

**APPENDIX-I**



**INVENTORY MANAGEMENT WITH REFERENCE TO MICRO LABS  
LIMITED**

**by**

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**A DISSERTATION REPORT SUBMITTED IN PARTIAL FULFILLMENT  
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UNIVERSITY OF PETROLEUM & ENERGY STUDIES, DEHRADUN**

**APPENDIX-II**  
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## APPENDIX – III

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#### Declaration by the Guide

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Further, I certify that the work is based on the investigation made, data collected and analyzed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion it is fully adequate, in scope and utility, as a dissertation towards partial fulfillment for the award of degree of MBA.



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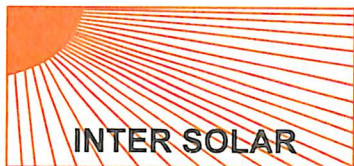
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Thanking You

Yours Sincerely

KETAN SINGH RANA

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## **ABSTRACT**

Inventory management is one of the processes used in all companies. Before the era of computing and integration, paper tables and paperwork solutions were used as inventory management tools. We were far from being a solution, we had a lot of time and we even needed employees only for this section of the organization. All processes were based on paperwork, the human failure rate was high, the process and tracking of inventory losses were not possible and there were no efficient registration systems. After the computer age, each process begins to integrate into the electronic environment. And now we have experienced technology to implement new solutions to these problems. Software-based systems offer the advantages of having more efficient control with less effort and employees.

This "INVENTORY MANAGEMENT" project gives us complete information about the inventory. We can enter the registration of new items and retrieve the details of the items available in the store. We can issue materials for the department and maintain their records, and we can also verify how many materials are issued and how many stocks are available in the store. If the materials are not available in the store, the demand for purchase will be initiated. In this project we understand the inventory management of the company.

## **CHAPTER NO. 1**

- Overview
- Background
- Purpose of the study
- Research Hypotheses

### **Overview of Inventory Management**

Inventory is the largest asset of the business. This is a stock of business items. Inventory is one of the key advantages that most companies have because stock revenues are one of the main sources of continuous revenue generation and profit for shareholders and company owners. Inventory is very important for a company that has no stock and no company can survive. Inventory is intended for "protection" and "cost savings".

Maintaining adequate inventory will enable us to meet the elements of distribution time, supply fluctuations, and unforeseen needs and circumstances when purchasing equipment. While inventory is a must, inventory is one thing that will accumulate and go into profitability to turn it into a loss and possibly turn the company red. Therefore, there is a need for inventory management to save the company from storage and avoid losses. Better said than done is a word that is appropriate for inventory management.

Inventory management is a key issue for the entire business. If the company's inventory level is too low, it will result in delays in processing customer orders. If the stock is too high, it binds to the dollar that can be used better in other areas. It is also dangerous for aging and damaged. Successful businesses keep their stock high, but they also maintain their service level above or above industry standards.

Inventory is the inventory required for an organization to function successfully. Inventory refers to materials purchased, stored and used for the day-to-day operations of the entire organization. Inventory has a direct relationship with the Department of Production and Marketing, but finance must play an important role in inventory management. The purpose of inventory management is to conserve inventory in a way that is free of excess storage or storage.

Inventory is one of the most expensive assets of many companies, representing up to 50% of total investment capital. Inventory management refers to a set of policies and procedures by

which the industry determines what materials will be stored and the quality of each person it will be carrying.

### **THEORETICAL BACKGROUND OF THE TOPIC**

Inventory is an essential element in the working capital of most companies and industries. In the inventory, we include raw materials, finished products, work processes, supplies and other accessories. To maintain the operation of the company, the company must have a minimum arsenal. However, the management of the physical inventory is the operational responsibility of the Manager and the financial staff has nothing to do but the financial management of these inventories in the entire range of activities that have a significant portion of current assets, a frequent problem. In working capital management, inventory management is designed to quantify the investment in available products, the type of goods stored to meet production needs.

### **CONCEPT OF INVENTORY MANAGEMENT**

Inventory management is used in two ways: unit management and cost control. Production and purchasing officers use this term to manage work units, while accounting for this term is used as price control. Due to the investment in inventory, in many cases one of the biggest assets of the commercial company, especially those involved in manufacturing, wholesale and retail. Sometimes, the cost of raw materials used in production exceeds wages and production costs. Therefore, the management and control of the capital invested in inventories must be the main responsibility of the accounting department because the resources invested in the inventory are not profitable for the company. Instead, they are paying the company for both the continued capital expenditure and the anticipated loss of income.

### **OBJECTIVES OF INVENTORY MANAGEMENT**

The basic purpose of inventory management is twofold. First, avoid overinvestment or non-investment in inventories. And second, provide the right amount of standardized material to the production department at the right time. In summary, the objectives of inventory management can be summarized as follows:



### **A. Purpose of the Operation:**

- 1. Ensure the availability of raw materials:** there must be all types of raw material available continuously in the factory so that production does not support what is desired. The minimum quantity of each material should be stored in the warehouse to allow production to continue as scheduled.
- 2. Avoid waste:** there must be a minimum vacuum of material while these are stored in the sanctuary or used in the factory by the workers. Waste should be allowed at a certain level known as normal waste. To avoid waste, strict control over the inventory must be carried out. Leakage, theft, embezzlement and material confiscation due to oxidation should be avoided.
- 3. Improvement of production efficiency:** if the right types of materials are available for production at the right time, their production efficiency also increases. His level of motivation increases and morale improves.
- 4. Inventory risk:** information on the availability of raw materials must be provided continuously for management, so that they can plan the acquisition of raw materials. Maintains inventory at optimal levels, taking into account operational requirements. It also prevents stock accidents.
- 5. Better customer service:** an adequate inventory of finished products must be in line with the reasonable requirements of the customer for the rapid execution of their orders.
- 6. Poor design of the organization for inventory management:** clear responsibility must be set at different levels of the organization.

### **B. Financial Objectives:**

- 1. Purchasing economics:** proper inventory management also brings certain advantages and economies of scale. Every effort should be made to influence the economy to buy in volume and take advantage of favorable markets.
- 2. Affordable:** When buying equipment, it is important to see that quality materials are purchased at an affordable price. Quality is not sacrificed at low prices. The purchased material must have the quality you need alone.

3. **Better investment and efficient use of capital:** the basic objective of inventory management from a financial point of view is the optimal level of inventory investment. There should not be too much investment in shares. Etc. Inventory investments should not link funds that can be used in other activities. Determination of the maximum and minimum levels of attempted stock in this direction.

## **TYPES OF INVENTORY**

- **Stock movement.**

The movement inventory is called transverse or tubular inventory. Pipeline inventory exists because the material cannot be sent immediately between the supply point and the demand point.

- **Inventory cycle**

It is done for the reason that one or more stages of the process cannot supply all the elements it produces simultaneously. This type of inventory is caused by the need for batch production and its volume depends on the volume decisions.

- **Change inventory.**

The inventory is used to allow work centers or processes to function independently. Once this inventory is done, even though the machine breaks down the work, it does not stop.

- **Inventory of anticipation.**

This type of inventory is assembled to face future interruptions in demand or supply. It is a way for manufacturers to maintain constant operations when the demand for the product is low.

## **NEED TO HOLDING INVENTORIES**

Storage implies the accumulation of company funds and the occurrence of storage and expenses. If it is expensive to hold shares, why do companies hold shares? There are those general purposes for holding stocks.

- **Transaction motive**

According to this reasoning, a company holds stocks to avoid bottlenecks in production and sales. By keeping stocks, the business ensures that production is not interrupted by the demand for raw materials, and that sales are not affected by the availability of finished products.

- **Precautionary motive**

The inventory is also made with the intention of having a mattress against the unexpected business. There may be sudden and unexpected increases in demand for finished products at some time. Similarly, there may be an unexpected decrease in the supply of raw materials at the same time. In both cases, the cautious business world would prefer to have some cushions to protect against the risk of unpredictable changes.

- **Speculative motive**

A company can also maintain inventories to take advantage of price fluctuations. Suppose that if the price of raw materials gradually increases, the company would like to have more stocks than demand at lower prices.

## **FACTORS INFLUENCING INVENTORY**

The inventory management of an organization affects the entire system.

How much to buy at the same time and in what quantity? These two basic things on which inventory control depends. Many factors govern these important things. The main factor that governs the two fundamentals is

- Quality in stock or on stock
- Obsolesce
- Requirements
- Lead time

## **ADVANTAGES OF INVENTORY CONTROL**

Here are the following advantages of inventory control-

- Production and sales improvement.
- Maintenance of sufficient inventions reduces the costs associated with each production run.
- Proper and efficient use of raw materials.
- Reduction in investment in inventory.
- Efficient and optimal use of physical as well as financial resources.
- If a firm places a few large orders in place of several small orders, the ordering cost can be reduced.
- No bottlenecks in production.

## **RISK AND COST ASSOCIATED WITH INVENTORIES**

Holding of Inventories expose the firm to a number of risks and costs.

**Major risks are as follows-**

- (a) Obsolescence:** This may be due to change in customer taste, new production technology, improvement in product design, specifications etc.
- (b) Product deterioration:** This may be due to improper conditions of storage or storage of a product for a long time.
- (c) Price drop:** They may be due to increase in the market supply of the product, introduction of a new competitive product, price-cut for competitors etc.
- (d) Obsolescence:** This may be due to change in customer taste, new production technology, improvement in product design, specifications etc.

**The expenses of holding inventories are as follows-**

- (a) Cost of materials:** This includes the purchase, transport and handling charges of goods any exemption allowed by the supplier of goods.
- (b) Carrying cost:** This includes the cost of storing and handling the goods. This includes storage costs, insurance costs, bad costs, cost of funds tied up in inventory, etc.
- (c) Ordering Cost:** This includes the variable cost associated with placing an order for goods. The fewer the orders, the lower the order for the firm.

## ESSENTIAL OF INVENTORY CONTROL SYSTEM

Some important conditions for an efficient and successful inventory control are as follows:

1. **Classification and identification of inventions:** The general inventory of the manufacturing firm includes raw materials, stores, progress and components etc. To facilitate quick recording of the deal, each item of the inventory must be assigned a special code number. And it should be classified into appropriate groups or sub-divisions. ABC analysis of the material is very helpful in this context.
2. **Standardization and simplification of inventory:** To facilitate inventory control, the inventory line should be simplified. It refers to the elimination of additional types and sizes of objects. Simplification reduces the classification of inventions and its carrying cost. Standardization, on the other hand, refers to the determination of standards for raw materials to be purchased and the specification of components and equipment used.
3. **Setting the maximum and minimum limits for each part of the inventory:** The third step in this process is to determine the maximum and minimum limits for each item of the inventory. This avoids the shortage of any commodity as well as the possibility of over-investment during the cost of production. The regulating point must also be preordained.
4. **Economic Order Quantity:** Determining what quantity to order at a time is also a basic inventory problem. In determining the EOQ, the problem is one to strike a balance between two opposite costs, namely carrying costs and carrying costs. This quantity should be preordained.
5. **Adequate storage facilities:** To make the system of inventory control successful and efficient, it is also necessary to provide adequate storage facilities. Adequate storage area and proper handling facilities should be organized.
6. **Adequate reports and records:** Inventory control requires the maintenance of adequate inventory records and reports. The various inventory records should contain information to meet the needs of purchasing, production, sales and financial staff. Specific information required about any class of inventory can be related to the hand, location, quantity in transit, unit cost, code for each item of inventory, point of repetition, security

level, etc. The description and inventory records should be designed so that the clerical cost of maintaining these records should be kept to a minimum.

7. **Experienced and Intelligent Inventory Personnel:** An important requirement of a successful inventory control system is the appointment of qualified and experienced staff in the procurement and stores department. The establishment of procedures and maintenance of records will not produce the desired results as there is no substitute for honest and dedicated and experienced hands. Therefore, the entire inventory control structure should be operated with trained, qualified, experienced and dedicated staff.
8. **Coordination in and out inventory of all departments:** There should be excellent coordination of each and every department involved in the process of inventory control, such as procurement, finance, receiving, approval, storage and accounting departments. All these departments have different approaches and items in inventory management but the financial manager has to coordinate them all.
9. **Budget:** An efficient budgeting system is also necessary. It is also necessary to prepare a budget related to materials, supplies and equipment to ensure economy in the purchase and use of materials.
10. **Internal Checking:** It is also important in inventory management to conduct a system of internal checks so that all transactions related to material supply and equipment purchases are properly approved and checked automatically.

#### **FACTORS WHICH AFFECTING STOCK INVESTMENT IN ALL LEVEL**

**Universal Factors of Inventory Management:** these factors, which affect directly or indirectly investment in any asset. These are as mention below:-

- (1) Type of Business
- (2) Scale and Size of Business
- (3) Predictable Sales Volumes
- (4) Cost Level Changes
- (5) Accessibility of Funds
- (6) Organization view Point

**Specific Factors:** These factors are directly related to investing in stocks. Following are the main factors:

1. **Seasonal character of raw materials:** If the supply of raw materials used in the firm is seasonal, then the firm will require more money to purchase raw materials during the season. Typically, raw materials are available at cheaper rates during its production season.
2. **Length and technical nature of the production process:** If the production process is long and technical in nature, high investment in raw materials is required. Technological nature In the production process, more emphasis is placed on quality control of raw materials.
3. **Conditions of purchase:** If certain concessions or price discounts or loan facilities are provided by suppliers on the purchase of a large quantity of raw materials, the firm is motivated for excessive procurement of goods and hence comparative comparison in inventory Requires more investment than.
4. **Nature of the end product:** The nature of the end product also affects the investment in inventory. If the end product is a durable good, then higher investment will be required because durable goods can be stored for a longer period. On the other hand, perishable goods cannot be stored for a long time. Therefore, investment in the list of such products is low.
5. **Supply conditions:** If the supply of raw materials is regular and there is no possibility of future interruptions, then there is no need for high investment in inventory.
6. **Time Factor:** The main time of the token at the time of the raw material in the production process and the sale of the product also affect the investment in the inventory. There will be investment in long-term, higher inventory.
7. **Loan facilities:** If the raw material is purchased on loan or loan from the bank or other financial institutions can get on the security of the raw material, then less investment will be required. In the absence of such loan facility, higher investment is required, Will be.
8. **Price level fluctuations:** If future price increases are expected then the raw materials can be stored in higher quantities and hence more investment will be required. Conversely, if raw material prices are expected to go down in the future, comparatively less investment will be required.

## TECHNIQUES OF INVENTORY CONTROL

Inventory is being maintained as a cushion in the supply of materials for continuous production without the condition of stock out. This seat should not be suicidal for any organization. The following scientific techniques and methods are being used to control inventory.

1. Inventory Management Techniques
2. Standardization
3. Selective List Control
4. Just have time
5. Perpetual inventory system
6. Inventory Turnover Ratio

### 1. MANAGEMENT TECHNIQUES OF INVENTORY

#### I. Economic Order

If the firm is buying raw material, it has to decide a lot in which it will have to buy it on replenishment. If the organisation is planning a manufacturing run, the issue is how much production to schedule. These problems are called order quantity problems and the firm's task is to determine the optimal or economic order quantity.

##### (A) Ordering cost

The cost of ordering is used in the case of raw materials and includes the full cost of obtaining the raw materials.

##### (B) Carrying cost:

The cost incurred to maintain the level of a given inventory is called the carrying cost.

Economic Order Quantity is given by the formula:

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

And the cost of inventory is given by formula:

$$\text{Total cost of inventory} = (A \times P) + (A \times Q)/EOQ + (EOQ \times C)/ 2$$

Where, A= Annual Consumption (in units)

O= Ordering cost per order (in Rs)

C= Carrying cost per unit (in Rs)

P= Price per unit (in Rs)



## **II. Reorder Point**

The reorder point is the inventory level at which an order must be placed to refill the inventory.

Set the order point:

- Lead time is the time it normally takes to refill inventory after an order.
- Average Usage
- Economic order quantity

## **III. Safety stock**

The demand for material can fluctuate from day to day. Actual delivery time may differ from normal lead time. If actual usage increases or delays in the delivery of inventory then the firm may face stock out problems, which can be costly. So, the firm can maintain a security stock to save the stock.

### **2. STANDARDIZATION :**

Standardization is very essential to control inventory, as standardization is possible to reduce the diversity of materials. And the advantages due to diversity reduction are low cost, low inventory, low storage stock, preservation of materials, reduction in diversity, less paper work, easy to follow with suppliers, low number of orders.

The importance of this field has been recognized since the days of FW Taylor, who first drew attention to this fundamental need in an organization. The work required is preliminary to simplify this work, and is a basic technique for production control, quality control, materials. Handling, estimated cost control, etc. Standardization is the initial requirement to design a basic technique on initial control and standardization process.

### **3. SELECTIVE INVENTORY CONTROL MANAGEMENT**

Any manufacturing organization consumes a few thousand consignment shops. Each item's inventions will have a high level of control, so neither should consider the functions involved, nor meaningful because not all items are of equal importance. It is therefore desirable to categorize or group items in order to control comments commensurate with importance. This is the principle of selective control as applied to inventions and the technique of grouping is called selective technique.

Selective inventory means differences in methods of inventory control from object to object and should be selective on a basis by differential classification. A company has to stock thousands of

items of raw materials, standard parts, shops and parts, sub contract items, appliances, stationery, etc. To better control inventory / stock, selective inventory control techniques should be used in isolation.

Thus, selective control means selecting the area of control so that the necessary objective is achieved as quickly as possible without any time due to taking care of the entire area: -Minimum loss of energy and efforts.

Techniques are as mention below:-

- ABC Analysis
- FSN Analysis
- XYZ Analysis
- VED Analysis
- HML Analysis

#### a) ABC ANALYSIS

ABC analysis is a selective control technique that needs to be applied, when we want to explicitly control the value of consumption of goods, when we want to control the value of consumption of that material, we need to select those materials Should be done where consumption is very high.

In the manufacturing of any company, there is a number of goods consumed or traded that can run into thousands. It has been found after several studies for various companies that-

Value of consumption of items (value in Rs )	No. of items	Grade
70% of consumption	10% of no. of items	A
20% of consumption	15% of no. of items	B
10% of consumption	75% of no. of items	C

**a. Item:** These are items that are found to be barely 5% 10%, but their consumption may account for 70% to 75% of the total money spent on materials.

**b. Items:** Are those items which usually account for 10% 15% of the total items and 10% 15% of their consumption is spent on the material.

- c. **Items:** These are a large number of items that are cheap and inexpensive and therefore unimportant. They are in large numbers spending 5% 10% of the total money in materials.

<b>'A' Class Items (High consumption value)</b>	<b>'B' Class Items (Moderate consumption value)</b>	<b>'C' Class Items (Low consumption Value)</b>
Very strict control	Moderate control	Lose control
No safety stocks or very low safety stocks	Low Safety stocks	High safety stocks
Maximum follow up and expediting	Periodic follow up	Follow up and expediting in exceptional cases
Rigorous value analysis	Moderate value analysis	Minimum value analysis
Must be handled by senior officers	Can be handled by management	Can be fully delegated

#### **b) FSN ANALYSIS**

This type of analysis is more concerned with the motion of the object or the point of view of the object under this type of analysis.

'F' items are items that are moving fast i.e. up to a fixed period of time, up to a month or a year until the number of items that have been issued. However, moving fast does not mean that these items are consumed in large items.

'S' items are items that are moving at a slow pace in the sense that they are released in a very limited time over a given period of time.

'N' non moving items are those that are not issued for a long time.

Thus, the department of stores that deals with the growth of items wants to know and classify that items are being stored in FSN categories. So that they can conduct and store activities according to their own.

For example, efficient operation would require that fast-moving objects be stored as far as possible up to the point of issue. So that it can be released with minimal handling. Such items should be stored at floor level to avoid being stored at a high level.

Likewise, if items run slow or are released once in a certain time, they can be stored in the interior of the store and at even greater heights, as these items are very rare to handle. It happens.

Further, it is necessary for store in-charge to know about non-moving items due to various reasons:

1. They mean unnecessary blockage of money and affecting the rate of return of the company.
2. Furthermore they occupy valuable space in the shops without any utility and hence it becomes necessary to identify these items and go into details and find reasons for them without any reason and if they are disposed of expeditiously. It is advisable to recommend top management, so that company operations are carried out efficiently.

In addition to this, inventory control can also be used to some extent based on FSN analysis.

For example, fast moving objects can be more severely controlled, especially when their value is also very high. Likewise, items moving at a slow pace often cannot be controlled and reviewed very quickly as their consumption may not be frequent and their value may not be high.

### c) XYZ ANALYSIS

This type of analysis is carried out from time to time from the point of view of the value of the remaining shares in the stores and classifies all the items as given below.

'X' items are items that have a high value of stock remaining in stock.

'Y' items are items whose balance stock price is moderate.

'Z' items are items that have very little value of the remaining stock in stock.

**This type of classification and knowing their objects can be taken to control the situation as shown below:**

- Items of high value should be stored for safety and should be kept under lock and key or, if possible, in a manner that is always under surveillance. Similarly y and z can be arranged according to the item.
- From the inventory control point we should know why items X 'is the high inventory for the item. We should review the inventory control process for each and every higher item as the stock must take care of lead time consumption and provide safety stock. For high value items lying in stores, we should review the long lead times as well as the reasons for the change in demand and see if lead time consumption and safety stocks may be

reduced. Thus appropriate inventory control procedures can be developed based on XYZ analysis.

Thus appropriate selective control methods should be selected to control the material and prevent loss from being encountered, taking advantage and knowing exactly what is to be done.

#### **d) VED ANALYSIS**

VED analysis is performed to control the situation, which are important. When applied to materials in VED analysis, we try to identify the materials according to their importance for production, which means that the material, without which production will stop and is similarly classified into three categories material: -

- V- Vital
- E- Essential
- D- Desirable

Vital categories of items are items for which production will have to be discontinued. For example: - electricity in the factory

The essential group of goods are those items whose stock out cost is very high due to non-availability.

Desirable set of commodities are those items which have no immediate loss of production due to non-availability and stock cost is very low and can cause minor disruption in production for a short period of time.

#### **e) HML ANALYSIS**

This analysis analyzes the materials according to their prices and then classifies them as H items or M items or L items.

H stands for High Price,

M stands for Medium Price and

L stands for low price.

Since the price is more related to the procurement department, most purchasing department people analyze the material according to HML analysis.

HML analysis should be done with one of the following objectives or may have some purpose as the case may be -

- When it is desired that the purchase responsibility be delegated to the right level of people.

- When it is desired to develop purchasing policies then HML analysis is also done i.e. purchasing exact quantity as per requirement or purchase in EOQ or only when necessary.
- When the objective is to control consumption at the department level, the authority will be given a high level H item, a low level for an L item, and a medium level for the M item, to pull the material from the stores.
- When there is a desire to decide the frequency of taking stock, very often H category, very low L category and average category M.
- When there is a desire to make security arrangements for the items, under the H items lock and key, the L items remain open on the shop floor and under the supervision of the M items.

#### **4. JUST IN TIME INVENTORY SYSTEM**

Considering the huge investment of inventory in stores and going down, manufacturers and merchandisers are asking their suppliers for more frequent deliveries with shorter purchase order lead time. Today organizations are becoming more and more willing to reap the potential benefits from creating smaller and more frequent purchase orders. In other words, they are just getting interested in the time buying system. Just-in-time purchase (JIT) is the purchase of materials or goods in such a way that delivery of purchased goods is ensured prior to their use or demand.

Purchasing just in time recognizes the costs associated with keeping high inventory levels very high. Therefore, it advocates developing good relationships with suppliers and timely procurement from proven suppliers, who can make ready delivery of goods when needed. The EOQ model assumes a constant order quantity while the JIT purchasing policy advocates a different quantity for each order if demand fluctuates. EQQ emphasizes procurement costs quality costs and ordering costs to exclude stock. Just shopping on time takes into account all of these costs and moves - outside the assumptions of the EOQ model.

##### **Advantages of JIT purchasing**

- i. Investment in inventories decreases as more purchases are ordered in smaller quantities.
- ii. Carrying costs are reduced as a result of reduced investment in inventory.

- iii. It is possible to reduce the number of suppliers to deal with it. Only proven suppliers who can deliver quick delivery of quality goods are given purchase orders. As a result, a reduction in talk time is possible. The use of long-lasting contracts with some suppliers is possible with minimal paperwork.
- iv. Quality costs such as inspection costs of incoming materials or goods, scrap and rework costs are reduced as JIT procurement delivers quick and frequent deliveries of small size orders resulting in minimal potential wastage at low level inventory . Therefore, JIT procurement is often implemented by organizations dealing with perishable goods.

## **5. PERPETUAL INVENTORY SYSTEM**

The Chartered Institute of Management Accountants, London, defines perpetual inventory as "a system of records maintained by the Department of Control, which reflects the physical movements of stocks and their current equilibrium". Bind cards and stores help in the movement of stock on ledger receipts and help maintain this system as they create a record of physical movements of stock on receipts and material issues and also reflect balance in stores. Thus, it is a system of obtaining balance information after each receipt and issue through stock records to facilitate regular checks and to avoid closing the firm for stocktaking. To ensure the accuracy of provisional inventory records (ie bind cards and store ledgers), physical verification of stores is done by bind cards and store verifiers may differ from the actual balance of stock according to physical verification. This can be done for the following avoidable and unavoidable reasons.

## **6. INVENTORY TURNOVER RATE TECHNIQUE**

An important technique of inventory control is to use the inventory turnover ratio. These ratios are calculated to assess efficiency in the use of inventions. The following control ratios can be calculated for inventory analysis:

- i. Inventory turnover ratio = cost of goods sold / average inventory

Where Average Inventory = (Opening Inventory + Closing Inventory) / 2

The inventory turnover ratio can be calculated separately for raw materials and finished goods.

- a) Raw material turnover ratio = Raw material consumption / Average stock of raw materials.
- b) Finished goods turnover ratio = Cost of finished goods / Average stock of finished goods

Average age of inventory turnover in days to days during period / inventory turnover ratio

- ii. Average inventory of total cost of production = (average inventory / total cost of production) x 100
- iii. Slow moving stores for total inventory = Slow moving stores / Average cost of inventory
- iv. Inventory Performance Index = (Actual Material Turnover Ratio / Standard Material Turnover Ratio) x 100

These ratios provide a comprehensive framework for control and provide the basis for future decisions about inventory control. Ratios provide a difficult signal when inventory levels are going to be high. Even if it appears from the ratio that levels are too high, there may be a perfectly good reason why the level of inventory is being maintained. Ratios also indicate status and trend. However, the range of the ratio should be kept in mind. They are not an end in themselves, but merely tools of sound inventory management.



## **PURPOSE OF THE STUDY**

Inventory is the key element in the working capital of any manufacturing concern. The scope of the current study extends to ensure proper inventory management and cost control. It provides a guideline for the management of the company's materials and helps in making necessary changes where necessary.

Inventory Management scope is concerns the fine line between replenishment lead time, inventory costs, asset management, inventory forecasting, quality management, replenishment, returns and faulty inventories and demand forecasting. Balancing these competitive requirements increases the level of inventory, which is a continuous process as the business needs a wider environment

## RESEARCH HYPOTHESES

### 1. Testing the Hypothesis

#### Null hypothesis

HO: Inventory management practices have an impact on the organization performance of Micro Labs Limited within the city.

#### Alternative hypothesis

H1: Inventory management practices have no significant impact on the organization performance of Micro Labs Limited within the city.

## RESULTS

### Variables Entered/Removed

### Hypothesis Testing Criterion

Model	Variables Entered	Variables Removed	Method
H1:	Inventory management helps in inventory planning and scheduling at Micro Labs Limited.		Enter

### 2. Testing the hypothesis

#### Null hypothesis

HO: Inventory management practices have an impact on the organization performance of Micro Labs Limited.

### **Alternative hypothesis**

H1: Inventory management practices have no significant impact on the organization performance of Micro Labs Limited.

## **RESULTS**

### **Variables Entered/ Removed**

### **Hypothesis Testing Criterion**

<b>Model</b>	<b>Variables Entered</b>	<b>Variables Removed</b>	<b>Method</b>
H1:	Better procurement was reported by the respondents as inventory management's contribution to the organization's performance.		Enter

### **3. Testing the hypothesis**

#### **Null hypothesis**

HO: Inventory management practices have an impact on the organization performance of Micro Labs Limited.

#### **Alternative hypothesis**

H1: Inventory management practices have no significant impact on the organization performance of Micro Labs Limited.

In testing the above hypothesis, as shown ved superior buying was reported by respondents as an inventory to contribute to the organization's performance, improved purchase stock holding and valuation of goods' would be tested.

## RESULTS

### Variables Entered/ Removed

### Hypothesis Testing Criterion

Model	Variables Entered	Variables Removed	Method
H1:	Cost reduction is central in ensuring that the future of any project. It was noted by the respondents that Micro Labs Limited is required to show a clear commitment to cost reduction which was reflected through inventory management.		Enter

**a. Predictors:** (constant), cost reduction is central in ensuring the future of any project. It was noted by the respondents that the cost reduction required the government to show a clear commitment which was reflected through inventory management.

**b. Dependent Variable:** Internal coordination at Micro Labs Ltd. can be improved by inventory management practices.

Based on the above response, and the discussion of the findings, the null hypothesis (Ho) is accepted and the alternative hypothesis (H1) is rejected.

## CHAPTER NO. 2

### REVIEW OF LITERATURE

Studying the available literature related to his field of study is compulsory for the researcher so that he can be updated in his field and related field. Without this, researchers would not be able to make a worthy contribution. The literature review in this study shows the importance and need for inventory management within an organization.

Inventory management can help businesses be more profitable by reducing the cost of goods sold and increasing sales. Inventory management at different points in the supply chain is needed to prevent regular and planned production from disruption of raw materials or goods. After the paragraph, review the available literature:

- **Stephen Ronsworth (2005)** stated in his Inventory Management Review article: “When stocks are available, the company does not want to have too many products and does not want enough of them to meet demand. Inventory management helps ensure that the right inventory is maintained at all times. "Stephen also says proper inventory management has many benefits for the company. Inventory management can help make sure the company has the right inventory. No less, no less. Inventory management is also an effective way to keep track of the products the company has.
- **Philip Slater (2007)** in his article (Inventory Management - One Size fits all) says, “If there is a big myth in inventory management, it is the only technique that will solve all inventory problems. Not that people believe that one technique will solve all problems in every situation, but that every company needs a method to manage its entire inventory. He also pointed out that there are many techniques and methods that people use to manage inventory. These include JIT, ABC and FSN, VED analysis, risk management, security stocks and EOQ. Sometimes they are used alone and sometimes in combination. They are all useful techniques when used properly.
- **Charles Atkinson**, in his publication The Point of Sale, Retail Inventory, and Money Management (October 25, 2005), pointed out that there are three types of inventory that require joint management There is raw material, finished goods and processing. The raw material can be cut in a variety of different ways, most notably by ordering a smaller frequency band with a higher frequency from the supplier (JIT). Finished inventories can

also be reduced in many ways, most notably by producing only when you actually have an order (JIT) or by obtaining a more accurate search forecast.

- Experts argue that the level of inventory should decrease markedly as a result of the implementation of better inventory management systems such as JET. A paper "**Inventory Decline: An Empirical Study**" (2001) by **Rajagopalan and Malhotra** indicates that while it appears that the general level of inventories in all industries has declined since the 1960s, it does not appear This trend intensified in the 1980s, as JIT proponents might suggest.
- In addition to tools and techniques, **Mike Schramm (2009) in his Five Tips to Inventory Management** has provided some tips for a successful inventory management. They are
  - Sell junk (even if you think it's not junk).
  - Get a bank completely, and use it for everything
  - The gear is correct.
  - Set up
  - Regular maintenance is better than emergency cleaning.
- **Adam. Jay Fein, in his article Building a Building Supply Chain, (2006)** stated that "a widely held, but inaccurate, assumption that new technologies led to a direct decline in the inventory-to-sales ratio Has done, "an important indicator of buffer. Inventory "in the supply chain. In theory, the introduction of information technology-based supply chain practices such as just-in-time (JIT) inventory management, warehouse automation, and bar code have allowed companies to improve stock management of orders and materials.
- **Bruce D. Caldwell (2009)**, in his article **The ABC Analysis for Inventory Reduction**, mentioned some of the benefits of ABC analysis. The simplest and efficient method is to use the "ABC" concept to analyze control inventory investment and windings. Most inventories are made up of hundreds and possibly thousands of personal items that are required to manufacture a company's products.
- **Ashwathappa, Productions and Operations Management (2008)** stated that inventory management involves the development and administration of policies, systems, and processes that aggregate costs relative to inventory decisions and related tasks such as customer service requirements, production scheduling, purchasing and traffic.

- **Lucy, Quantitative Techniques for Management (2002)** defined inventory management as recording and monitoring stock levels, forecasting future demand and deciding when and how to order.
- **Juhi Gonzales states in his article Inventory Control (1999)** that inventory management is ensuring that items are available when customers call for it, but not too much stock, so that the inventory turnover target is met.
- **In Managing and Finance for Managers (1988) Bardia** believes that for a firm to be successful, the inventory to current assets ratio of inventory must be kept to a minimum. Also a high inventory turnover ratio which indicates that rapid movement of materials is beneficial for firms. He also states that the ratio of finished / semi-finished inventories should be kept to a minimum.
- **Khadwal (1985)** in his book *Inventory Management and Stock Evaluation* revealed that a slow and decreasing rate of transmission of working capital to selected units was recorded. The main problem responsible for this condition is the high share of inventions in current assets which ranged between 40% and 70% with an increasing trend during the period studied.
- **Jain, in his book The Working of Stock Exchange in India (1988)**, has highlighted various facts of working capital management in the state of Rajasthan. He said that the cash position of working capital should be improved by reducing inventive and efficient collection of loans.
- **Rao (1990) evaluates** the management of working capital and degree of efficiency of management inventions in Andhra Pradesh public sector manufacturing undertakings equivalent to inventory control models. An analysis of the structure of the inventory shows that the undertakings selected for the study had overstocking with respect to each and every component of inventory overstocking.
- **Mohan Reddy in managing working capital (1991)** considered that inventory constituted the major part of the current assets of the sample private sector enterprises studied. Large enterprises in the private sector made larger inventions than smaller ones. Inventory turnover ratios have shown that private sector units are not named in inventories.

- **Kurian Jose Erthel In (1999)** conducted a study to analyze the efficiency of inventory management system at KEL, Memla unit. The study showed that due to better inventory management, the unit enables proper arrival of goods, reducing lead-time.
- **Arifa T. Mohammed** studied working capital management in his book *Stores and Inventory Management* (2004), suggesting that unnecessary inventions should be avoided as this may reduce anxiety.
- **Renju Mohan PT (2008)** conducted a study on store inventory management at Karborundam Universal Limited. There should be strict control over A category items as well as important items. Highly trained inventory managers and high quality software will help make inventory management successful. The ROI of inventory management will be seen as an increase in revenue and profits, a positive employee environment and overall growth of customer satisfaction.
- **MZ Babai and Y. Delier IESM, (May 2005)**, the literature dealing with inventory management policies is very rich and has grown rapidly during the past year; They classify these policies into 2 approaches according to the type of information sought. The policies in the first approach assume that advance demand is not known and decisions are made in real time using inventory shortages.



## **CHAPTER NO. 3**

### **COMPANY PROFILE**

Micro Labs Limited, established in 1973, is a multi-dimensional healthcare organization with a skilled marketing team, state-of-the-art manufacturing facilities and R&D centers that conform to international standards. All of this, was possible by a strong distribution network and path-breaking research work, has placed us among India's fastest growing transnational healthcare organizations.

Late Shri. C. A privately held company founded by Surana, led by Mr. Dilip Surana and Mr. Anand Surana.

Micro Labs occupies the leading position in select medical fields like cardiology, diabetesology, ophthalmology, dermatology, pain / analgesics etc.

#### **Business Confidence:**

#### **Micro Labs are built as four pillars of business values:**

- **Quality:** A driving force for the organization in the value chain
- **Ethics:** Manage businesses by applying the best methods of governance and ethics
- **Customer focus:** Understanding customer needs and focusing on customer satisfaction
- **Respect for people:** Our most important belief: Respect people and their contributions

#### **Ranking:**

It is ranked in the top 19 in India with a market share of 1.95% as of AIOCD-AWACS July 2019.

#### **Domestic Operations:**

Micro Labs has been contributing to the health needs of the domestic market for more than 3 decades, growing at an annual compound rate of 14%. Current marketing is structured into 22 divisions, each with more than 5,000 medical representatives customized to deliver a

promotional message to a certain segment of a specific clientele, including approximately 250,000 doctors and 180,000 pharmacies.

**global presence:**

The group has a presence in over 40 countries, with grassroots operations in 15 countries, exporting all major supplements in every therapeutic segment. Micro Labs is building critical mass in existing markets and developing business in new markets such as the United States, Eastern Europe, North Africa and South and Central America and achieving a "Big Generic Company", a medium-term position in the global pharmaceutical space Is well prepared for.

**Awards and recognitions:**

Time and again, micro labs have been recognized and respected in simple ways. One of our proud achievers is Dolo, an award-winning brand determined to manage fever. Dolo-650 was recently awarded the 'Most Trusted and Popular Pharmaceutical Brand 2019' by the Times Group.

Our CMD, Mr. Dilip Surana was recently awarded the 'Responsible Business Leader Award 2019' by the responsible business leaders in Mumbai.

**Previous awards include:**

Micro Labs awarded 'Best Concern for Health 2016' by World CSR Day-National CSR-Leadership

**Congress and Awards:**

- Karpil was awarded the Silver Award under the 'Acute' category for the 'Crypt' category and the Bronze Award for the year 2016, TenPride, by the AWACS Marketing Excellence Awards 2016.
- The Dolo-650 was honored as 'Asia's Largest Brands 2016' by Asia One Magazine and PwC India
- Brand Dolo awarded India's Most Admired Brand 2015 by White Page International

- Dolo won the 2014 Golden Award for Brand of the Year and Amlong won the Bronze Award of the Year 2014 at the AWACS Marketing Excellence Awards 2014.
- Brand Dolo honored as 'Brand of the Year 2013' at the 6th Annual Pharmaceutical Leadership Summit 2013
- Mr Dilip Surana, CMD of Micro Labs Limited was honored as 'CEO of the year 2016' by World CSR Day and 'Asia's Greatest Leader 2016' presented by Asia magazine and PwC India.
- Micro Labs Sikkim Manufacturing Unit received the prestigious Silver Award in 2016 and 2017 'India Manufacturing Excellence Awards (IMEA)' organized by Frost & Sullivan in collaboration with The Economic Times.
- Micro Labs is a regular recipient of the IDMA Quality Excellence Awards, a clean hat-trick of 3 awards in 2009, an unprecedented 4 awards in 2010, 3 awards in 2011, 4 consecutive awards in 2012 and 2 awards in 2013

**CSR Contribution:**

The company is also at the forefront of social contribution, striving to become a model corporate citizen in terms of environmental protection and social initiatives with significant contributions in the field of education and health. The micro group has run a GDA Foundation since 1994, which includes educational institutions - an undergraduate college and a management college, which is Surana College, a school that helps in many clinics and hospitals besides Surana Vidyalaya.

**Future Focus:**

Micro Labs is poised to gain a unique position in the global pharmaceutical industry. Based on a deep and firm vision, the company has set its eyes on achieving the \$ 1 billion mark by 2022.

## **CHAPTER NO. 4**

### **RESEARCH DESIGN, METHODOLOGY AND PLAN**

- Data Sources
- Research Design
- Survey Questions
- Interview Procedures
- Data Analysis Procedures

**The following methodology was adopted in the project.**

- Understand the understanding of theoretical concepts in general.
- Questionnaire study.
- Analysis of the primary data.
- Analysis of secondary data.

#### **RESEARCH DESIGN**

Research design means a specific framework to control data collection. The research is descriptive in nature, which could provide an accurate picture of the induction process carried out in the organization. Descriptive research includes surveys and research consultations of different types. The research is of an ex post facto nature in which the researcher has no control over the variables. The statistical method emphasizes objectivity instead of relying on intuition and judgment, and the average and percentages can be easily calculated.

**The static method requires data collection in two ways.**

1. Primary data
2. Secondary data

#### **1. PRIMARY DATA**

The primary data are those that are collected for the first time, and therefore turn out to be of an original nature. The data on the required information is collected from real people who use the product / service. This information is more suitable for the project's objectives.

## **2. SECONDARY DATA**

Data that has already been collected by another person or taken from published or unpublished sources and that have already been passed through the statistical process.

### **DATA COLLECTION MODE**

The study is based on secondary data that include:

Secondary data will be collected from Micro Labs Limited- books, magazines and website about online marketing strategies.

### **STATEMENT OF THE PROBLEM**

Management uses them manually to keep store records, but due to material costs, human errors, low data integrity, difficulty in finding and recovering the product, and recoverable loss of records and retrieving files The system is difficult to maintain.

### **NEED FOR THE STUDY**

Inventory performs some basic functions that are of critical importance in a firm's production and marketing strategies. Effective control over the use of materials has a great impact on profit and attempts to study materials management are made here. This study helps the company to find and evaluate its strengths and weaknesses and also gives recommendations for better inventory management.

Without inventory management it would be difficult for any company to maintain control and be able to handle customer needs. Inventory is essential for a firm to operate efficiently and almost all business transactions involve delivery of products or services in exchange for currency.

### **OBJECTIVES OF THE STUDY**

1. To study inventory management on a ratio basis
2. To find out the effect of inventory on working capital.
3. To study inventory management and its effective control through various techniques.
4. Suggesting measures to improve inventory levels.

## DATA INTERPRETATION & ANALYSIS

### THE PERCENTAGE OF CURRENT ASSET TO INVENTORY.

CURRENT ASSET	YEARS	FIGURE	% OF INVENTORY
SUNDRY DEBTORS	2014-15	45.34	187.82%
	2015-16	63.20	244.86%
	2016-17	63.83	240.32%
	2017-18	72.24	233.10%
	2018-19	65.08	167.99%
CASH AND BANK	2014-15	.26	1.07%
	2015-16	4.74	18.36%
	2016-17	7.06	26.62%
	2017-18	.43	1.38%
	2018-19	.10	0.25%
LOAN AND ADVANCES	2014-15	8.83	36.58%
	2015-16	11.43	44.29%
	2016-17	11.42	42.99%
	2017-18	13.25	42.75%
	2018-19	13.63	35.18%

**Inference**

The percentage of sundry debtor to inventory is highest in the year 2014-15 and lowest in the year 2016-17 where cash and bank is highest in the year 2014-15, loan and advances is highest in 2018-19 and lowest in 2017-2018

## INVENTORY TURNOVER RATIO

Inventory turnover ratio also known as stock turnover ratio establishes the relationship between costs of goods sold and average inventory. Besides it helps in determining the liquidity of a business concern, this ratio indicates how many times during the period the firm has turned its inventory. It presents the rate at which stock is converted into sales and then into cash.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

### THE INVENTORY TURNOVER RATIO.

Year	Net sales(in Lakhs)	Average inventory (in Lakh)	Ratio
2014-15	75.37	20.36	3.7
2015-16	91.74	24.98	3.67
2016-17	100.21	26.19	3.82
2017-18	101.96	28.77	3.54
2018-19	102.84	34.87	2.94

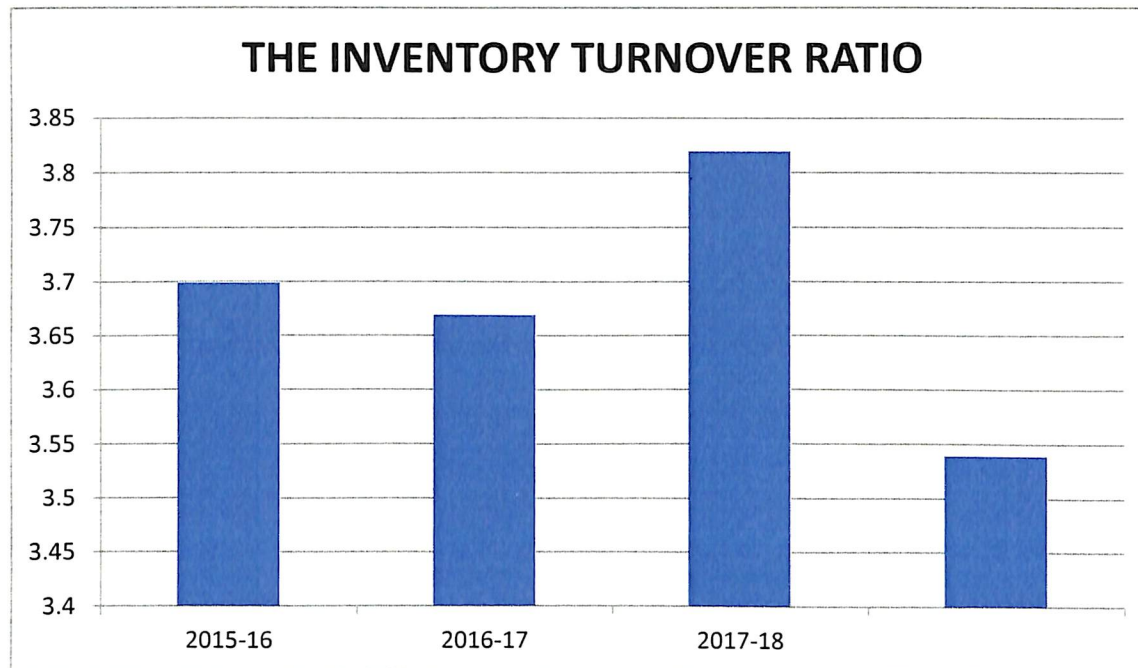
### Inference

The inventory turnover ratio is maximum in the year 2014-15. Higher value indicates better performance. The organisation was able to sell their products quickly.

The Lowest Inventory turnover ratio is in 2018-19. A low inventory turnover ratio shows an inefficient inventory management.



## THE INVENTORY TURNOVER RATIO



## INVENTORY HOLDING PERIOD

Inventory (Product) holding period (days) shows whether the stock is fast moving or not from the godown. It is calculated to see the average time taken for clearing the stock. The lower product holding shows whether is any slow moving product, fast moving or dormant stock. It is the average time to convert our total inventory into sales. The lesser inventory conversion period it is better because more fastly the inventory is converted into sales.

$$\text{Material Holding Period} = \frac{\text{Days in a year}}{\text{Inventory turnover ratio}}$$

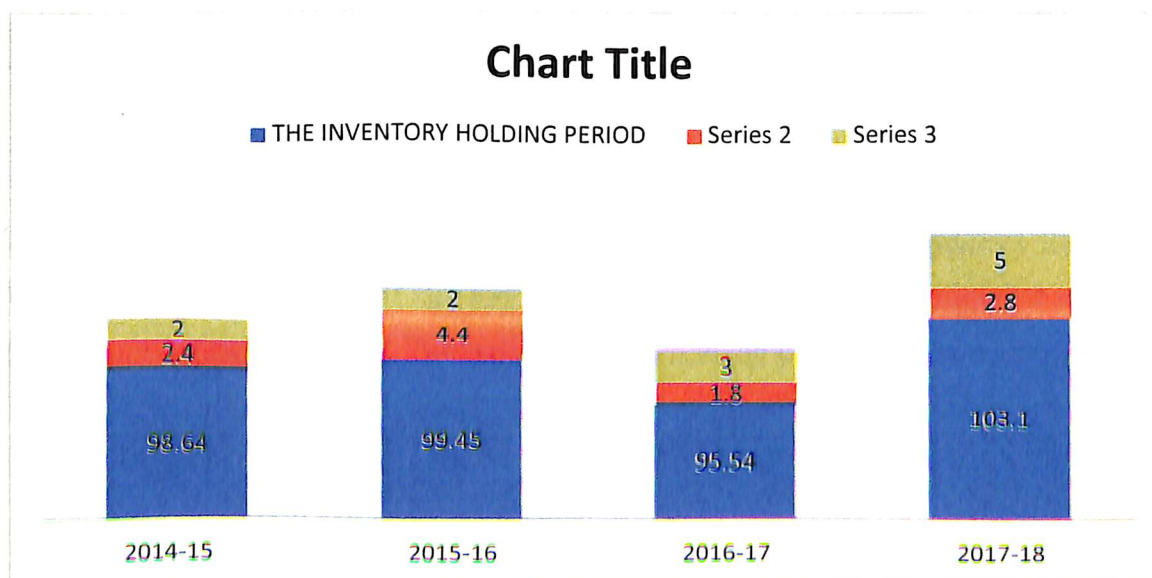
### THE INVENTORY HOLDING PERIOD.

Year	Days	Average inventory turnover ratio(in Lakh)	Inventory Holding period
2014-15	365	3.7	98.64
2015-16	365	3.67	99.45
2016-17	365	3.82	95.54
2017-18	365	3.54	103.10
2018-19	365	2.94	124.14

### Inference

The above table shows that the inventory conversion period for the 5 years Inventory conversion period is minimum in 2014-15 which indicate the conversion of inventory to sales is faster. Maximum inventory holding period is in 2018-19.

### INVENTORY HOLDING PERIOD.



## RATIO OF MATERIAL CONSUMPTION TO TURNOVER

Ratio of material (inventory) consumption to turnover measures how frequently inventory taken for production. This ratio shows the proportion of expenditure on material consumption to turnover. It provides a measurement between the amount of raw material verses the average amount of raw material in the inventory at any given time. A higher ratio is good from the view point of liquidity. It is calculated as follows:

$$\text{Ratio of material consumption to turnover} = \frac{\text{Expenditure on material}}{\text{Turnover}}$$

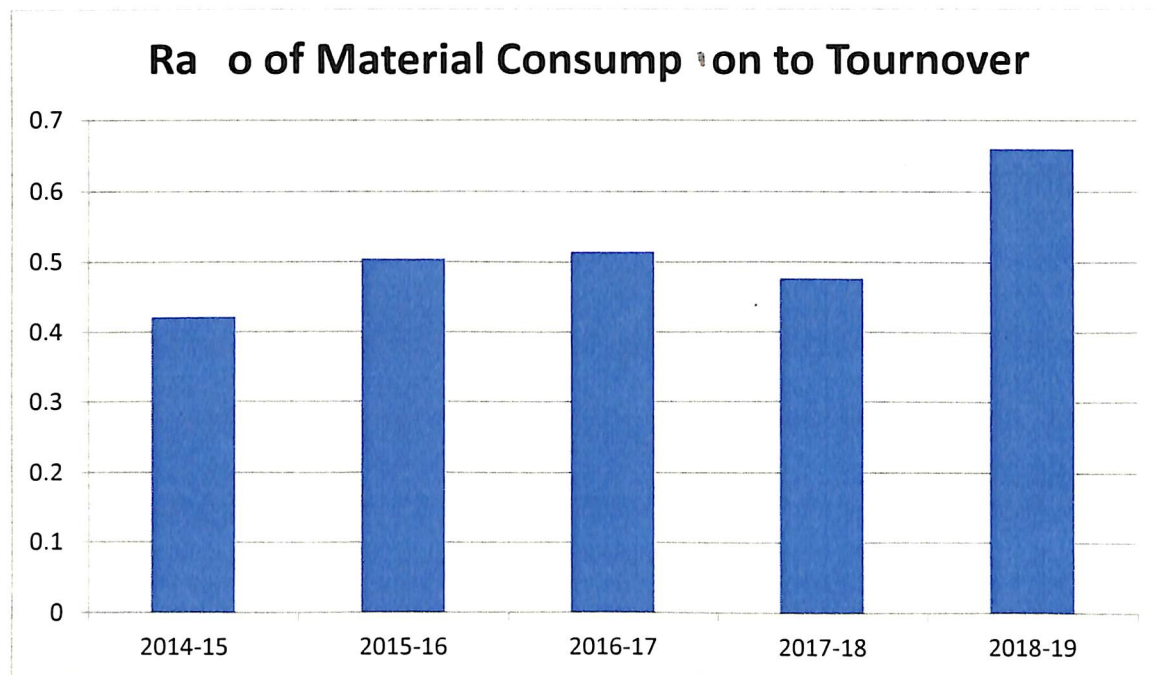
### THE RATIO OF MATERIAL CONSUMPTION TO TURNOVER.

Year	Material consumption	Turnover	Ratio
2014-15	31.86	75.38	.422
2015-16	46.49	91.75	.506
2016-17	51.76	100.21	.516
2017-18	48.77	101.96	.478
2018-19	68.06	102.84	.661

#### Inference

The above table shows a increasing trend of the ratio of material consumption to turnover from 2014-15 to 2015-16. In 2016-17 the ratio of material consumption to turnover is maximum which is not good for a company. The ratio is minimum in the year 2017-18 which is favourable

## THE RATIO OF MATERIAL CONSUMPTION TO TURNOVER



## INVENTORY TO CURRENT ASSET RATIO

Inventory to current assets ratio establishes a relationship between inventory and the total current assets. There by analyzing the level of investment in inventory and consumption of total current assets. It is current assets are those resources of firm which are either held in the form of cash or a expected to be converted in cash within the accountig period.

$$\text{Inventory to current assets ratio} = \frac{\text{Inventory}}{\text{Current Asset}}$$

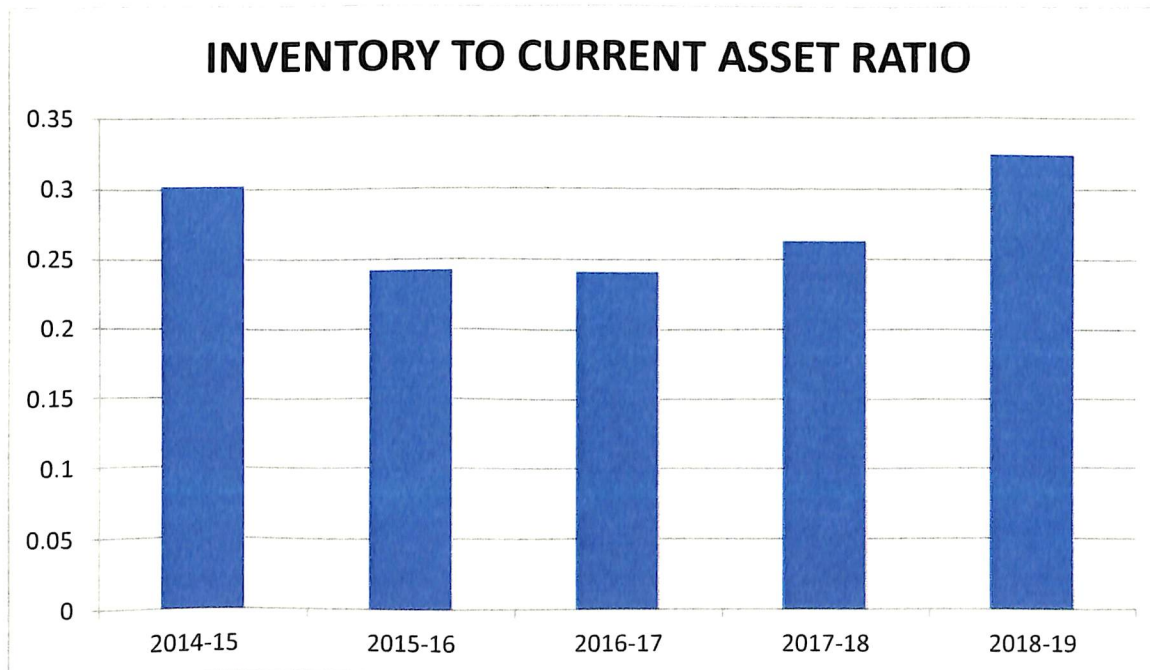
### THE INVENTORY TO CURRENT ASSET RATIO.

Year	Inventory	Current assets	Ratio
2014-15	24.14	79.46	.303
2015-16	25.81	106.10	.243
2016-17	26.56	109.55	.242
2017-18	30.99	117.36	.264
2018-19	38.74	118.99	.325

#### Inference

The inventory to current asset ratio has a increasing trend from 2018-19 to 2017-18.It is maximum in the year 2018-19.The lower the percentage of inventory to the current assets, the greater the liquidity of current asset and versa. Low ratio is shown in 2016-17.

### THE INVENTORY TO CURRENT ASSET RATIO



## INVENTORY TO WORKING CAPITAL

A firm is financially sound if its amount of inventory does not exceed the amount of working capital. This ratio is calculated to know whether there is any overstock in the firm. It is a wise to reduce the the level of asset tied up in working capitalsince each dollar freed is a dollar that can be used to pay down long-term debt, repurchase share etc.

$$\text{Inventory to working capital} = \frac{\text{Inventory}}{\text{Working Capital}}$$

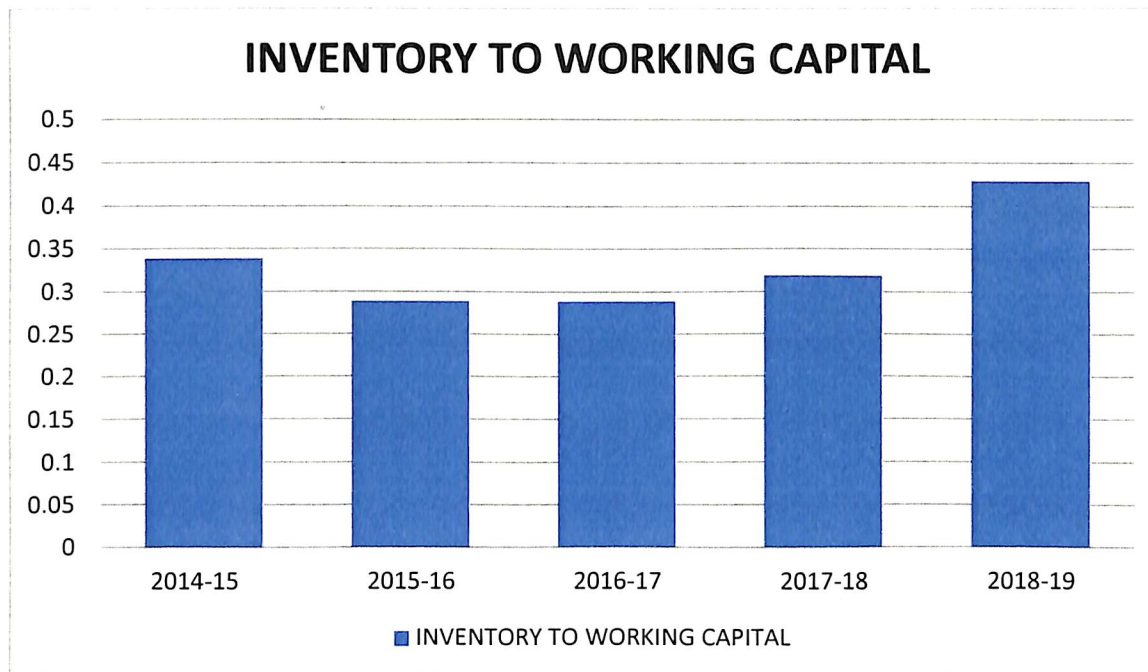
## INVENTORY TO WORKING CAPITAL.

Year	Inventory	Working capital	Ratio
2014-15	24.14	69.47	.34
2015-16	25.81	87.09	.29
2016-17	26.56	91.11	.29
2017-18	30.99	94.45	.32
2018-19	38.74	88.81	.43

### Inference

Inventory to working capital ratio analysis it shows the proportion of inventory is less when compared to working capital. The proportions are high in the year 2017-18 and lower in the year 2016-17 and in 2014-2015.

## INVENTORY TO WORKING CAPITAL



## DEBTORS TURNOVER RATIO

It indicates how many times the firm is collecting the cash from its debtors to whom firm sells in credits. Trade debtors are expected to be converted into cash with a short period. Debtors turnover ratio or accounts receivable turnover ratio indicates the velocity of debt collection of a firm. In simple words it indicates the number of times average debtors (receivable) are turned over during a year.

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Trade Debtors}}$$

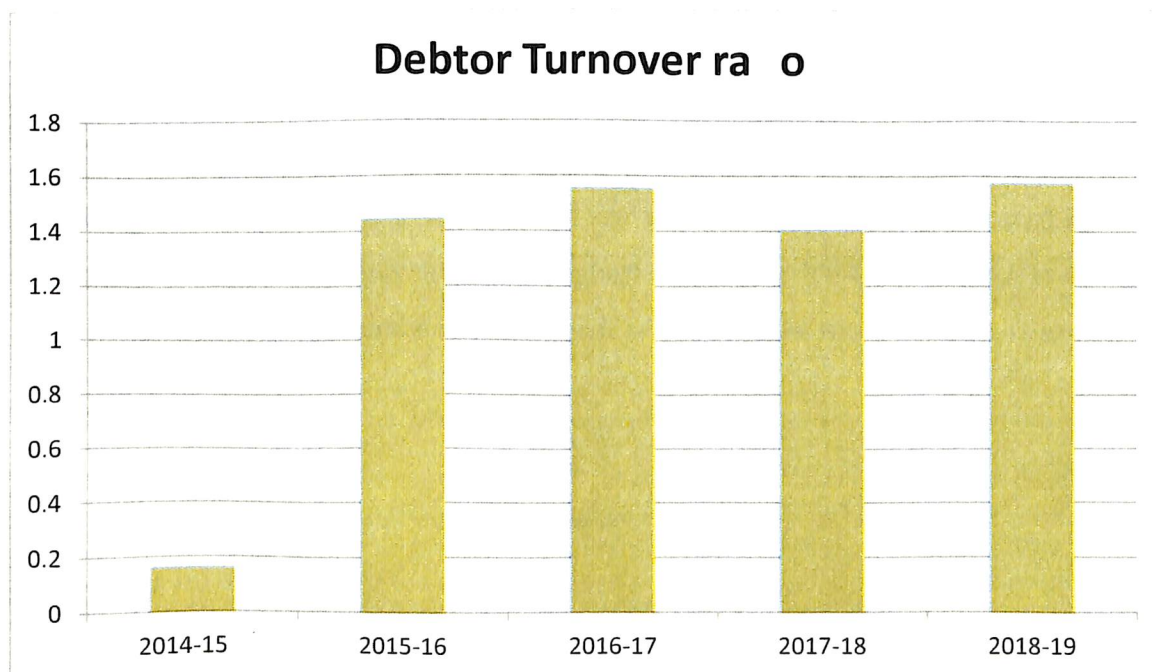
### DEBTORS TURNOVER RATIO.

Year	Sales	Debtors	Ratio
2014-15	75.37	45.34	.166
2015-16	91.74	63.20	1.45
2016-17	100.22	63.83	1.56
2017-18	101.96	72.24	1.41
2018-19	102.84	65.08	1.58

### Inference

The higher debtor turnover ratio is in the year 2018-19 which is good for the company. The table shows an increasing trend from 2016-2017 and decreased in the year 2017-2018

### DEBTORS TURNOVER RATIO





## CREDITORS TURNOVER RATIO

In business operations, a firm has to make credit purchase and incur short term liabilities. Suppliers of goods creditors are likely to take in repaying its trade creditors. For this purposes, creditors payable turnover ratio is calculated. The two components of the ratio are trade creditors and annual purchase.

Creditors turn over ratio= $\frac{\text{net credit annual purchase}}{\text{trade creditors}}$

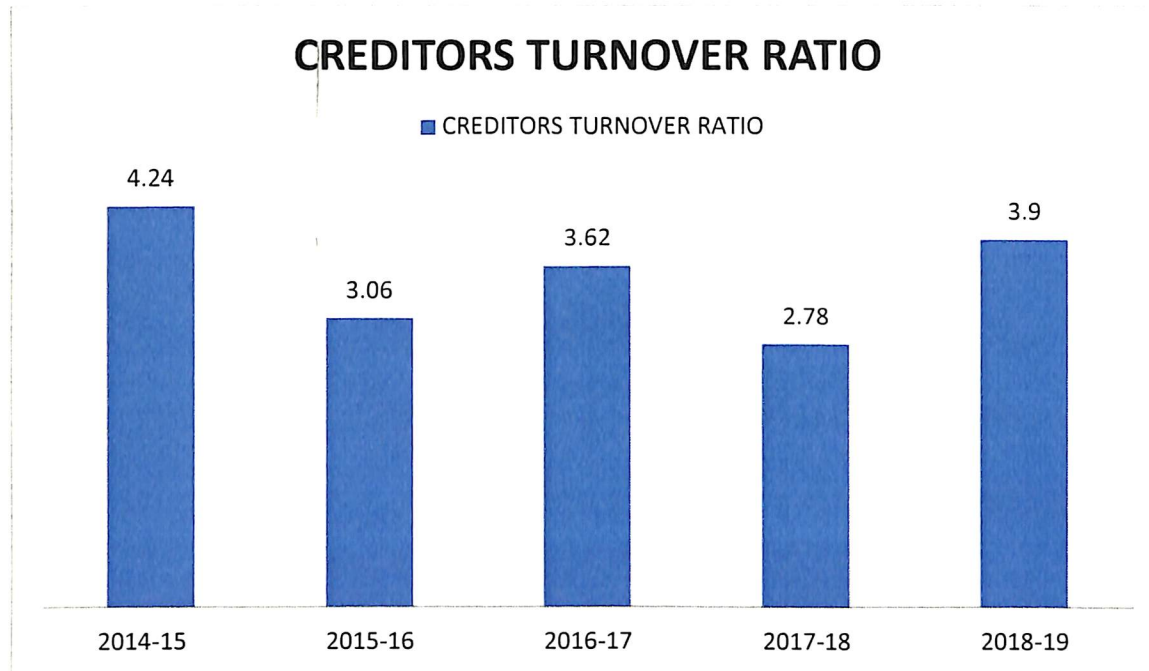
## CREDITORS TURNOVER RATIO

Year	Purchase	Creditors	Ratio
2014-15	75.37	7.51	4.24
2015-16	91.74	15.17	3.06
2016-17	100.22	14.27	3.62
2017-18	101.96	17.49	2.78
2018-19	102.84	17.43	3.9

### Inference

The analysis of creditors turnover ratio reflects whether terms of credit allowed by suppliers are liberal or not. Creditors turnover ratio is highest in the year 2014-2015 which is 4.24. In 2018-19 has a favourable creditor turnover ratio which is 3.9. Creditor turnover ratio is lowest in the year 2017-18

## CREDITORS TURNOVER RATIO



## INPUT OUTPUT RATIO

Inventory control can be used using this ratio. Input output ratio is the ratio of the amount of input of the material to the output and the standard material content of the actual output.

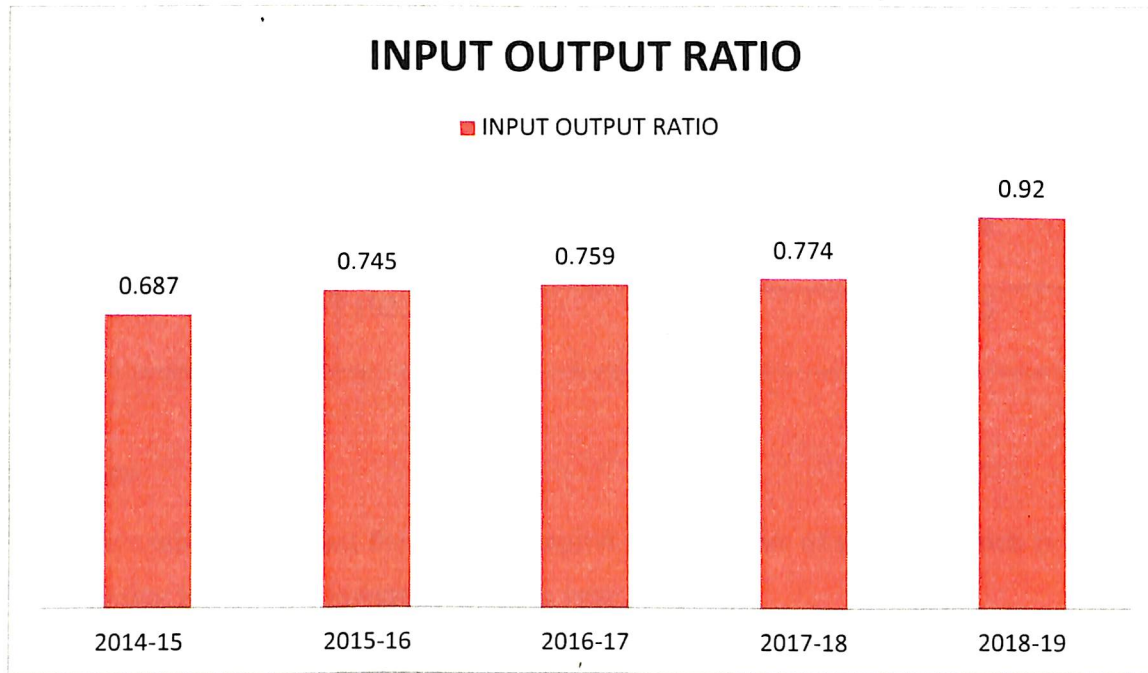
### INPUT OUTPUT RATIO FOR ILP.

Year	Input	Output	Ratio
2014-15	46.05	66.96	.687
2015-16	63.56	85.27	.745
2016-17	73.13	96.25	.759
2017-18	72.54	93.69	.774
2018-19	94.76	102.65	.92

### Inference

The analysis of input output ratio shows that above shows the tendency is fluctuating year by year. This is not favorable to the company. The input output ratio is increasing from 2014-15 to 2018-2019. The ratio is highest in the year 2018-2019 which is 0.92

### INPUT OUTPUT RATIO



### WORKING CAPITAL TURNOVER RATIO

The working capital turnover ratio is the ratio that represents the number of working capital requirements in sales. One concern's working capital is directly related to sales. It is used to analyze how effective a company is using working capital to generate sales.

The ratio of higher working capital turnover is better, as it means that the company is making a lot more sales than it used to use the money for sales.

Working capital turnover ratio=  $\frac{\text{Net sales}}{\text{Net working capital}}$

Net working capital.

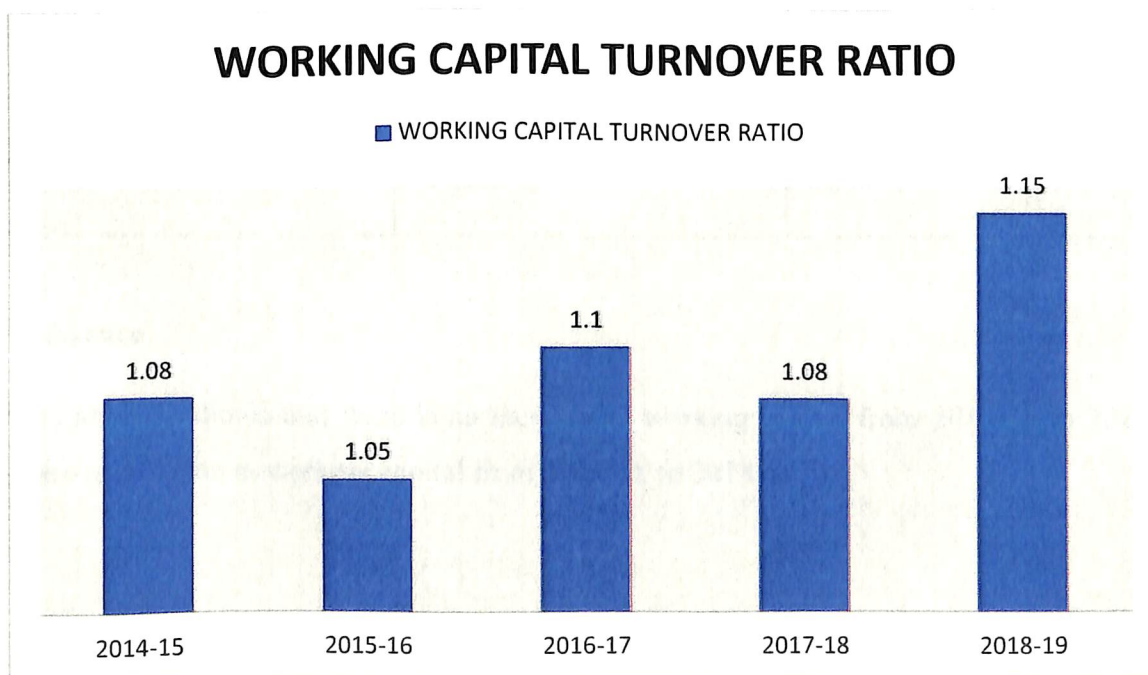
### WORKING CAPITAL TURNOVER RATIO FOR ILP.

Year	Net Sales(in Crore)	Net Working capital(in Crore)	Ratio
2014-15	75.37	69.47	1.08
2015-16	91.74	87.08	1.05
2016-17	100.22	90.99	1.10
2017-18	101.96	94.45	1.08
2018-19	102.84	88.90	1.15

### Inference

The above table shows that the working capital requirements of the firm which is highest in year 2018-19 that is 1.15 and lowest 1.05 in the year 2015-16.

### WORKING CAPITAL TURNOVER RATIO.



## TREND ANALYSIS

The financial statements can be analyzed by calculating the growth trend of the series. This method determines the upward or downward direction and involves the calculation of the percentage relation that each statement item has on the same item in the base year. One year is taken as the base year. Usually, the first year is taken as the base year.

Trend analysis is an attempt to gather information and put patterns, or trends, into information. Although trend analysis is often used to predict future events, it can be used to estimate uncertain events in past

Trend percentage = current year amount/ Base year amount\*100

## TREND ANALYSIS OF WORKING CAPITAL

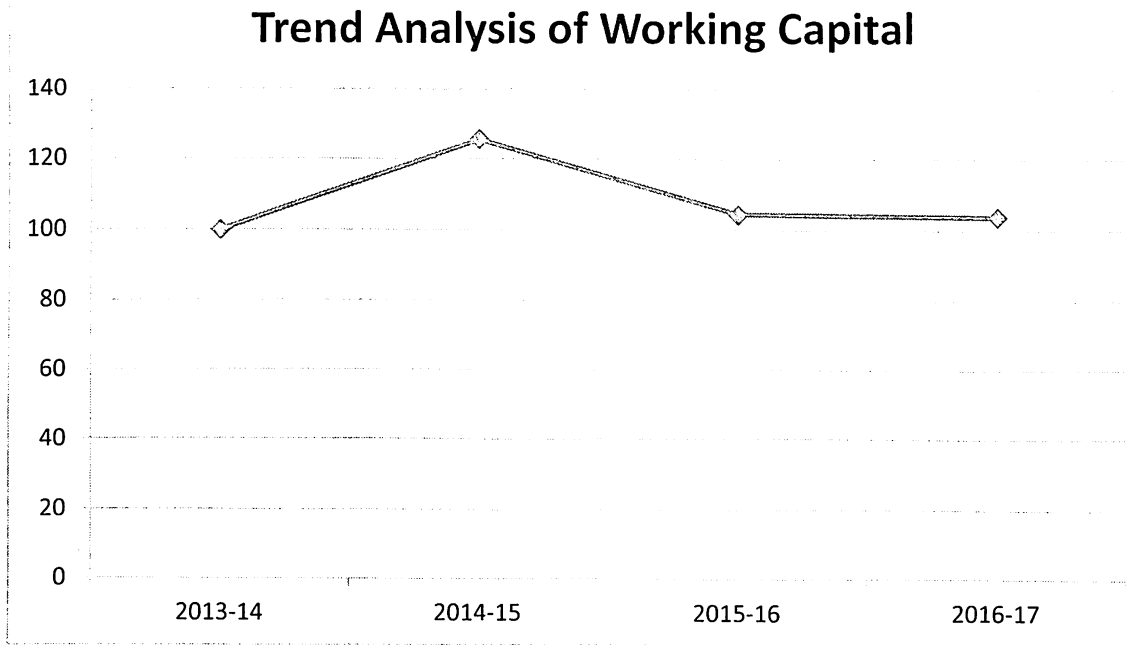
### TREND ANALYSIS OF WORKING CAPITAL

Year	Working capital(In Crore)	Trend percentage
2014-15	69.47	100
2015-16	87.08	125.35
2016-17	90.99	104.44
2017-18	94.45	103.79
2018-19	88.90	94.12

### Inference

The analysis shows that there is an increase in working capital from 2014-15 to 2015-16 then there is decrease in working capital from 2017-18 to 2018-19.

### Trend Analysis of Working Capital



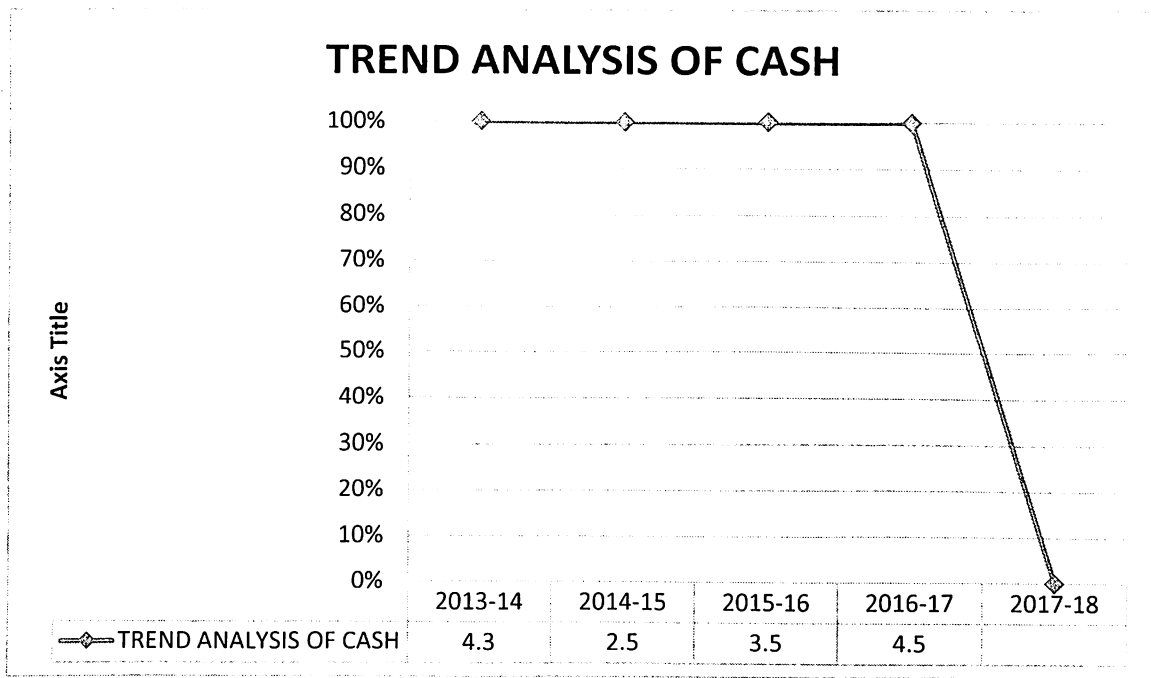
### TREND ANALYSIS OF CASH

Year	Cash( In lakhs)	Trend percentage
2014-15	.261	100
2015-16	4.74	181.09
2016-17	7.06	148.94
2017-18	.428	6.06
2018-19	.104	24.29

#### **Inference**

The trend analysis of cash shows a vast decrease in the year 2017-2018. The trend percentage on cash has a huge increase on the year 2014-15 and then decreases rapidly in 2016-2017.

## Trend Analysis of Cash



## **CORRELATION ANALYSIS**

Correlation refers to the relationship between any two or more variables. Correlation expresses the relationship or interdependence of two sets of variables over each other in such a way that the change in value of one variable is in sympathy with the change in the other variable. Correlation co-efficient is a numerical measurement that shows the degree of correlation between two variables.

Correlation analysis helps indicate the degree of association between two variables. Several methods are used to measure correlation.

### **Degree of correlation**

Correlation exists in various degrees:

- Perfect positive correlation  
if it is perfect correlation , an increase in one variable is always followed by a corresponding and proportional increase
- Perfect negative correlation: It is negative perfect correlation, if a decrease in one variable is always followed by a corresponding and proportional increase.

### **Correlation for the concern**

The present section aims at analyzing the correlation co-efficient under the following combination of variables to study the relationship existing between them.

1. Relationship between inventory and current assets.
2. Relationship between raw materials and current assets.
3. Relationship between raw materials and inventory.

## **RELATIONSHIP BETWEEN INVENTORY AND CURRENT ASSETS**

The relationship between inventory and current assets is explained by the following table.



**TABLE SHOWING RELATIONSHIP BETWEEN INVENTORY AND CURRENT ASSETS.**

Year	X	X=x- $\bar{x}$	X <sup>2</sup>	y	Y=y- $\bar{y}$	Y <sup>2</sup>	XY
2014-15	24.14	-5.1	26.15	79.46	-26.8	718.24	136.68
2015-16	25.81	-3.44	11.8	106.10	-.17	.02	.58
2016-17	26.56	-2.69	7.2	109.55	3.28	10.7	-8.82
2017-18	30.99	1.74	3.02	117.36	11.28	122.9	19.62
2018-19	38.77	9.52	90.6	118.9	12.63	159.5	120.23
	146.27		670.19	531.35		1011.37	268.29

Correlation co-efficient 'r' =  $\frac{\sum XY}{\sqrt{\sum X^2} * \sqrt{\sum Y^2}}$

$$\sum XY = 268.29$$

$$\sum X^2 = 138.8$$

$$\sum Y^2 = 1011.37$$

$$r = \frac{268.29}{\sqrt{138.8} * \sqrt{1011.37}}$$

$$= \frac{-292.27}{11.78 * 374.6}$$

$$= .60$$

### **Inference**

The table shows the relationship between inventory and current asset. It shows that correlation between these two variables is .60. This indicates that these two variables have positive correlation. That is inventory and current asset are changed in the same direction.

Here x represent inventory.

y represent current asset.

X represents difference of x values from assumed mean of x values

Y represents difference of y values from assumed mean of y values

$\bar{x}$  represents the average of x values.

$\bar{y}$  represents the average of y values

### RELATIONSHIP BETWEEN RAW MATERIAL AND CURRENT ASSETS

The relationship between raw material and current assets is explained by the help of following table.

### BELOW TABLE SHOWS RELATIONSHIP BETWEEN CURRENT ASSETS AND RAW MATERIAL

Year	X	$X=x-\bar{x}$	$X^2$	y	$Y=y-\bar{y}$	$Y^2$	XY
2014-15	31.86	-17.52	306.95	79.46	-26.8	718.24	470.06
2015-16	46.49	-2.89	8.35	106.10	-.17	.02	.49
2016-17	51.75	2.37	5.61	109.55	3.28	10.7	7.77
2017-18	48.77	-.16	.372	117.36	11.28	122.9	-6.88
2018-19	68.06	18.68	348.94	118.9	12.63	159.5	236.36
	21.9		670.19	531.35		1011.37	708.3

$$\text{Correlation co-efficient 'r'} = \frac{\sum XY}{\sqrt{\sum X^2} * \sqrt{\sum Y^2}}$$

$$\sum XY = 708.3$$

$$\sum X^2 = 670.19$$

$$\sum Y^2 = 1011.37$$

$$= 708.3 / \sqrt{670.19} * \sqrt{1011.37}$$

$$= 708.3 / 25.8 * 31.8$$

$$= .86$$

Working note:

$$\bar{x} = \sum x / n$$

$$\sum x = n = 5$$

$$\bar{x} = 49.38$$

$$X = x - \bar{x}$$

$$\bar{y} = \sum y / n$$

$$\sum y = 313.5$$

$$n = 5$$

$$\bar{y} = 106.27$$

$$Y = y - \bar{y}$$

### **Inference**

The table shows the relationship between raw materials and current assets. It shows that there is correlation between these two variables. 60. This indicates that these two variables have a positive relationship. It is the raw material and the current property changes in one direction.

Here x represent raw material.

y represent current asset.

X represents difference of x values from assumed mean of x values

Y represents difference of y values from assumed mean of y values

$\bar{x}$  represents the average of x values.

$\bar{y}$  represents the average of y values.

### RELATIONSHIP BETWEEN INVENTORY AND RAW MATERIAL

The relationship between inventory and raw material is explained by the help of following table.

**TABLE SHOWING RELATIONSHIP BETWEEN INVENTORY AND RAW MATERIAL.**

Year	X	X=x- $\bar{x}$	X <sup>2</sup>	y	Y=y- $\bar{y}$	Y <sup>2</sup>	XY
2014-15	24.14	-5.1	26.15	31.86	-17.52	306.95	89.35
2015-16	25.81	-3.44	11.8	46.49	-2.89	8.35	15.72
2016-17	26.56	-2.69	7.2	51.75	2.37	5.61	-6.37
2017-18	30.99	1.74	3.02	48.77	-.16	.372	-1.06
2018-19	38.77	9.52	90.6	68.06	18.68	348.94	177.8
	146.27		138.8			670.19	275.47

Correlation co-efficient 'r' =  $\frac{\sum XY}{\sqrt{\sum X^2} * \sqrt{\sum Y^2}}$

$$\sum XY = 275.47$$

$$\sum X^2 = 138.8$$

$$\sum Y^2 = 670.19$$

$$r = \frac{275.47}{\sqrt{138.8} \cdot \sqrt{670.19}}$$

$$= .90$$

Working note:

$$\bar{x} = \frac{\sum x}{n}$$

$$\sum x = 146.25$$

$$n = 5$$

$$\bar{x} = 29.25$$

$$X = x - \bar{x}$$

$$\bar{y} = \frac{\sum y}{n}$$

$$\sum y = 246.9$$

$$\bar{y} = 49.38$$

$$Y = y - \bar{y}$$

**Inference:** The table shows the relationship between inventory and raw materials. It shows that correlation between these two variables is .90. This indicates that these two variables have high positive correlation. That is, inventory and raw materials are changed in the same direction.

Here x represent raw material.

y represent inventory.

X represents difference of x values from assumed mean of x values

Y represents difference of y values from assumed mean of y values

$\bar{x}$  represents the average of x values.

$\bar{y}$  represents the average of y values

## INVENTORY CONTROL TECHNIQUES

### ABC analysis

One of the widely used techniques for control lists is ABC (Always Better Control) analysis. The purpose of ABC control is to differentiate the costs associated with maintaining appropriate controls according to the potential savings associated with the appropriate level of such control. ABC analysis uses this principle to divide the list into 3 classes according to the use of money.

"A" item; Which represent about 10% of the total inventory range and account for about 70% of the usage value, call for a lighting control system. Order quantities and order points are carefully determined. Close attention is paid to the record and the variables can be reviewed periodically.

The 'B' item which accounts for about 20% of the total inventory range and 20% of the annual usage value, requires general control. Variables can be reviewed periodically.

The 'C' items are the remaining 70% of inventory, comprising relatively loose controls of about 10% of the price used and in their case consistently low reviews are sufficient. ABC analysis is also called proportional parts price analysis or demand supply method.

here

Group A consists of inventory ranging from Rs 9,99,99,999 to Rs 99,99,998

Group B includes inventory, priced between Rs 99,99,999 to Rs 99,998

Group C includes inventory, priced between Rs 99,999 to Rs 1

**TABLE SHOWING ABC ANALYSIS**

<b>Group</b>	<b>Number of items</b>	<b>% of items</b>
<b>A</b>	<b>6</b>	<b>0.028%</b>
<b>B</b>	<b>388</b>	<b>1.83%</b>
<b>C</b>	<b>20721</b>	<b>98.13%</b>
		<b>100</b>

**Inference**

In the ABC analysis, 98.13% of the inventory is of Group C, 1.83% of the inventory is of Group B and 0.028% of the inventory is of Group A.

**FSN analysis**

FSN stands for speed, slow movement and no moving. The classification here is based on the pattern of issues from the stores and is useful in controlling obsolescence. FSN analysis is taken, later, to determine the number of months that have elapsed since the previous transaction.

Items are usually grouped over a period of 12 months. FSN analysis is helpful in identifying active items that should be reviewed regularly and surplus items should be investigated. Non-moving items can be further investigated and their disposal considered.

**TABLE INDICATING FSN ANALYSIS**

<b>Group</b>	<b>Number of items</b>	<b>% of items</b>
<b>F</b>	<b>2210</b>	<b>15.39%</b>
<b>S</b>	<b>3399</b>	<b>23.68%</b>
<b>N</b>	<b>8744</b>	<b>60.92%</b>
	<b>14353</b>	<b>100</b>

Group F-inventory ranging between 1 year to 2 year.

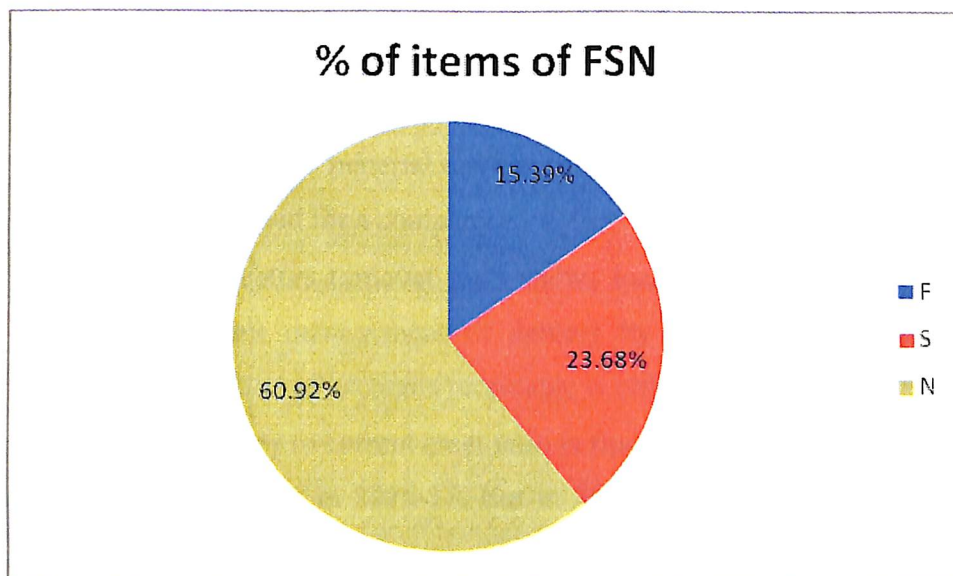
Group S-2 year to 5 year.

Group N-Above 5 year

**Inference**

Here 60.92% of inventory belongs to group N, 23.68% of inventory belongs to group S and 15.39% of inventory belongs to group F.

**Diagram showing FSN**





## **CHAPTER NO. 5**

### **FINDING AND ANALYSIS**

#### **FINDINGS, OBSERVATIONS & CONCLUSION**

- The percentage of current asset to inventory sundry debtors, cash and bank, loan and advances have decreased in the year 2018-2019.
- Inventory turnover ratio shows a fluctuating trend over the years. It has been decreased to 2.94 in the year 2018-19 which is not good for the company
- Inventory conversion period has increased to 124 days in the year 2018-2019 which indicate the conversion of inventory to sales is lower
- The material holding period is low in the year 2014-15. It indicates that stock is fast moving and in the year 2018-2019 is very high which is not in favour to the company.
- The ratio of material consumption to turnover is maximum .667 in 2018-2019 which is not good for a company
- The debtors turnover ratio shows increasing from the year 2018-19 which indicate efficient management of debtors by the company. The extension of credit and collection of accounts receivable is efficient
- Inventory to current asset ratio is fluctuating. Low ratio is good to the company and it was shown in 2016-17. But in 2018-19 the ratio increases which is not good to the company.
- The ratio to inventory to working capital shows an increasing trend which is favorable to the company. It is maximum in the year 2018-2019 has a favourable effect on the company.
- The creditors turnover ratio is high in the year 2018-19. This is favorable to the company.
- The analysis of input output ratio shows that above shows the tendency is fluctuating year by year. This is not favorable to the company
- Working capital turnover ratio is highest in the year 2018-2019 which is 0.43 which indicate better performance

- Correlation analysis shows the relationship between various variables like inventory and current asset, relationship between raw material and current asset, relationship between raw material and inventory.
- As per ABC analysis A category 0.028%, B category constitute 1.83% and C category constitute 98.13% of the total number of items.
- As per FSN analysis F category of items constitute 23.68 % , S category constitutes 23.68% and N category constitutes 60.92% of the total number of items.

## CONCLUSION

This project on “The study on inventory management” gave me an opportunity to understand the level of inventory management in the **Micro Labs Limited**. This research will help the organization to make necessary measure to the inventories. This will certainly bring down the causes of inventory problems and help the management of inventories. The high turnover ratio indicates efficient management of inventory because more frequently the stock sold. So the organization should try to improve the inventory turnover ratio.

The inventory system followed by the **Micro Labs Limited** is satisfactory which is mainly due to the efficiency of employees. The current study helped me to understand the current inventory control measures practiced by **Micro Labs Limited**. The cordial and corporate relationship between management and employees is the secret behind the success of the company.

## **CHAPTER NO. 5**

### **SUGGESTIONS / RECOMMENDATIONS**

- Company have to shift some items of Group B to Group A and C to B for more Control over the inventory which can reduce the inventory cost.
- The Items of Nonmoving group (60.92%) can be reduced to have more Control over the inventory
- Perpetual inventory system and periodic review system should be considered seriously and also ensure that materials are checked by authorized persons
- It will be more better if the firm try to decrease the Inventory Conversion Period through efficient management of them.
- Efficient management of the debtors and creditors have to be maintained which is favourable for the development of the company.
- The higher turnover ratio indicates efficient management of inventory because more frequently the stock sold, so efficient steps have to be introduced to improve the inventory ratio

## **LIMITATIONS OF THE STUDY**

- Study is limited for a limited period. Therefore the obtained result can be applied for the selected period.
- The study is mainly done with data derived from secondary data and accounting records, it has some limitations and also affects the study.
- Financial ratios reflect only monetary aspects of a firm's operations. The ratio cannot be directly considered an indicator of good or bad performance of management.
- The accuracy and precision of instruments such as ratio analysis depends on the accuracy of published accounts.
- Time available for the study was another bottleneck factor.
- The inventory management of the organization is limited to the extent of information provided through published documents and personnel discussion.

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