CHAPTER I
INTRODUCTION

1.1 Background of the Study

Cost accounting is a special branch of accounting. The field of cost accounting has become broader with the passage to time. Besides serving the purpose of inventory valuation and pricing, cost accounting also serves the purpose of cost control, cost estimation and cost determination for a variety of managerial uses. The scope of cost accounting has been extended to include the cost and the control problem of manufacturing as well as non-manufacturing business. Along with the realization of the usefulness of cost accounting, there has developed a systematic body of concepts, methods and procedures of cost accounting. The ever-increasing tempo of industrialization has brought the subject of costing and cost accounting to the forefront.

Cost accounting involves classification, accumulation, assignment, and control of costs. It is concerned with something more than providing cost data for general financing reporting. It provides, in addition, detailed cost to management for cost control, planning ad decision-making. Therefore, the cost accounting is and art as well as science. It is science because it is a composite of systematic knowledge and principles. It is an art because cost accountant needs a special ability to apply the principles and knowledge of cost accounting use of costing principles, techniques and methods help to solve the managerial problems. Cost accounting provides knowledge to take efficient and effective decision making for cost control, determination of profitability and internal and external reporting.

Inventory management and control system is one of the important parts of the cost accounting. Inventory is the balance materials of trading houses. Inventory either can be raw materials or finished good ready for sale, or goods in the manufacturing process. Therefore, the inventory is recorded as an asset on a company. When the goods are purchased by the Trading houses, they have to be stored until they are

supplied to the market. Thus, inventory involves higher amount for investment blocking the huge amount of capital. Thus, inventory management and control system should be the top priority of every management of the trading houses to reduce the cost of store. So, high inventory is not a good sign because it involves a high cost with storage of the extra inventory of the trading houses.

Modern concept of inventory management can be traced from 1915-1922 with several authors like Davis, Clark, Owen. They had develop an economic lot size equation which has minimize sum of holding cost and carrying cost where the demand is known and constant. Inventory makes a link between demand of the goods and supply of the goods. They inventory exits in manufacturing and non-manufacturing organization also. But, Mostly the inventories are appearing in manufacturing and trading houses. There are four the aim optimum level of inventory is maintained for the smooth supply to the market and sales operation and to minimize the total cost of investment that will lead to optimal inventory investment for attainment of desired objectives.

The growing number of business corporations in Nepal faces a lot of problem in inventory management. Due to lack of proper inventory policy and system, there are many organizations where large amount of capital are blocked up and very little measures have been taken to manage the inventory. The area of inventory management corers the following phases: determine the size of inventory with time schedule, procedure and lot sizes for new order, determine minimum safely stock level and co-ordinate the sales department for inventory policy such that proper store facility, arrange the receipt, disbursement and procurement of goods are in operation. Inventory management covers the development of recording the transaction, assign the responsibility for carrying out the inventory control function and provide the necessary report for carrying out the inventory control function and provide the necessary report for reviewing overall activities of top management. To maintain the optimal inventory level, organization should use the inventory management techniques. The inventory management techniques are as follows:

Economic order quantity (EOQ):- Economic order Quantity (EOQ) is such quantity where total cost is minimize and total carrying cost and total ordering cost are equal at this level. Economic order quantity is also known as re-ordering quantity.

Re-order Point (ROP) or Re-order Level (ROL):- The re-order point (ROP) or re-order level (ROL refers to the level of inventory at which a re-order should be placed to receive the inventory at the time when previous stock is exactly finished.

Minimum stock level:- This represents the minimum quantity of the materials, which must be maintained in hand at all times. The quantity is fixed so that production may be held up due to shortage of the material.

Maximum stock level:- It represents the maximum quantity of an item of materials that can be held in stock at any time. Stock should not exceed this quantity. The quantity is fixed so that there may be no overstocking.

Safety stock:- Safety stock is that level or that stock which is used if there is no normal stock and the business is going to close due to the cause of not availability of stock. The purpose of safety stock is to run the production operation smoothly.

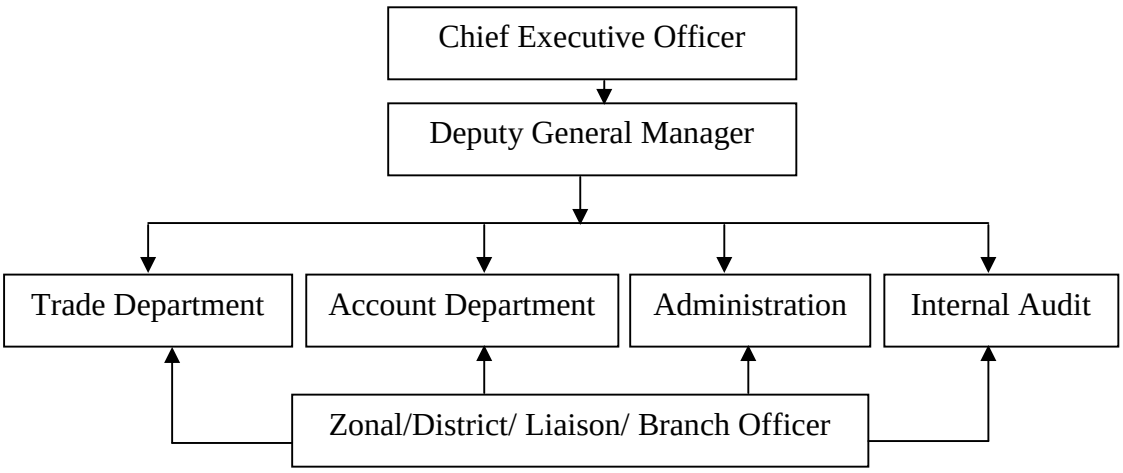
Danger level: - It is the level where normal issue of material are stopped but can be issued under special instruction. It is signal that procurement of material is essential otherwise, the business operation may close due to the shortage of material.

1.2 A Brief Introduction of Him Shree Foods Pvt. Ltd.

Him Shree Foods Pvt. Ltd. is a manufacturing organization. It was established during the 6th five-year plan situated in the eastern part of Pokhara valley. At the time of establishment, it was named "Gandaki Noodles Pvt. Ltd." Latter it has changed as Him Shree Foods Pvt. Ltd. It lies among the different industries in the Pokhara industrial estate. It started its production from the year 2039 B.S. In the previous years, it produced Rara and Phewa Noodles. Nowadays it produces Rara instant Noodles, Rara steam Noodles, and Ezee snack noodles are the newly branded noodle of the factory. Among these noodles, Rara instant Noodles is the most popular

noodles in Nepal. Most of the people of Nepal, ranging from schoolchildren to homemakers like Rara noodles. It is also the favorite food of the foreign tourists in Nepalese restaurants, bars and hotels. At the time of establishment, the market area was narrow. Nowadays it sells its products at national as well as international market according to their demands. It was added one back on the foundation of industrialization in Nepal. Other entrepreneur is encouraged by this company. It was helped to strengthen the economic condition of the nation by playing large amount of excise duty to the government.

Fig. 1.1



1.3 Statements of the Problems

Private enterprise is encouraged in Nepal. Production oriented enterprises should hold a large size of inventories. The reasonability of is to control inventory if Minimum wastage and misuse of inventory management. But the managing of inventory itself is a problem. Many sophisticated mathematical techniques are available to handle inventory management problems. Such techniques are part of production management. Although inventory management usually is not the direct operating responsibility of the financial manger, the investment of funds in inventory is an important aspect of financial management. So the financial manager should control inventories effectively to allocate capital with the view of maximizing of wealth. A managing asset of all kinds is an inventory problem although various techniques have developed; most of the firms are found not handling inventories effectively. Hence, this study is more concerned with the management of inventories.

Inventory management and control is to maintain the optimal level of inventory investment and minimize the cost of inventory. So the company should control the inventory of physical and financial. Managing the inventory in a proper way is a great challenge to every organization. The researcher could find optimal inventory policies in Him Shree foods Pvt. Ltd. by the following research questions:

- Whether or not Him Shree Foods Pvt. Ltd. has applied inventory management and control?
- What is the present inventory position of Him Shree Foods Pvt. Ltd.?
- What is inventory turnover ratio of Him Shree Pvt. Ltd.?
- What is the performance of Him Shree Foods Pvt. Ltd. based on selling and cost price of inventory?
- How does Him Shree Foods Pvt. Ltd. manage inventory and use of the techniques?
- What are the major problems faced by Him Shree Foods Pvt. Ltd. in inventory management and control?
- What is the relation of inventory position with the profitability of the firm?

1.4 Objectives of the Study

The general aim of this study is to find out the inventory management and control system exercised by the company. The specific objectives of the study are as follows:

1. To see present procurement procedure of Him Shree Foods Pvt.Ltd.

2. To see relation between production cost and profit.

3. To analyze present inventory position of Him Shree Foods Pvt.Ltd.

4. To find out the difficulties in application of inventory management in Him Shree Foods Pvt. Ltd.

5. To make recommendations to overcome the difficulties in inventory management in Nepal is manufacturing organization.

1.5 Significance of the Study

Inventory plays a vital role in business. It is a part of working capital. Inventory affects the purchase management, production and sales. So a businessman has to pay an important role for maintain optimum level of inventory to minimize the cost of production and to increase the wealth of the firm. Optimum inventory is essential for business otherwise the cost of production may increase and efficiency of business may decline. Inventory management avoids the over investment in inventory and also helps to maintain adequate level of inventory.

Most of the manufacturing organization of Nepal are suffering from poor inventory management. Him Shree Foods Pvt. Ltd. is no exception from this problem. Thus this study seeks to understand the problems faced by Him Shree foods Pvt. Ltd. These are the most important of the inventory management and control for the company as follows:

- To take advantage of economic purchase order.
- To Provide and maintain goods and costumer services.
- To perform various production operations economically and independently.
- To provide protection against the uncertainties of demands and supplies.
- To enable the organization smooth flow of goods in production process.
- To allow flexibility in schedule.
- To ensure a reasonable utilization of equipment and labors.

1.6 Limitations of the Study

The limitation has been confirmed to study the inventory management of Him Shree Foods Pvt. Ltd. as follows:

- The study covers only five fiscal years from 2063-064 to 2067-068.
- The study is based on primary data and secondary data.
- The accuracy of this study is based on true response and the data provided from the company.
- Time and resource for the studies are major limitation.

The study is related on inventory management and control tools and techniques of Him Shree Foods Pvt. Ltd.

1.7 Organization of the Study

The study has been divided into five chapters. They are:-

Chapter-1

Introduction: - This chapter will concern on the background of the study along with inventory management and control, brief introduction of Him Shree Foods Pvt. Ltd., statement of the problem, objective of the study, significance of the study, limitation of the study and organization of the study.

Chapter-2

Review of Literature:- This chapter will deal with review of various books, journal, old dissertation, published and unpublished reports, articles, previous newspapers etc.

Chapter-3

Review of Literature:- This chapter will deal with review of various books, journal, old dissertation, published and unpublished reports, articles, previous newspapers etc.

Chapter-4

Data presentation and Analysis:- it will be the focus of the study which represents the various statically tools to present the collected data as form of tabulation, chart, graph & diagram and analysis of the data by using various methods of statistics tat describe in the chapter.

Chapter-5

Summary, Conclusion & Recommendation: - This chapter will deal with the summary of the study, relevant suggestion regarding with the inventory management and control system.

CHAPTER-TWO
REVIEW OF LITERATURE

Managing of inventory is a challenging task for any manufacturing and trading organization. Inventory management is a topic of considerable and widespread interest. Although, various scientific techniques to the solution of inventory management problem re developed. Inventory management had ben facing the problem of effective handling of inventory. There have been other researches on the inventory management in Nepalese enterprises, too. Therefore, this research is not entirely new one about the inventory management of Nepalese enterprises.

Scientific research must be based on past knowledge. The previous studies can not be ignored because they provide the foundation for the present study. Literature review is a "stock taking of available literature in one's field of research."

This chapter is devoted to the concept of related pattern of the study that would be fruitful to solve the research problem. This framework would be helpful for gathering various knowledge and experiences.

This chapter is divided into two parts: Theoretical and conceptual review of inventory management is presented in the first part and review of related studies I the second part.

2.1 Theoretical Framework

In simple meaning, inventory can be as a stock, which is ready to convert into finished product/ goods. But in broad sense, inventories are stock of raw material, work-in-process, finished goods and office supplies. They are equally important for small or large business organization. As we know that, for manufacturing enterprise, inventory is the most important factors for production process. Without inventory, the manufacture enterprises cannot be established. So very manufacturing enterprise must think about the different types of inventory used in their firm daily.

2.2 Concept of Inventory

Inventory management means the management of optimal level of inventory in a firm. To maintain the optimal level of inventory in a firm, it is necessary to train the employees by the top-level management or by hiring the expert person from outsides, because inventory includes the maximum amount in the production process to produce the product. Inventory involves different forms such as financial dimension and physical dimension. These dimensions are interrelated and cannot be separate while analyzing the inventories in a firm.

There are various forms of inventory can be keep such as raw material, semi finished goods as well as finished goods which play a significant role in the success of every enterprises. "However firms would prefer to hold little or no inventory and if it called be arranged, firms would like to time the production of their products to coincide perfectly with the arrival of demand". (Weston and Brigham, 1992) As we know that, demand of the product in the market for the future time cannot be predicted at present by the firm. If the firm can estimate or forecasted the demand of the product, at present situation, at such condition, the firm may try to coincide its production of products/ goods with the demand of its customers. So such type of function may take only few amount of time for production and it changes with the length of transportation process and value added to the original material purchased. But in reality such action may not take easily. So that, the company try to maintain optimal inventory level which minimize the total cost of the firm. As we know that excessive inventory increases the more capital investment and inadequate inventory level may not fulfill the demand of the customers or may not successes to run the business smoothly. Therefore, excessive and inadequate level of inventory both is not suitable to the manufacture enterprises. So, the firm must maintain the appropriate level of inventory in a firm to avoid both excessive and inadequate level of inventory. Therefore, the main aim of the managing inventory is to avoid the over stock and under stock and try to maintain the optimal level of inventory for the sound operation of the business.

All manufacturing enterprises, nearly 90% of amount are invested in inventory. So, it is necessary to give proper attention in handling the inventories management in

enterprises. The efficient management system of inventories gives the following information on time relating to the inventories such as:

What kinds of inventories to be purchase?

Where to purchase?

By whom to purchases?

How to purchase?

Where to store?

Thus inventory management system helps to used different tools and techniques which minimize overall inventory cost and maximize the profitability of the firm by smooth running of the business.

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2.2.1 Classification of Inventory

Every manufacturing enterprise has its own types of inventory. Inventory can be classified on the basis of the following heading i.e. namely raw material; work in process; and finished goods.

Raw Materials

Raw material is very important factors for production. As we known that without raw materials the production process cannot be run effectively. Raw material can be express as a direct material which is the prime factor of production process and also become the integral part of the final product. Indirect materials are those materials which are not directly concerned with the final product but helps to run the business smoothly, such martial are oil for plant and machinery; stationary goods; packing materials etc.

Work-in-Process

The semi-finished products can be said as work-in-process. It means these are the products which needed more work before to convert into final or finished products. In other works, the work-in-process is neither a finished goods nor raw materials. In an industry the same may be the finished product but for the other industry such material may be the work-in-process, normally it depends upon the nature of the business activities. Work-in-process refers to inventory units that are at various stages of completion; some of the inventory in work-in-process will be at the beginning stage of completion and some will nelry completed.. If the firm has work-in-process, then it will not have to completely shut-down production if a problem arises at one of the previous production stages (Weston & Brighams 1992:130)

Finished Product

The final output of the production process of any manufacturing enterprises is called final product. These products are ready to sell to the customers "Demand in the market. If the firm has to keep large amount of finished goods on hand, normally provides advantages on the marketing as well as production departments. From the marketing viewpoints, large amount of finished goods enables to fill the orders of the customers; minimize the lost sales and avoids shipment delays due to the stock outs. From the production viewpoints, maintaining large finished goods permits items to be manufacture in large production runs, which helps to keep the units production costs low by spreading fixed set-up expenses over large volume of output. (McGuigan & Kretlow; 1999:44).

2.2.2 Motives of Holding Inventory

Inventory is necessary for production process. Inventory helps to run the business smoothly. However every firm has to hold the inventory because of the following motives i.e. transaction, precautionary and speculative motive.

a) Transaction Motive

As we know that without inventory the production process and selling of finished product is not imagine. Therefore, transaction motive helps smooth operation of the business and sales of the final product.

b) Precautionary Motive

Holding of inventory is the safety against the risk of unpredictable demand and supply of the product.

c) Speculative Motive

Speculative motive influences the decision to increase or decrease the inventory level to take benefits inflection of price.

2.2.3 Benefits of Holding Inventory

Inventory is necessary for all manufacturing organization. Therefore, the organization must hold the optimal level of inventory for production. Holding inventory gives the following benefits to the corporation, which can be explain by the following heading:

a) To meet the irregular supply and demand change

Due to the change in prices of the inventories, the firm may not to continue the production process. So if company holds the sufficient amount of inventories then the production process cannot be stop which meets the demand of the customer "in the market.

b) To get quantity discount

Farm's normally purchase the inventory in large volume for the smooth operation of the production. Purchasing huge amount of inventories generally takes heavy discount from the supplier and ultimately the cost of materials will be reduced.

2.3 Objectives of Inventory Management

Inventory is the one of the most important components of all manufacturing enterprises. Without inventory, the business activities cannot be formed. Keeping excessive and inadequate inventory level is not healthy to the organization. So the managing optimal inventories levels are good for the all organizations. It helps to minimize the ordering cost and carrying cost of the inventory. Therefore, to maintain and optimal level of inventories in manufacturing enterprises are quite significant. But it is difficult to the management the optimal level of inventories because the optimum level of inventory always between two dangerous points of excessive and inadequate inventories. Effective management of the inventory in nay manufacturing enterprises should be:

i. Ensure continuous supply of raw materials to facilitate uninterrupted production.

ii. Maintain sufficient stocks of raw materials in periods of short supply and anticipate price changes

iii. Maintain sufficient finished goods inventories for smooth sales operation and efficient customer service.

iv. Minimize in the production cost.

v. Control investment inventories and kep it at an optimal level.

(Kothri, C.R 1989:160)

The objectives of inventory management should be neither excessive nor inadequate level of inventories. But maintaining sufficient inventories help to run the production and sales operations. An optimal level of inventory should be determined on the basis of the trade off between cost and benefits. The various objectives of inventory management can be summarized as follows:

i) To minimize the total cost of inventory.

ii) To maximize the profit of the firm.

iii) To minimize wastage of storage cost.

iv) Reasonable price of raw materials.

v) No excessive investment in inventory.

vi) To give proper information about the availability of stock.

(VanHorne, C. 1992:50)

2.4 Need and Important of Inventory Management

Inventory is an important factor of any manufacturing enterprises. It helps to regularly for running of production and sales operation smoothly. Therefore, maintaining optimal level of inventory is the main aim of inventory management. Thus, the need and significance of inventory management to a firm could be specified as bellow:

i. It helps maintaining a tradeoff between carrying costs and ordering cost, which results in to minimizing the total cost of inventory.

ii. It facilitates maintaining adequate inventory for smooth production and sales operations.

iii. It avoids the stock-out problems that a firm otherwise would face in the lack of proper inventory management.

iv. It suggests the proper inventory control system to be applied by a firm to avoid losses, damages and misuses.

2.5 Inventory Cost Concept

Inventory includes the different types of costs, such as holding costs, operation costs, shortage costs etc. Holding cost are those costs which are relating to the warehousing and handing of physical goods, operating costs are relating to the placing and ordering of manufacturing records which we are considered in production of batches and shortage cost are those costs which are failure to meet the demand of the customers. Thus, the firm has to apply the systematic and scientific inventory management system considering various cost factors to get the optimal inventory management. Generally, the first step inventory management is to identify all the cost involved in purchasing and maintaining inventories. Different types of cost of inventory can be summarized as bellow.

2.5.1 Purchase Price

Purchase price is incurred only when the firm has to purchase the raw materials. Every organization has to try to minimize it without compromising specifications of materials through purchase management.

2.5.2 Carrying/ Holding Cost

Carrying costs are the variable costs per unit of holding an item of inventory for a specified time period. Carrying cost includes cost of storage, handing and storage costs, insurance costs, proper tax, spoilage and obsolescence cost and system cost associated with the administration of the inventory system in sue such as information gathering cost, supervision cost, physical stock checking cost, record keeping requirement cost on holding inventories. So, Carrying cost is the first category of in inventory management cost, which is generally associated proportionally with the average value of inventory. (Era, 1989) The total carrying cost is simply the product of carrying cost per units and the average inventory unit as devoted below:

Total carrying costs [TCC] = [C] × [A]

Where,

C = Carrying cost per unit.

A = Average inventory unit.

Again, carrying cost per units [C] is calculated as below,

Carrying cost per unit [C] = [C%] × [P]

Where,

C% = Percentage of carrying cost.

P = Purchase price per unit,

Average inventory units [A] = Q/2

Where,

Q = Ordering quantity

The inventory carrying costs are further explained as

i) Capital Opportunity Cost

This consists of expenses of rising funds (interest capital) to finance the acquisition of the inventory. If founds are not locked up in inventory, they would have earned a return. This is opportunity cost of the funds or financial cost of components of the cost (Khan & Jain, 2002).

Funds associated with inventory are not available for other uses. Therefore, an opportunity cost determined by alterative uses to which could be put. For example, for the alternatives uses if firm can earn 10% then, the capital cost of the inventory is 10%.

ii) Handing Cost

The size of consignments and the material handling facilities in the store determines these costs up to a certain level of inventory size per unit handling cost decreases with that level per unit handling cost start increasing.

iii) Storage Cost

The cost associated with maintenance of inventory storage cost. These include expenditure made on inventory staff, expenditure to provide various facilities like heating, lighting, floor space, shelter and racks, binds and containers, materials handing equipments and other provision for safe and proper storage of item.

iv) Spoilage and shortage cost

Many products deteriorate over time in storage. The precise nature of deteriorate various from product to product but whatever the causes, it presents reduction in the company's assets and such in a cost of holding inventories. This is term as a spillage cost, sometimes because of shrinkage and pilferage of inventory.

v) Depreciation Cost

In every organization, the value of the capital investment decrease with time. Thus, there is tendency among organization to reduce its capital investment on machines and other equipment. The depreciation cost thus reduced. Naturally, the desire among of production with running the machines in stock period thus increases the size of inventory.

vi) Insurance and Taxes

Many of the goods in inventory require and it should be included in inventory holding cost, whether the year. The inventory, a firm has at hand those data's the higher their tax bill be. Where such taxes are in effect prudent, inventory management may dictate periodic reduction in inventory to coincide with the data on which the assessment is made.

One final type of inventory holding cost remains to be discussed those associated with the administration of the inventory system in use such as information gathering costs, physical stock checking costs and recording equipment cost. It is difficult to determine whether these expenses will be high or low expect by making a comparison among actual inventory system (handley & Whiten, 1992).

2.5.3 Ordering/ Procurement Cost

Another cost associated with investment in inventory is the ordering costs. Ordering costs include the fixed clerical cost of placing and receiving on order. It includes cost such as requisitioning, purchase ordering, transferring and receiving inspection and storing. Ordering cost increases with the number of order increase, thus more frequently order of inventory occurs higher cost for the firms. On the other hand, if the firm maintained large amount of inventory level there will be few orders placed and such orders make the relatively ordering cost low. Therefore, the decrease in ordering cost with increasing the size of the inventory. The total costs are expressed in terms of following relationship:

Total ordering costs [TOC] = [O] × [N]

Where,

O = Ordering cost per order

N = Number of order to be placed

Where,

Number of order can be calculated by the following way:

$$\text{Number of order [N]} = \frac{\text{Annual Requirements (A)}}{\text{Economic Order Quantity (EOQ)}}$$

Ordering cost are generally expresses due to the following reasons:

i. Transportation and shipping cost.

ii. Clearing and forwarding cost.

iii. Cost incurred when raw material in transit

iv. Insurance of raw material.

v. Telephone/Fax/Post4age expenses

vi. Stationary cost.

vii. Bank Commission.

viii. Cost of placing an order.

ix. Requisition cost.

x. Receiving, inspecting cost.

2.5.4 Stock Out cost

Stock out cost is related with demand and the depletion in stock result in loss in sales or bank order costs. When the sales are lost due to stock out, the firm losses both the profit margin on unmade sales and the firm's good will. If the customer uses another business elsewhere, future profit margin may also be los and bank order cost is needed to convince customers to uses gain after inventories have been replenished. Bank lost includes loss of goodwill, money plaid to reorder goods and notification to customers when goods arrived (Adams & Ebert, 1993,: 142).

Stock out cost = Inventory cycles per year – output units × probability of possible stock out × unit stock out cost.

Where,

Inventory cycle per order = Annual Sales/ Quantity order size.

2.5.5 Over Stock Cost

When the demand of the product of terminated, as such condition, the goods are remained unsold; it is called the over stock cost.

2.6 Inventory Management Techniques

In inventory management technique, we seek how to minimize the total cost of inventory. As we know that adequate inventory level helps to provide regular delivery to the customers but on the other hand, excessive inventory is idle resources of the firm and the large amount of money is blocked unnecessarily. According to Alton N. Smith, "Inventory is money on which a company pays interest rather than collect interest. It is money always in danger of deviation. No controlled inventory is an industrial danger." To maintain the optimal inventory organization should used the inventory level techniques.

2.6.1 Economic Order Quantity (EOQ)

This technique attempts of establish the economic balance between the acquisition cost and carrying cost by determining quantity to be ordered. The most economic order quantity is ascertained at this point.

In 1915, F.W. developed the famous economic order quantity (EOQ) formula. Later, through the consultant named Wilson, this formula gained wide use in industrial area. Later on Haris developed this formula. The EOQ is still widely used in inventory for independent demand. The EOQ model is an inventory management technique used to find the optimal order included order quantity that minimizes the total cost, which includes ordering, and carrying cost.

John J. Hampton defined economic order quantity as "the order size that will result in the lowest total of ordering and carrying costs for an item of inventory. Furthermore, he states the importance of economic order quantity as if a firm places unnecessary order it will insure unneeded order costs if it places to few orders, it must maintain large stock of goods and will have excessive carrying costs. By calculating an economic order quantity, the firm identities the number of units to order that results in the lowest total of these cost. (Hamption, 1986:136).

It refers to the order size that will results in the lowest total cost (totals ordering cost + total carrying cost) for an item of inventory. if a firm places many orders it will insure unneeded ordering costs. If it places too few orders, it will have excessive carrying costs. By EOQ model, we can identify the numbers of units to order that results in the lowest total costs. EOQ seeks that how much units of inventory should purchase at an order, Which minimizes the total cost involves in the carrying and ordering, a fairly large error, say 21% in determining the carrying and ordering costs will introduce a much smaller error (10%) in the determination of EOQ. (Buchan, 1970).

We can compute EOQ with the help of forecasting usage; ordering and carrying costs, in EOQ calculating we must use marginal cost only, don't include fixed costs.

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

Where,

A = Annual demand/ Annual requirement

O = Ordering cost per order

C = Carrying cost per unit

(Buchan, 1970)

Assumption of Economic Order Quantity (EOQ):

i. The demand rate is constant recurring and know. for example demand (or usage() is 100 units for a day with no random variation, and demand is assume to continue into the indefinite future.

ii. The lead-time constant and known. The lead-time for order placement to order delivery is therefore always a fixed number of days, no stock outs are allowed. Since demand and lead-time and constant one can determine exactly when to order material to avoid stock out.

iii. Material is orders or produce in a loft or batch and lot is placed into inventory all at one time.

iv. A specific cost structure is used. Unit cost is constant and no discounts are given for large purchase. The carrying costs depend linearly on the average inventory level there is a fixed ordering or set up cost of each lot which is independent of the number of items in the lots.

v. The item is a single product there is no interaction with other products.

Determination/ Approach to Set EOQ:

The EOQ model can be illustrate by (a) Mathematical or formula Approach (b) The long Analytical Approach or Trail and Error Approach, they are explained below: (Dangol, Ratna Ma; 2069:37)

i) Mathematical or Formula Approach

Mathematical models are also available to calculate EOQ. There are numerous model exist as the field of inventory management and can be studied in college programs such as production and operation research management. Even many mathematical models are exists, the main objectives of their model is to reduce and minimize the inventory costs. Without getting into highly refined models, the firm cannot get a good decision. We can illustrate the concept of EOQ with a basically mathematical model as follows. The order fro the material to be purchased should be too large to incur too heavy a payment on account of interest, storage and insurance costs. If the price to be. paid is stable, the quantity to be ordered each time can be ascertained by the following formulae:

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

Where,

EOQ = Economic order quantity

A = Annual requirement of product

O = Ordering cost per order

C = Carrying cost per unit

Suppose:

Annual requirement (A) = 10,000 units.

Ordering cost per order (O) = Rs. 32

Carrying cost per unit (C) = Rs. 1 per unit

Solution:

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

$= \sqrt{(2 \times 10.000 \times 32)/1}$

= 800 units

Therefore, the Economic order quantity (EOQ) = 800 units

If the firm orders EOQ units each time, it will minimize the total inventory costs. To sum up, EOQ is determined keeping in view the ordering costs and carrying costs.

ii) The Long Analytical Approach or Trial and Error Approach

This is another approach to calculate economic order quantity. A firm has different alternative purchase policy of its inventory. It can purchase its entire requirement in one single lot. Alternatively, the firm can purchase its inventory is small lots periodically say weekly, monthly, six monthly and so on. It means more than one time the firm can place and order to purchase inventory. The smaller the lot sizes the lower average inventory and vice-versa. Low inventory holding are associated with high ordering cost and low carrying cost. This approach for the determination of EOQ uses different permutation and combination of total costs.

In the other words, according to this approach the carrying cost and ordering cost for a different sizes of order to purchases inventories computed and the order size with the lowest total cost (ordering +carrying) of inventory is the economic order quantity.

Under this approach, first ordering number and order quantity are determined and then total calculated the total carrying cost and total ordering cost to be fined. After total cost to be determined with the help of adding these, two total cost and ordering costs. At last, calculation of the total cost of different order size and select the least cost, that least cost determine the economic order quantity (EOQ). In below table, the total cost is least in one condition, where the carrying cost and ordering cost it can be cleared by the following illustration.

Suppose:

Annual requirement (A) =2500 units

Ordering cost per order (O) = Rs. 100

Annual carrying cost per Unit (C) = Rs. 2

Solution:

Table : 2.1

Trial and Error Approach Method

No. of orders (N)	1	2	3	4	5
Order size (Q)	2500	1250	833	625	500
Average Quantity (Q/2)	1250	625	417	313	250
Total Carrying Costs (TCC)	2500	1250	834	626	500
Total ordering Cost (TOC)	100	200	300	400	500
Total inventory Costs	2600	1400	1134	1026	1000

Source:- Dangol, Ratna Man 2069:39

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

While preparing above table, the following calculations were made:

Order size (Q) = Annual Requirement / No. of Ordres

Average Quantity = Order Size/2

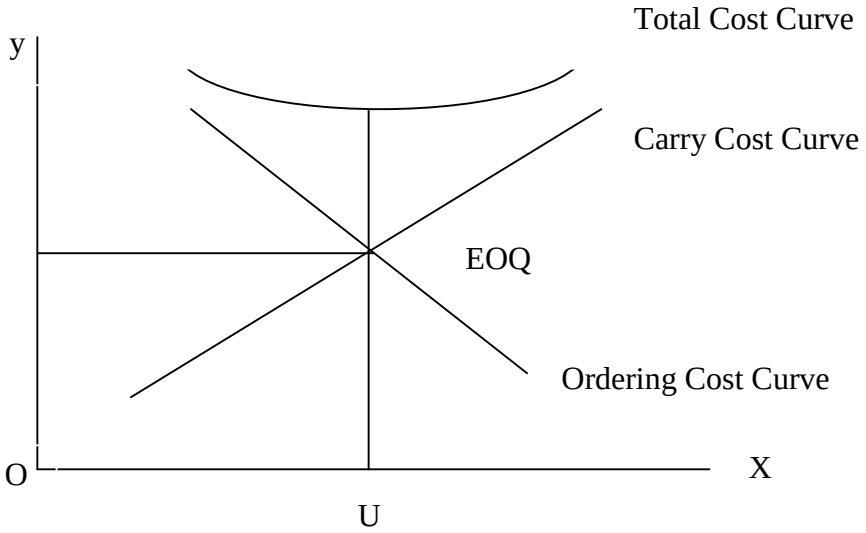
Carrying Cost = Average Quantity X Cost per Unit

Ordering Cost = No. of Orders × Ordering Cost per order

iii) The Graphical Approach

Economic order quantity can also can be determined by using the graphical approach. Under this method, EOQ is determined at a point where total ordering cost and carrying cost interest each other. It is the point where ordering cost curve and carrying cost curve are equal. At this point the total cost would be minimum. It may be presented clearly in the following diagram:

Fig. 2.1-Economic Order Quantity



Source:- Dangol, Ratna Man 2069:39

In the above diagram, OX axis represents the ordering quantity and OY represents the costs. When the order size increases the number of orders as well as ordering cost also decreases. Therefore, the ordering cost curve slopes down from left to right. On the

contrary to this, the carrying cost curve slopes down from left to right. On the contrary to this, the carrying cost cure slopes upward from left to right as the carrying cost increases with the increase in number of orders. The point where ordering cost curve and carrying cost curve interest each other is economic order point. It is the only point where the total of carrying cost and ordering cost are minimum. The diagram shows that the total cost curve slopes downward in the initial stage and slowly tend to increase from the equilibrium point, showing the U-shape. In the OU point, the total cost curve is lowest. Any increase or decrease in the order size from this point, the total tend to increaser.

iv) Quantity Discount

Quantity discount helps the helps the firm to increase its order size more than the EOQ level. It will reduce number of orders and increase the average inventory holding. When we accepts quantity discount the firm will save on ordering costs, but will incur additional carrying costs. The net return is the differences between the result of saving and additional carrying costs. If the net return is positive, the form's order size should equal the quantity necessary to avail the discount. If negative, order size should be equal to EOQ level.

2.6.2 Re-order point (Re-order level)

As we know that, EOQ model under the assumption that the level of sales are forecasted with certainty, the level of usage are constant over the time period and inventory could be replace as immediately as required. At such situation, EOQ solves the problem of how much to order. But another problem to the inventory management is to determine when the re-order should be placed. The re-order point (ROP) or re-order level (ROL) refers to the level of inventory at which a re-order should be placed to receive the inventory at the time when previous stock is exactly finished. To determine the re-order point under certainty, we should know (i) lead time, (ii) daily average consumption, (iii) Economic order quantity. Lead time is the number of days between the placement of order and the delivery.

For calculating Re-order level, the following points should be taken into consideration.

1. Lead time i.e., the time lag between ordering and receiving of the inventory. It is usually expressed in number of days.
2. Usage rate or daily consumption i.e., the quantity per day at which the item is consumed in production process or sold to customers.
3. Minimum stock level i.e., the quantity below which stock should not be allowed to fall.

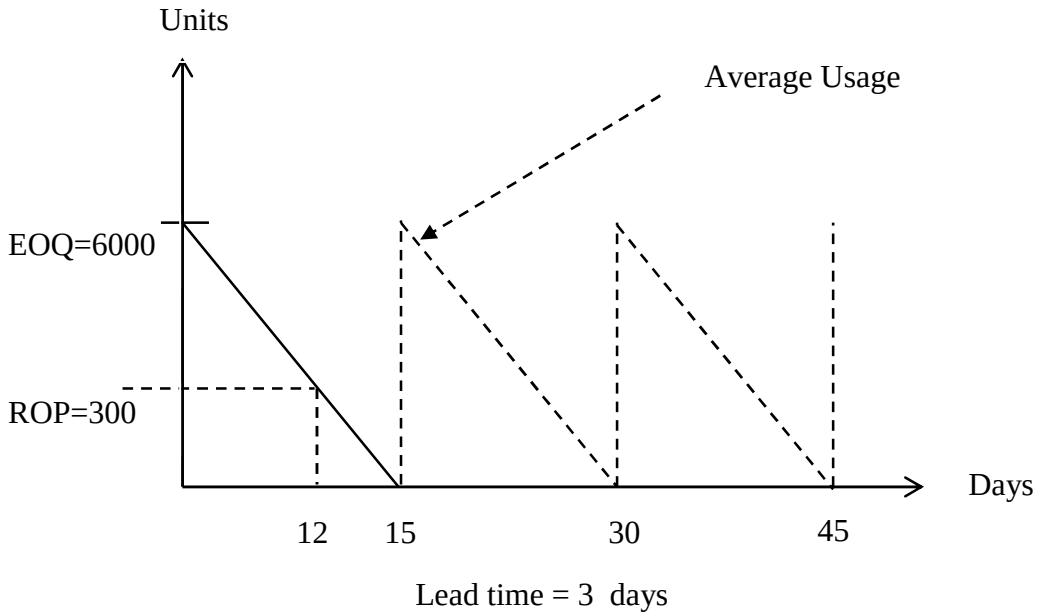
Re-order point may be determined by using any one among the given three formulae:

1. Re-order Point = Lead Time × Daily Consumption
2. Re-order Point = = Maximum Consumption × Maximum Lead Time
3. Re-order Point = Minimum Level + (Lead Time × Daily Consumption)

Source:- Dangol, Ratna Man 2069:39

The Re-order Point can be cleared by the following figure:

Fig. 2.2 Re-order Points (ROP)



Suppose:

Lead time = 3 days

Annual requirement (A) = 36000 unit

Days in a year = 360 days

Solution:- Re-order point (ROP) = Lead time × Average Consumption/Days

= 3 days × 100 units

= 300 units

Working note:

$$\text{Daily consumption} = \frac{Annual\ \text{Re}\ quirement\ (A)}{Days\ in\ a\ \ year\ (N)}$$

$$= \frac{36000}{360}$$

Here,

300 units of inventory level in hand at the time of placing order is called the re-order point. That means we must place a re-order when previous inventory level declines to 300 units. This condition is already shown in above figure. Normally, if a new order is received, good-in-transit inventories will occur. Good-in Transit is goods That that have been ordered but have not been received yet. If the normal delivery lead-time is greater than the order period or frequency, there will be goods-in-transit. At such condition ROP can be calculated as follows:

ROP = Lead time × Daily consumption -Goods-in-transit.

Thus, ROP is important for every organization because it gives the clear picture about the inventory to be -reordered. In addition, the firm will be saved from the stock out problems.

Source : Adams & Ebert, 1993;141)

2.6.3 Safety Stock

So far, we assumed the condition of certainty, but in the reality the situation what we assumed that may not be accurate. It means the lead time and average consumption cannot be forecasted accurately because the demand for the product and lead time may variation over the time period. In Such condition, the organization may face the stock-out problems. Therefore, to avoid the possibilities of being out of the stock due to the increase average consumption and excessive lead time. So, the organizations have to maintain the safety stock. Safety stock can be calculated by the following equation:

Safety Stock = Average Consumption × Lead -Time

2.6.4 Maximum Stock Level

Maximum stock level refers to the maximum quantity of an item of inventory, which can be held in stock at any time that stock should not exceed this quantity. The maximum stock level is fixed by taking into account the following factors.

- Amount of capital available for maintaining stock.
- Maximum requirement of the stock for production purposes at any point of time.
- Risks of obsolescence and deterioration.
- Possibility of change in fashion and habit, which will necessary change in requirement of material.

Maximum stock level can be calculated by the following equations:

Maximum level =Re-order level + Re-order Quantity- (Minimum Consumption × Minimum re-order period)

2.6.5 Minimum Stock Level

Minimum stock level is time lag between ordering and receiving the inventory.

Rate of consumption of the inventory during the lead time.

According to the mature of inventory, minimum level does not required against the customers specific orders.

Minimum stock level can be computed by the following equations:

Minimum stock level = Re-order level- (normal consumption × normal re-order period)

2.6.6 Average Stock Level

Average stock ever can be defined as the sum of minimum stock level and one half of the economic order quantity, which can be calculated as following way:

Average stock level = Minimum stock level + ½ EOQ

2.6.7 Danger Stock Level

These are just two types of inventory system. They have a numerous variations. One is termed as the fixed order size system, a fixed quantity of goods is ordered whenever inventory deeps below a predetermined level. The time between orders varies with the demand rates, but the size of the order remains constant. In practice, fixed order size system is generally called perpetual inventory system, since up to date records of the inventory's status are kept. Each time, items are withdrawn from or added to reflect the new status. These posting operations may be done manually on inventory records cards or as in increasingly the case through remote input terminals to a computer file. In general, only class A and B inventory are maintained in this fashion.

The two-bin system and application of the fixed order size approach is one of the oldest inventory systems in use. For e.g. let us imagine that all materials or given types is placed in two large bin. When the first is empty, the second is put inot use and a replacement order for a fixed amount is dispatched immediately when the new materials arrive, it is placed in the empty bin and the process continues. In the second basic type of the fixed order for a fixed amount is dispatched immediately when the new material arrive, it is placed in the empty bin and the process continues. In the second basic type of the fixed order interval system, periodic reviews of inventors are made at which time they are restore to some predetermined optimum level. No running records of daily inventory activities are kept. The status of the inventory is

known only at the time of the review, which may take place weekly, monthly, quarterly or yearly. Because of this, inventory systems of this are commonly called 'periodic inventory system' such system are generally used for class B or C inventories or instances where the large number of items precludes the updating of each inventory transaction.

Perpetual Inventory System: System that keeps track of removals from inventory continuously, thus monitoring current levels of each item. Two Bin systems: Two containers of inventory, reorder when the first is empty. Universal Bar Code: Bar code printed on a label that has information about the item to which it is attached.

2.7.1 Perpetual Inventory System

The institute of cost and Management Accountant, London, defines the perpetual inventory as "a system of records maintained by the controlling department, which reflects the physical movement of stocks and their current balance". The perpetual inventory system is maintaining of regular stock records is commonly known. In fact, perpetual inventory system implies a complete and up dated of each item of stores both on records and physical goods. The institute of cost and management account of England and Wales define perpetual inventory system as 'A system of recording maintaining by the controlling department, which reflects 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. The continuous stock taking is an essential future of the perpetual inventory system. Inventory records maintained under LIFO and FIFO basis are the best example of perpetual inventory system. The perpetual inventory system 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 times.

2.7.2 Comparison of the periodic and perpetual inventory system

The systems are both designed to control inventories to face uncertainty, whether one is employed in a particular instance depends upon the nature of the items stocked; the type of control is needed to the nature of the sources of supply (Hadley & Whiten, 1992).

The fixed order size system is well suited for managing inventories of low value items, since it permits lesser control. Items of are usually bought in large quantities relative to their use and can be readily obtain from the soppier at any time. They can be controlled by a simple two bin process without a large investment in record keeping. Perpetual inventories also lead themselves to the stocking of high cost items that can be purchased at anytime. These items are controlled by continuous positing to inventory records. In this way, the status of the high cost items can closely watched. This is costly, however for inventories with a large number of items, since the critical costs are high yet with use of computer, such cost can be reduce. The broader application of perpetual inventory record made feasible by computer in turn result involves control of inventories.

The fixed order interval system lads it self to inventories that consist of large number of products because the clerical cost of periodic evaluation is substantially below the required for perpetual recording. This system is also well suited for items shoes availability may be limited because the suppliers demand for period order so that they can plan their production runs economically. In order to sue the foxed order inventory system, higher safety stock must be maintained (Handley & Whiten, 1992 Page 156)

Both systems are designed to control inventories in the face of uncertainty. Whether one or the other is employed in a particular instance, depend upon the nature of the items stocked, the type of controls needed and the nature of the source of supply. The fixed order size system is well suited for managing.

An inventory of low value items since, it permits looser control. Items of this sort are usually bought in large quantities relative to their use and can be readily obtained from the supplier at any time. They can be controlled by a simple two bin process without a large investment in record keeping, perpetual inventories also lend themselves to the stoking of high cost items that can be purchased at any time. Their items are controlled by continuous posting to inventory records. In this way ot the status of the high cost items can closely watched. This is costly, however, for inventories with a large number of items, since the critical costs are high, yet, with the use of computers, such costs can be reduced. The broader application of perpetual inventory records made feasible by computes will in turn result in closer of

inventories. The fixed interval system lends itself to inventories that consist of large number of products because the clerical cost of periodic evaluation is substantially below that required for perpetual recording. This system is also well suited for items whose availability may be limited because of the supplier's demand for periodic orders so that they can plan their production runs economically. In order to use the fixed order interval system, however higher safety stocks must be mainteained.

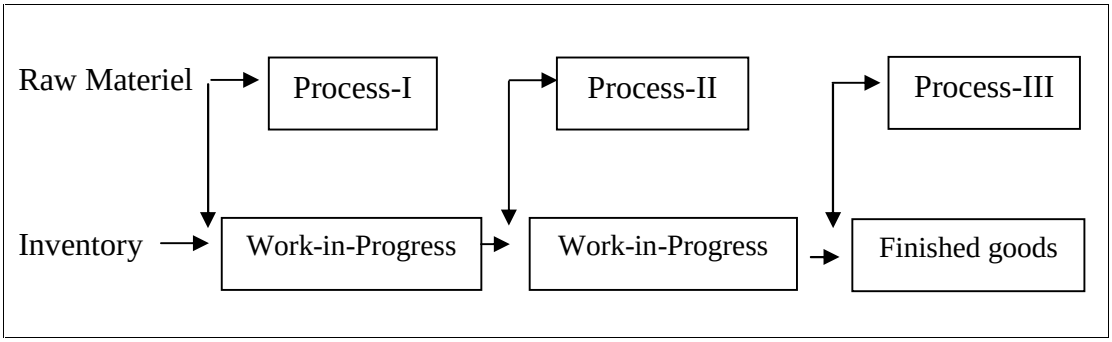
2.7.3 Concept of Inventory Level

As we know that, inventory is usable, but idle resources; the tem stock is generally used to refer resources in its physical and tangible form, like material. Thus, stock and inventory as synonyms used by them firm. Different types of inventories are kept by the firm to meet the demand of the customers. In order to know the concept of inventory and its application in a reality, it will necessary to clear the view about the concept of inventory system. The concept of the inventory system can be categorized as bellow.

2.7.4 Multi-Stage Inventory

Multi-Stage inventory system focuses on the inventories of different points of production stages and tries to maintain the balance of the inventory level at different stages for the whole conversion system. At this stage at he company has to maintain inventory such as parts and components, work-in progress in different production stages to produce desired products or goods in time. Such type of stage can be demonstrated by the following figure.

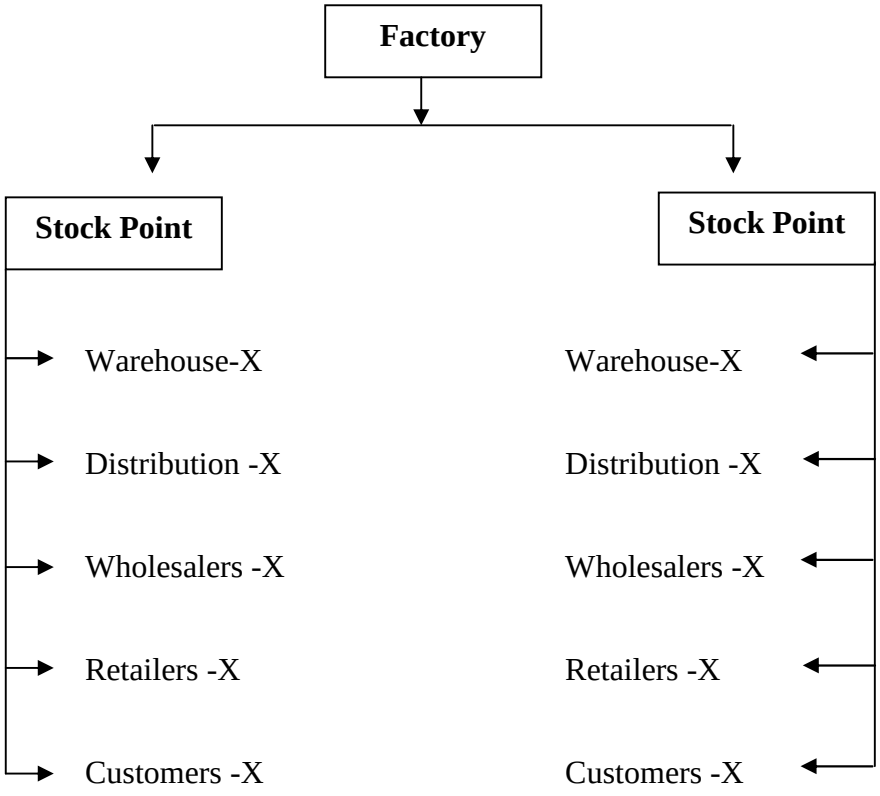
Fig. 2.3 Multistage Inventory System



2.7.5 Multi Level Inventory

Multi-level inventory system of distribution of finished goods to the customer by the help of proper marketing channel. The company has to maintain the different level for distribution of goods in the market place. In other rods, the company has to manage the inventories at different point of distribution system which can be presented by the following figures.

Fig. 2.4 Multi Level Inventory Systems



2.8 Inventory Control System

Inventory control may be defined as a planned method whereby investment in inventories held in stock is maintained in such a manner that it ensures proper and smooth flow of materials needed for production operations as well as sales while at the same time, the total cost of incensement in inventories is kept at a minimum. The inventory management is also concerned with establishing and applying proper inventory control system, which are described below:

2.8.1 ABC Analysis

ABC analysis is a widely used classification technique to identify various items of inventory for the purpose of inventory control. In this analysis, the organization should classify the inventories to identify which items should receive the most effort in controlling. The firm may use the selective control system for the various types of inventories. This analytical approach is called the ABC analysis and tends to measure the inventories to classify the inventories into A,B & C categories on the basis of their values.

Category "A" consists of those items of inventories, which covers about 15% in the items of quantity but covers 70% of investment amount.

Category "B" consists of those items, which covers about 30% in quantity but involves 20% of investment amount.

Category "C" includes those, which have about 55% quantity but covers only 10% of investment amount.

The example of the ABC analysis can be explained by the following table.

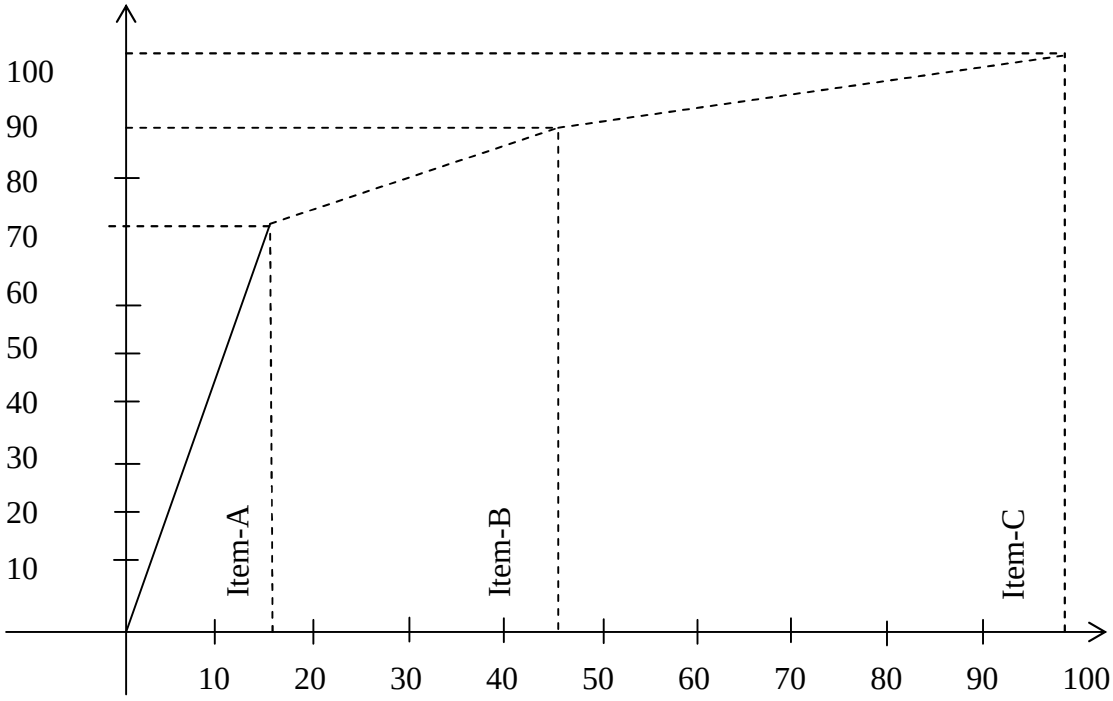
Table 2.2 ABC Categories based on Their Value

Group	Percentage of Units	Percentage of Costs
A	15%	70%
B	30%	20%
C	55%	10%
Total	100%	100%

From the above table, category "A" has highest percentage cost but lowest percentage of items. But category "C" has least percentage of cost but highest percentage of items. Similarly, category "B" has less percentage cost than "A" but more than "C" and more percentage of items than "A" but less than "C".

ABC analysis can also represented by the graphical method, which can be showed below.

Fig. 2.5 Graphical Presentation of ABC analysis



The above graphical presentation shows than item "A" has minimum percentage i.e.15% of total units of all items but it represents the highest value i.e. 70% of total investment amount. Item "C" has maximum percentage i.e. 55% of total units of all items but it represents the lowest value i.e. 10% of total investment amount. Item "B" occupies the middle place, therefore, the firm has to highest control on item "A" and simple or lowest control on Item "C" in order to maximize the profitability on its investment.

Procedure:

The steps for computering of ABC are as

a. First we calculate annual usage, multiplying the quantity (number of the units) of the item consume in one year by its unit price.

b. Arrange all inventory items, firs-term will show maximum annual usage in rupees, the second item shows the second maximum. The third items, the third maximum and so on. After having done this total of annual usage in rupees is put at the bottom of the cost.

c. Inventory items are categorized on the basis of annual usage and their price, which item has more annual usage and higher their price these item is categorized as "A" item. Which contribute lesser than A are categorized as 'B' and so on.

d. Placing of the orders on the basis of the classified.

The items in A, B & C categories can be compared in the following tabular form.

Table No.: 2.3 Items of A,B &C categories

Categories	A	B	C
Extent of control	Very strict control	Moderate control	Low control
Frequency of order	Frequent ordering	Once in three months	Once in six months or once in a year
Lead time	Maximum efforts to reduce lead time	Moderate efforts to reduce lead time	Minimum efforts to reduce lead time
Level of Management	Must be taken care by senior officer	Can be supervised by middle management	Can be supervised be clerical staff
Period of review	Review after month of every 15 days of waste, obsolete and surplus items.	Review after 3 months of waste, obsolete and surplus items	annual review over obsolete and surplus times.
Sources of supplies	As many sources as possible for each item	Three or more reliable sources	Three reliable sources for each item
Follow-up	Maximum follow up	Periodic follow-up	Follow-up only in exceptional cases
Safety stocks	Very low safety stock	Low safety stocks	High safety stocks
Centralization	Centralized purchasing	Centralization and decentralized	Decentralized purchasing
Value analysis	Rigorous value analysis	Moderate value analysis	Minimum value analysis

Source:- Richard mode, 1969

2.8.2 Rend line method

Under this system, a red line is drawn around the inside of the bin used for stocking inventories. This red line represents the re-order point on inventories. When the level of inventories reach down to red line drawn in the bin, a re-order is made.

2.8.3 Two Bin System

Under two bin system, inventories are stocked in two separate bins. When the stocks in one bin are completely used, the firm places a re-order to fill the bin and inventories are drawn for used for the second bin.

2.8.4 Computerized System

The work of keeping inventory record, cost determination and sending the order of procurement according to the requirement through computer is call computerized system. Generally large firms design a specific computer programming to count the stock of inventories.

2.8.5 Statistical Inventory Control System

A number of firms with widely spread distribution system find the use of mathematical model and electronic pattern inventory location level best reconcile consideration of customer service, manufacturing and have been developed to help inventory management decision.

2.8.6 Just-in-Time (JIT)

Just in time is also used as a technique in inventory management. Just in time is a system of inventory control in which a firm coordinates production with suppliers so that raw materials or components arrive just as they needed in the production process. In this system the inventories are received as and when they are needed for production that facilitates the firm to minimize carrying cost of inventory. Application of JIT requires efficient purchasing procedure, most reliable suppliers and effective method

of handling inventory. Therefore, JIT emphasizes waste reduction, total quality control, and devotion to the customers.

2.9 Review of the Article and related studies

Inventory management is wide subject but no one pay attention in this field. Many modern techniques to control inventory management have been realized. IN our country there are number of public and private enterprises have been established as well as analysis has been made but only the aspect of financial performance. In the field of inventory management, only few researche4rs have made the research on the inventory management of the manufacturing company.

From the various studies of thesis, dissertations business reports and other sources, it is found that some company are apply modern methods or techniques to manage as per the requirement.

So far the studies, some studies made on inventory management are considered relevant, which are shown below according to their major findings.

Agrawal, (1980) management export, claims that the inventory management in Nepal is probably the weakest aspect of management, the tools and techniques for controlling inventory have been applied in Nepalese company for controlling their physical as well as financial dimension.

Inventory management is to discover and maintain the optimal level of inventory investment and minimizing the cost of inventory. So, physical and financial dimensions of inventory should be effectively managed. If the top level management can not be managed efficiently, it will be and adverse effect upon profit which is main goal for maximizing the profit of a modern company (Pradhan, 1983).

Gautam (2001) has conducted a research study on *A study of inventory Management of Nepal Oil Corporation Limited* to analysis the efficiency and present policy of inventory management of NOCL. His objective was to determine the problem faced by NOCL in application and practice on inventory management. He has collected the

related information and data from primary and secondary data are obtained from published and unpublished documents related to NOCL. He gathers books, articles, magazines and official records of NOCL for the company's actual data collection. The researcher has applied correlation and regression, EOQ, safety stock, trend analysis approaches to evaluate examine the gathered data. Some of his significant findings can be presente4d below:

- NOCL is the only one organization to supply petroleum fuel in our country; therefore, it has to act in favor of consumer interests and needs.
- NOCL's inventory control system is weak' therefore, the company has always suffered over stock or stock out situation.
- NOCL is failed to practice basic inventory management techniques and it always suffered over stock or stock out situation.
- NOCL is failed to practice basic inventory management techniques and it always maintain rough safety stock for 35 days, which is fluctuating every time.
- NOCL has not applied scientific inventory management.

Pun (2002) has conducted the research work on the topic of A study on inventory Management and Control: case study of Royal Drug Ltd. and National Trading Ltd. The main objective of his study were to assess the types of inventory maintained in Royal Drugs Ltd. and National Trading Ltd. and to examine the techniques being employed to manage the inventory by these enterprise.

Both primary and secondary data were used in the study. The primary data were collected through personal observation and interviews with the officials, in that study and the secondary data were used with the help of financial statements, balance sheet, and other document of the company. The major findings of his study's are as follows:

- Both enterprises were not applied economic order quantity model.
- The companies have maintained the safety stock which is highly situated and estimated roughly.

- Both companies have not categorized their inventory for the purpose of control and paid equal attention for all the inventory held in the stores.
- Cost related with ordering and holding inventory are not recorded separately in both company which is recorded as a whole.
- Demand and purchases of material is decreases year to year of National Trading Ltd. but increases in Royal Drug Ltd.

Pathway (2005) has studied on the *Inventory Management of Hetauda Cement Industry Limited* for her degree thesis. She has collected the related information and data from primary and secondary data are obtained from published and unpublished documents related to Hetauda cement Industry limited. Some of his important findings can be presented below:

- Hetauda Cement Ltd. has no target for materials purchase in the industry likewise price quantity of the materials of the materials are more fluctuating in very year.
- Hetauda Cement Ltd. was not following economic order quantity model for purchasing the inventories decision.
- Hetauda Cement Ltd. had invested huge amount in inventory and its value was fluctuating in every years.
- Hetauda Cement Ltd. has not good position of inventory to current assets ratio.

Uppadhya (2005) has conducted master degree dissertation entitle Inventory management system appli3ed by the Kantipur publications. He has used primary and the secondary data for the preparation of this thesis. The main objectives of this study is to examine the existing inventory management system applied by he Kantipur Publications (P) limited, to identify the problems faced by the publications in scientific inventory management system and to suggest the proper inventory model suitable to the publications. He has pointed the some of the major finding, which can be presented below:

- Kantipur publication could not apply a suitable inventory management model to reduce its inventory costs.

- Kantipur publication has not been used fully for findings out the optimum level of inventory.
- Kantipur publication holds high quantities of safety stock than is requirement that crates the over burden to inventory cost.
- Kantipur publications has not taken any steps to records proper data relating to inventory management. There was no any separation of ordering and carrying costs. And proper control mechanism like ABC analysis was not been used.

Limbu (2007) has made a research on the topic of inventory Management, A case study of salt trading corporation. The main objectives of Mr. Limbu study are to identify the inventory management practice in STC and its impact on profitability. Further, more Mr. Limbu also try to analyze the relationship of inventory with sales and profit of the firm. The researcher has collected related data from the factory using published and unpublished official records. He also used journals, magazines, government and universities publications as a source of secondary data. Limbu used EOQ, ABC analysis ratio, trend analysis approach to present and analyze the data. Some of his major findings can be presented below:

- Corporation try to applying techniques of inventory management lie as ABC analysis and EOQ analysis, however, it is found that the use of both technique are unsystematic and ineffective.
- Inventory to total assets ratio are not constant over the study period.
- It is clear that inventories turnover ratio is decreasing during the study period except fiscal year 2060-061 but seems satisfactory level at stuffy period.
- Sales and net profit fluctuation for the entire study period. Sales are increasing to certain level then start to decline severely.
- Procurement trends of salt trading corporation also fluctuating in every year of the study period.
- According to regression model, there is positive correlation between sales and closing inventory based on the study period. al.

Shrestha (2009) had conducted a research work on the title of *A study of Inventory Management & It's Impact on profitability: With special reference to Udaipur Cement Industry Ltd.* The main objective of his study was to examine the inventory system as practice by the Udaipur Cement Industry Ltd. and diagnosis the problem of inventory management in the light of various fundamental variables.

Both primary and secondary data were used in that research work. Primary data were collected through the personal observation and interviews and secondary data were collected with help of published and unpublished financial statement, balance sheet, and other document of the company. The analysis of that study included analysis of inventory management, ratio analysis regression analysis and correlation analysis. The major findings of that study were:

- The consumption and production trend of the factory Id decreasing. And the ratio between consumption and production of cement indicates a fluctuation trend.
- The trend of demand and supply of raw materials is increasing except in fiscal year 2056-057.
- The investment in Inventory is in large amount. The value of inventory is in fluctuating trend.
- The highest ratio for inventory to total assets was 29.44% in FY 2063-064 and lowest ratio was 13.40% in FY 2054-055. According to Weston and Bringam, Company should be hold inventory to total asset are concentrated 16-30%. Such ratio has been applied by UCIL on the study period except FY 2054-055 and 2063-064. It means more money has not locked as inventory.
- Raw materials consumption volume is very high. So, an unnecessary investment tied up in raw materials.

2.10 Research Gap

Various studies were made relating to inventory managements of different organizations. But there are few studies related to inventory management in Nepalese Noodles manufacturing company. Many studies have been reported that,

implementation of scientific inventory management is essential in Nepalese business organization. However, there has been very little research reported in the effectiveness of scientific inventory management and its relation with profitability of the organization. The purpose of the present studies is therefore to ascertain the effective use of scientific inventory management tools to revue cost and increase profitability.

This study will be fruitful to those interest persons such as researchers, students, teachers, business executives and the government organization for the policy perspectives.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Introduction

For the proper evaluation of the research problem, research methodology is very essential to any researcher. Research methodology generalizes the way of solving the problem thoroughly and systematically. Research means a systematic method of finding out solution to a problem. Methodology means performing sequential steps in studying a problem with certain objectives of the study both primary and secondary data are used.

3.2 Research Design

Most of the data and information of the study are concerned with the opinion, experiences and performance of the respondents. This study therefore, follows descriptive analytical, true experimental and field study research design in order to obtain the regained information data and opinion. Research design thus, is the overall framework for the achievement of the goals and objectives of the research. For this purposes five years data of Him Shree Foods Pvt. Ltd. are collected and analyzed using various statistical tools. Data are presented on the table persons.

3.3 Nature and Sources of Data

The data uses in this study are taken from both primary and secondary sources. The major sources of the data are as follows:

a) Primary Source of Data

The important sources of primary data are opinion survey through questionnaire and interview, field visit, and mailing information of the respondents.

b) Secondary sources of data

The secondary data & information will be obtained from various sources like, annual report, unpublished official records, published thesis and other related documents, others newspapers article and management etc.

3.4 Population and Sample

The population for the study covers all the manufacturing organizations that produce noodles in Nepal. Out of them Him Shree Foods Pvt. Ltd. is selected for the study as a sample.

3.5 Data Collection Technique

Data and information used in this study were collected from primary and secondary sources. Primary data were collected through observation and interview by the researcher. Various officials were selected for personal interviews according to the requirement of the study. Secondary data were also collected through contact with the officials by the researcher. To get accurate and actual information, all questionnaires will be distributed and collected personally through field visit. For the fulfillment of mentioned objective, the research were conducted by distributing structured questionnaire among various respondent of Him Shree Foods Pvt. Ltd.

3.6 Tools used to Analysis

Mainly financial tools will be applied for the purpose of this study. Appropriate statistical tools will also be used.

A. Accounting & Financial Tools

Inventory turnover ratio and some major ratios are used in this study. These are as follow:

1. Ratio Analysis

Ratio analysis financial techniques which were used to analyzed and interprets financial statements. I helps in making decision as it helps establishing relationship between various financial figures. Ratio analysis isn't just comparing different numbers of the balance sheet, income statement, and cash follow statement. Ratio evaluate the relationships between individual values and relate them to how a company has performed in the past, and might perform in the future. Financial analysis is an evaluation of firms' post financial performance and its prospects for the future. Financial statement analyses involves the calculation of various ratios. The ratio analysis is the financial tools by which the finical strength and weakness are measured by relating two accounting data. The following ratios were used to analyze financial data.

i. Inventory turnover ratio

Inventory turnover ratio indicates the relationship between sales and closing inventory.

$$\text{Inventory Turnover Ratio} = \frac{Cost\ of\ goods\ Sold}{Average\ Stock} \text{ or } \frac{Sales}{Clo\sin g\ Stock}$$

ii. Current Ratio

Current Ratio is the test of liquidity. It shows the relation between current assets and current liabilities.

$$\text{Current Ratio } \frac{Current\ Assets}{Current\ Liabilites}$$

iii. Quick Ratio

Quick ratio measures the short-term liquidity of the firm. Quick ratio is calculated by dividing quick assets by current liabilities. Liquid/Quick assets include current assets less stock and prepaid expenses.

2. Inventory Index

The inventory index shows the relationship between opening and closing inventory.

3. Profit index

Profit index shows the relationship between profit and sales in different years.

B. Statistical Tools

Statistical tools such as simple percentage, simple average, and correlation coefficient are mainly used in the study. These are as follows:

1. Price Index

The price index shows the relationship between cost price and selling price. It shows the difference between cost and selling price and their impacts in selling.

2. Tabulation

The raw data and the findings are shown in tabulated form to show the clear view and to make the comparison easier.

3. Correlation

The probable error of the coefficient of correlation helps in interpreting is value. With the help of probable error it is possible to determine the reliability of the value of the coefficient. It depends on the conditions of the coefficient of correlation is obtained as follows:

$$\text{P.E.} = 0.6745 \left(\frac{l - r^2}{n} \right)$$

Where,

r = Correlation Coefficient

n = Number of pairs of observation

If the value of r is less than the probable error, then 'r' is not significant. If the value of 'r' is more than probable error, then 'r' is significant.

CHAPTER IV
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter constitutes the crucial part of the study; it provides a mechanism for meeting the basic objectives stated earlier in the first chapter of this research. The researcher has followed the methodology described in third chapter in order to attain the objectives. Data analysis compares cost and selling price of noodles, collection of raw material in values, actual quantity used in values, production of noodles in quantity, consumption of raw materials and production of noodles, and relationship of profit with inventory position etc.

The firm should maintain a sound inventory position to run its business operation in this competitive world. Both excessive as well as inadequate inventory position are dangerous from the firm point of view. So, management should maintain right inventory position to meet its objectives.

The basic objective of this study id to analyze the present inventory situation of Him Shree Foods Pvt. Ltd. In order to achieve this objective collected data are analyzed in this section. Data are analyzed on the basis of computing the relationship between selling and cot price. The inflow and outflow of inventory is assessed on the basis of collection. It analyses profit and finally assesses the inventory position of Him Shree Foods Pvt. Ltd.

4.1.1 Comparison of Selling and Cost Price of Noodles

No doubt that this study about the trend of selling and cost price of any product is helpful to know the overall condition of factory. So the attempt has made it possible to know the actual condition of the factory. The Selling and cost price of the noodle is depicted below:

Table 4.1

Comparison of Selling and Cost Price of Noodles

Value in Rs.

Selling Price				Cost Price			
Fiscal Year	Selling Price per carton	Annual Change %	Index	Cost price per carton	Annual change %	Index	Difference
2063-064	240	-	100	195		100	45
2064-065	245	+1.03	102	197	+1.03	101	48
2065-066	255	+4.1	106	205	+4.1	105	50
2066-067	255	0	106	205	0	105	50
2067-068	270	+5.9	112	218	+6.34	111	52

Source:- Production and marketing department (Unpublished official record, 2068)

Note: One carton = 30 pieces of noodles

The selling and cost price of the noodle for the fiscal years 2063-064 to 2067-068 is depicted in table 4.1. The selling and cost price of the noodle is measured in the quantity of one carton, i.e. 30 packets, for simplicity. The table shows, in the fiscal 2063-064, that the selling price of noodle per carton is Rs. 240 whereas the corresponding cost price is Rs. 195, there is a difference of Rs. 45 between the selling and cost price. In the fiscal year 2065-066, the selling price of noodle per carton is Rs. 245. It is increased by 2.1% in comparison to the previous fiscal year 2065-066. The corresponding cost price is Rs. 197. It is increased by 1.03% in comparison to the previous fiscal year. In the fiscal year 2065-066 , the selling and cost price is Rs. 255 and 205 respectively, whereas the difference between selling and cost price is Rs. 50. IN the fiscal year 2066-067, the increase in selling and cost price form the previous year is zero, hence the annual change in percentage and difference in selling and cost price were also same. It means that from the fiscal year 2064-065 to that of 2066-067, the selling and cost price of noodles is increased by 5.9 and 6.34 percent respectively. In that year, the selling price per carton is Rs. 210 and the difference in selling and cost price is Rs. 52. The index of selling price per carton is increase to 112 from 100

and the index of cost price per carton is increase to 111 from 100. It means only 12% increase in selling price and 11% increase in cost price per carton during five fiscal year.

Karl Pearson's coefficient of correlation has been used to measure the degree of association between selling and cost price of the noodle, which is shown in appendix A. The coefficient of correlation (r) between selling and cost price of the noodle of Him Shree Foods Pvt. Ltd. Is 0.9995. This indicates the highest degree of correlation between them. This fact reflects the good situation of the factory. Hence, it proves that there is a significant relationship between selling and cost price of the noodle of Him Shree Foods Pvt. Ltd.

4.2 Trend of Profit and Production of Him Shree Foods Pvt. Ltd.

Generally the difference between revenue and cost is known as profit of any investment. It may be positive or negative. The production and profit of the factory is analyzed below

Table 4.2

Profit and Production of Him Shree Foods Pvt. Ltd.

Profit in Rs. (000), Production in Carton (000)

Year	Profit before tax	Annual change %	Production quantity	Annual change %
2063-064	4027.05	-	91.785	-
2064-065	4268.747	+6.00	92.168	+0.0042
2065-066	4839.294	+13.365	100.326	+8.85
2066-067	5113.4117	+5.66	106.009	+5.66
2067-068	6452.1027	26.18	103.399	-2.46

Source:- Marketing and production department (Unpublished official record, 2068)

The above table shows the profit and production of Him Shree Foods Pvt. Ltd. For the period of five years. Before tax profit is presented in Rs. and production in cartons. In the fiscal year 2063-064, the factory earned a profit of Rs. 4027.05 thousand before

tax. The production for the same year is 91.785 thousand cartons. During the fiscal yeare 2064-065, the factory earned a profit of Rs. 4268.747 before tax and produced 92.168 thousand cartons. The before tax profit in that year is increased by 6% and production is increased by 0.0042% in comparison to the previous fiscal year 2061-062.

Similarly in the fiscal year 2065-064, the before tax profit and production are Rs. 4239.294 thousand and 100.326 thousand cartons respectively. The profit before tax is increased by 13.365% and production is increased by 8.85% in the fiscally year 2066-067, before tax profit is Rs. 113.411 thousand and production is 106.009 thousand cartons. The profit is increased by 5.6% and production is increased by same percentage in comparison to the previous year. In the fiscal year 2067-068, the before tax profit is 103.399 thousand carton, In this year, profit is highly increased by 26.18% and production is decreased by 2.46% in comparison to the previous year. It means in the fiscal year 2067-068 stock of finished goods of 2066-067 is sold by the company.

The above table shows that the Him Shree Foods Pvt. Ltd. is running under profit during the five year period. But the profit of the factory is varying from year to year. The factory earned the highest amount of profit in the fiscal year 2067-068. The rate of percentage change in profit is not same during the five fiscal year.

4.3 Inventory Position of Him Shree Foods Pvt. Ltd.

No doubt that inventory plays a vital rose in any productive organization. Without inventory an organization may be like a fish without water. But proper care should be taken to manage inventory. The inventory position of Him Shree Foods Pvt. Ltd. is analyzed below:

4.3.1 Stock of Raw Materials in Values

The Closing stock of raw materials in values is shown in table NO. 4.3 below.

Table 4.3

Closing stock of Raw Materials

Values in Rupees (000)

Fiscal Year	Values	Annual change %
2063-064	872.5	-
2064-065	975.0	+11.75
2065-066	1625.7	+66.74
2066-067	1537.5	-5.43
2067-068	1721.5	+11.97

Source:- Production and marketing department (Unpublished official record, 2068)

The above table shows the inventory position of raw materials through the fiscally year 2063-064 to 2067-068. In the fiscal year 2063-064, the factory had the raw materials of a value of Rs. 872.5 thousand. In the following year, it is of Rs. 975 thousand. The raw materials values of the fiscal year 2064-065 is increased by 11.75% in comparison to the previous F.Y. In the fiscal year 2065-066, the closing stock of raw materials is of value of Rs. 1625.7 thousand. It is increased by 66.74% in comparison to the previous fiscal year, 2064-065. Similarly, in the fiscal year 2066-067, the value of closing stock of raw material is Rs. 1537.5 thousand. It is decreased by 5.43% in comparison to the previous fiscal year, 2065-066. In the fiscal year 2067-068, the value of closing stock of raw materials is 1721.5 thousand. It is increased by 11.97% in comparison to the FY 2066-067.

From the above table, it can be analyzed that the value of closing stock of raw materials is increasing from year to year except fiscal year 2066-067. But the annual increased rates are different from year to year.

4.3.2 Closing Stock of Finished Goods

The stock of finished goods in term of cost a values for the period of five years is presented in table 4.4 below.

Table 4.4

Stock of Finished Goods

Values in Rupees

Year	Stock quantity	Cost Rate (Rs.)	Stock Value (Rs.)	Annual change %
2063-064	17953	195	3500835	-
2064-065	21189	197	4174233	+18.02
2065-066	24729	205	5068445	+16.71
2066-067	28470	205	5836350	+15.13
2067-068	7790	218	1697220	-72.64

Source:- Production and marketing department (Unpublished official record, 2068)

In the fiscal year 2063-64, the closing stock of finished goods i.e. Noodle is 17953 cartons with worth Rs. 3500835. In the following fiscal year, 2064-065 it is Rs. 4174233 and quantity of 21189 cartons and it is increased by 18.02% in comparison to the previous fiscal year. Similarly, in the fiscal year 2065-066, the closing stock of noodle is Rs. 5069445 and it is increased by 16.71% in comparison to the previous fiscal year 2065-066. In the fiscal year 2066-067 the stock is of Rs. 5836350 and it is increased by 15.13%. In the fiscal year 2067-068. The closing stock of noodle is of Rs. 1698220 and it is decreased by 72.64% in comparison to the previous fiscal year 2066-067.

The above table shows that the closing stock of noodle is increasing year to year except fiscal year 2067-068 in amount but increased rates of percentage are deferent. Due to the less stock of finished goods in2067-068, the company has the chance of stock out. The calculation of stock of finished goods is shown in appendix C.

4.4 Procurement of Raw Materials

Without input, no output is possible. Raw materials are the vital inputs in any productive organization. The quality and quantity of finished goods depend upon the

quality and quantity of raw materials used. Raw materials essential for producing noodles can be grouped in to two namely flour and auxiliaries.

Auxiliaries purchased by the factory are further grouped under two headings: they are, Nepalese and overseas. Flour is available within Nepal. Therefore, there is no complication in the purchase of it. The auxiliaries, which are used in factory are: ghee, oil, sup power, chemicals, plastic wrapper gum tape, card board paper, salt, plastic, diesel, etc. among them, sup power is imported from Japan, Palm-oil, wrapper and chemicals are imported from Singapore and the rest of the things are purchased in Nepal. All the things are purchased directly and no purchasing agent is used.

4.4.1 Procurement of Raw Materials by Him Shree Foods Pvt. Ltd.

The collection o raw materials by Him Shree Foods Pvt. Ltd. is presented below in table 4.5 followed by its analysis.

Table 4.5

Collection of Raw Materials

Rs. in million

Fiscal Year	Raw materials	Fuel	Wrapped and card board	Total	Annual change %
2063-064	75.753	5.32	32.739	113.739	-
2064-065	81.214	6.2	35.516	122.93	+8.01
2065-066	90.145	7.5	48.325	145.97	+18.74
2066-067	95.321	7.97	50.31	153.601	+5.23
2067-068	102.175	8.75	53.45	164.375	+7

Source:- Production and marketing department (Unpublished official record, 2068)

Raw materials include flour, ghee, oil, sup powder and chemical though, all the materials presented in table n 4.5 come under raw materials, they are written under different headings in the different columns. Under the heading fo raw materials, flour, ghee, oil, sup powder and chemicals and plastic are included. The above table shows the purchasing of same materials in the five year under the scope of this study. According to the table, the total amount of raw materials purchased in the fiscal year

2063-064 is Rs. 113.812 million. In the fiscal yar 2064-065, it is 122.93 million and it is increased by 8.01% in comparison to the previous year. In the fiscal year 2065-066, it is Rs. 145.97 million and it is increased by 18.74% in comparison to previous year. In the fiscal year 2066-067, total raw materials purchased added up to Rs. 153.601 million and it is increased by 5.23% in comparison to the previous year. Similarly, in the fiscal year 2067-068, the total purchased amount Rs. 164.375 million and it is increased by 7% in from the above analysis it is found that the amount paid under the heading of raw materials is the highest and that under fuel is the lowest. Similarly, in the fiscal year 2065-066, the total purchased amount is increased by the highest percentages, i.e. 18.74% in comparison to other fiscal year. And in the fiscal year 2066-067, the total purchased amount is fluctuating form year to year . It indicates that there is no proper target for the purchasing of raw materials.

4.4.2 Actual Quantity Used in Values

The actual purchased amount is shown in table 4.6. Not all the purchased amount is used. So, the actual used is shown in table No. 4.6.

Table 4.6

Actual Quantity Use in Values

Values in Rs million

Fiscal Year	Opening stocks	Purchase	Total	Closing stocks	Used value	Annual change %
2063-064	9.235	113.812	123.047	8.725	114.322	-
2064-065	8.725	122.93	131.655	9.75	121.905	+6.63
2065-066	9.75	145.97	155.72	16.257	139.463	+14.4
2066-067	16.257	153.601	169.858	15.375	154.483	+10.77
2067-068	15.375	164.357	179.732	17.215	162.517	+5.2

Source:- Production department (Unpublished official record, 2068)

Total = Opening stock + Purchase

Used= Total - Closing stock

In the fiscal year 2063-064, the total quantity used in values is Rs. 114.322 million. In the fiscal year 2065-066, the quantity used is Rs. 121.905 million and it is increased by 6.63% in comparison the previous year. In the fiscal year 2065-066, the quantity

used is Rs. 139.463 million. It is increased by 14.4% in comparison to the previous FY. In the fiscal year 2066-067, the quantity used is Rs. 154.483 million; it is increased by 10.77% in comparison to the previous F.Y. Similarly, in the fiscal year 2067-068, the quantity used is Rs. 162.517 million; in it is increased by 5.2% in comparison to the previous year.

Table 4.6 shows that the quantity used is increasing from year to year. But the increasing ratio is disordered. Similarly, the closing stock is increased from year to year discontinuously except fiscal year 2066-067. So, it can be said that the materials management of the factory is not sound.

4.5 Production of Noodles in Quantity

No output can be produce without input. It mans inputs are necessary for getting output Raw materials are the inputs and noodles are the output of Him Shree Foods Pvt. Ltd. The consumption of raw materials production of noodles is therefore analyzed here.

Table 4.7

Production of Noodles in Quantity

Qt.in (000)

Fiscal Year	Noodles		
	Production	Annual Change%	Index
2063-064	91.785	-	100
2064-065	92.168	+0.42	101
2065-066	100.326	+8.85	109
2066-067	106.09	+5.75	115
2067-068	103.339	-2.6	112

Source:- Production department (Unpublished official record, 2068)

In the fiscal year 2063-064, 91.875 thousand cartons of noodles are produced. In the following fiscal year 2064-065, the production is increased by 0.42% and the quantity is 92.168 thousand cartons. Similarly, in the fiscal year 2065-066, the production of

noodles is 100.326 thousand cartons and it is increased by 8.85% in comparison to the previous fiscal year. In the following fiscal year, the quantity produced is increased by 5.57% and the production is 106.09 thousand cartons. In the fiscal year 2067-068, the production is decreased by 2.6% and it is only 103.339 thousand cartons. The presented table shows that the production of noodles in the five year range is fluctuated. The index shows only 12% increment in production during the five fiscal year.

The presentation shows that the production of noodle fluctuated highly. It shows that either the factory could not spray the good image about the product to the customers and the demand fell or that it could not produce that sufficient quantity due to mismanagement of raw materials or inefficiency of machine.

4.5.1 Consumption of Raw Materials and Production of Noodle in Values

The consumed raw materials and production of noodle in value is shown below in table 4.8. It should be noted that the production of noodle in Rs. denoted the production cost only. This is because only after including the excise duty, selling tax and production cost, the selling cost is determined. Under the value of raw materials, the aggregate value of raw materials includes.

Table 4.8

Actual Quantity Use in Values

Rs in million

Fiscal year	Consumed Raw materials (Rs)	Annual Change %	Production of Noodles (Rs.)	Annual change %
2063-064	114.322	-	178.98	-
2064-065	121.905	+6.633	181.57	+1.45
2065-066	139.463	+14.4	205.67	+13.27
2066-067	154.483	+10.77	217.32	+5.66
2067-068	162.517	+5.5	225.41	+3.72

Source:- Production department (Unpublished official record, 2068)

In this fiscal year 2063-064 raw materials of Rs. 114.322 million is used and the production of noodle is of Rs. 78.98 million. In the fiscal year 2064-065, raw materials is increased by 6.633% and amounted to Rs. 121.9 million. In the same year, production is increased by 1.45% and the total amount is Rs. 181.57 million. In the fiscal year 2065-064, consumption of raw materials is increased by 14.4% and amounted to Rs. 139.463 million, while in the same year, production is increased by 13.27% and amounted to Rs. 205.67 million. In the fiscal yar 2066-067, consumption of raw materials was increased by 10.77% and amounted Rs. 154.483 million, while in the same year; production is increased by 5.66% and amounted to Rs. 217.32% million. In the fiscal year 2067-068, consumption of raw materials is increased by 5.2% and amounted to Rs. 162.517 million. Meanwhile, production is increased by 3.72% and amounted ot Rs. 225.41 million.

The table shows that raw materials are increasing from year to year. Similarly, production is increasing from year to year. But they are not increasing in the same ratio. It means that neither he increasing ratio of raw material consumption and production of noodle are same nor the increasing ratio of raw materials consumed and the production of noodle itself in the different years are the same.

4.6 Trend of Average Material Cost and Average Cost Price of the Noodle

Attempt has been made for analyzing the relationship between the cost of raw material and the cost of noodles. The average cost of materials to produce a carton noodle per year for the five years is presented below in table 4.9 for simplicity, the cost of only one carton is taken. Here, average refers to the average raw materials required and average production.

Table 4.9

Comparison of Selling and Cost Price of Noodles

(Rs. in million)

Fiscal Year	Materials Cost		Total Cost		
	Value per carton	Annual Change %	Value per carton	Annual Change%	Difference
2063-064	120	-	195	-	75
2064-065	125	+4.16	197	+1.03	72
2065-066	132	+5.6	205	+4.1	73
2066-067	127	-3.78	205	0	78
2067-068	143	+12.59	218	+6.34	75

Source:- Production department (Unpublished official record, 2068)

In the fiscal year 2063-064, the material cost per carton is Rs. 120 and the cost price of the same carton is Rs 185. There is a difference of Rs. 75 between material cost and cost price of the noodle. In the fiscal year 2064-065, the material cost and production cost per carton are Rs. 125 and rs. 197 respectively. The difference is Rs. 72. IN this fiscal year, the material cost and production cost increased by 4.16% and 1.03% respectively in compare to the previous fiscal year. In the fiscal year 2065-066, the material cost per carton is Rs. 132 and total cost per carton is rs. 205. They are increased by 5.6% and 4.1% respectively in compare to previous fiscal year. In the fiscal year 2066-067, the material cost per carton is decreased by 3.78%, but the total cost per carton is same with previous fiscal year.

In the fiscal year 2067-068, the material cost per carton is Rs. 143 and the production cost per carton is Rs. 218. the difference between material cost per carton and production cost per carton is Rs. 75. in the fiscal year 2067-0068, production is increased by 6.34% and material cost is increased by 12.59% in comparison to the previous fiscal year.

Karl Pearson's co-efficient of correlation (r) between the material cost and cost price of the noodle of Him Shree Foods Pvt. Ltd. has been computed to measure the degree

of relationship between them. The computation is presented in appendix B. the co-efficient of correlation (r) between the material cost and cost price of the noodle of Him Shree Foods Pvt. Ltd. is 0.967, which shows the higher degree of correlation between two. It means the relationship between them is highly significant.

4.7 Trend of Material Cost and Sales of Noodle

A comparative study between the cost of materials actually, used and sales of Him Shree Foods Pvt. Ltd. for the five-fiscal year period is analyzed below.

Table 4.10

Comparison of Selling and Cost Price of Noodles

(Rs. in million)

Fiscal Year	Raw materials Cost		Sales	
	Rs.	Annual change%	Rs.	Annual change%
2063-064	114.322	-	214.776	-
2064-065	121.905	+6.633	217.884	+1.447
2065-066	139.463	+14.4	246.804	+13.27
2066-067	154.483	+10.77	260.784	+5.66
2067-068	162.517	+5.2	270.492	+3.72

Source:- Production department (Unpublished official record, 2068)

The above table shows the raw material cost and sales of noodle of Him Shree Foods Pvt. Ltd for th five fiscal year from 2063-2065 to 2067-068. In the fiscal year 2063-064, the raw material cost of noodle is rs. 114.322 million and the sales is rs. 214.776 million. IN the fiscal year 2064-065, the material cost and sales cost are 121.905 and 217.884 million respectively. In this year, raw materials and sales are increased by 6.633% and 1.44% respectively in comparison to previous year. In the fiscal yar 2065-066, the raw material cost is Rs. 139.463 million and sales is Rs. 246.804 million. These are increased by 14.4% and 13.27% respectively in comparison to the

previous fiscal year in the fiscal year 2066-067, raw materials cost Rs. 154.483 million and sale is Rs. 260.784 million. The increasing ratio is 10.77% and 5.66% respectively in comparison to previous year. In the fiscal year 2067-068, the material cot is Rs. 162.517 million and sales is rs. 270.492 million. the material cost is increased by 5.2% and sales is increased by 3.72%.

4.8 Order Placement for Raw Materials

Palm oil, wrapper, sup powder and chemicals are imported from foreign countries, especially from Japan and Singapore. The rest of the raw materials are purchased within the nation. When the amount of raw materials becomes less in produciton department, production department informs to the storekeeper, after the permission of management, purchases the raw materials. Generally, theses are stocks of raw materials for one month. The factory is not following the economic order quantity. When there are more orders of noodle from the customers, the factory starts its produciton in night shit, too. In such a time, produciton stops due to the raw materials being out of stock. In this factory, there is no provision of maximum, minimum an re-order levels.

From studying the factory, it is concluded that no purchasing agent is appointed by the factory. Sometimes, the factory becomes highly stocked and sometimes it becomes stockless. So it is advised to maintain the raw materials at the optimum levels.

4.9 Purchasing Practices

The period of purchasing time is the most important aspect of material management, Him Shree Foods Pvt. Ltd., purchase its raw materials directly. The factory purchases locally available materials in the local area. If the materials are not available, then in purchases them from outside. Most of the local raw materials are purchased when they are required.

Since, there is no provision of economic order quantity, there is no provision for exact lead time, too. There is no specific purchasing time.

4.10 Inventory Position and Profit of the Him Shree Foods Pvt. Ltd.

Large quantity of inventories indicates low sales, and low sales generate low profit. This relation of inventory and profit represents the quantity of inventories to generate a good profit of the corporation. HSFPL's accounting figures of net profit pattern for five years study period present in the following table.

Table 4.11

Inventory Position and Profit of the Him Shree Foods Pvt. Ltd.

(Values in Rs. 000)

Fiscal Year	Inventories		Profit (Rs.)
	Opening stock (Rs.)	Closing stock (Rs.)	
2063-064	3902.76	4373.34	4027.05
2064-065	4373.34	5149.23	4268.747
2065-066	5149.23	6695.15	4839.294
2066-067	6695.15	7373.85	5113.4117
2067-068	7373.85	3418.72	6452.1027

Source:- Marketing and Production department (Unpublished official record, 2068)

In the above table, opening and closing stock are Rs. 3902.76 and 4373.34 thousand respectively in FY 2063.-064. And the profit is Rs. 4027.05 thousand in that year. The closing stock of raw materials and finished goods in FY 2064-065, 2065-066 and 2066-067 are Rs. 5149.23, Rs. 6695.15 and Rs. 7373.85 thousand respectively. The table shows the profit of rs. 4268.747 thousand in FY 2064-065, rs. 4839.294 thousand in FY 2065-066 and rs. 5113.4117 thousand in FY 2066-067. IN the fiscal year 2067-068, the closing stock and profit are 3418.72 and 6452.1027 thousand respectively.

The above table shows that the profit is increasing in fluctuating rate. In the FY 2067-068, the closing stock is very low. All the stock of finished goods are sold in this year. It will cause stock out problem.

4.11 Ratio Analysis of Him Shree Foods Pvt. Ltd.

The financial strengths and weaknesses of the factory can be measured by using ratio analysis tools. To analyze inventory position and its effect on profitability of Him Shree Foods Pvt. Ltd. , inventory turnover ratio, current ratio and quick ratio are calculated.

4.11.1 Inventory Turnover Ratio

The inventory turnover ratio indicates the efficiency of the factory in selling its product. Inventory turnover ratio= Sales/Closing inventory.

Here,

The numerator, Sales, is valued at market price and the denominator is valued at cost price. The inventory turnover ratio of Him Shree Foods Pvt. Ltd. is shown in table now 4.12 below.

Table 4.12

Inventory Turnover Ratio Analysis of Him Shree Foods Pvt. Ltd.

(Values in Rs.)

Fiscal year	Sales (Rs.)	Closing Inventory (Rs)	Inventory Turnover Rario (Times)	Annual change %
2063-064	21477600	3500835	6.135	-
2064-065	21788400	4174233	5.22	-14.94
2065-066	24680400	5069445	4.87	-6.705
2066-067	26078400	5836350	4.47	-8.214
2067-068	27049200	1698220	5.93	+265.38

Source:- Production and Marketing department (Unpublished official record, 2068)

The above table shows the calculation of inventory turnover ratio of the factory for the five fiscal year. In the fiscal year 2063-064, the inventory turnover ratio is 6.135 times. In the fiscal year 2064-065, the inventory turnover ratio is 5.22 times. It is decreased by 14.9% in comparison to the previous fiscal year. During the fiscal year

2065-066, the inventory turnover ratio is 4.87 times. It is decreased by 6.705% in comparison to the previous fiscal year. In the fiscal year 2066-067, the inventory turnover ratio is 4.47 times. It is decreased by 8.214% in comparison to the previous fiscal year. Similarly, in the fiscal year 2067-068, the inventory turnover ratio is 15.93 times. It is increased by 256.38 in comparison to the previous fiscal year.

The above table shows that the inventory turnover ratio is decreasing in the first four years and dramatically increased in the last year. The highest inventory turnover ratio is in the fiscal year 2067-068. From the above table, it can be concluded that the inventory in the fiscal year 267-068. From the above table, it can be concluded that the inventory turnover ratio of the factory is not satisfactory.

4.11.2 Current Ratio

Current ratio is the test of liquidity. It measures short-urn debt paying ability of the organization. In order words, it measures the availability of current assets fro meeting current liabilities. It is calculated by dividing current assets by current liabilities. Current assets are those assets which are expected to be converted into cash or consumed in the production of goods and services in normal courses of time. Current liabilities are those liabilities which fall due for payment in the relatively short period of time.

Table 4.13

Current Ratio of Him Shree Foods Pvt. Ltd.

(Values in Rs.0000)

Fiscal year	Current Assets	Current Liabilities	Current Ratio (Times)
2063-064	102.31	62.17	1.65
2064-065	106.85	69.82	1.53
2065-066	111.16	72.26	1.54
2066-067	168.12	83.08	2.02
2067-068	154.39	98.22	1.57

Source:- Annual Report of Him Shree Foods Pvt. Ltd.

The standard current ratio is equal to 2:1, i.e. curent assets double the current liabilities. Higher current ratio indicates high liquidity and indicates ability to pay its current obligations in time as and when they become due. In fiscal year 2063-064 the current ratio is 1.65, which is below the standard. The current ratios are 1.53, 1.54, 2.02 and 1.57 in fiscal year 2064-065, 2065-066, 2066-067, 2067-068 respectively. In table 4.14 comparatively, current ratio of Him Shree Foods Pvt. Ltd. is not satisfactory. The maximum current ratio is 2.02, which is also nearest to standard. All current ratios are below the standard except the current ratio of fiscal year 2066-067.

4.11.3 Quick Ratio

Quick ratio measures the short-term liquidity of the firm but it emphasis the instant debt paying capacity of the firm. Liquidity refers to the ability of a concern to meet its current obligations as and when these become due. It is calculated by dividing liquid assets by current liabilities. Liquid assets include current assets less stock and prepaid expenses.

Table 4.14

Quick Ratio of Him Shree Foods Pvt. Ltd.

(Values in Rs.0000)

Fiscal year	Quick Assets	Current Liabilities	Quick Ratio (Times)
2063-064	50.65	62.17	0.81
2064-065	63.60	69.82	0.91
2065-066	60.03	72.26	0.83
2066-067	67.87	83.08	0.82
2067-068	76.32	98.22	0.78

Source:- Annual Report of Him Shree Foods Pvt. Ltd.

The quick ratio is very ratio is very useful in measuring the liquidity position of the firm. The standard quick ratio is 1:1. In the fiscal year 2063-064, the quick ratio is 0.81, which is below the standard. The quick ratio is 0.91 in the fiscal year 2064-065. The above table shows the quick ratio 0.83, 0.82 and 0.78 in the fiscal year 2065-066, 2066-067 and 2067-068 respectively.

All the quick ratios of the Him Shree Foods Pvt. Ltd. are below the standard. The highest quick ratio is 0.91 in the fiscal year 2064-065, which is nearest to standard. the quick ratios are fluctuating but not above the standard.

4.12 Major Findings

From the above analysis, the following major findings about the inventory management and control of Him Shree Foods Pvt. Ltd. are extracted.

a. The selling and cost price of noodle is increasing from year to year with different rate. There is a highest degree of correlation between selling and cost price.

b. The relationship between profit and production quantity is positive.

c. Him Shree Foods Pvt. Ltd. is running under profit. But the increase rate of profit is fluctuating.

d. The annual change percent of actually used raw materials is furcating. So, the material management is not sound.

e. The factory uses direct method for raw materials purchasing. Total purchased amount is increasing at different rates.

f. The rate of increase of raw materials consumed and production of noodles is not same. It shows the weak inventory control in the produciton department.

g. The average material cost and average cost price of the noodles are fluctuating at different rates.

h. The material cost and sales are increasing from year to year at is criminating rates. The relationship between materials cost and sales in significant.

i. The inventories are not managed by ABC analysis.

j. The inventory turnover ratio, current ratio and quick ratio of the factory is not satisfactory.

k. The economic order quantity model is not used by the company.

l. No purchasing agent is appointed by the factory for materials.

m. Closing stocks are valued at cost price.

CHAPTER V
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study has been divided into five chapters' introduction, literature review, research methodology, analysis and interpretation and summary, conclusion and recommendations. Here is a brief summary of the above chapters.

Establishment of food-producing factory on agriculture is of great importance in Nepal because food is the fundamental thing for survival. In such a productive factory, large amounts of capital are invested in inventory. The attempt such inventory problems many mathematical formulas have been developed.

Him Shree Foods Pvt. Ltd. being a productive factory invests a large amount of capital in the form of inventory. The researcher has studied about the maintaining of inventory and their consequences on cost and profit. The objective of the study is to find out factory. To achieve the objective, the researcher conducted interviews with officials and observed the inventory system personally. The data were collected from the unpublished official records, balance sheets, profit and loss accounts, reports, etc.

All the facts and data were analyzed by using tools like percentage, index, correlation coefficient, ratio analysis, etc. though mathematical techniques like economic order quantity have been developed, the researcher could not find such techniques being used in the factory. Inventory management means directing the business for the proper handling of inventory to achieve a carefully chosen goal. From the study it is found the inventory management of Him Shree Foods Pvt. Ltd. is not worse even though it requires some improvements.

5.2 Conclusions

The study is based on the data as provided by the factory and personal observation fo the researcher. After studying the factory, the researcher has derived the following conclusions with the help of the major findings of the study.

The factory is running under profit but the change rate of cost price and selling price is not uniform. The factory gets most of the raw materials in Nepal and some raw materials are important from Japan and Singapore. The factory does not used raw materials purchases agent that is raw material are collected directly by the factory. The inventory turnover ratio, current ratio and quick ratio seems not satisfactory because the ratios are below standard. Most of the current assets cover the Inventory. So, the liquidity of the organization is very low and cash is blocked by investing in the inventory. The factory is following neither economic order quantity model in its purchasing decision nor ABC analysis in inventory management. And it has no real purchasing budget.

5.3 Recommendations

On the basis of the forgoing analysis, the recommendation can be made as follows.

Record keeping system should be scientific so that the factory can located the past record. It is also helpful for researcher.

Some raw materials were found to be imported from Japan and Singapore. This should be discouraged and the best alternative should be searched within the nation.

The company should make the production plan in order to help to the purchasing of raw materials.

The raw material purchasing planning is no found in the factory. So, it is advised to follow the economic order quantity model in its purchasing decision.

Inventories of finished goods should not be very low and very high so that the problem of under stocking and overstocking of finished goods may not arise.

The corporation must apply scientific and effective inventory management system.

The corporation must use EOQ model to determine order size, which minimize cost of organization and increase the profitability.

To top level of management should pay its attention to overall management, purchasing, production and financial aspect of the factory.

The company should make the master plan.

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APPENDIX-A

COEFFICIENT OF CORRELATION

Between Selling and Cost price of Noodles

Selling Price 'X'	x = (x- $\overline{x}$)	x^2	Cost Price 'Y'	y = (Y- $\overline{Y}$	y^2	xy
240	-13	169	195	-9	81	117
245	-8	64	197	-7	49	56
255	2	4	205	1	1	2
255	2	4	205	1	1	2
270	17	289	218	14	196	238
$\sum X$ =1265	$\sum X$ =0	$\sum X^2$=530	$\sum y$=1020	$\sum y$=0	$\sum y^2$=328	$\sum y$=415

Where,

$$\overline{X} = \frac{\sum x}{n} = \frac{1265}{5} = 253$$

$$\overline{Y} = \frac{\sum Y}{n} = \frac{1020}{5} = 204$$

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

$$= \frac{5\times 415 - 0\times 0}{\sqrt{5\times 530 - 0^2}\ \sqrt{5\times 328 - 0^2}}$$

$$= \frac{2075}{2048.706}$$

$$= 0.995$$

Computation of probable error

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

$$= 0.6745\ \frac{1-(0.995)^2}{5}$$

$$= 0.6745\times 0.001995$$

$$= 0.00134$$

APPENDIX-B

COEFFICIENT OF CORRELATION

Between Materials Cost and Cost price of Noodles

Material Cost X'	x^2	Cost Price 'Y'	y^2	xy
120	14400	195	380	23400
125	15625	197	38809	24625
132	17424	205	42025	27060
127	17424	205	42025	26035
143	16129	218	47520	31174
$\sum X$ =647	$\sum X^2$=84027	$\sum y$=1020	$\sum y^2$=208408	$\sum y$= 13229

Where,

Coefficient of Correlation r = $$\frac{n\sum xy - \sum x \sum y}{\sqrt{n\left(\sum x^2 - \left(\sum x\right)^2\right)}\ \sqrt{n\sum y^2 - \left(\sum y\right)^2}}$$

$$= \frac{5 \times 132294 - (647 \times 1020)}{\sqrt{5 \times 84027 - (647)^2}\ .\ \sqrt{5 \times 208408 - (1020)^2}}$$

$$= \frac{1530}{1582.22}$$

$$= 0.967$$

APPENDIX -C

Calculation of Stock Finished Goods in Values

Value of Finished Goods = Stock Quantity × Cot Price of Finished Goods

Fiscal year	Value of Finished goods in Rs.
2063-064	17953×195 =3500835
2064-065	211893×197 = 4174233
2065-066	24729×205 = 5069445
2066-067	28470×205 = 5836350
2067-068	7790×218 = 31698220

RESEARCH QUESTIONNAIRE

Name of the Respondent: Him Shree Foods Pvt. Ltd. Pokhara

Position:

Department :

Sex:

Would you please answer the following question properly? Please tick ( ) for choosing your answer.

1. Questions Related to Administration

a. Which level of management is responsible for budget preparation your organization?

i) High level

ii) Low level

b. Would you please mention the long range objectives of the factory?

i).....

ii) .....

iii) .....

c) What is the wages payment system?

i) Daily basis

ii) Monthly basis

iii) Piece work basis

2. Question Related of Production

a. From which market the raw material are purchased?

i) National

ii) International

b) If the raw materials are purchase from international market from which countries are they purchased?

i) .....

ii) .....

iii) .....

c) What production policy has been adopted?

i) Stable

ii) Flexible

iii) Seasonal

3. Question related to Marketing and Sales

a) Who is responsible for sales forecasting?

i) Sales manager

ii) Sales officer

iii) Marketing manager

iv) Marketing

b) What methods and tools are sued for sales forecasting?

i) Survey method

ii) Market studies and experimentation Method

iii) Statistical method

c) On what basis sales budget is prepared?

i) By product basis

ii) By time period basis

iii) By territories

d) What pricing methods have accepted?

i) Cost plus

ii) Geographical

iii) Market oriented