhan, 1992:3)

The industrialization started very late in country that is only after the Second World War. Several industries were established in public sector mostly with the financial and technical assistance of USSR and China. The government gave much emphasis on the development of public enterprises, after the adoption of first five year plan in 1956. After 1956, the government established different public enterprises during various plan periods, some public enterprises were liquidated, some were amalgamated, some were privatized and some are operating now also (Panta, 2003 : 250).

Since 1956, Nepal has witnessed growth and development of public enterprises. His Majesty's Government of Nepal has to play a vital role in the development process of the country. For this purpose HMG of Nepal makes massive investments to create necessary infrastructure and run some of the large manufacturing industries and to provide essential services to the people. This has necessitated creation of number of public enterprises as instruments of national development.

Public enterprises play a major role in achieving the twin objectives of social and economic development envisaged in the national policy. The objectives for which the public enterprises are set up are specified in their respective legal charters. The objectives are aimed at creating the necessary infrastructure for developing the economy, stabilizing prices, maintaining a regular supply of essential commodities, import substitution and export promotion and employment generation. To achieve the objectives for which they have been set up, public enterprises are endowed with more autonomy then government departments.

Nepal Bank Limited, a commercial bank was the first public enterprise to have a separate legal entity in Nepal. During the world war second, some other public enterprises were established, however they couldn't make any substantial progress. The significant penetration of public enterprises in manufacturing and trade occurred in the third and fourth plans respectively. Nepal started its planned economic development in 1956 with the lunching of first five year plan. Since then the number of public enterprises has increased substantially in the various field of economy.

1.2 National Trading Limited: An Overview

National Trading Limited (NTL) was established as a public LIMITTED COMPANY IN March, 1962 A.D. under the Nepal Company Act, in public sector completely owned His Majesty Government (HMG) of

Nepal. NTL was created in order to canalize commodity aids from the People's Republic of China and USSR with a view to meet the local cost of development projects initiated by these countries through the sales of aids good in the domestic market. Previously, this function was handled by the Development of commerce, HMG. In order to create a better channel to serve the growing needs of the national economy and the people at large, through the regular supply of essential goods at reasonable prices, HMG set up the NTL as a state trading organization.

It was entrusted with the functions of engaging on all kinds of trading activities including quota goods to be imported from India for the purpose of establishing domestic prices, regularizing the supply of basic construction materials, industrial raw-materials, machinery and equipment, and consumer goods. As NTL began to procure goods from diverse sources and also as it was exporting to diverse markets, NTL through its activities definitely did support the country's policy of trade diversification.

NTL is under the Ministry of commerce of HMG Nepal. It has a Hoard of Directors, Which consists of five members, is responsible for formulation short and long-term policies on NTL's periodical plans, programmer and policies. The Chairman and the General Manager are responsible, for the appropriate of the plans, programmers and policies' formulated and decided by the hoard. The chairman and the board member are all appointees of HMG. The Hoard of NTL has representation in it's from the most relevant ministries and department of HMG. Since the Hoard member has been drawn from the interrelated ministries of HMG this has resulted in easy coordination and efficient decision making at the policy level.

NTL's organization structure has undergone continuous as percent the increasing volume of trading activities, which are also guided by the growing development works under various plans periods as well as because of the ever increasing needs of the people in general for consumer goods.

As a result, NTL has a diversified organization structure consisting of eight different departments at central office; it has five regional offices, ten branch offices, and one foreign based office in Calcutta, beside the NTL head office in Kathmandu. Besides this, NTL has maintained bonded ware house and duty free ship in Ramshahpath, Kathmandu for diplomats and duty free shop in Tribhuvan International Airport, and valley sales office at Bishal Bazaar sales center and Chabahil sales center. At present total of 510 staffs are working in the corporation. The

range of products which fall within the training framework of NTL has been categorized as follows:

Range of Products of Trading Activities

Category	Products
Constructional materials	Cement. G.I. Pipe, Iron rods. Angle etc.
Machineries and Equipments	Grain milling Machineries, drilling machine. Printing press. Jeep. Cars, Motor-cycles, Tools and equipments, Electric-fan, Electric-fittings. Electric-motors etc.
Industrial Raw-Material	Writing and Printing papers. News Print Paper. Craft paper, copper sheets. Brass sheets etc.
Bonded Warehouse goods	Whisky, Beer and liquors. Cigarettes. Tobacco. Perfumes etc.
Consumer goods	Major essential consumer goods

Source: NTL Annual Report 2062/063

1.3 NTL Role in National Economy

NTL through its trading activities has to fulfill economic and social responsibilities entrusted to in the country. NTL has its social responsibility to maintain regular supply of daily necessity goods at a reasonable price throughout the country. NTL again has the responsibility to fulfill the needs of the economic sectors like agriculture and industry and at a reasonable price.

NTL has rendered support services to the development of tourism by providing duly free goods like Whisky, Beer, Cigarettes, tobacco, cigars, perfumes etc. through its bonded warehouse and duty free shop to persons with duty free privileges as well as to out-going and incoming tourists.

NTL has assisted to various national development project as roads, factories etc. directly/indirectly by making available of development goods (cement, iron rods, corrugated sheets, machineries, and so on) as well as to make available local expense for different development projects from the proceeds of commodities aid.

Through a long accumulated experience of about quarter century, NTL has expertise in handling imports by engaging in imports, and other activities related to import performance. NTL has taken part in regional and international trade fairs and exhibitions in order to identify potential market for import and export.

NTL has established its business contact with government and private trading entities in the People's Republic of China. USSR, India, Pakistan. Bangladesh, North Korea, Bulgaria, South Korea, Thailand, Hong Kong, Japan, Singapore. Federal Republic of Germany, Kingdom, France Italy and the United State of America.

1.4 Objectives of NIL

As the first leading trading organization at the national level. NTL was made to deal with both the import and export aspects of foreign trade for the purpose of rendering supports service to the economic development of the country. In order to achieve this end. Currently the NTL have had the following board objectives.

a. To stabiles the price of construction materials and industrial raw materials needed for the country both by local purchase and import.
b. To maintain stable price through increase in supply by importing [he necessary consumer goods of general public.
c. To supply bonded ware house and duty free goods.
d. To act as an agent of HMG in the matter of import and distribution of the goods which the HMG has to import and distribution time to lime and to handle the commodity-aids goods received for HMG.
e. To engage in agencies business by getting the agent through producer for the products in which NTL is dealing.
f. To earn reasonable profit in return of HMG's investment.

1.5 Introduction of Inventory Management

The literal meaning of the word inventory is stock of goods. Inventories are greatly influenced by the level of sales. Since inventories are acquired before sales can lake-place, an accurate sale forecast is critical to effective inventory management. Inventory can be in the form of raw materials, work in progress and finished goods. Inventory constitutes the most significant part of current assets of large company. The inventories exist in manufacturing and non manufacturing organization. In manufacturing org. there are four types of inventories such as raw --materials, work in progress, finished goods and supplies.

First, raw materials refer those units which have been purchased & stored for future productions. Seconds, WIP refers semi manufactured products. Third, finished goods inventories are those which are

completely manufactured products, are ready for sales. 1'ourth. supplies include office & plant cleaning materials, oils, fuel, light bulbs & so on. These materials do not directly enter for production. In case of a trading concern, inventory will comprise only finished goods or stock in trade owned by it for sale to customers in the normal course of business. Inventory management involves dele-fining how much inventory to hold, when to place order and how much units to order. Inventory management involves planning of the optimum level of inventory and control of inventory cost supported by an appropriate organization structure, which is staffed by trained persons and directed by top management. It involves both financial as well as physical dimension and these dimension are interrelated and can not be looked in isolation (Agrawal, 2000: 150).

Depending upon the nature of the industry and firm, inventory may be durable and perishable, valuable and expensive. When materials are purchase by and organization they have to be stored until they are put into the production process, when the production is over, the finished products have to be stored again until they are sold. Holding excessive inventories literally can ruin a company. Inventory should be maintained in proper way so as to avoid overstock and under stock. Thus the primary concern of inventory management is to minimize total cost of inventory and maintain of optimum level of inventory.

1.6 Statement of the Problem

Organization cannot be far from problem. Inventory management and control is important for any organization to meet the regular demand of the customer at optimum cost and increase return on investment.

The public enterprises process in Nepal is being developed very slowly. Policies of government in respect of public enterprises are not satisfactory. The growth rate of public corporation is very slow. But, most of public corporations are operating on losses due to the lack of proper inventory management system. So NTL is also suffering from loss.

NTL as a trading company, it has the responsibility of making the ideal inventory management for the smooth flow of production. To manage inventory effectively and efficiently many statistical tools and techniques arc available and developed for the systematic inventory management system. The present study is simply done lo know the inventory management of NTL the stud}' has tried to answer the following research questions.

1.

a. To what extent is the inventory management system followed?
b. What are the main problems encounters during the management of inventory?
c. What are the tools and techniques use by this company to control inventory management?
d. What effects will occur in the company's profitability and productivity due to change in the inventory?

1.7 Objectives of the Study

The basic objectives of this study are to examine the inventory management position of NTL. The specific objectives are: -

a. To examine the present inventory management position of NTL.
b. To evaluate impact of inventory on purchase, sales and profit of NTL.
c. To analyze the impact of inventory in profitability of company.
d. To provide suggestions and recommendations for the betterment of Nepalese organization.

1.8 Significance / Importance of the Study

Inventory management is one of important aspects in manufactory and Non-manufactory Company. Without the effective and efficient inventory management system no one can successfully operate in this dynamic environment. The study tried to attempt the impact in profitability due to changes in inventory. J low can we improve the inventory management system, what is the present situation of inventory management system and so on. The research is mainly concern on this tried to answer such questions. The present study deserves some significance of its own kind in this field. This study will be concise, Practical, useable and valuable to the major parties interested in inventory management and more beneficial to NTL. Most of the public enterprises of Nepal are suffering from 1 the losses due to the poor inventory management. So this study provides the lesson to the company who couldn't mange the inventory properly.

1.9 Assumptions Limitation of the Study

As every research has its own limitation. This study is also no biased. The study has certain limitations which are given below:

a. The study only concentrates on the area of inventory management.
b. The conclusion derived from the study doesn't applicable for all kinds of trading companies,
c. Major portion of analysis and interpretation have been done on the basis of available secondary data.
d. Financial tools like inventory turnover ratio, gross profit margin, net profit margin and statistical tools like mean, standard deviation and

correlation and regression analysis are use to analyses the data have their own limitation.

e. The accuracy and reliability of the study depends upon the data provided by the company.
f. The data have been based on 2058 to 2063 (five years) preference of the company
g. Basically the data be used in the study from factor source and no attempt is done to examine the reliability of the data.

1.10 Chapter Scheme

This study has been divided into five different chapters.

1.10.1 Introduction

This chapter includes background of the study, introduction of the company, statement of problem, objectives and limitation of the study.

1.10.2 Review of Literature

The second chapter deals with review of literature and review of related study.

1.10.3 Research Methodology

The third chapter deals with introduction, research design, nature and source of data, data gathering procedure, presentation and analysis of technique and tools.

1.10.4 Presentation and Analysis of Data

The fourth chapter deals with presentation of related data collected from different source and analysis of them to reach closer to the actual result by using financial and statistical tools and techniques.

1.10.5 Summary, Conclusion and Recommendation

The last chapter provides the summary, conclusion and recommendation of overall study. At the end an extensive bibliography and annexes are also included.

CHAPTER-II

REVIEW OF LITERATURE

Review of literature is used on the assumption that if an idea is an important enough to included in a report and should he incorporated into that text. Scientific research has been based on past data. The previous studies can not be ignored because they provide the foundation or pillar to the present study. Under this chapter attempts have been made to present the review of literature regarding inventory management. This chapter is divided into two sub-sectors: Theoretical concept of inventory management is presented in first part and review of related studies has been presented in the second part.

2.1 Theoretical / Conceptual Frame Work

Profit planning and control is an important approach, mainly in profit oriented enterprises. Profit planning is merely a tool of management. It is not an end of management or substitute of management. It facilitates the managers to accomplish managerial goals in a systematic way.

The management is efficient it is able to accomplish the objective of the enterprise. It is effective, when it accomplishes the objectives with minimum effort and cost, hi order to attain long rang efficiency and effectiveness, and management must chart out its course of action in advance. A systematic approach • that facilitates - effective management performance is profit planning and control, or budgeting.

Profit is ultimate goal of every business house. They involve in business for making profit. Profit can not be achieved easily; it should be managed well with better managerial skills. So profit is the planned and controlled output of management. By -element, profit is the revenue and planning of cost. Generally two types of plans arc-prepared; they are i) long range or strategic plans ii) short range or tactical plan.

2.1.1 Inventory Management

The term inventory management is formed with two different words inventory and Management. Inventory is store of goods and stocks. In manufacturing organization. Inventory refers raw-material parts and components, supplies, work in process and finished goods. In service organization it includes the tangible items to be sold and used for day to day operation. The dictionary meaning of inventory is stock of goods or a list of goods. Various authors understand the word inventory differently. In accounting language may mean stock of finished goods. In a manufacturing concern it may include raw-materials, work in process and stores etc.

Inventory plays vital role on the success of the organization. Inventory means not only maintaining stocks, it refers the investment of the

organization as well as of the country. It is a major part of investment and affects the economy of the country as well. Therefore inventory control is very essential. There should be good inventory policies controls. The set of policies of controls refers the inventory system of the organization. Inventory management involves planning of optimum 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 management, it invokes both financial as well as physical dimension and these dimension are interrelated and can not be looked isolation. Inventory in the form of raw-materials, work in process and semi finished goods are of great significant for the success of an enterprise. This can directly affect Inefficiency of the system.

Managing of the inventory is a challenging and-complex task for both private as well1 as public sector enterprises. There are various scientific tools and techniques for the solution of inventory management problem. However, in Nepalese contents many trading enterprises have been facing the problem of effective handling of inventory. Every enterprise needs inventory for smooth running of its activities. It's serves as a link between production and distribution process. There is a time lag between the reorganization of a need and its fulfillment. The greater the time lags the higher requirement for inventory. The unforeseen fluctuation in demand and supply of goods. Also necessitate the need for inventor). It also provides a cushion for future price fluctuation. About 90% part of working capital is invested in inventories; therefore it is necessary for every management to give proper attention to inventory management. A proper planning of purchasing, storing, handling and accounting should form a part of inventories management. And efficient inventory management system will determine.

Capital investment is required for the holding of different kinds of inventories. Excessive inventory increases the capital investment and inadequate inventory causes the obstacle in smooth running of production of market operation. Therefore, excess and inadequate inventories would not desirable. Inventory should be maintained in appropriate level to avoid both under and over stock situation. It is because main aim of inventory management is to avoid excessive and inadequate level of inventories and maintain optimum level of inventory for the smooth productions and sales operation.

Inventory is the stock of materials held by a firm to meet its future requirement of production and sale. In other words, inventory refers any stock held by a company for smooth running of production and market operation. It is a part of current assets in which huge part of working capital

invested. Depending upon the nature of the industry and firm, inventory may be durable or non-durable, perishable or non-perishable, valuable and expensive. Basically manufacturing and non manufacturing public enterprise generally holds following kinds of inventories. They are: -

A. Raw- Material

Raw-materials are those basic inputs that are converted in the finished product through the manufacturing process. In other words those units which have been purchased and stored for future production are raw-material inventories. Raw-materials inventories are hold by manufacturing firm for smoothly running of production operation. I he level of raw-materials inventories is influenced by anticipated production, seasonably of production, reliability of sources of supply and efficiency of scheduling purchase and production operation (*Weston and Copeland, 1992 :321*) Construction materials and industrial are the main raw-material use by NIL.

B. Work in Process

Working process is semi manufactured products hat have gone committed to the production process but have not been counted into finished goods. Sometimes it becomes very difficult to determine which materials is work in process and which arc not because same materials may be the final product for some industry and same material maybe the WIP for other industry, it depends upon the nature of production. For sugar industry, sugar is the final production where as for a biscuits industry sugar is uses as a raw material.

C. Finished Product

Finished goods inventories are that completely manufactured product, which are ready for sale. Stock of raw materials and work in process facilitates production while stock of finished goods is required for smooth marketing operations. In a manufacturing firm they are final output of production process whereas in none manufacturing firm smooth marketing operation is required. It a firm doesn't have finished goods inventory it would have to wait for the completion of the production process be lore inventory could be sold thus demand could not be satisfied. When demand arrives there is no inventory lo satisfying that demand? In such situation, the firms will being danger position of Imposing the customers permanently. Therefore adequate amount of inventory should be hold for the smooth for the smooth operation of the organization.

D. Supplies and Parts

Fourth kinds of inventory are that goods which lies for office such 's cleaning things (soap, bboom, oil, fuel, light buIBs, paper box). Spare parts are those

materials which are use in operating function. Generally inventory management covers the functions of:

2.1.1.1 Purchasing

Purchasing function is must important function an organization. In narrow sense purchasing means the act of buying the items at a price. Purchasing is also known as procurement which refers the process by which the companies acquire raw materials components, product, services and other resources from supplies to excite their operations. According, purchasing is an important boundary function that supports operations by acquiring major resources from the conversation process (*Weston and Copeland, 1992:321*).

Purchasing functions in any organization is concerned with the cost of materials purchase. Therefore, purchasing agent has an important role. Purchasing is the only department that deals with both the materials and cost should be recognized as the value expert of the organization.

A. Objectives of Purchasing

The Major objectives of purchasing may be:-

- Provide an uninterrupted flow of materials, supplies and services required to operate the firm.
- Minimize inventory investment and losses.
- Maintain adequate quality standards.
- Find or developed competent suppliers.
- Purchase required items and services at the lowest ultimate price.
- Improve the organization competitive position.
- Work harmoniously with other department of the organization.

B. Purchasing Procedures

The main steps of purchasing procedures may be listed below:-

- **Purchase requisition :-** Third initiation of purchases beings with the normal request firm. Among various sections of Cleo'rtinen4. the purchases department has to order 9oods. The request is made in purchase, requisition slips by (his purchase department, needing the goods authorizing to the purchase department for procuring the goods as percent (he specification given in the slip by the date mentioned on it.

- **Decision for purchase: -** On receipt of the purchases requisition, the purchase department that decides what and how much to buy taking in to consideration various limitations and constraints in purchasing the goods. As far as possible. Mie raw-materials should be pin chased in

- sufficient quantity, neither less nor more, to continue the slow of production, for purchasing other materials of plant and equipment, the necessary permission should be obtained from the authority concerned and the finance department to release the finance.
- **Study of market condition and sources of supply:-** I laving taking the decision for the purchase, agent should study the market condition based on market reports as to when and what goods should be purchase. And intensive study should also be made concerning the source to supply from where the goods can be procured with the help of catalogues, directories. Past record, list of vender and purchase records.
- **Selection of vender: -** Based on the studies of market conditions and sources of supplier, the purchasing agent selects the vender keeping in mind that the reliability is price movement history, is delivery record and lop service required and his co-operation. Sometimes supply is selected out of the listed suppliers registered with the company for the supply of goods or sometimes quotation of price bids of tenders are invited from the prospective suppliers on the studying of supply and the quality and quantity of goods, vender is selected out of the bidder a tenderizer.
- **Purchase ordered: -** Having selected the vender supplier, purchase order is prepared in the prescribed form by the purchase department and send to the vender authorizing to supply specified quantity and quality of materials at the reasonable price at the lime and place mentioned therein.
- **Receiving materials:** - when goods arrived they are taken delivery and the receiving clerk checks materials with the order placed by the purchasing department to the vender. After proper checking, goods should be delivery to the store department or to other department that requisitioned them. While checking, if any discrepancy is found regards to quality or quantity, it should immediately referred to (he purchasing department so that discrepancy may be adjusted.

2.1.1.2 **Store Keeping**

- I he best method of maintaining materials properly is store keeping. Store keeping is a service function in a manufacturing concern, which deals with the physical storage of goods under the custodian of well-trained and experienced person termed as storekeeper. Raw-materials are usually known as stock and the place where such stocks arc kept is known as storeroom. Store keeping is that aspect of inventory control, which is concerned, with the physical storage of goods. The

responsibilities of store keeping management are 'to receives materials, to protect them in storage from unauthorized removal, to issue the materials in the right quantities at the right lime in the right place and provide these services promptly and at least cost.

In the light of the above explanation store keeping can be descried as the keeping of materials in stores in a scientific and systematic way.

A. Objectives of store keeping:

The major objectives of store keeping may be staled 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 all losses from fire, theft and obsolesce.
- Minimizing the investment on inventories.
- Maintaining regular supply of raw- materials at all limes when properly authorized.
- Facility ordering or required materials.
- Minimizing the inventory holding cost.

To achieve the above said objectives, a firm generally uses different types of controlling devices like:-

a. Bin Cards: - A bin card is a record of the receipt and issue of materials to keep for each items of stores carried. The storekeeper maintains these cards and storekeeper is answerable for any difference between the physical stoke and the balance shown in the bin card. These cards are used for not only recording, receipts and issues of stores but also assist the storekeeper to control the stock. For each item of item of stores, minimum quantity, maximum quantity and ordering quantity are stated-on the card. By seeing the bin card the storekeeper can send the materials requisition for the purchase of materials in time.

b. Store ledger: - This ledger is kept in the costing department and is identical with the bin card accepts that issues and balanced are shown along with their money values. I his contains an account for every item of stores and makes a record of the receipts, issues and the balances, both in quantity and value. Thus, ledger provides the information for the pricing of materials issued and the money value at any lime of each item of stores (*jain and Narang, 1991:2.37-2.39*).

2.1.1.3 Issuing and Pricing:

Materials should be issued against materials requisition slip. The prices of the issues can be determined based on cost price or market price. Storekeeper should always issue the materials under proper authority to avoid the misappropriation of materials. The pricing of the issue can be used on any one of the following methods, depending on the policy of management (*Agrawal, 1975:9*).

- First in first out (FIFO)
- Last in first out (L1FO)
- Sample average
- Replacement price and market price
- Standard price

All the above methods have its advantages and disadvantages. However the method chosen is significant for efficient inventory management. The weighted average method is use in various enterprises to determine the pricing. It is calculated by using following formula.

$$\text{Weighted Average} = \frac{\text{Total Amount of Closing Inventory}}{\text{Total Quantity}}$$

2.2 Need of Holding Inventories

The basic reason for keeping inventory is that it is physically and practically impossible to meet the need of customers whenever and wherever they needed. In addition to this reason, other reasons for maintaining inventory are as follows.

A. Transaction Motives

Transaction motives emphasize the need to maintain inventories to facilitate .smooth production and sales operations. Inventories are required to maintain business transaction smoothly. Here, transaction means both smooth production as well as regular supply of product. Shortage of raw materials may interrupt the smooth production and due to the lack of regular supply, customers may turn to another source of supply. Minis may avoid these problems by maintaining an optimum level of inventories.

B. Precautionary Motives

Precautionary motives necessitate holding of inventories to safeguard the risk of unpredictable change in demand and supply forces and others factors stock of materials should be maintained for a smooth production operation. Precautions should be taken for uninterrupted production operation by maintaining sufficient stock of raw materials. Unexpected cases like strike, transport disruption and short supply of materials may interrupt the production operation. Like materials, stock of work in progress should also be maintained sufficiently as storage or machine breakdown in one process should also be maintained sufficiently as storage or machine breakdown in one process should not hamper the production operation of succeeding processes. Adequate stock of finished goods should also be maintained to meet fluctuating demands.

C. Speculative Motives

Speculative motives influence the decision to increase or reduce inventory levels to take advantage of price fluctuations. Holding inventories with a motive to sale at a high price in future is called speculative business. If price is expected to increase in near future: some firms hold enough inventories and expect to earn supper normal profit. So, sometimes firms holding stock of goods with such motive.

A company should maintain adequate stock of materials for regular supply of product. Due to time lag between demand for materials and its supply it is not possible for a company to procure raw materials whenever and wherever it is needed. On the other hand procurement of raw material may be delayed due to the strikes, transportation, disruption etc. Therefore, the firm should maintain sufficient stock of raw materials at a given time for a steady production.

Stock of finished goods has to be hold because a firm cannot produce immediately when goods are demanded by customers. To holding inventories the firm is able to separate the process of purchasing, producing and selling. If firms were not willing to hold adequate raw materials and finished goods, purchasing would take place only when immediate production and sales were anticipated. When a customer signed an agreement the firm would not able to offer rapid delivery when the scheduled production runs, it would achieve none of the economies that longer urns provide.

2.3 Objectives of Inventory Management

The objectives of inventory management are as follows:

I. To supply all kinds of inventory regularly in such a manner (hat there is no shortage of materials and the production has got to be stopped. For this purpose, the minimum level of all kinds of material is pre determined and the business organization tries to maintain the materials at that level.
II. To utilize available storage spaces properly and prevent stock levels from exceeding space availability.
III. To have suitable organization for management of inventory for maintaining adequate accountability of inventory assets.
IV. To ensure an adequate supply of materials and others of require quality with a reasonable price.
V. To minimize stock outs and shortages and avoid cost of interruption in operations.
VI. To optimize investment in inventories and keep down inventory carrying costs and to minimize others loss like obsole3cence. 4hefls etc.

VII. To provide a perpetual inventory system for eliminating differences between actual and recoded stock and provide inventory value for (he preparation of financial statement.

VIII. To provide a check against losses of materials through carelessness or pilferage and helps for disposition of inactive and obsolete store items.

IX. To pro hide information about inventories for planning aid control of inventory.

2.4 Cost Associated with Inventory

Cost of inventory includes price of raw-material, transportation, insurance, store charges etc. all these cost directly affect cost and price of goods. The goal of inventory management is to provide the inventories required to susta)n operations at the minimum cost. The first step is to identify all the cost involved in purchasing and maintaining inventories. To maximize profit of and organization, management should: focus on minimization of inventory cost. Thus, inventory cost can be classified in the following categories.

I) Procurement/ Ordering Cost

It includes those cost 7hich are incurred for placing orders, or the setup cost if goods are manufactured. Ordering cost increases with the number of order, thus, more frequently is the inventory acquired; higher the firms ordering cost. On the other hand, of the lire maintained large inventory. Levels there will be few orders placed and ordering cost will be relatively siall. Thus, ordering cost decreases which increasing the size of inventory.

Generally, this cost is fixed in nature with some exception. When this cost involves both variable costs, assuming the or caring cost (O) is fixed percent order, the load ordering cost is calculated simply by multiplying 'O' by the number of limes to be ordered per year. Therefore total ordering cost is calculated as fallows (*Pradhan. 1W2: 1 87*). Total ordering cost |TOC| - [O] |N| = |O) | A/Q| Where,

O = Host of placing and order
N = Number of times to be ordered percent 9ear
I A =1 Annual requirement

II) Holding / Carrying Cost

Holding cost is incurred fkr caepinc stocks in thd store. It includes rent, insurance, security, heat, light, power, taxes, thefts, laakage. spoilage etc. these costs generally increase in Production to the average amount of inventory Carrying costs generally rise in direct proportion to the average amount of inventory carried, which in turn depends on the frequency with which orders arc placed. The total carrying cost calculated are follows:-

Total carrying cost [TCC] = |C| [P] f A|
Where,

C P = Percentage carrying cost
P = Purchase price percent unit
A = Average number of units

The inventory carrying costs are further explained as:-

a. Capital opportunity costs,
b. Handling costs.
c. Storage costs,
d. Spoilage and shortage costs
e. Depreciation costs,
f. Insurance and taxes

III) Shortage / Stock out Costs

Stock out refers the storage the shortage of stock to meet demand of customers. Stock out cost includes the cost of back order, loss of goodwill, loss of the profit, expenses incurred for receiving the stock from supplier and notifying the customers when goods are arrived. When the sales are lost due to stock out. The firm losses both the profit margin on unmade sales and the firms goodwill. Stock out cost is computed from following formula.

Stock out cost = inventory cycles percent year output units X probability of possible stock out x unit stock out cost
Where,

$$\text{Inventory Cycles Percent Year} = \frac{\text{Annual uses}}{\text{Quantity Order Size}}$$

Determination of stock out cost is generally appropriate and arbitrary in future. However its significance shouldn't be ignoring in effective inventory management.

2.5 Techniques of Inventory Management

Adequate inventory facilitate smooth production activities and help to provide quick delivery to customer. On other hand excessive A inventory is idle resource of the firm and can prove costly because it ties up working capital necessarily. Which could have been better used had it been utilize for some other purpose. According to the Alton N. Smith "Inventory is (money) on which a company pays interest rather than collect interest."

A firm should manage inventory properly in order to achieve the wealth maximization objective. To achieve this, the firm should determine the optimum level of inventory. Efficient controlled inventories make the firm flexible.

Inefficient control result in unbalanced inventory and flexibility the firm may sometimes run out of stock and sometimes may stock unnecessary. This increases the level of investment and makes the firm unprofitable. For effective and efficient control of inventory, the following techniques are employed.

2.5.1 Economic Order Quantity (EOQ)

Economic order quantity is the quantity of goods ordered, which minimizes total annual cost of inventory. Generally, economic order quantity equals carrying cost and ordering cost of inventory.

Johan J. Hampton defined economic order quantity as ’(he order she that will result in the lowest total of order and carrying cost for items of inventory1, further more he stales the importance of economic order quantity as if a firm places unnecessary orders it will incurred unneeded order costs if it places too few orders, it must maintain large stock of goods and will have excessive carrying costs by calculating an economic order “quantity. The firm identifies the number of units to order that results in the lowest total of this cost. The EOQ model relics on several assumptions.

a. There is a continuous, constant and known demand rate.
b. The lead time/ replacement cycle is known as constant.
c. The constant purchase price is independent of the amount order.
d. Transportation costs remain constant.
e. There is no inventory in transit.
f. All inventory parts are independent of each other.

Economic order quantity (EOQ) can be computed as follows:

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

Where,

A = Annual Requirement
O = Ordering cost per order
C = Carrying cost per unit

EOQ can be determined by the three approaches

I. Forma! Approach
II. Trail and error Approach
III. Graphic Approach

I) Formal Approach

Mathematical models are also available to calculate economic order quantity. We can calculate by using the following formula.

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

II) Trial and Error Approach

Under this approach, first of all the different alternatives order number along with the various order size of each alternatives order is determined. Than, ordering costs and carrying costs are found out by totaling (lie relative ordering cost and carrying cast, total cost of each order size is determined.

The lowest cost is the cost of economic order quantity. The total cost would be the lowest where the relevant costs are equal. The following steps are helpful to prepare the table.

Step 1 To estimate the number of orders.

Step 2 To find out the order size, by using the Following formula

$$\text{Order Size} = \frac{\text{Annual Requirement}}{\text{Number of Orders}}$$

Step 3 To find out average quantity

$$\text{Order Size} = \frac{\text{Average Quantity}}{\text{---------}}$$

2

Step 4 To find out Carrying cost

Carrying cost = Average quantity x Carrying cost per unit

Step 5 To find out ordering cost

Ordering cost = Numbers of orders x Ordering cost per order

Step 6 To find out total cost

Total cost = Carrying cost x Ordering cost

Trial and error analytical approach to resolve the order quantity problem can be illustrated with the help of following examples:

Table No. 2.1

Trial and Error Analytical Approach

No of Orders	1	2	3	4	5
Order Size	2500	1250	833	725	500
Average Quality	1250	625	717	313	250
Carrying cost @ of Rs 2	2500	1 250	834	626	500
Ordering cost @ of Rs 100	100	200	300	400	500
Total Cost	2600	1450	1134	1026	1000

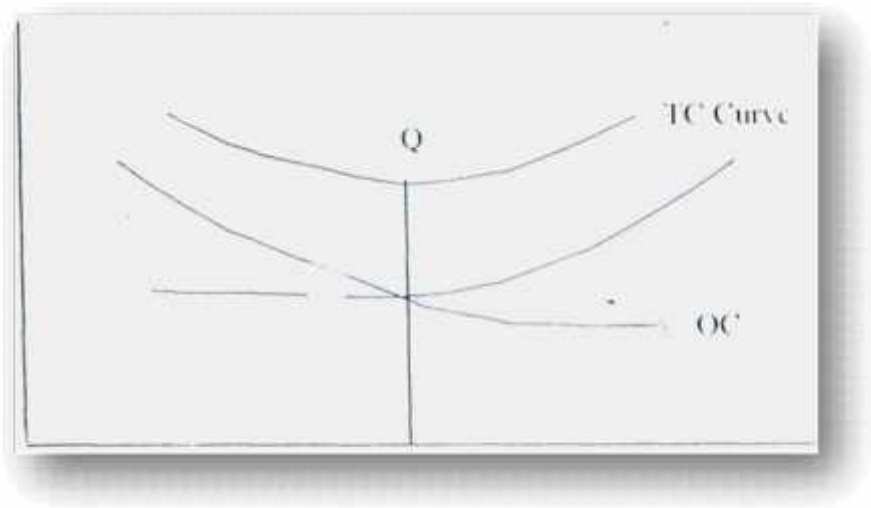
In the above table, the lowest total cost is at order number live where the economic lot size is five hundred units. Therefore, 500 units is the economic order quantity. This is lot size where the carrying cost and ordering cost are equal.

III) Graphical Approach

Economic order quantity can also be determined by using the graphical approach. Under this method, EOQ is determined at a point where total ordering cost and carrying cost intersect each other. It is the point where ordering cost curve and carrying cost curve are equal. At this point total cost would be minimum. If the orders are increased or decreased beyond this

point, the total cost will increase. It may be presented clearly in the following diagram.

Figure No. 2.1
Graphical Approach of EOQ



In the above diagram, OX axis represents the ordering quantity and OY axis represents the costs. When the order size increases the numbers of orders as well ordering costs also decrease. Therefore, the ordering cost curve slopes down from left to right. On the contrary to this, the carrying cost curve slopes upward from left to right, as the carrying cost increases with the increase in number of orders. The point where the ordering cost curve and carrying cost curve intersect each other is economic order point it is the only point where the total of carrying cost and ordering costs are minimum. The diagram shows that the total costs curve slopes downward in the initial stage and slowly tend to increase from the equilibrium point, showing the U-Shape.

In the OM point the total curve is lowest. Any increase and decrease order size from this point, the total cost will tend to increase.

2.5.2 Re-Order Point

The re-order point is the level of inventory at which the firm places an order in Mie amount of economic order quantity. The problem when to be ordered is solved by determining the re-order point. Re-order level depends upon the lead time, rate of consumption and economic order quantity (Munakarmi and Shrestha - 2003). I he reorder point is calculated by using any of the following formula:

Re-Order Point = Lead time X Daily Consumption

Re- Order point ~ Maximum Consumption x Maximum 1 .cad Time

Re- Order Point = Minimum Level + (Lead Time x Daily Consumption)

The items of information are needed input to design the re-order point, which arc given below:

Usage rate
This is the rate percent day at which the items are consumed, in production or they are sold to customers.

Lead time
This is the length of time between placing an order and receiving the order.

2.5.3 Safety Stock Level

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. The provision of safely stock makes the organization able to face the problem of stock out.
Here,

Safety = Average Usage \ Lead Time

2.5.4 Minimum Stock Level

This represents the quantity below which it should not be allowed to be kept. The purpose of keeping this level to ensure that production is not hold up due to shortage of any materials.

Minimum Stock Level = Re-ordering Level - (Normal Consumption x Normal Reorder Period)

2.5.5 Maximum Stock Level

This represents the quantity below which stock should not be allowed to keep. I he purpose of keeping this level is saving the company from the disadvantage of over stocking

Maximum Stock Level T= Re- Order Level I Re -Order Quantity (Minimum consumption x Minimum Re- Ordered Period)

2.5.6 Average Stock Level

An average stock level indicates the average stock hold by the firm. It is calculates by using following formula.
Average Stock Level = Minimum Stock Level 1/2 of Re-Order Quantity

2.5.7 Danger Level

This is the level below the minimum quantity. It is a level at which normal issue of (he materials are stopped but issued under special instructions. Generally, danger level of stock is fixed above the minimum level but below the re-ordering level. It is calculated by the following formula.

Danger Level = Average Consumption Maximum Re-Order Period for Emergency Purchases

2.5.8 Just-in Time Inventory System (JIT)

Modern business enterprises are applying new strategies for inventory management. It is just-in-time inventory system. The ordered materials and parts should arrive only at the time of the supply to a customer which is just- in-time. This system helps in saving the cost. Product are not manufactured or inventory are not order unless need arises under the system. Thus, inventory is not maintained or maintains relatively a low inventory level. The main objective of the system is to avoid or reduce the level of inventory.

JIT reduces the sizeable amount spend on inventories and other related factors. The special features of JIT system are as under.

1. A smooth uniform production
2. A full method of coordinating in the production process.
3. High quality of materials and finished goods.
4. Purchase of materials and parts in small lot size.
5. Effective preventive maintenance of equipment.
6. Skilled workers and Flexibility in facilities.

2.5.9 Perpetual Inventory System

Maintaining of regular stock records is commonly known as perpetual inventory. Jin fact. Perpetual inventory implies a complete and up dated account of each item of stores both on records and physical goods. The institute of cost and management accountant of England and Wales defines perpetual inventory as 'A System of record maintain by the controlling department, which reflect the physical movement of stock and their-current balance.

Thus, this is a system of ascertaining current balance after recording every received and issue of materials and stock records. Continuous stock taking is an essential future of the perpetual inventory system. Inventory records maintained under Ml () and FIFO basis are the best example of perpetual inventory system. Perpetual inventory means maintenance of such records (Stock control cards, Bin cards and Store ledger) as it will reflect the receipts, issue and balance of all items in stock at all lime.

2.5.10 ABC Analysis - Selective Control

ABC analysis is the application of stock holding of Pareto's law which shows that the majority of inventory value will be represented by relatively few items. The firm should pay maximum attention to those items whose value is the highest. Thus the firm should be selective in its

approach to control investment in various types of inventories. This analytical approach is called ABC analysis.

Manufacturing organization finds it useful to divide materials into three categories for the purpose of exercising selective control on materials. An analysis of material costs will show that a smaller percentage of items of materials in the stores may contribute to a large percentage of the value of consumption, and on the other hand, a large percentage of items may represent, a smaller percentage of the value of item be consumed. ABC' analysis is a control technique that divides items into sub classifications and uses different control systems for each group of materials. Under this technique of material control materials are listed in A, B and C group in descending order based on money value of consumption.

Table 2.2

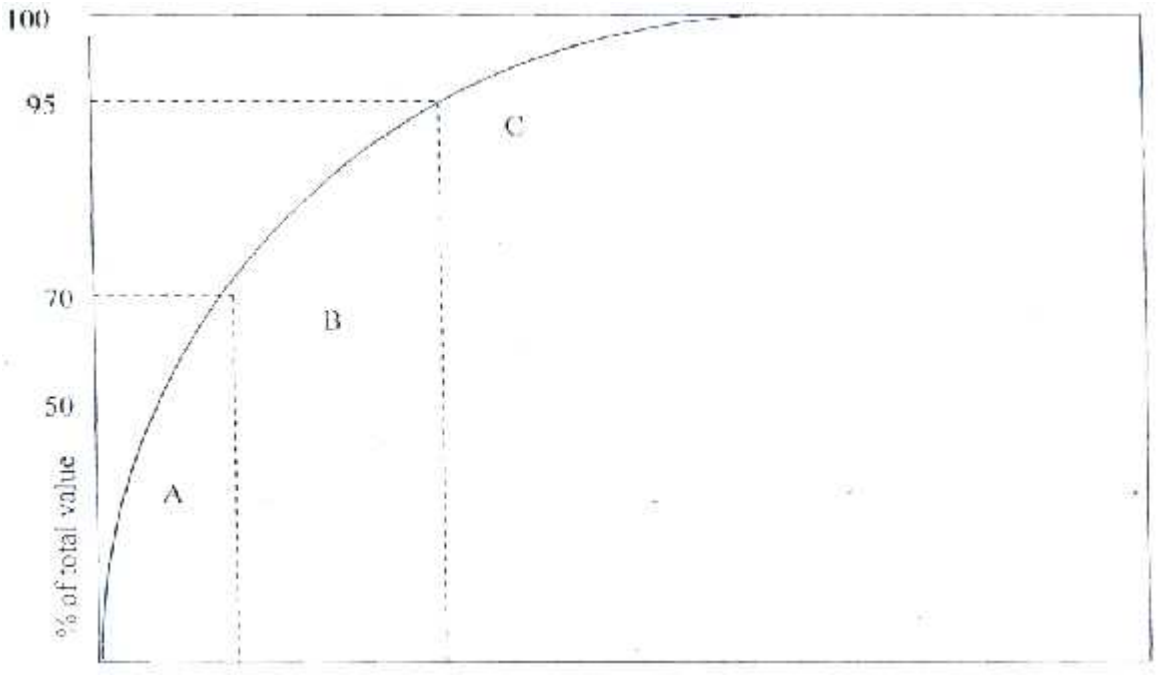
ABC Analysis - Selective Control

Category	% of Total Value	% of Total Quantity
A	70	10
B	25	30
C	5	60

In the above table, it is shown that 10% of the total items account for as much as 70% of the total value. These are 'A' category items which need very strict control because of their high cost significance. The second type of items represents 30% of the total quantity but amount for 25% of the total value. These are 'IV items which need routine type of control. Finally, the items representing 60% of total quantity account only for 5% of total value. The 'C' items are kept under simple physical control. The rules regarding purchasing, storing and issuing various categories of item should be formed according to their value and importance.

Figure No. 2.2

ABC classification



Source : Joshi, 2007

Advantage of ABC Analysis

The advantages of ABC technique are as follows:

I. Close and strict control can be exercised on those items which represent large amount of capital invested.
II. Investment in delivery is regulated and funds can be utilized in the best possible way.
III. Economy in stock carrying costs.
IV. It helps in maintaining enough safety for 'C' category items.
V. Selective control helps in maintaining high stock turnover rate.

2.6 Review of Related Studies

Above, we have emphasized only on the review of text books hut attempt is only made to review the related studies conducted by different expert, scholars related with inventory management. Limited studies undertaken on 'inventory management' in Nepal were reviewed in the course of this study.

Suraj Sidgel (2004) and PuspaRaj Ghimire (2005) have studied on the "Inventory management of Agriculture Inputs Corporation Regarding Chemical Fertilizers and Sees" for his degree thesis. Some major points stated by Mr. Ghimire and Mr. Sidgel are reviewed below.

The main objective of the study is to analyze the present system of inventor) management in Agriculture Inputs Corporation Regarding Chemicals Fertilizer and Seeds. This study is based upon quality as well as price aspect.

- To Study the present procurement producer of chemical Fertilizers and seed.
- To study the transportation facilities for various Fertilizer and seed.
- To study the warehouse facilities for various Fertilizer and seeds.
- To analyze present positions of inventory management.
- To provide suggestion based on findings

From the analysis and interpretation of variable data the following Mr. Ghimire and Mr. Sigdel have been made conclusion as the findings are derived below.

- The major procurement procedure/ ways are through investing global tender negotiation, through aid/assistance from donor agencies/countries and through negotiation/arrangement of two governments.
- AIC procure of collect seeds from external as well as internal sources.
- Walls of warehouses are built with bricks of stone as available locally, with cement building.
- AIC does not have adequate Heel of trucks. So in most cases transport companies under contractual agreement earn 'out this job.
- AIC in not using scientific models of inventory management.

Based on analysis and conclusion, the following recommendation have to improve the state of affair of existing inventory management system of Agriculture Inputs Corporation has been forwarded.

- To avoid the problems of over stocking of chemical fertilizers and seeds AIC should consider these points
- Target should be realistic.
- Target should be with the capacity of being fulfilled.
- If AIC is able to hold only optimum level of ending stock the locked up capital will be reduced.
- AIC should development appropriate standard record keeping system of ending stock.
- Before calling global tenders, seeds grower's season of requirement, lead time and means of transportation should be considered.
- Numbers of warehouses should be made according to the area and consumption of chemical fertilizes and seeds, which will make the distribution of fertilizers easier.

Mun Kumar K.C. (2006) has studied on the "Inventory management in manufacturing concern" of Royal Drugs Ltd. for his degree thesis. Some major points slated by Mr. K.C. are reviewed below.

The main objective of the study is to analyze the position of inventory management in Royal Drugs limited. This study is based upon quality as well as price aspect.

- To study the recent practice of inventory management function.
- To analyze the position of inventory levels in Royal Drugs Ltd.
- To point out the methods applied in managing the inventory in RDL.

For the analysis and interpretation of available data Mr. K.C. has made conclusion as the major findings are derived as below.

- Store Keeping functions are well managed by RDL but due to the lack of a separate store, department and far away locations, co-ordination between stores is difficult. RDL has not sought to make periodical analysis of various requisitions and materials returned notes to prepare materials issue analysis sheet.
- RDL selling's activities are not effective and enough as selling of any of products have not met the sales target.
- Closing stock of finished product has piled up year to year due to over production than sales. Hence, RDL has bear unnecessary carrying cost.

Based on analysis and the conclusion the following recommendation have to improve the state of affair of existing inventory management system of Royal Drugs has been forwarded.

- Royal Drugs Limited should plan for purchase by fixing annual requirement of raw and packing material.
- Inventory control practices should be made effective by using adequate tools. Inventories of Royal Drugs Limited should be graded based on ABC technique and spare parts of machinery on the basis of VED analysis.
- Royal Drugs Limited is unable to establish the relation between the gross profit and the average inventories.

Govinda Ram Agrawal, management exports claims (hat inventors management in Nepal is probably the weakest aspect of management. The tools and technique for controlling inventory has been applies in Nepalese enterprises for controlling their physical as well as financial dimension (*Agrawal. 1980:21*).

RAO & N.V.S Jagmohan Rao also observed that for the efficient management of inventory, there are the needs of tackling human element the third world country like Nepal. They have suggestion to orienting the attitude of the staffs

towards materials cost because lack of knowledge and carelessness, which were the responsible of this management of inventory.

A study relating to Nepal Transport Corporation with various aspects has been made by CEDA one of the major findings was that though inventor} management of this factor is rather simple but due to management of stocking of spare parts it hampered for the smooth operation of the enterprises (CEDA, 1973. I8).

A case study conducted by Dinesh Kumar Pant (2005), regarding Inventory Management of Gorkhapatra Corporation for his Degree thesis. The main objective of the study is:

- To study the inventory management system followed by Gorkhapalra corporation.
- To analyze the inventory level maintained by Gorkhapatra Corporation.
- To analyze the technique used by the company to determine level of inventory.

From the analysis Mr. Panta has made the following conclusion as the major findings.

- The corporation doesn't use any tools and techniques to manage inventory.
- Net profit margin is inconstant in various years.
- Inventory turnover ratio is flexible over the study period.
- Regression and correlation analysis have shown the positive relationship between the inventory material and cost.

Based on analysis and conclusion, the following recommendation has been forwarded.

- The corporation needs lo apply (lie appropriate tools and techniques of inventory management for maintaining optimum level of inventory.
- Corporation should adopt the reliable procurement procedure in order lo avoid the possible crises of stock out.

A study conducted by Risal (2003), regarding Inventory Management of Agriculture Inputs Corporation for his degree thesis. The objectives of the study area:

- To analyze present practice of purchase or procurement procedure of A/C.
- To identifying the problem faced by AIC in the inventory management.

The major findings of the study are corporation did not use any tools and techniques lo manage inventory. Inventory turnover ratio is flexible, net profit margin is inconstant. Return of total assets is more flexible.

He concluded that the inventory management was not based on scientific methods. 'Use of scientific method of inventory management in this organization is very difficult because of non-uniform inventory consumption pattern, frequent fluctuation in the exchange rate of imported inventory component.

Pokhrel (1992) had conducted a study on inventory management of Janakpur Cigarette Factory Ltd. The main objectives of the study is to analyze (he present practice, of collection, procurement procedure of raw material, analyze the present position of inventory and identify the problems laced by (he factory.

On his research work he has found that Janakpur cigarette factory faced the problem of overstocking of raw material and finished goods due lo this it raised the problem of working capital management.

So he has concluded that this is due to lack of proper sales planning as well as defective procurement and production policy. So the lop level management should pay attention lo the overall management of purchasing, production and financial aspects of the factory.

A study about the Inventory Management conducted by Radha Kiimari Balika (1996) of Hetauda Cement Factory to study the present practice of collection, procurement procedure of Raw material. Analyze the present position of inventory and identifies the problems faced by Hetauda cement industries ltd.

The researcher finds no proper target for material purchase, factory does not follow the economic order quantity, re-order level to control inventory management, overstocking of raw materials and work in progress has maintained. There is lack of coordination between the production and procurement planning. On the basis of study conducted by him. The following suggestion has been recommended. The company should follow EOQ model and ABC analysis.

Dhital (2005), has also made study regarding a Inventory Management of Nepal food Corporation. Main objectives focused by him were to analyze the variables like purchase. Sales demand and food quota of Nepal Food Corporation and to find out their trends.

The basic problems highlighted by him are the procurement and selling, distribution functions of food grain are challenging and costly due to

geographical disparity. On the basis of the findings he has recommended that NFC should encourage food production by initiating farmers to produce more food grain. It's should facilitate farmers by managing various inputs through coordination with concerned agencies. NFC must do timely procurements of food grains and it should be released from the interference of the government as well as political parties.

Pandey (2000), has conducted the thesis on- the topic of Inventory Management of Gorkhapatra Corporation. The main objective of the study is to collect information about the current position of corporation, to identify its development messages and to measures its effectiveness etc.

She has pointed out some conclusion based on major findings. As the corporation is not following any tools, techniques and models to determine optimum Level of inventory which are increasing the ordering and carrying cost and there is lack of sufficient warehouse for the storing.

She has recommended for the improvement in (hen present inventory management in the following manner. The corporation should apply the EOQ model and recorder point formula to determine when to order. Corporation should maintain its own warehouse. I he scrap materials should be recycled; record keeping should be scientific etc.

Shrestha (2002), has conducted the thesis on topic of Inventory Management of Manufacturing Industries in Nepal with Special Reference to Quick Foods she has set the following objectives of to assess the types of inventory maintained in Thai foods. To find out the applied techniques used to manage the inventories of the industries, to analyze present inventory position of Thai foods and to analyze (he profit and production cost and to suggest proper inventory model to Thai foods and quick foods based on the analysis. Based on the above study she found that company doesn't follow any scientific tools and techniques such as EOQ models, ABC analysis etc. Findings this she has recommended some suggestions to improve the present situation of inventory management of the company. Further she recommended that the company should classify all the inputs according to ABC analysis and those items which are costly should be given special consideration and (he items having low value with respective consideration.

Form the review of above mentioned literature; it has been observed that many thesis and articles has been written on the topic of inventory management but inventor. Management systems could not be found practice

in Nepalese enterprises. All of the enterprises are working on the own their estimation and forecasting neither they are using inventory management tools and techniques. Therefore study will try to study the various system and their applications but found unsuccessful.

2.7 Research Cap

There are various studies done in the topic of inventory management of public as well as private enterprises. But this study is based on primary data regarding I he public enterprises. So this study is little bit differed' form others. Most of previous study have based on secondary data. In this research the changes in inventory in different year is illustrate. The relation of inventory with various aspects that is purchase, sales and profit has been shown. So, this study will be fruitful to those interested person, parties, scholar, students, teacher, Professor, Businessman, Policy maker, and government for academically as well as policy perspectives.

CHAPTER III
RESEARCH METHODOLOGY

3.1 General

For the purpose of achieving the objective (lie following research methodology has been purposed which includes research design, nature and sources of data, data collection procedure and techniques of analysis.

3.2 Research Design

The research design is plan structure and the strategy for investigation to obtain answer to research questions. To achieve the primary goal of the study, the study has used the available data from the primary and secondary source. Analytical as well as descriptive research design has been adopted to clarify the situation through presentation and analysis of various data.

This is the case study of National Trading Limited deals with procurement, sales and distribution procedures, trends of sales and purchase of National Trading Limited, which are the variables under the study.

3.3 Nature and Sources of Data

To achieve the objectives of this study, both primary as well as secondary data have been used. Information collected through Questionnaire and secondary data have been collected from the following sources.

a. Published and unpublished documents related to NTL.
b. Books, articles, magazines, previous dissertation of NTL.
c. Reports and financial statements of the company provided by the officials.
d. Various websites.

3.4 Data Gathering Procedure

Data gathering recorder, which is most important part of the research, consists of obtaining information from some body's hand. It is therefore very difficult activity of the whole research process. Researcher has made frequent visits to central office of National Trading Ltd. in order to collect the required data from officials.

Primary data were collected through questionnaires and personal talks to different senior level officer and staff of the corporation. All the gathered data have been used according to need and requirement of this study.

And, secondary data were directly obtained from various sources mentioned above specially, to obtain the data from official records, the researcher has to visit the company frequently and get it from the records.

3.5 Population and Sample

At present there are 38 PES are operating in Nepal. There are the populations of this study. Out of them NTL is selected as a sample using judgmental sample.

3.6 Presentation and Analysis Techniques

In this study, data collection from various sources is managed, analyzed and presented in proper tabular formats and diagrams are interpreted and explained as percent needed. The techniques here included are statistical and inventory management techniques such as graph, CV. ratio analysis. Karl Pearson's coefficient of correlation, mean standard deviation and coefficient of variance and probable error, percentage etc have been used as per need.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

The data presentation and analysis is the important part of the study because all (he information and ideas will be analyzed and presented in this chapter. The basic objectives of this study have been already mentioned in the first chapter. The inventory management aspects have been discussed in the review of literature. In the research methodology necessary analytical tools and techniques have been employed for the accomplishment of prescribed objectives. In this chapter efforts have been made to process (he obtained data analyzed and interpret them. The available data are presented in table and graph and they are analyzed with the help of statistical, mathematical, and inventory management tools and finally interpreted to explore the facts.

4.2 Procurement Procedure of NTL

NTL was created in order to canalize commodity aids from People's Republic of China and USSR with a view to meet the local cost of development project limited by those countries through the sale of aids goods in the domestic market. Previously, this function was handled by the department of commerce, NG in order to create a better channel to serve the growing needs of the national economy and the people at large, through the regular supply of essential goods at reasonable prices. NG set up (he NIL as a. slate trading organization. It was entrusted with the function of engaging on all kinds of trading activities, including quota goods to be imported form India for the purpose of establishing domestic prices, regularizing the supply of basic construction materials. Machinery & equipments, & consumer's goods. As NIL began lo procure goods from diverse sources and also as it was exporting to diverse markets. NIL through its activities definitely did support the country's policy of trade diversification.

As a public sector merchandising company it purchase different types of good and commodities such as cement, sugar, news print etc. directly through the importer or by announcing the lends bids. Generally, NTL began to procure bonded warehouse items the international tax free agent or producer or manufacture or sole distributor such goods are available only for diplomats, incoming and outgoing passengers, General merchandise goods like sugar, cement, iron rods, GI pipe and copper sheets through inviting tender. Purchase quota goods like fertilizer, sugar also.

4.3 Distribution Pattern of INTL

NTL has maintained its country-wide sales and distribution network. NTI, maintains 14 Branch offices and sales across the business centers, of the kingdom. The sales and distribution network of NTL spans all over the kingdom through its dealers.

NTL used to follow these two distribution channels for effective distribution.

I. Supplier .....> Consumers
II. Supplier .....> Retailer (Dealer) .....> Consumer

NTL sells goods to consumer directly from its branch offices and sales depots. NIL sells it's through the channel of dealers too. NTL contracts with dealers to sell NTL's goods in market at the price fixed by NTL and dealers are supposed to receive commission for the sales.

4.4 Present Storage Facility

Storing is the back bone of inventory management. It means no storage, no inventory management. Good storage helps the storekeeper maintain the quality of goods, facilitate production process, smooth sales and also helps-to service customer well. Modern storage facility is a most necessary condition to safeguard the quality of goods being stored. While discussing storage number of factors is to be taken into consideration.

- Value of stock transaction
- Types of stock
- Volume of stock to be hold at any one time
- Amount of handling, re-handling and extent of transport involved.
- Security
- Safety requirement

NTL functions related to clearing, forwarding and storage of imported goods are very well a crucial part of the total functional network in NTL's day to day trading operation. NTL has its modern ware house complex in Kathmandu. Birgunj. Biratnagar.

Bhairahawa. Nepalgunj, Dhangadlii and Pokhara. I he existing ware house capacity of NTL is 80400 Mt. tons with 110 Godowns including 90 Godowns built below (he road (Prithivi Rajpath, Ramshah Path Department). NTL has set up a liaison office at Calcutta in India with a view to expedite clearing and forwarding imported goods efficiently. The existing warehouse capacity tabulated below:

Storage Capacity

Goodowns Centre	Number of Godowns
1. Birgnng	5
2. Kathmandu	5
3. Bhairahawa	2

4. Biratnagar 5. Nepaljung 6. Pokhara 7. Ramshopath, Kathmandu 8. Dhangadlii	2 2 1 92* 1
Total	110

*Includes 90 Godowns built below the Prithivi Rajpath Kath.
Sources : NTL Report 2062/063

4.5 Trend Analysis of Procurement

Purchasing is the procurement of goods and services form external agencies, which plays significant role on earning of profit of an organization. The following table shows total annual purchase from FY-2058/059 to 2062/2063

Table 4.1
Procurement Trend from FY 2058/2059 to 2062/2063

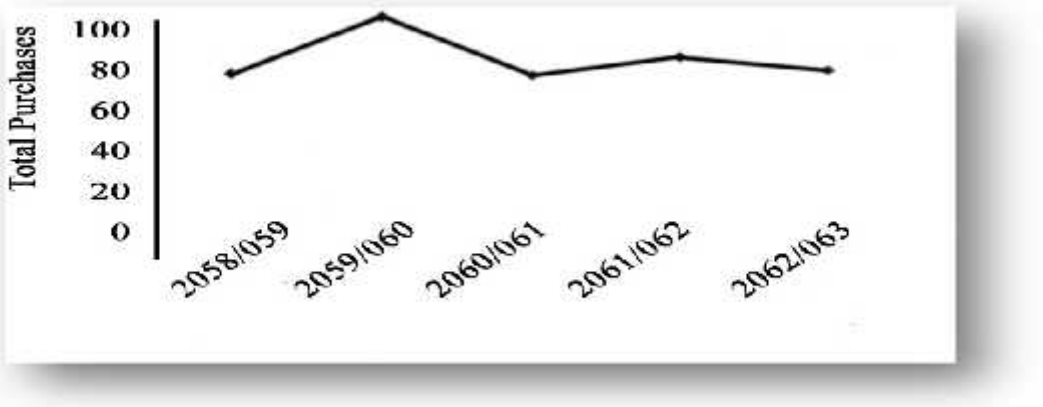
Fiscal Year	Annual Total Purchases	Change%
2058/059	76.81	8.35%
2059/060	104.30	35.79%
2060/061	76.00	27.13%
2061/062	84.10	10.66%
2065/063	78.42	6.75%

Source : - NTL Annual Report -2062/O63

From the above table it shows that the total purchases from FY 2058/059 to 2062/063 is 76.81, 104.30, 76.00, 84.10 and 78.42 the purchases trend can be presented in following

Graph

Figure 4.1
Purchase Trend of NIL



From above figures it is observe that the purchasing trend of NIL is fluctuating every year. From this we can easily examine that the company has not adopted the appropriate purchasing policy like just in time purchase. EOQ model etc. In the FY 2058/059 total purchase is 76.81 whereas in 059/060 it is 104.10. Which is higher, similarly. 060/061 to 2062/063 it is 76.00 to 78.42. We mean that. NTL is not making proper plan for procurement of goods. NTL purchase goods without proper market study, demand forecasting and market situation analysis. Due to this company are not able lo sales as they targeted.

In the FY 059/060 purchase is high due lo its higher demand of product in the market: flow of tourist in the country is high and due to sound lo political environment. But alter to internal disturbance like moist problem its economic condition of the Country has adversely affected at the result purchasing power of the people has decline. From the change trend analysis there is 35.79% achievement in 2059/060 and highest negative deviation is in2060/061 from above all it can be concluded that 2060/060 is quite well for the point of view of company achievements.

4.6 Trend Analysis of Sales

As a public sector trading organization. NTL is sometimes subjected to criticism on its performance. However, there are some genuine constraints faced by NTL, which arc not entirely within NTL's control. It is certain due to heavy responsibility that NTL has shouldered for providing support on the one had, and also providing consumer's goods of daily necessity to the general masses regularly and at a reasonable price. Nil, as the leading public sector trading house apparently has more responsibility to carry-out in the year ahead. Because of the country's massive development activities there are going to be increased demands for industrial inputs which would need to be supplied to the country regularly and at a reasonable price. NTL has maintained its country wide sales and distribution network, besides its head office in Kathmandu. NTL has five regional offices in five development regions of the country. NTL also maintains (en branch offices and sales depots across the business centers of the kingdom. The sales and distribution network of NTL spans almost allover the kingdom through its dealers. The following table shows the annual sales of NTL from FY 2058/059 to 2062/063.

Table 4.2
Sales rend From FY 057/058/ to (161/062

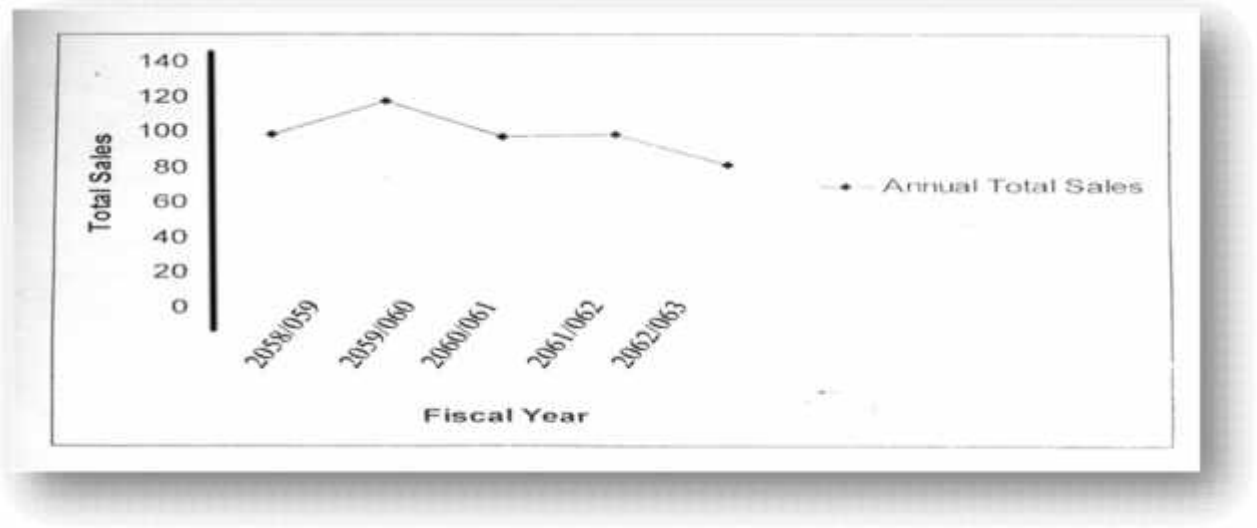
(Rs. In Cores)

Fiscal Year	Annual Total Sales	Change %
2058/059	97.89	8.42%
2059/060	1 17.30	19.83%
2060/061	96.74	17.53%
2061/062	97.75	1 .04%
2062/063	80.91	17.23%

Source: - NTL Annual Report 2062/063.

The sales in analyzed by taking relevant figures of the period covering from FY 2058/059 to 20529/060 NTL sells a number of variety products ranging form consumer goods like cigarettes, wines, sugar, electrical goods, household goods up to industrial and developmental materials like machineries, tractors etc. Tins product var.es in price, size and usage the table shows that the sales trend of NTL during the five years from 2058/059 to 2062/063 are 97.89, 117.30. 96.74, 97.75 and 80.91 respectively. The total sales trend is fluctuating every year. Due to internal disturbance like political situation. Social condition, Moist problem, transportation etc. are the factors that influencing sales. Due to this the flow of tourist to come in Nepal decreases as a result its sales fluctuat.ng. Like the sales variance is favorable 058/059 by 8.42% but unfavorable in 060/061 by 1.04% Achievement in 2058/059 is very sound and it had made good performance. But later on its achievement in un sound which indicate the poor performance of management. We can clarify more clearly with the help of graphical presentation.

Figure 4.2
Sales Trend on NTL



Observing the above figure it is found that sales in 2059/060 are increases unexpectedly. Due to the sound political economical and social environment of the country its sales rises in FY 059/060 where as in FY 060/061 its decreases virtually due to tough competition with international market, effects like internal and external disturbance with down trend of tourism business. Chinese product and flow of Indian cement and other materials of the market.

4.7 Relationship between Total Sales and Total Purchases

Following table shows the result of total sales and total purchases of NIL during the FY 058/059 to 062/063

Table 4.3
Annual Total Sales and Purchases

Fiscal Year	Sales	Purchases	Sales as % of Purchase
2058/059	97.89	76.81	127.44%
2059/060	117.10	104.30	112.46%
2060/061	96.74	76.00	127.29%
2061/062	-97.75	81 .10	120.53%
2062/063	80.91	78.42	103.18%’

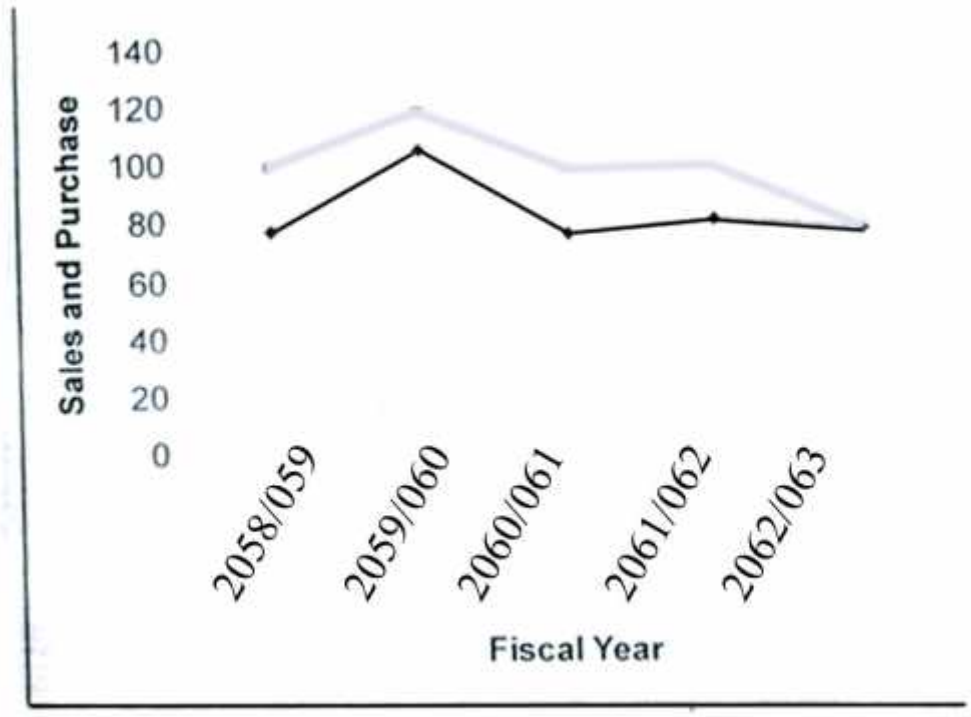
Source : - NIL Annual Report 2062/063

This table shows that the level of total sales and purchases of different FY period. The both of them are changes more over in the same pattern. It also reveals that percentage of sales is high in comparison to purchase. There is highest sales percentage in FY 2058/059 and lowest in 2062/059 due to high stock company are able to sales more as the quota facility provided by Indian government to HMG on sugars each year, this levied sugar is marketed by NTL. So it has contributed to increase in sales. Beside this lesser competition in the market, sound political environment etc. Where as in 2062/063 due to external and internal disturbances. How of Chinese products in the market, high pace of technological change are the factor which affects the sales.

In order to find out the nature of variability correlation and other statistical measures, we have to use to calculate the mean, standard deviation, coefficient of variation and correlation coefficient. Correlation analysis is the statistical loll that we can use to describe the degree to which one variable is linearly related to other variables.

Figure 4.3
Total Sales and Total Purchase

(Rs in Cores)



The graphical presentation shows the gap between total purchase and sales is not large. Both are in fluctuating. In order to find out the nature of variability of sales and purchase of different FY mean, standard deviation, co-variance and co-relation coefficient have I been calculated in the appendix two?

Table 4.4
Relationship between Sales and Purchases

(Rs. In Cores)

Statistical Tools	Sales	Purchases
Mean ($\bar{X}$)	98. 12 cores	83.93 cores
Standard Deviation (σ)	11 .54 cores	10.84 cores
Coefficient of variation (C.V)	11.76%	12.92%

Source : - NTL. Annual Report.2062/063

Again, co-relation co-efficient between sales and purchases, Karl Pearson's co-efficient of calculating (r) should be determined for the purpose of calculating (r) the sales is assumed as independent variables and purchase assumed dependent variable. The detail calculation of co-efficient is shown in appendix Two from computation we have found the value of r = 0.80

The value of 'r' shows that there is perfect positive co-relation between sales and purchase. To know the significance of calculate value of (r) probable error |PI s| is presented appendix one. The probable error is used to test whether the calculated value of co-efficient is significant or not. A few rules for the interpretation of the significance of co-relation co-efficient are as follows:-

If r< PE(r) then the value of r is not significant.
(i) If r> 6x PE(r) then r is definitely significant

Co-efficient of co-relation (r) = 0.80
Probable error (PEs) = 0.11

The value of r is 0.80 which indicates that there is positive co-relation between total sales and purchase. Increase in total sales will result total purchase increase and vice-versa. The calculate value of r is greater then 6PEs so, it can be concluded that here is strong positive co-relation between sales and purchase.

4.8 Relationship between Sales and Inventory

The following table shows that the sales and inventory of NTL, through-2058/059 to 2062/063

Table 4.5
Sales and Inventory

Fiscal Year	Sales	Inventory	Inventory% of sales
2058/059	97.89	55.75	56.95%
2059/060	117.30	56.24	47.95%
2060/061	96.74	47.80	49.41%
2061/062	97.75	35.44	36.26%
2062/063	80.91	38.06	0.47%

Source : - NTL Annual Report, 206 1/062

Above table shows that sales are increasing to the certain level then start to decline, than it start to rise. So sales are in fluctuating trend, where as for inventory it start lo raise in 059/060 toward this it start to decline every year. Inventory % of sales on different years is 56.95,

47.95, 49.41, 36.26 & 0.47 Durum, this period inventory is highest 058/059 where as lowest in 062/063. During the 058/59 stock turnover is low which mean that stock are hold for long for long period in order lo meet the future requirement where as in 062 /063 stock turnover is low which mean that stock are hold for long period in older to meet the future requirement where as in 062/63 stock is frequently sold and low level of inventory is kept.

In order to find the variability of sales and inventory of different FY we have to calculate mean, standard deviation, co-variance, and co-efficient of co-relation. The detail calculate on is shown in appendix three. H can be presented in the given below figure.

Figure 4.4
Total Sales and Inventory

(Rs in Cores)

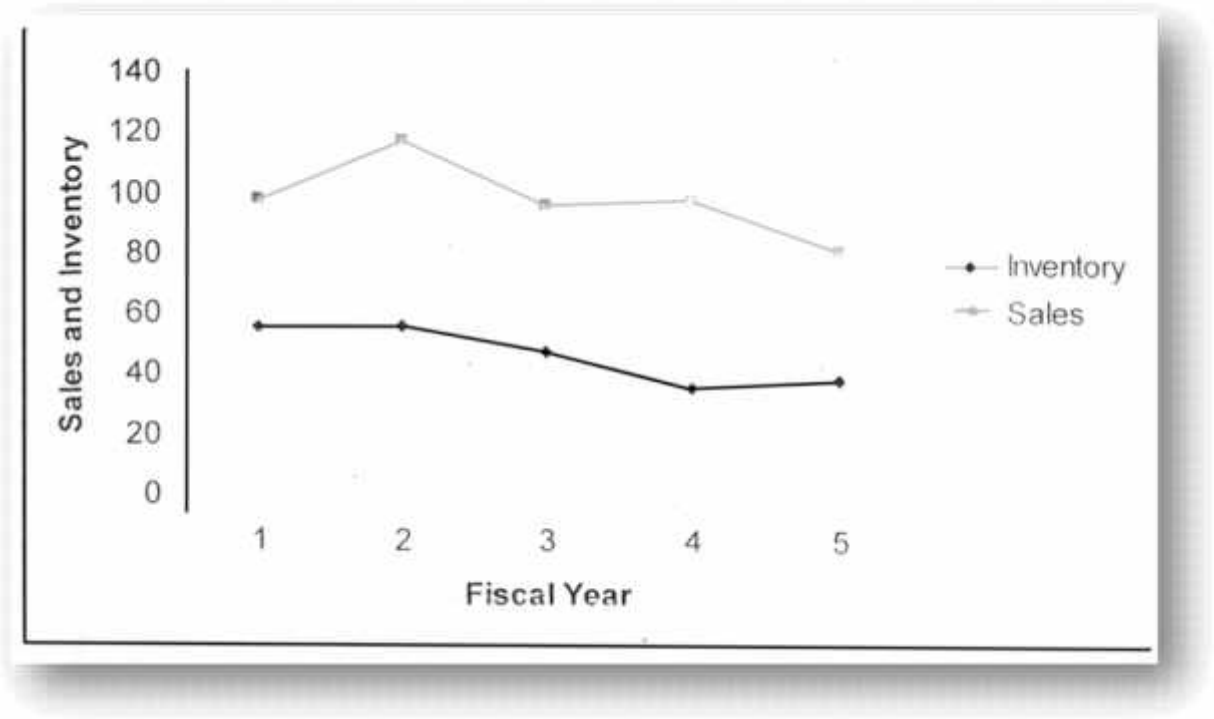


Table 4.6
Relationship between .Sales and inventory

(Rs. in Cores)

Statistical Tools	Sales	Inventory
Mean (x)	98. 1 2 cores	46.66 cores
Standard Deviation (σ)	I 1. 54 cores	8.67 cores
Coefficient of variation (C.V)	I 1. 76%	18.58%

Source : - NTL Annual Report 2062/063

We can observe that co-efficient of variance of inventory is higher then than the coefficient of variance of sales. A distribution of higher CV is said to be less heterogeneous or less variable then the other.
To analyze the relationship between sales and inventory co-relation efficient is used. To find the relationship between sales and inventory we can help of Karl's Parson's coefficient of co-relation. For the purpose of calculating V sales is denoted by X are assumed to be independent variable and inventory denoted by Y are assumed to be dependent variable. The detail calculation of co-relation coefficient and the probable error are shown in appendix three.

The co-efficient of co-relation and the probable error of the co-efficient co-relation between sales and inventory is 0.67 and the probable 'r' is O.I 7 respectively. The value of 'r' i.e. 0.67 shows us that there is positive co-relation between sales and inventory. Increase in sales will also increase inventory and vice-versa.

But considering probable error (PHs) it is found that the calculated value of V is lesser then 6 (PEs). So it can be concluded that the value of V is insignificance that is increase in sales will not proportionate to the increase in inventory.

4.9 Relationship between Purchase and Inventory

The following table shows the relationship between procurement and inventory from FY 2058/059 to 2062/063

Table 4.7
Purchase and Inventor

(Rs. In Cores)

Fiscal Year	Purchase	Inventory
2058/059	76.81	55.75
2059/060	104.30	56.24
2060/061	76.00	47.80
2061/062	84. 1 0	35.44
2062/063	78.42	38.06

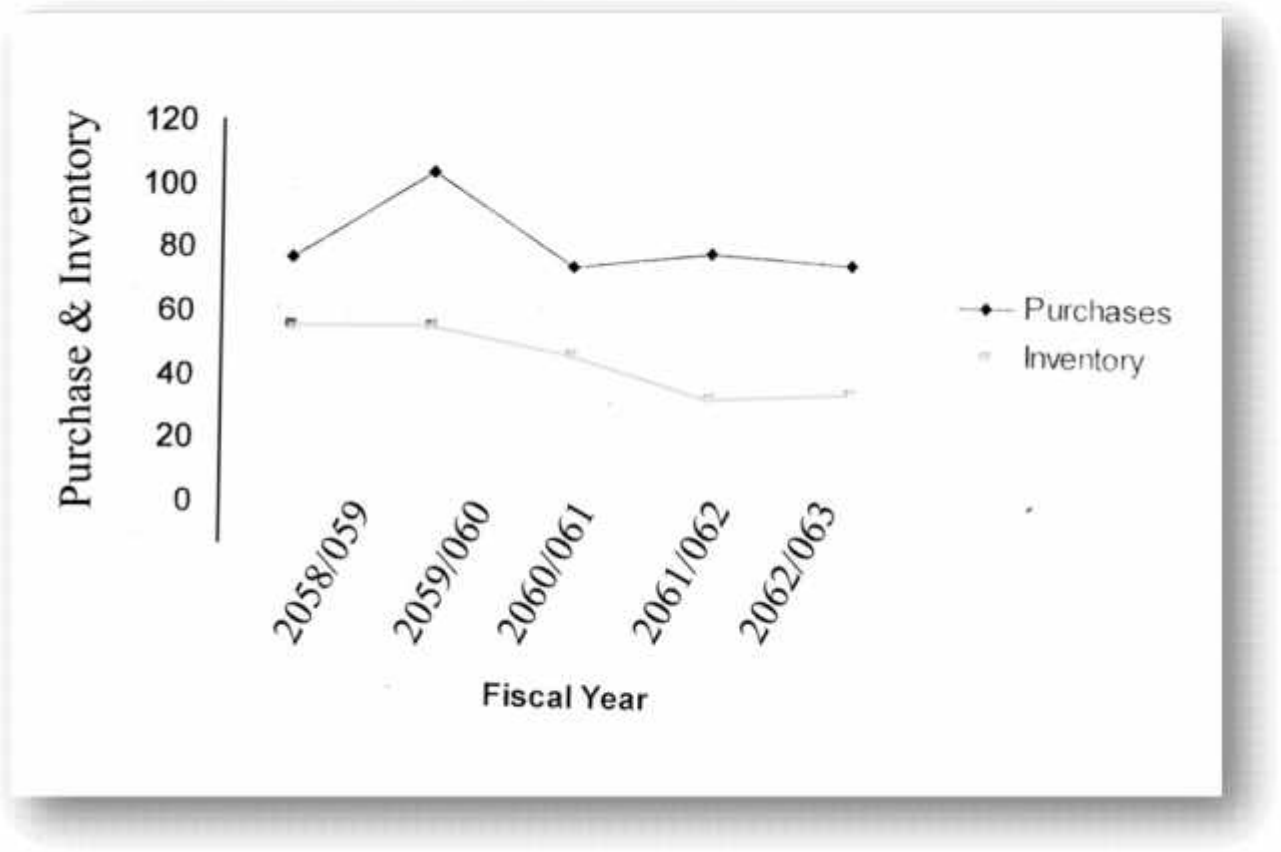
Source : - NTL Annual Report.2062/063

From the above table it can be analyzed that procurement trend of Nil. is fluctuating every year, that means increase is one year and decrease in next year and so on. Where as in inventory it increase in -2059/060 then after it started to decline. On the basis of purchase NTL holds its

inventory. So holding of inventory is determined by the procurement procedure. It can be clarify with the help of following diagrams.

Figure 4.5
Total Purchase and Inventory

(Us in Cores)



In order to find out the nature of variability of purchases and inventory of different FY mean, standard deviation, co-efficient of co-relation has been calculated in appendix three. Summarizing the result from appendix four we have.

Table 4.8
Relationship between Purchases and Inventory

(Rs. In Cores)

Statistical Tools	Purchase	Inventory
Mean(x)	83.93	46.66 cores
Standard Deviation (σ)	10. 84 cores	8.67 cores
Coefficient of variation (C.V)	12.92%	18.58%

Source :- NTL Annual Report 2062/063

Form the table it is observe that the co-efficient of variance of inventory is higher then the co-efficient of variance of purchases. A distribution of higher CV is said to be less heterogeneous or less variable then the other.

To find out the variability of relationship we have use the Karl Pearson's co-efficient of co-relation. By calculating 'r' we have examine whether there is positive co-relation between purchase and inventory or not. For calculating of 'r' purchase is denoted by X and assumed to be independent variable and inventory denoted by Y are assumed to be dependent variable. The detail calculation of these statistical tools is presented in appendix four.

The significance of 'r' is tested by the help of probable error of 'r'. The probable error of the coefficient of correlation helps in interpreting its value with the help of probable error: it is possible to determine reliability of the value of the coefficient. As percent calculation co-efficient of co-relation and probable error of the coefficient correlation between purchase and inventory is 0.68 and the probable of 'r' is 0.16 respectively. Co-relation co-efficient comes less then the six times the probable error. Though they are positively related but co-relation is not much significant i.e. increase/decrease in purchase will not be proportionate to the increase/ decreased in inventory.

4.10 Relationship between Inventory and Profit

Table 4.9

Inventory and Profit

(Rs. In Cores)

Fiscal Year	Inventory (X)	Profit before Tax (Y)
2058/059	55.75	3.01
2059/060	56.24	0.60
2060/061	47.80	0.48
2061/062	35.44	8.28
2062/063	38.06	5.94

Source : - NTL Annual Report 2062/063

The detail calculation of statistical tools is presented in appendix V We have,

Inventory = X
Profit = Y

Table 4.10
Relationship between Inventory and Profit

(Rs. In Cores)

Statistical Tools	Inventory (\)	Profit (Y)
Mean ($\bar{x}$)	$\bar{x}$ = 46.66 cores	$\bar{Y}$ =(2. 03) cores
Standard Deviation (σ)	a = 8067 cores	σx = 4.3 1 cores

To find out the correlation between Inventory and profit. Karl's Pearson's coefficient of correlation (r) is determined; for this purpose inventory (X) is assumed to be independent variable and profit (Y) is assumed to be dependent variable. By calculating r we can examine whether there is positive correlation between inventory and profit or not. The formula for correlation is

$$r = \frac{\sum xy}{n \pm x \pm y}$$

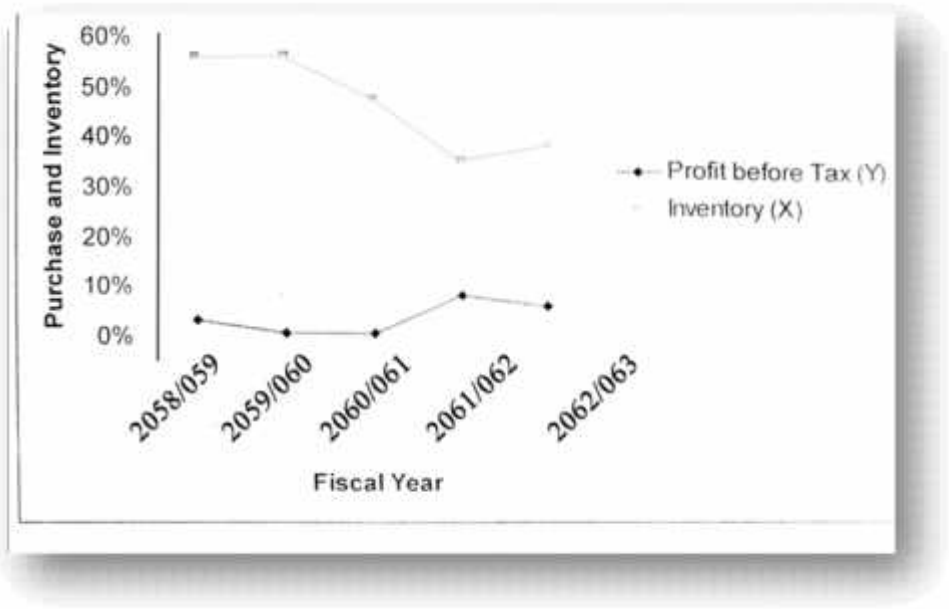
$$r = \frac{177.63}{5x8.67x4.31}$$

$$= 0.95$$

The value of r is 0.95 which shows the positive relationship between inventory and profit. The value of r is 0.95 therefore it can be concluded that the inventory and profit are highly correlated. To test the significant of the calculated value of r probable error is calculated. The detail calculation of PI{s are presented in appendix V. Since the calculated (PEs) is 0.03 i.e. r> 6x PEs. So there is significant relationship between inventory and profit. The data of inventory and profit can also be presented in graphical form.

Figure 4.6
Inventory and Profit

Rs in Cores



The graphical presentation shows that the Inventory and profit are variable in each year. The above table shows NTL has a trend of large stocking system as a result it negatively impact upon the profitability of the enterprise. Whereas profit margin was very low lot-the study period which represents that NTL has a huge amount of expenses like interest. Administrative overhead, depreciation etc. these expenses make contribution to decline in net profit.

4.11 Relationship between Sales, Purchase and Inventory

Table 4.11

Sales, Purchase and Inventory

(Rs. In Cores)

FY	Sales (Y)	Inventor (y) (XI)	Purchase	$X1^2$	$X2^2$	X1Y	X2Y	X1X2
2058/059	97.89	55.75	76.81	3108.06	5899.78	5457.37	7518.93	4282.16
2059/060	117.30	56.24	104.30	3162.94	10878.49	6596.95	12234.39	5865.83
2060/061	96.74	47.80	76.00	2284.84	5776	4624.17	7352.24	3632.80
2061/062	97.75	35.44	84.10	1255.99	7072.81	3464.26	8220.78	29.80.50
02062/063	80.91	38.06	78.42	1448.56	6149.70	3079.43	6344.96	29.84.67
Total	$\sum Y$ =490.59	$\sum X1$ =233.29	$\sum X2$ =419.63	$\sum X1^2$ =11260.39	$\sum X2^2$ =35776.78	$\sum X1Y$ =23222.18	$\sum X2Y$ =41671.30	$\sum X1Y2$ =19745

Source: Annual Report of NTL. 2062/063

The multiple regression equation is

Y = $a + b1x1 + b2x21$

Where a, b1 & b2 are variable term. To find out the value of a, b1 and b2 we have to calculate the following three normal equations:

$$\sum y = na + \sum x1 + b2 \sum x2$$

Model	Unstandardized Coefficients	Standardized Coefficients		T	Sig.
	B	Std. Error	Beta		
1 (Constant)	11.159	29.093		.384	.981
X_1	.563	.427	.423	0.66	.715
X_2	.823	.350	.662	.575	.756
					.548

$$\sum x2y = a\sum x1 + b1 \sum x1^2 + b^2 \sum x1x2$$

Model	Unstandardized Coefficients	Standardized Coefficients		T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-420.295	11077.6		-.038	.976
X1	31.900	6	.214	0.66	.958
X12	.375	485.400	.233	.068	.956
X1x2	.692	5.481	.575	1.711	.337
		.404			

$$\sum x2y = a\sum x21 + b1 \sum x1x2 + b2 \sum x2^2$$

Model	Unstandardized Coefficients	Standardized Coefficients		T	Sig.
	B	Std. Error	Beta		
1 (Constant)	52.552	1785.646		.029	
X12	2.973	6	1.166	-.480	
X1x2	-2.820	6.198	-1.483	.403	

X22	1.778	6.994 2.071	1.670	.859	

4.12 Inventory Turnover Ratio (ITR)

A ratio which is use to measure the efficiency of sales of au organization is termed as inventory turn over ratio. Some time it is also called stock turn over ratio or stock velocity ratio. Finished good inventory is the cushion between sales and purchase for non-manufacturing enterprises. Level of inventory depends upon sales and purchase of the goods of enterprises. Detail calculation of cost of goods sold and average inventory are shown in appendix VI and VII.

Table 4.12

Calculation of Inventory Turn Over Ratio

(Rs. In Cores) Ratio

Fiscal Year	Cost of Goods Sold (CGS)	Average Inventory	Ratio
2058/059	81.83	58.26	1.40
2059/060	103.81	56.00	1.85
2060/061	84.44	52.02	1.62
2061/062	96.46	41.62	2.32
2062/063	75.81	36.75	2.06

Source : - NTL Annual Report 2062/063

$$\textbf{Inventory turnover ratio (II R)} = \frac{\text{Cost of Goods Sold}}{\text{Average inventory}}$$

Where,

Cost of goods sold = Opening + Purchase - Closing Stock

$$\textbf{Average inventory} = \frac{\text{Opening Stock + closing Stock}}{2}$$

The five year trend of NTL shows inventor) turnover ratio of different periods are 1.40. 1.85, 1.62, 2.32 and 2.06 respectively, inventory turnover ratio indicates whether the investment in inventory is efficiently used or not a high stock turnover indicates efficient management of

inventory because more frequently the stocks are sold, the lesser the amount is require to financing the inventory. From the table it is clear that the maximum turnover ratio is 2.32 and minimum is 1.40 in FY 2061/062 and 2058/2059 respectively. In FY 2062/06, low level inventory is kept in the company due to the last consumption and sale of finished goods where as in FY 2058/059 company has maintained the largest stock to meet the future requirement as a result fund locked up. Which increase the cost. As percent the government direction and to control the market price NTL holds the stock for longer period as the result it increase the storage cost which will increase the market price.

The NTL's utilization of inventories in generating sales is poor, the yearly holding of all types of inventories is increasing and large portion of working capital is hold up as a result over inventories is increasing and large portion of working capital is hold up as a result overinvestment in stock by which NTL is suffering from loan. Paying to higher interest rate and administrative expenses it is suffering from loss.

Table also indicates that NTL has not prepared inventory policies. The present stock has been increases just to take the advantage of expected rise in selling price or to meet the estimated sales and it can be concluded that marketing efficiency of the NIL is poor.

4.13 Gross Profit Margin

The Gross Profit Margin of NTL for the study period is presented in following table:

Table 4.13
Calculation of Gross Profit Margin

(Rs. In Cores)

Fiscal Year	Gross Profit	Sales	Gross Profit Margin
2058/059	16.06	97.89	16.41%
2059/060	13.60	117.30	11.59%
2060/061	12.29	96.74	12.70%
2061/062	1.29	97.75	1 .32%
2062/063	5.11	80.91	6.32%

Source:- NTL Annual Report 2062/063

$$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Sales}} \times 100$$

High Gross profit Margin indicates better operating position of the firm where as low profit margin reflects efficiency of the firm is poor. Gross profit Margin is frequently variable in each year. In FY 2058/059 it was 16.41% where as in 2059/060 it was decreases to 11.59%. Similarly in 5060/061 to 2062/063 it was 12.70. 1.32 and 6.32 respectively. A low Gross Profit Margin may reflect higher cost of good sold due to the firm's inability to purchase goods as favorable terms, under utilization of available assets, or over investment in assets, resulting higher cost of sales. The margin may also be low due to reduction is selling price in order to get higher sales volume, the cost of goods sold remaining unchanged. Thus management needs to make a sound analysis for such a low margin and efforts be made to improve the present situation. The trend shows satisfactory results in FY 2058/059 and 2060/061. But in other year the result are not taken satisfactory.

4.14 Net Profit Margin

NTL's accounting figures profit pattern for five years study period presented in the following table.

Table 4.14
Net Profit Margin

(Rs. In Cores)

Fiscal Year	Gross Profit	Sales	Gross Profit Margin
2058/059	97.89	3.01	3.07%
2059/060	117.30	0.60	0.519%
2060/061	96.74	0.48	0.50%
2061/062	97.75	8.28	(8.47)%
2062/063	80.91	5.94	(7.34)%

Source: - NIL Annual Report, 2062/063

$$\text{Net profit margin} = \frac{\text{Net profit}}{\text{Sales}} \times 100$$

Higher Profit Margin shows the sound operating position of the firm, lesser profit margin shows the income and efficiency of the firm is poor. From above table we can easily examine that profit margin of the firm is

in decreasing trend i.e. 3.07, 0.51, 0.50, (8.47) and (7.34) % respectively. The net profit margin in FY 2058/059 is high at 3.01% which shows the profitability is quite appreciable. But the reason for high net profit for the relevant year is due to prior year income adjustment.

Institution is gaining profit continuously since last three years but in last two years. High competitive market as well as down trend of international market effects like internal and external disturbance with down trend of tourism business, is the main reason of negative profit. NTL has a hug volume of expenses like interest, administrative overhead. Depreciation costs etc. These expenses make contribution to decline in net profit margin. Thus the sound investigation is needed to analyze the causes of decreasing profit and management should take corrective action to improve the situation by cost reduction program. Due to the excessive intervention from the government in the price regulation is the main reason of decreasing profit. The net profit margin in FY 058/059 is high at 3.01% which shows the profitability is quite appreciable. But the reason for high net profit for the relevant year is due to prior year income adjustment which was from reimbursement from government.

NTL has non-operating profit as house and go down rent, income from transportation and dividends earned in the long term investment in shares of various organizations like Nepal Lube Oil, Himal Cement Company, Salt Trading Limited. Nepal Oil Corporation. Bishal Bazar Limited etc.

4.15 Analysis of Primary Data

The primary data gives the accurate information of the company. The data arc collected through questionnaire with the senior's level officers. The questionnaire arc shown in appendix 1

Basically inventory management and controlled system followed by trading enterprises is ABC analysis, perpetual inventory management system. EOQ etc. As the question is asked to the responsible person of NTL, it is found that the inventory management and control system followed by NTL is fixed period inventory system generally three months to six months period, but the company neither uses KOQ model nor ABC analysis. Regarding the next question about the cost of ordering and carrying cost, the researcher found that three is no systematic and scientific system to determine ordering and carrying cost.

As the question is asked regarding reason behind keeping the inventory in company. Some of them said that to meet the variation is demand and some said to provide safeguard against variation in merchandise supply

through this company will regular supply the product in the market as percent the customer demanded.

Regarding the method of inventory valuation apply by the company is FIFO as well as average cost rate.

As per them the problem faced by the company while managing the inventory is Nepal Banda, strikes, lockout as well as unexpected changes in the price. Though the number of warehouse is sufficient to storage the goods but they are not able to supply the goods according to the demand of the customer due to variation in merchandise supply.

As per them company have maximum stock in Ashwin/Kartik during Dashain and Tihar due to high demand of the product in the market and minimum quantity in Jestha/Ashad year ending as demand of product is less.

Regarding the question any comment cm- opinion on the inventory policy of Nil, all the respondent have given the same answer of need of complete computerized inventory system.

4.16 Major Findings

The major findings of the present study are summarized as follows:

- According to the respondents, NTL holds the inventory on the basis of purchase and purchase is estimated on the basis of sales.
- According to the respondents the company has used the average cost role for valuation of inventories.
- Company has maintained the several policies to sale the product. Goods which remain 6 months in stock, company off 10% of its price and sales and goods which remain more than three years company even clearance its sales by decreasing 50% price as per the decision from aboard.
- Since few years company has operating on the loss but in near future company expected to earn profit by exporting the sugar in the European countries.
- Though the company has sufficient warehouse capacity but the company is not able to provide sufficient goods as percent the customers demanded.
- As the question is asked to NTL about the cost of ordering and carrying cost. The researcher found that there is separate cost for each items and no systematic and scientific approach to determine ordering and carrying cost.
- The company has not following economic order quantity model in purchasing decision. It has also ignored the concept of ABC' analysis.

- NTL has not the practice of preparing comprehensive sales plan. But it prepares only target sales in totality. NTL has not considered major demand determinants of its commodities. NTL has not a realistic system of forecasting, no efforts of market research for indigenous product have been made in NTL.
- The coefficient of correlation of total sales and total purchase is 0.80 and the probable error (PES) is 0.11. The calculated value or r> 6xPE. So there is insignificant relationship between sales and inventory.
- The co-efficient of correlation of purchase and inventory is 0.68 and the probable error is 0.16. The calculated value of r is lesser than the 6 limes the probable error. Though they are positively related but correlation is not much significant i.e. increase/decrease in purchase will not be proportionate to the increase/decrease in inventory.
- Company hold the stock for the longer period as the result large portion of working capital is hold up. So the over investment in stock by which NTI. Is suffering from loan.
- The most recent problem faced by the company while managing the inventory is unexpected changes in price.
- There are high purchases carrying between inventory and purchases.

CHAPTER V
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Public enterprises play a crucial role in Nepal. One can feel the presence of public enterprises in almost all the key sectors. Particularly in trade sector of the economy as well. NTL as merchandising enterprises. Its main objectives is to provide the goods to general people at a reasonable price in order to get reasonable profit and to act as an agent of NG in the matter of import and distribution of the goods which the NG has to import and distribute time to time and handle the commodity aid goods received for NG.

NTL is an undertaking of Nepal Government established in 1962 A.D. as a public limited company. Its main objectives arc serving the growing needs of the national economy and the people at large. Through the regular supply of essential goods at reasonable price NTL as the leading sector house apparently has more responsibilities to carry out in the year ahead. Because of the country's burgeoning development activities there are going to be increased demand for industrial inputs which would need to be supplied to the country regular and at a reasonable price.

The head office of NTL is located in Teku. Kathmandu. Besides this NTL have five regional offices in five development regions. NTL also maintain 7 branch offices and sales depots across the business centers of the kingdom. Besides this Nil, has maintained Bonded warehouse and duty free shop in Ramshahpath. Kathmandii for Diplomats and duty free shop in Tribhuvan. international Airports, and valley sales offices as Bishal Bazaar and Chabahil sales center.

Inventory management is one of the most important assets to most of the organization. Large percentage of total capital is invested in inventory. Inventory is vital element in the efforts of the firm's to achieve desires sales. A firm cannot achieve its goal unless inventories are controlled effectively and capital is allocated efficiently.

The present study is a case study of Inventory management of national Trading Limited. The present study has examined the present inventory management position and system applied by NTL. The study has tried to answer the certain research questions stated in statement of the problem. Institutions are successfully earning profit continuously since last three years but in 2061/2062 and 2062/2063 it has running in the

loss. Due to fair competition with unfair competitive market as well as down trend of international markets effects like internal and external disturbance with down trend of tourism business, flows of Chinese product in the market etc.
Five years data have been analyzed for evaluation and due to other resources constraints. the scope of the present study is limited to NTL and the results is not thoroughly applied overall types of trading enterprises. The whole study has been divided into 5 chapters consisting Introduction, review of literature, Research Methodology, Data presentation and analysis, and finally summary, conclusion and recommendation.

Mainly primary and secondary data have been collected to analyze. Statistical tools like mean, standard deviation, coefficient of variation, correlation, regression analysis, probable error of r are used to analyze the data. Similarly, financial tools like financial ratios have also been used.

5.2 Conclusion

After analyzing the present practice of inventory management of National trading limited. The conclusions are made:

- Financial position of NTL is not satisfactory. There is decreasing trend of profit margin due to high operating expenses like administrative expenses, repair and maintenance etc.
- The purchase and sales of NTL is variable. It has not prepared any reliable and regular system of forecasting. It is based on managerial rational judgment.
- NTL is suffering from overstaffing. Present number of employees is 510. Hut institution can run with the expected personnel of 350 people.
- Lack of feasibility study of new marketable product and their business.
- Cost plus pricing policy is adopted by NTL. This pricing policy is not suitable in fair competitive market as well as down trend of international market. Effects like internal and external disturbance with down trend of tourism business.
- Communication gap between top and lower level management.
- Excessive interference from political and bureaucratic levels has their own vicious effects upon the company performance
- System of NTL is unclear to supply the goods in the rural areas.

- Gross profit is not so high. This implies higher cost of goods due to the firm's inability to purchase at reasonable terms.
- Net profit margin is also variable. This implies NTL has a huge volume of expenses like interest and administrative overhead.

5.3 Recommendation

Based on the above study the following suggestions are recommended for the considerations which might be variable and will help the company in its management.

- Company has not able to utilize the optimum capacity as a result it has unable to satisfy the demand of customer. Hence company should plan for effective utilization of the idle storage capacity.
- NTL should attempt to use the scientific inventory models. NIL should use BOQ model to determine the order size which will minimize the ordering and carrying cost. Similarly ABC model will help to store right product at the right place which will ultimately minimize the storing cost.
- In order to purchase and sales of goods from international market the use of email, internet should be used for reducing the cost. In order to adjust in this competitive business environment the need of computerized accounting is must.
- Administrative expenses and other costs are increasing every year. So the company should lunch the effective program for cost reduction.
- NTL should consider demand determinants while forecasting demand. NTL should practice the market analysis while formulating sales and purchase plan.
- The company has lack of study on effective and efficient inventory management system for controlling inventory. Due to this the huge amount of money to be blocked in the inventory. To solve this problem separate inventory management development should be open so that the strategic plan and an effective decision can be taken
- NTL should plan for effective utilization of idle storage capacity.
- The government should not be interface over the decision made by the concern authority. The power and authority should be given to the top management.
- Inventory constitutes the highest proportion. So NTL should give proper attention to the inventory management. The company should adjust the inventory according to sales and purchase and priority basis. Molding large amount of inventory requires high operating cost.

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Appendix - I

$$\text{Inventory turnover ratio (ITR)} = \frac{\text{Cost of Goods sold}}{\text{Average inventory}}$$

Where,

Cost of goods sold = Opening + Purchase - Closing Stock

$$\text{Average inventory} = \frac{\text{Opening Stock + Closing Stock}}{2}$$

4167130 = 419.63a+19745.96b1+37776.78b2
41173.26=419.63a+l 9579. 1Ob1+35217.87b2
-498.04 =-166.86bl-558.91b2
-166.86bl+558.91b2=498.04 .....(v)

Multiplying equation (IV) by 166.86 and multiplying equation (V) by 375.55 and subtracting these equations.

62664.27bl+27842.26b2 =55435.90
62664.27bl+20989.65b2=l 87038.92
-182056.3b2 =-131603.02
Or, b2 = 0.72

Substituting the value of b2 in (v)

166.86bl +558.91 x 0.72-498.04

Orl66.86bl =498.04-402.42

B1= 95.62

166.86

= 0.573

Again, putting the value of b1 and b2 equation (i), we get,
490.59 =5a+233.29bl +419.63b2

Or, 490.59 = 5a + 233.29 xQ.57 + 419.63 x 0.72

The multiple regression equation is Y = a+b1 x 1+b2 x 2
Where, a, b1 & b2 are variable term. To find out he value of a, b1 and b2 we have to calculate the following three normal equations:

$$\sum y = na + b1\sum x1 + b2\sum x2$$

$$\sum x1y2 = a\sum x1 + b1\sum x1^2 + b2\sum x1y2$$

$$\sum x2y = a\sum x2 + b1\sum x1x2 + b2\sum x2^2$$

Substituting the corresponding value in the above equation, we get.

490.59 = 5a+233.29bl +419.63b2
Or, 490.59 = 5a + 233.29 x 0.7 + 419.63 x 0.72

5

Regression equation of sale (Y) en independent variable inventory (XI) & Purchase (X2)

FY	Sales (Y)	Inventor y (XI)	Purchase (X)	X^1	X^2	X1Y	X2Y	X1X2
2058/059	97.89	55.57	76.81	3108.06	58899.78	5457.37	7518.93	42.82.16
2059/060	117.30	56.24	104.30	3162.94	10878.49	6596.95	12235.39	5865.83
2060/061	96.74	47.80	76.00	2284.84	5776	4624.17	7352.24	3632.80
2061/062	97.75	35.44	84.10	1255.99	7072.81	3464.26	8220.78	2980.50
02062/063	80.91	38.06	78.42	1448.56	6149.70	3079.46	6344.96	2984.67
Total	$\sum Y$ =490.59	$\sum X1$ =4233.29	$\sum X2$ =419.63	$\sum X1^2$ =11260.39	$\sum X2^2$ =35776.78	$\sum X1Y$ =23222.18	$\sum X2Y$ =41671.3	$\sum X1Y2$ =19745.96

6

Appendix
III Regression (Model_1)

Variables Entered/Removed6

Model	Variables Entered	Variables Removed	Method
1	X2, X1[a]		Enter

a. All requested variables entered,
b. Dependent Variable: Y

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.906a	.821	.643	7.7110

a. Predictors: (Constant), X2, X1

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
1	547.232	2	273.616	4.602	179[a]
Regression	118.919	2	59.459		
Residual	666.151	4			
Total					

a. Predictors: (Constant), X2, X1
b. Dependent Variable: Y

Coefficients3

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
1(Constant)	11.159	29.093		.384	.738
X1	.563	.427	.423	1.319	.318
X2	.723	.350	.662	2.064	.175

a. Dependent Variable: Y

Regression (Model_2)

Variables Entered/Removed13

Model	Variables Entered	Variables Removed	Method
1	X1X2, X1, X12[a]		Enter

a. All requested variables entered,
b. Dependent Variable: X1Y

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.989a	.979	.915	420.094969

a. Predictors: (Constant), X1X2, X1, X12

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig
1 Regression Residual Total	8139152.0 176479.78 8315631.8	3 1 4	2713050.658 176479.783	15373	,185a

a. Predictors: (Constant), X1X2, X1, X12
b. Dependent Variable: X1Y

Coefficients3

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
1(Constant)	-420.295	11077.565		-.038	.976

X1	31.900	485.400	.214	.066	.958
X12	.375	5.481	.233	.068	.956
X1X2	.692	.404	.575	1.711	.337

a. Dependent Variable: X1Y

Regression (Model_3)

Variables Entered/i3emovedbq

Model	Variables Entered	Variables Removed	Method
1	X22, X12, X1X2[a]		Enter

a. All requested variables entered.
b. Dependent Variable: X2Y

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.985[a]	.970	.88	787.340337

a. Predictors: (Constant), X22, X12, X1X2

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	2019041	3	6730139.53	10.857	.219°
	Residual	9	1	8		
	Total	619904.8	4	10.857		
		1		619904.806		
		2081032 3				

a. Predictors: (Constant), X22, X12, X1X2
b. Dependent Variable: X2Y

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
1(Constant)	52.552	1785.646		.029	.981

X12	2.973	6.198	1.166	.480	.715
X1X2	-2.820	6.994	-1.483	-.403	.756
X22	1.778	2.071	1.670	.859	.548

a. Dependent Variable: X2Y