

COST ANALYSIS OF MATERIAL MANAGEMENT AT MARUTI SERVICE MASTERS, CHENNAI.

Submitted in partial fulfilment of the requirements for the award of

MASTER OF BUSINESS ADMINISTRATION

by

NIMISHA DEEPTHI K

REGISTER NO:42410179



**DEPARTMENT OF BUSINESS ADMINISTRATION
SCHOOL OF MANAGEMENT STUDIES**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade “A++” by NAAC I 12B Status by UGC I
CATEGORY - 1 UNIVERSITY BY UGC I Approved by AICTE
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI -600119**

December 2023



SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
CATEGORY - 1 UNIVERSITY BY UGC**

SCHOOL OF MANAGEMENT STUDIES

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the Bonafide work of **NIMISHA DEEPTHI K 42410179** who carried out the Project Training “**COST ANALYSIS OF MATERIAL MANAGEMENT AT MARUTI SERVICE MASTERS, CHENNAI**” under my supervision from October 2023 to December 2023.

(Dr. R. JEYA RANI)

Internal guide

External guide

**Dr. BHUVANESWARI. G, MBA., Ph.D.
Dean – School of Management Studies**

Submitted for Viva voce Examination held on_____

Internal Examiner

External Examiner

DECLARATION

I NIMISHA DEEPTHI K (42410179) hereby declare that the Project Report entitled **“COST ANALYSIS OF MATERIAL MANAGEMENT AT MARUTI SERVICE MASTERS, CHENNAI”** done by me under the guidance of **Dr. R. JEYA RANI** is submitted in partial fulfilment of the requirements for the award of Master of Business Administration degree.

DATE:
PLACE:

NIMISHA DEEPTHI K

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my sincere thanks to **Dr. G. Bhuvaneswari, MBA., Ph.D., Dean - School of Management Studies** and **Dr. A. Palani, M.Com., M.Phil., M.B.A., Ph.D., - Head - School of Management Studies** for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Project Guide **Dr. R. JEYA RANI** for her valuable guidance, suggestions and constant encouragement paved way for the successful completion of my project work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **School of Management Studies** who were helpful in many ways for the completion of the project

NIMISHA DEEPTHI K

TABLE OF CONTENTS

Chapter No	Title	Page No
1	STUDY BACKGROUND	1
2	INDUSTRY PROFILE	7
3	CONCEPTUAL FRAMEWORK & DESCRIPTION	32
		60
4	REVIEW OF LITERATURE ON INVENTORY	
	MANAGEMENT	
5	RESEARCH METHODOLOGY	64
6	DATA ANALYSIS & INTERPRETATION	67
7	SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION	84

LIST OF TABLES

Table No.	TITLE	Page No.
1.1	Different types of inventory by function	2
2.1	Maruti Service Masters profile	16
6.1	Calculation of ABC Analysis of Maruti Suzuki	75
6.2	Slow Moving, Non-Moving and Obsolete items at Maruti Suzuki	76
6.3	Cost Analysis	80

LIST OF TABLES

Figure No.	TITLE	Page No.
2.1	Modern MGA Accessories	24
2.2	Maruti Suzuki Accessories	25
2.3	Maruti Suzuki Accessories For Car Interiors	26
2.4	Maruti Suzuki Body Exteriors	27
2.5	Maruti Suzuki Spare Part And Service	29
3.1	Purchase Order Workflow Diagram	36
3.2	Goods Receipt Note	41
3.3	Component Of Cost Price	54
3.4	Raw Material Cost	56
3.5	Techniques Of Inventory valuation	57
3.6	Amounts Recognized Format	59
3.7	Difference Between Ind As 2 & As 2	59
6.1	ABC Analysis Of Maruti Suzuki	75
6.2	Graph Calculation Of ABC Analysis	76
6.3	Slow Moving, Non-Moving And Obsolete Items In Main Store	77
6.4	Slow Moving, Non-Moving And Obsolete Items In WIP	78
6.5	Slow Moving, Non-Moving And Obsolete Items In Finished Goods	79
6.6	Stock Analysis In Main Store	81
6.7	Stock analysis in WIP	82
6.8	Stock Analyses in Finished Goods	83

CHAPTER-1

INTRODUCTION AND DESIGN OF THE STUDY

1.1. INTRODUCTION

The world over Inventory management is accepted as the most strategic, most vital area for management focus. More so for are most manufacturing industries. From the finance point of view materials management is important because inventories constitute almost 75-85% of working capital and working capital management is the only controllable aspect of managing the profitability. In terms of cost management, materials constitute bulk of the input costs and the labour costs are relatively insignificant. So the materials costs will need constant attention.

Material cost is the cost of materials used to manufacture a product or provide a service. Excluded from the material cost is all indirect materials, such as cleaning supplies used in the production process. Follow these steps to determine the amount of material cost to assign to a unit of production (such as a completed finished goods item):

- Ascertain the standard quantity of the material used to manufacture one unit.
- Add the standard amount of scrap associated with manufacturing one unit.
- Determine the standard amount of scrap associated with setting up the production run, and apportion it to the individual unit.
- If any scrap is then sold, apportion the revenue back to the individual unit

According to IND AS 2, Inventories are assets which are

- (a) Held for sale in **Ordinary course of Business**.
- (b) Held in the **Process of Production**.
- (c) Held in the **form of Material of Supplies** to be consumed in the process of production or rendering of Services.

There are three types of manufacturing inventories:

- Raw materials
- Work in progress
- Finished goods

TYPES OF INVENTORY BY FUNCTION

Input	Progress	Finishes goods
Raw materials	Work in progress	Finished goods
Consumables required for processing. E.g. Fuel, Stationary, Bolts & Nuts etc. in manufacturing.	Semi-Finished Production in various stages, lying with various department like production, working progress Stores, Quality Control, Final Assembly, Paint Shop, Packing, Outbound Store etc.	Finished Goods at Distribution Centres throughout supply chain.
Maintenance items/consumables	production waste and scrap	finished in transit
Packing material	rejections and defectives	finished goods with stockiest and dealers
Local purchased items required for production	rejections and defectives	Spare parts stock & bought out items. Defectives, rejects and sales returns. Repaired stock and parts. Sales promotion & samples stocks.

Table.1.1. Different types of inventory by function

COSTING

The amount of expenditure (actual or notional) is incurred on, or attributable to, a given thing. In order to ascertain the cost of given thing.

ELEMENTS OF COST

The primary classification of costs according to the factors upon which expenditure is incurred, viz., materials cost, wages (labour cost) and expenses.

Prime Cost

The aggregate of direct materials cost, direct wages (direct labour cost) and variable direct expenses. Direct materials cost, Materials cost which can be identified with and allocated to, and cost centres or cost units. Direct wages (direct labour cost), Wages (labour cost) which can be identified with, and allocated to, cost centre's or cost units. Direct expenses, Expenses which can be identified with, and allocated to, cost centre's or cost units.

Overhead Cost

The aggregate or indirect materials cost, indirect wages indirect labour cost) and indirect expenses. Indirect materials cost, Materials cost which cannot be allocated but which can be apportioned to; or absorbed by, and cost centre's or cost units. Indirect wages (indirect labour cost), Wages (labour cost) which cannot be allocated but which can be apportioned to, or absorbed by, cost centre's or cost units.

Indirect expenses, Expenses which cannot be allocated but which can be apportioned to, or absorbed by, cost centre's or cost units. Absorbed overhead, the overhead which, by means of rates of overhead absorption, is allotted to cost units. Under-or over-absorbed overhead, the difference between the amount of overhead absorbed and the amount of overhead incurred.

The aspects covered are:

- Process of Material Management.
- Determination of the type of control technique required.
- Costing of Materials Stock Analysis.

1.2. IDENTIFICATION AND NEED FOR THE STUDY

The primary reason for conducting cost analysis is generally to determine the true (full) costs of each of the programs under analysis (services and/or products). We can then utilize this knowledge to:

- Identify and prioritize cost-saving opportunities.
- Fundraise from donors to cover the true costs of delivering the program
- Price the service or product (for paying beneficiaries) at a level that covers the true costs of providing it
- Report the true costs of a program when claiming government reimbursements

An effective management of inventory helps in reducing costs which further keeps accounts and finances in check. From a customer's point of view, it helps you to provide better customer services through fast delivery and low shipping charges, hence, meeting customer expectations. To achieve optimum inventory replenishment is significantly difficult due to inherent uncertainties in demands and supply which result in loss of sales or keeping excessive inventories.

An unkept inventory can take up to one-third of an organization's annual investment. Therefore, in order to compete with invariably erratic demands, it is not only challenging to develop an intelligent system to maintain and control an optimum level of inventory but has also become mandatory. Here I have tried to study the inventory control system of a Maruti service masters using ABC and FSN.

1.3. STATEMENT OF THE PROBLEM

A Cost analysis of material management at leading Manufacturing Company is undertaken in order to determine the true (full) costs of each of the programs under analysis (services and/or products) and to know the strength and weakness of the Company. Effective cost analysis ultimately results in an increase in profitability and profit. Inventories constitute the most significant part of assets of a large majority of the companies in India. Material a double-edged sword is usually an asset of an organization, if not used properly it will become a liability. It is therefore absolutely very important to manage inventories efficiently and

effectively in order to overcome unnecessary investment and "To identify the problems/challenges involved in the Material Management process at this company."

1.4. OBJECTIVE OF THE STUDY

1. To know the process of inventory management at Maruti service masters.
2. To study the inventory management technique with the help of ABC analysis and FSN analysis.
3. To analyse the costing of material management in Maruti service masters.
4. To examine the availability of Stock or Materials at Maruti service masters.
5. To provide suggestions to Maruti service masters on costing of Inventory Management.

1.5. SCOPE OF THE STUDY

- This study provides insight for how the inventory management process is done at Maruti service masters.
- Inventory management is a simple concept-don't have too much stock and don't have too little. Since there can be a substantial cost involved in staying above and below the optimal range, careful inventory management can make a huge difference in the right balance can be quite a complex and time-consuming task without the right technology.
- Materials Management strives to ensure that the material cost component of the total product cost be the least. In order to achieve this, the control is exercised in the following fields. Materials Planning, Purchasing, Store Keeping, Inventory Control, Receiving, Inspection and Dispatching, Value Analysis, Standardization and Variety Reduction, Materials Handling & Traffic, Disposal of Scrap and Surplus, Material Preservation.
- Cost analysis of inventory management is very important for "Maruti service masters ". It enables the business to which further keeps accounts and finances in check.
- The scope of the study includes the ABC Analysis and FSN of Raw Materials, work in progress and finished goods for particular Year.

1.6. SIGNIFICANCE OF THE STUDY

- The findings of the study will provide well-researched information, which can be useful to researchers for academic purposes in the area of inventory management and its impact on costing.
- To the stores and Procurement department staff, the study hopes to provide them with useful information like the recommended techniques of inventory management so as to meet their customer's and organization's needs.
- To the firm's management, the recommendations of the study may enable them to reduce the cost of inventory management which creates more impact on the balance sheet to improve the smooth running of the firm, thereby satisfying customers and keeps accounts and finances in check.

1.7. COLLECTION METHODOLOGY AND TOOL

- In this study the data has been gathered through interaction and discussions with the executive and staffs working in division.
- Some important information has been gathered through couple of unstructured interviews of executive.
- Financial statement, annual report and other magazines published by the company are used for collecting the required information.

1.8 TOOLS OF ANALYSIS

To have a meaningful analysis and interpretation of various data collected, the following tools were made for this study

- ABC Analysis
- FSN Analysis
- Cost Analysis
- Stock Levels Analysis

1.9 LIMITATIONS OF THE STUDY

It's required greater investment and needs more expenses. This examination requires more opportunity to do.

- The examination depends on auxiliary information as it were.
- Stock quality examination isn't tantamount.
- Analysis depends on people who are just in interior reports.
- Analysis dependent on particular year report from the Finance Department, which has its Very own farthest point.

1.10 CHAPTERISATION:

Chapter No.	Title chapter
Chapter I	Introduction
Chapter II	Conceptual and framework & description.
Chapter III	Industry and company profile
Chapter IV	Review of Literature
Chapter V	Analysis and interpretation
Chapter VI	summary of finding and suggestion ,Conclusion

CHAPTER - II

2. CONCEPTUAL FRAMEWORK OF THE STUDY

MEANING OF INVENTORIES

Inventories are assets which are

- (a) Held for sale in ordinary course of business
- (b) Held in the process of production
- (c) Held in the form of material or supplies to be consumed in the process of production or rendering of services. There are three types of manufacturing inventories:

- **Raw materials**
- **Work in progress**
- **Finished goods**

2.1 INVENTORY PROCESS

BUDGET

An inventory budget analysis is a quantitative evaluation that compares cost estimations against actual costs. A desired ending inventory valuation drives what a business plans to buy and how much inventory it intends to hold over a given period of time. Purchasing expenses, holding costs and how much, if any, becomes waste all play a role in evaluating an inventory budget and controlling inventory costs.

FORECAST

Inventory forecasting also known as demand planning is the practice of using past data, trends and known upcoming events to predict needed inventory levels for a future period.

Accurate forecasting ensures businesses have enough products to fulfill customer orders while not tying up cash in unnecessary inventory.

Forecasting is more than just setting a reorder point its using data analysis to identify patterns and trends to adapt to dynamic conditions and meet customer demand. Reorder points are one important piece, but there is much more to inventory forecasting.

2.3 MATERIAL REQUIREMENT PLAN

Many manufacturing companies have adopted computerized systems to control the flow of resources and inventory. Materials requirement planning (MRP) is one such system. MRP uses a master schedule to ensure that the materials, labor, and equipment needed for production are at the right places in the right amounts at the right times. The schedule is based on forecasts of demand for the company's products. It says exactly what will be manufactured during the next few weeks or months and when the work will take place. Sophisticated computer programs coordinate all the elements of MRP.

The computer comes up with materials requirements by comparing production needs to the materials the company already has on hand. Orders are placed so items will be on hand when they are needed for production, while maintaining the lowest possible amount of materials and product to remain in house. MRP helps ensure a smooth flow of finished products.

PURCHASE REQUISITION

In any business, multiple departments need materials from time to time—from basic office supplies to raw materials, equipment, and services. Purchasing is universal, but how it's handled makes a difference. When firms enable line managers or departmental managers to place orders with suppliers directly, it can lead to increased expenses and increased cases of expense fraud.

Purchase requisition form

A purchase requisition form is an internal document used by an employee to purchase goods or services on behalf of their firm. These purchases may be for business operations (such as office supplies), inventory, or manufacturing inputs. The purchase requisition form is submitted to the purchase department for approval which is the first step in creating an effective audit trail for purchasing. Once the purchase requisition is approved by the relevant department, a purchase order is issued to the vendor of the requested goods or services.

Contents of a purchase requisition form Purchase requisition forms

generally require the following information:

- Name and department of the requestor
- The date of request
- The products or services requested
- Item description, quantity, and price
- Reason for purchase
- Legal name of the supplier

STEPS INVOLVED IN THE PURCHASE REQUISITION WORKFLOW

The steps in a purchase requisition workflow may vary from one company to another. However, the basic outline of the process remains the same:

Submission of purchase requisition form

An employee recognizes the need for goods or services, and requests the purchase of the items. To do this, they issue and fill out a purchase requisition form with the details of the desired purchase. In some firms, they request manual filing of the form while in others, this process is carried out using spend management software.

Approval from the line manager

The purchase requisition form is then subjected to an internal approval process, where it is verified by the line manager of the requestor's department. The line manager's duty is to check the legitimacy of the purchase and also ensure that the value of the purchase does not exceed the department's allotted spending limit.

Stocktaking by inventory department

From here, the requisition form is routed to the inventory department, which checks it against the company's existing stock. If the requested materials are not already in stock, they forward the request to the purchasing department.

Screening by purchasing department

In the purchasing department, the request is processed by the appropriate officer (in most cases, it's the purchasing manager). To process this form, the officer identifies the business need for the products/services, checks the legitimacy of the purchase, and confirms that the requisition is duly signed and authorized. If the form is missing vital details, the officer may either fill them in or send the form back to the requestor for completion. If the request appears inappropriate or exceeds the applicable purchasing limits, the purchase requisition form is rejected and sent back to the requestor with comments justifying the rejection.

Generating a purchase order

If the purchase requisition form receives all of its needed approvals, a purchase order is generated and sent to the vendor. Once it is accepted, by the vendor the purchase becomes a legally binding contract.

Order delivery and assessment

When the products or services are delivered by the vendor, the receiving department checks the order for quality and quantity. A three-way matching process checks the purchase order, order receipt/packaging slip, and invoice to confirm the accuracy of the order. This ensures that the finance or accounting team is paying only for the items that they have ordered and received and not anything extra. If any returns are required, they are processed by the warehouse or receiving team.

Invoice payment

Once the documentation requirements are met, the purchase order is closed. Then the invoice from the vendor is approved by the finance team, entered into the accounts payable, and paid according to the payment terms and conditions.

PURCHASE ORDER

A purchase order is an official document that you issue to your vendors, indicating relevant information about what you want to buy, the quantity, the price agreed for that particular product or service.

Purchase Order Workflow Diagram

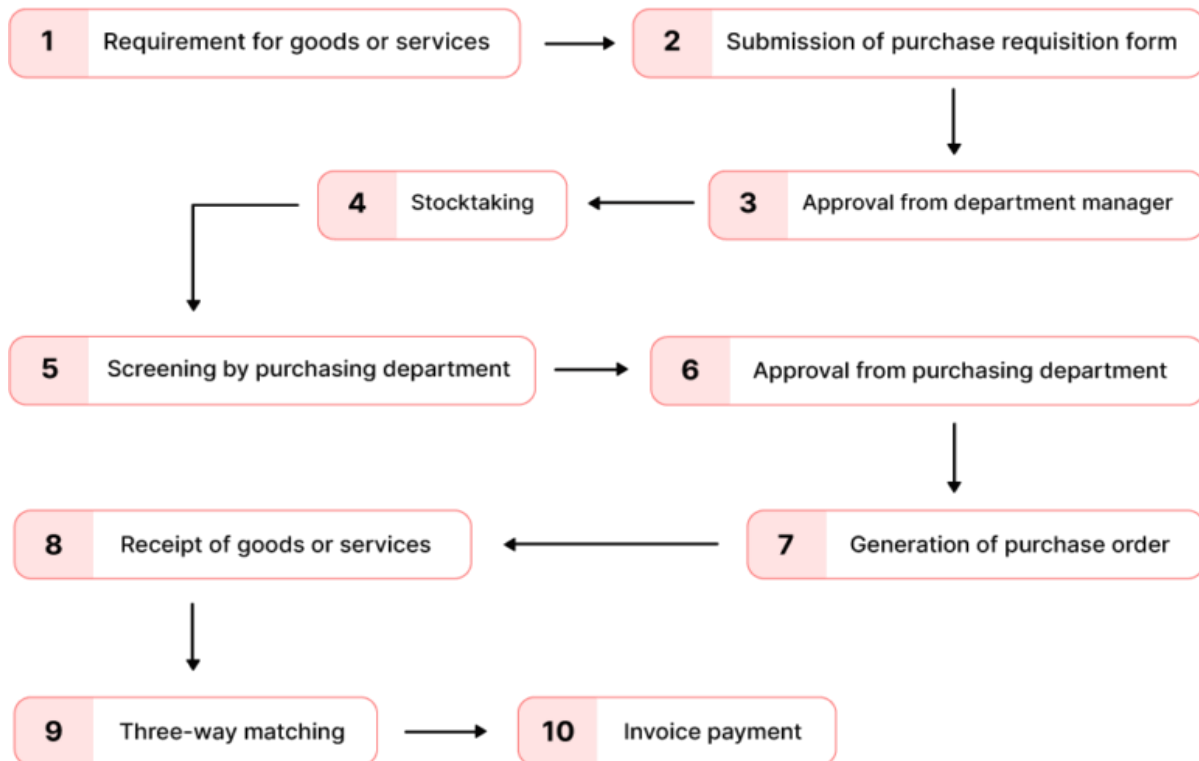


Figure 2.1 Purchase Order Workflow Diagram

INVOICE

Supplier invoices are the sales invoices and bills issued by supplying vendor and received by the buying customer. Customers also refer to supplier invoices as vendor invoices. A supplier invoice itemizes a transaction between the buyer and seller. If the seller extended credit to the buyer for the sale, the invoice usually specifies payment terms and provides options for payment methods. Suppliers may also opt to instead send a month-end statement as an invoice for all outstanding transactions. In this case, a company needs to clearly indicate that no subsequent invoices will be sent. In the past, invoices have been mostly recorded on paper with multiple Copies generated so

that the buyer and seller each have a record of the transaction for their own records. Now, software generated invoices are common and allow for easier searching and sorting of specific transactions or specific dates.

GATE INWARD (STORE/MP&L)

Receipt of Material & Quality Checks

- Review of the gate entry for the incoming material in the inward gate register.
- Ensure that the weighment / Counting of the incoming material are made properly and correctly at the receiving section.
- Verify that stamp / acknowledgement of the receipt of the incoming material. The remark should indicate the quantity (weight / number of pieces etc.) of the material recorded at the gate along with condition (ok / damaged / wet etc.) in which material has been received. □
Review of Goods Receipt Note (GRN) prepared at the time receipt of goods.
- Verify the flow of transaction in the ERP/ QAD system.
- Ensure that the procedure for quality testing of raw material / finished goods is well documented in the form of a quality manual
- Ensure and check that the raw material / finished goods once rejected are not subsequently cleared under deviation. In special cases ensure that the approval under the deviation is duly approved.
- Review of time period within which, rejected material is intimated to the stores and subsequently to the vendor.
- Verify the treatment of rejected material recorded in the books.

Issue of Material from Stores

- Review the process related to issuance of materials from stores and transactions recorded in the ERP/ QAD. □ Verify the indents rose during the period under review.
- Verify that whether the indent raised and material issued is as per the order received.
- Verify whether the expiry details for all the material has been recorded in the system.

- Verify the controls related to issue of material on whether on FIFO basis or any other basis and control for the expired material being issued to production.

Physical Verification of Inventory

- Verify the last physical verification being conducted and analysis the discrepancies and its treatment, if any have been recorded in the books.
- Verify whether any calendar is being maintained for physical verification; if yes, whether physical verification is being done
- On random basis, physical verification of inventory to be conducted. Random sampling to be done factoring the following:

i) ABC analysis of materials,

ii) Categorization of materials into Raw Material, Consumables, Spare parts, BOC and finished goods, iii) Value of materials under various category.

- Highlight the discrepancies; if any between Actual Inventory vis-à-vis Inventory as per ERP/ QAD□
- Highlight the discrepancies; if any between the actual inventories physically verified vis-à-vis Minimum/ Maximum levels defined for each inventory□
- During the physical verification, analyze the change in location of inventory, condition of inventory, Non-tagged inventory and inventory physically available but not recorded in the system.□

Material sent to third party

- Verify whether the material sent to third party is either on Returnable Gate Pass (RGP) or Non-Returnable Gate Pass (NRGP)□
- Review the ageing analysis of material sent on RGP and analysis the reason for RGP beyond 180 days□
- Verify the Reconciliation and Balance Confirmation with Third Party□

- Confirm whether any surprise visit exercise is conducted by the unit to third party location, to verify the material at the third party□
- Verify that non-returnable material have been issued only on NRGP□

Analytical Analysis

- Verify the Slow Moving, Non-Moving inventory and compare the same with the company's policy and highlight instances of deviation from the company's policy□
- Verify the Obsolete inventory and compare the same with the company's policy and highlight instances of deviation from the company's policy□
- Verify whether the inventory have been issued on FIFO basis or not. Compare the GRN date vis-à-vis the issue date for the respective material.□
- Ensure that the expired material have not been issued for production□

GOOD RECEIPT NOTE (GRN)

Goods received note is a document that acknowledges the delivery of goods to a customer by a supplier. A GRN consists of a record of goods that the buyer has received. This record helps the customer compare the goods delivered against the goods ordered.

STORE

When the buyer receives the goods, the store's department will inspect them against the purchase order and examine their physical condition. Once they ascertain that all goods are received in perfect physical condition, the department issues the GRN. In cases where the goods received do not match the specifications of the purchase order, the buyer may reject these goods. The buyer issues the GRN only for approved goods and executes a fresh purchase order for the rejected batch.

The responsibility of issuing GRN is on the store's department. It is prepared in several copies, each for the supplier, GST department, accounts payable department, and store's department retention.

Format of goods received note

A GRN must consist of the following features to depict complete information of the delivery:

- Name of supplier□
- Time and date of the delivery□
- Details of products received include name, quantity, type, etc.□
- Signature of stores manager□
- Signature of supplier/representative of the supplier□

Goods Received Note				
Supplier Name:			Date & Time	
Order Number :			Deliver y Location	
Sr. No	Goods Description	Size	Quantity	Comments
1				
2				
3				
4				

	Total:			
Received By:				

Figure 2.2 Goods receipt Note

GST TEAM

GST Team will check for that GST allotted for Goods are correct or not.

ACCOUNTS PAYABLE TEAM

GRNs, meaning goods received notes, play a major part in the accounts payable process by confirming that items have been received as expected, in accordance with the original order and that the items can then be invoiced by the supplier and paid for.

2.4 STOCK STORAGE (INVENTORY)

Stock or stock inventory is the collection of all the materials and goods stored, whether for use to complete the production process or for sale to the customer. Efficient management of warehouse stock is a challenge for logistics companies or companies that have a warehouse or distribution center since the management of the stock inventory stored will largely depend on the business's profitability.

The importance of stock in a warehouse

Stock accumulation and storage is important because, firstly, having stock avoids any shortage in the product the company works with; secondly, the more units, the lower the unit cost of the product in general; and thirdly, having the product stored enables immediate availability to meet the customer's demand. What's more, stock management is just as important as the stock

itself. Any imbalance (depletion of stock, excess stock, etc.) in the amount of stock stored may reduce the company's competitiveness.

Types of stock or inventory

Before addressing the keys to stock management, we will look briefly at the current different types of stock or inventory:

Types of stock from the functional perspective

1. Cycle stock: this is the stock of a warehouse to meet regular demand over a long period of time.
2. Safety stock: this is the stock to meet unexpected demand or demand in exceptional circumstances that have caused problems (for example, unexpected delays).
3. Seasonal stock: this is the seasonal stock for products with sales that increase sharply at certain times (for example, the typical Spanish sweet "turrón" at Christmas time).
4. Recovery stock: these are those products that can be reused partly or totally.
5. Dead stock: this is the inventory of obsolete merchandise that cannot be reused and which must therefore be removed from the warehouse.
6. Speculative stock: if it is expected that the sales of a particular product are going to increase in the short term, the stock of that product is increased before there is any increase in demand, and it is therefore stored at lower cost.

Types of stock from the operational perspective

1. Optimal stock: the optimal stock level is that stock which offers us maximum profitability. Or rather, it is the stock that maintains the balance between an adequate response to demand and maximum profitability of storage costs.
2. Zero stock: it is the amount of stock associated with the Just In Time (JIT) management system, which is characterized by serving on demand, and therefore minimizing the inventory of stock in the warehouse. Zero stock is characteristic of the automotive sector.

3. Physical stock: physical stock is the amount of stock available at any given moment in the warehouse.
4. Net stock: this is the result of subtracting unmet demand from existing stock in the warehouse.
5. Available stock: this is the result of adding to the inventory or physical stock in the warehouse and the orders in progress to suppliers less the unmet demand.

Stock management variables

Stock management is the way of organizing stock flows in the warehouse. It is highly important for the competitiveness of companies. It must be primarily focused on having an adequate level of stock in the warehouse to competently meet customer demand at an optimal cost for the company. These are the main variables that affect the stock or inventory management of a warehouse:

- Planning and management of purchases.
- The desired quality of the service.
- The sales forecast.
- The product storage system: finding the ideal industrial storage solution for companies may make the difference in stock management and, therefore, to the viability of the business. Optimizing the space in warehouses and distribution center's plays a key role. ▪

Supplier delivery times.

2.5 Inventory management methods

These are the main inventory or stock management systems that logistics companies use:

FIFO (First in First Out) method

With the FIFO stock management system, the first goods to leave the warehouse racks will be the first ones that entered it. It enables optimum stock rotation and is perfectly adapted to the storage of perishable products.

Some of the industrial racking systems that are adapted to this management method are the live storage systems for pallets and the drive through compact system. The pallet shuttle system is also adapted to this method. To determine whether this is the appropriate method for managing your warehouse stock, discover the advantages of the FIFO system.

LIFO (Last in, First Out) method

With the LIFO inventory management method, the last unit load to enter the warehouse will be the first one to leave it. It is an ideal method for non-perishable products that do not expire or lose value over time. The stock is stacked accessibly on the racks, with easy access to it when required without having to move the rest of the unit loads.

The push-back racking or drive in pallet racking systems is ideal solutions for applying the LIFO stock management method in the warehouse. The shuttle system offers plenty of versatility and can also be applied in this stock management system. See more key aspects about the LIFO system.

ABC management method

In the ABC stock management method, stock is classified into three categories: A, B and C.

- Category A: these are the products of highest stock inventory value and which therefore require closer observation. They normally occupy 20% of stock. The control of this stock is vital to avoid stock depletion and all of the problems associated with this.□

Generally, these products occupy the lowest positions of more direct access on the industrial racking.

- Category B: According to the ABC management method, this stock requires less control by the company, as it rotates less, so the inventory is normally updated in batches, not by units. It represents about 30% of warehouse stock.□

It is placed at an intermediate height on the racking or in another less central area of the warehouse.

- Category C: these are the items that rotate the least and can represent up to 50% of inventory. This stock is simple to control because it hardly rotates.□

Generally, it is replenished as soon as it leaves the warehouse. It normally occupies the highest parts of the racking or other less central areas of the warehouse.

Just in Time (JIT) model

Any organization that is managed by the Just in Time (JIT) inventory management model has the just the right amount of raw materials for each moment of the production process, with minimal storage needs. It requires very strict organization to avoid delays or cause stock depletion. The automotive sector is the clearest example of this.

Wilson's model or optimal order model

Wilson's model for stock management determines the volume or quantity of the order to be placed, so as to optimize the stock management system. It is calculated when and in what quantity it is necessary to order the stocks. The mathematical formula takes into account the annual demand for the raw material, the cost of the order and the cost of storage.

Warehouse stock management costs

A variable to be taken into careful consideration in warehouse stock or inventory management is the cost of managing the stock to the company, which will greatly affect the return. There are 4 main types of stock costs:

Purchasing or acquisition cost

This is essentially the amount paid to suppliers for each order made. Generally, this amount will be reduced if the quantity of goods is greater, and will increase if small orders are made. **Cost of making the order**

This category includes the administrative and management costs of each order made by the company.

Stock depletion cost

This cost must include revenues not generated for not having been able to meet a customer's demand, but may also imply other types of indirect costs that affect a company's credibility and potential future lost orders.

Stock maintenance cost

The mere fact of having product in stock in the warehouse generates a cost for companies which will make it necessary to include staff costs, warehouse management system costs, storage system installation costs, the rental or purchase of the warehouse and its monthly expenses, depreciations and insurance and the possible depreciation of stored stock.

In conclusion, warehouse stock management is a differentiator in an organization's performance and there are many factors to consider when deciding how to manage the flow of goods: the type of stock, resources to control it, planning and forecasting of purchases, relationship with suppliers and the storage capacity of the facilities.

2.6 BACKFLUSING

In postproduction issuing (back flushing) you are not issuing the materials until production is posted (reported) against the operation. The materials may be accumulated through whatever means are most efficient for your operation. Once the operation is completed, the operator will use a program to post the production against the operation.

Postproduction issuing (back flushing)

- Back flushing is performed by operation, in the bill of material you will have to link the component to the specific operation and set the back flushing flag. You may also have to set back flushing flags on the specific operation in the routing, the program used for production posting, and at the machine/cost center level. The details of each system may vary so read the documentation for your specific software.□
- You may also find back flush flags on the item master; if so, this is likely used only as a default in setting up bills of material. Changing this to back flush will probably not change any existing bills previously created.□

- Changing an item on a bill of material to back flush will likely not change the item on the materials lists on any existing production orders previously created. You will probably have to change these manually or delete and recreate the orders.□
- Back flushing is generally not a global setting, which means you can chose specific bills of materials to back flush and even specific items within a bill of material. For example, you could back flush only point-of-use items and perform preproduction issuing on other items within the same production order.□
- Bill of materials often has options for entering scrap percentages. Note that this scrap information is usually only used for materials planning purposes and will probably not have any effect on the back flush quantities; however, you should test to see how your system handles this.□
- I highly recommend setting up machine locations and back flushing from these locations rather than back flushing from specific storage locations (this is often set up at the□ Machine/cost center level, however, it may be set up on the item master, bill of material, or routing). Items stored in specific locations should be transferred to the machine location when picked for production.
- You may need to set up some alternative picking documents. Creating a report that consolidates all materials required at a specific operation for all production orders expected to be run during that shift gives you the efficiency of batch picking. Point-of- use items can be treated similar to the way you would replenish forward picking locations in a distribution operation.□
- If you are using lot tracking of components you may not be able to perform blind back flushing, you will probably need to enter lot information in the detail of the issuing program.□
- Need I mention that accurate bill of materials and routings are critical.□
- Thoroughly test your system. Verify the effects on inventory accounts, on hand balances, allocations, and locations.□

RAW MATERIALS (RM) USED

Raw materials inventory is the total cost of all component parts currently in stock that have not yet been used in work-in-process or finished goods production. There are two subcategories of raw materials, which are:

- **Direct materials:** These are materials incorporated into the final product. For example, this is the wood used to manufacture a cabinet.□
- **Indirect materials:** These are materials not incorporated into the final product, but which are consumed during the production process. For example, this is the lubricant, oils, rags, light bulbs, and so forth consumed in a typical manufacturing facility.□

□

□

□

□

WORK IN PROGRESS (WIP)

A work-in-progress (WIP) is the cost of unfinished goods in the manufacturing process including labor, raw materials, and overhead. WIPs are considered to be a current asset on the balance sheet. Minimizing WIP inventory before reporting it is both standard and necessary since it is difficult to estimate the percentage of completion for an inventory asset. A WIP is different from finished goods which refer to a product that is ready to be sold to the consumer.

BOUGHT OUT PARTS/ASSEMBLY

A 'bought-out' part is **a part used in a machine or equipment that is not manufactured in-house by the manufacturer of the machine or equipment**. These can be. Standard off-the-shelf parts from a manufacturer. Bought-out-parts (BOP) inventory which directly go to the assembly of product as it is.

FINISHED GOODS (FG)

Finished goods are goods that have been completed by the manufacturing process, or purchased in a completed form, but which have not yet been sold to customers. Goods that have been purchased in completed form are known as merchandise. The cost of finished goods inventory

is considered a short-term asset, since the expectation is that these items will be sold in less than one year. The total amount of finished goods inventory on hand as of the end of a reporting period is typically aggregated with the costs of raw materials and work-in-process, and is reported within a single "Inventory" line item on the balance sheet.

GATE OUTWARD (DISPATCH)

Goods dispatch represents the last contact between the product and the warehouse. It is during this process that the final documentation verification takes place. This prevents errors and ensures that customers receive what they have ordered. Material Outward - Taking Out the stock from the depot according the Orders you received from your customer, Inbound - Delivery created for your depot (sales return or stock Receipt) and Outbound - Delivery created for customers (sales).

COST OF GOODS SOLD (COGS)

Cost of goods sold (COGS) refers to the direct costs of producing the goods sold by a company. This amount includes the cost of the materials and labor directly used to create the good. It excludes indirect expenses, such as distribution costs and sales force costs.

$$\text{COGS} = \text{Beginning Inventory} + \text{P} - \text{Ending Inventory}$$

Where P=Purchases during the period

2.7 IND AS2 – COSTING

COSTING

The amount of expenditure (actual or notional) is incurred on, or attributable to, a given thing. To ascertain the cost of a given thing by means of:

ELEMENTS OF COST

The primary classification of costs according to the factors upon which expenditure is incurred, viz., materials cost, wages (labour cost) and expenses.

Prime Cost

The aggregate of direct materials cost, direct wages (direct labour cost) and variable direct expenses. Direct materials cost, Materials cost which can be identified with and allocated to, and cost centre's or cost units. Direct wages (direct labour cost), Wages (labour cost) which can be identified with, and allocated to, cost center's or cost units. Direct expenses, Expenses which can be identified with, and allocated to, cost center's or cost units.

Overhead Cost

The aggregate or indirect materials cost, indirect wages (indirect labour cost) and indirect expenses. Indirect materials cost, Materials cost which cannot be allocated but which can be apportioned to; or absorbed by, and cost centre's or cost units. Indirect wages (indirect labour cost), Wages (labour cost) which cannot be allocated but which can be apportioned to, or absorbed by, cost centre's or cost units. Indirect expenses, Expenses which cannot be allocated but which can be apportioned to, or absorbed by, cost center's or cost units. Absorbed overhead, the overhead by which means of rates of overhead absorption, is allotted to cost units. Under- or over-absorbed overhead, the difference between the amount of overhead absorbed and the amount of overhead incurred.

BILL OF MATERIALS

A bill of materials (BOM) is a comprehensive inventory of the raw materials, assemblies, subassemblies, parts and components, as well as the quantities of each, needed to manufacture a product. In a nutshell, it is the complete list of all the items that are required to build a product. A BOM is sometimes also referred to as a product structure, assembly component list or production recipe (in process manufacturing industries). **A well-defined BOM helps companies:**

- Plan purchases of raw materials□
- Estimate material costs□
- Gain inventory control□
- Track and plan material requirements□

- Maintain accurate records□
- Ensure supply robustness and reduce waste□

BOM structure

Typically, a BOM is hierarchical in nature, with the finished product at the top. It includes product codes, part descriptions, quantities, costs and additional specifications. Among the most common methods of representing a BOM are the following:

- Single-level bill of materials, which is a relatively simple list for a product. In this type, each assembly or subassembly is shown only once, with the corresponding quantity required of each to make the product. Though easy to develop, this type of BOM is unsuitable for complex products because it does not specify the relationship between□ Parent and child parts or between assemblies and subassemblies. If the product fails, a single-level BOM makes it difficult to determine which part needs to be replaced or repaired.
- Multilevel bill of materials, which takes more work to create but offers greater details and specificity on the parent and child parts in the product. In a multilevel BOM, the total material required is shown. Additionally, the product structure is indented to show the relationship between the parent and child product, as well as assemblies and subassemblies.□

A BOM serves as the foundation of production planning systems, and the information in it provides the basic data for other business processes, such as manufacturing resource planning, product costing, material provision for production and plant maintenance.

Since the BOM combines all possible information that goes into building a final product, it finds wide use in departments beyond manufacturing, such as engineering, design, sales, material management and plant management.

Types of bills of materials

There are three main types of BOMs to be aware of:

1. **Manufacturing bill of materials:** A manufacturing BOM (MBOM) includes a structured list of all the items or subassemblies required to make a manufactured, shippable finished product. An MBOM, in addition to the information on individual parts, also includes information on the parts that require processing prior to assembly and explains how various components relate to one another in a product. The information in the MBOM is then shared with all the integrated business systems involved in ordering and building the product, including enterprise resource planning (ERP), material requirements planning (MRP) and, in some cases, a manufacturing execution system (MES).
2. **Engineering bill of materials:** An engineering BOM (EBOM) defines assemblies or parts as designed by the engineering department. Showing the component structure from a functional perspective, an EBOM, for example, will consist of a mechanical or technical drawing of a product. An EBOM is typically developed by engineers using Computer-aided design (CAD) or electronic design automation (EDA) tools, and it is common to have more than one EBOM for a product as the design undergoes a series of revisions.
3. **Sales bill of materials:** A sales BOM (SBOM) defines a product in the sales stage, meaning details of the product prior to assembly. In an SBOM, the list of finished products and the components required to develop it appear separately in the sales order document. Here, the finished product is managed as a sales item instead of an inventory item. It's important to note that each type of BOM will involve a different structure and level of detail. For example, an EBOM may list parts related to a specific function of the product, such as chips for a circuit board. An MBOM, by definition, lists every material that goes into manufacturing a product.

2.8 VALUATION OF INVENTORY (ON REPORTING DATE)

Lower of (a) Cost OR (b) NRV

SPECIAL CASES

(a) Joint product and By-Product

1) Joint cost is allocated on the basis of " sales ratio of each joint product either

At the time of split-off (or) on completion of production

2) By Product: If the amount is immaterial it must be measured at NRV and deducted from the cost of main product or joint products. **(b) Deferred settlement terms**

- If inventories are purchased on deferred settlement terms, Purchase price for normal credit terms will be the cost price = PV of all future payments
- Interest = [Deferred settlement amount (Future payment) - PV of future payment]
- Recognized it as an expense over the period of credit and will not be added to the cost price of Inventory.

COST PRICE

Component of Cost Price



Inclusions (Recovered from customer)	
(a) Cost of purchase	
Invoice price	XXX
(-) Trade discount / Rebate	(XXX)
(+) Non-refundable duties & taxes (credit is not available)	XXX
(+) Direct expenses to bring Inventories in present location	XXX
Cost of purchase	XXX
(b) Cost of conversion	
Direct labour (Manu. Wages)	XXX
Production OH (Ind material/ labour/Indirect cost)	

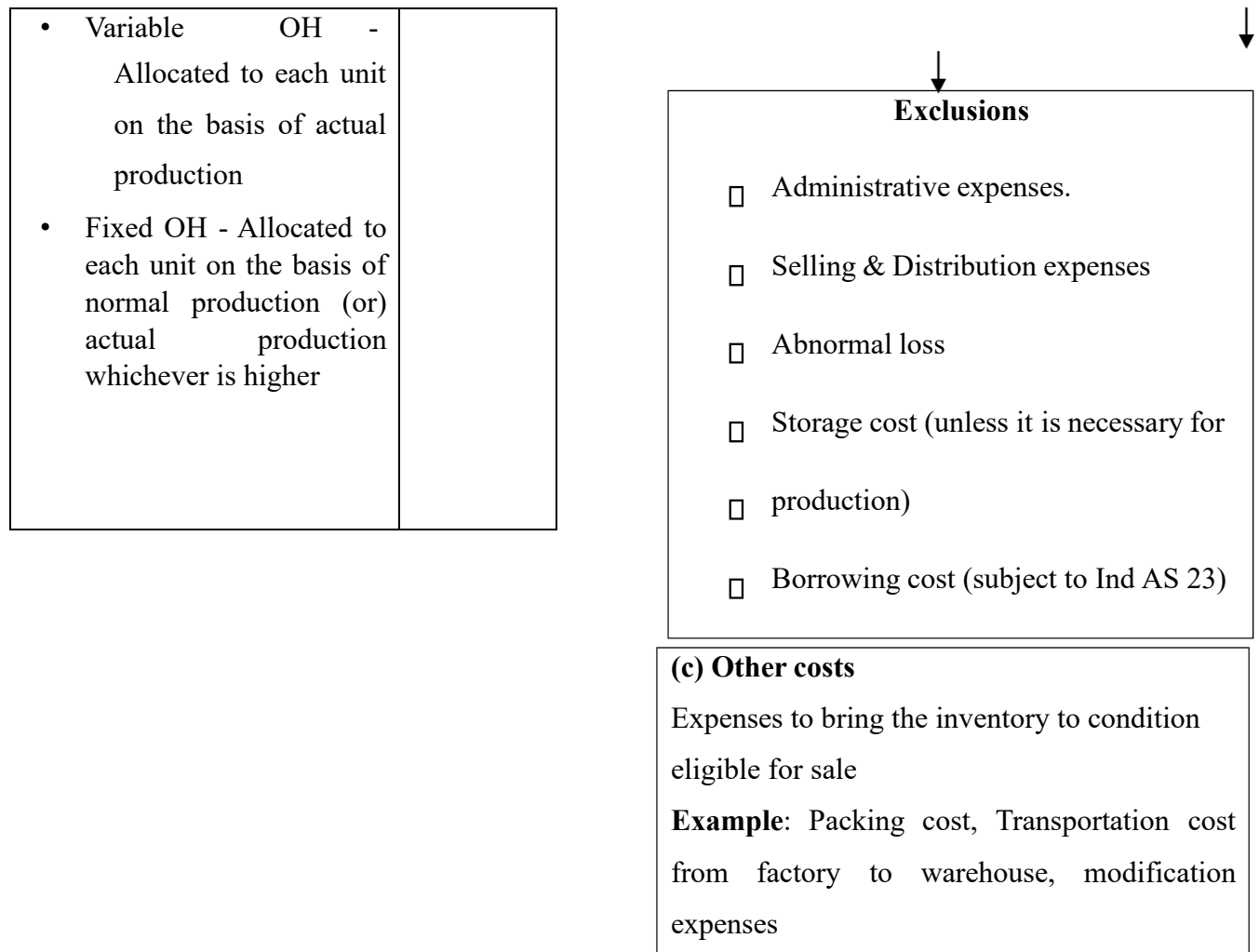


Figure 2.3 Component of Cost Price

Example: A Ltd. purchased inventory at Rs.60,00,000 on 01.04.2016 on 2 years credit (which is more than normal credit period). Rate of interest for similar transaction is 10%. Calculate cost price of inventory and pass Journal Entries. Solution: CP of Inventory = $60,00,000 \times 0.8264$
= 49,58,400

01.04.2016

Purchase A/c.	Dr.	49,58,400	
To Creditor A/c.			49,58,400

31.03.2017

Interest Expenses Alc.	Dr.	4,95,840	
To Creditor Alc.			4,95,840

31.03.2018

Interest Expenses A/c	Dr.	5,45,760	
To Creditor A/c.			5,45,760

Creditor A/c	Dr.	60,00,000	
To Bank			60,00,000

(c) COST OF AGRICULTURAL PRODUCE HARVESTED FROM BIOLOGICAL ASSET

As per Ind AS 41 agricultural produce at the point of harvest are measured at Fair Value less Cost to sell This is the cost price of such agricultural produce for application of IND AS 2.

V. NET REALISABLE VALUE (at each reporting Date)

(a) For finished goods / stock in trade

NRV = [Estimated selling price - estimated selling expense]

(b) For WIP

$NRV = [\text{Estimated selling price} - \text{estimated selling expense}] - \text{Estimated costs to complete}$

Formula:

Estimated selling price of finished goods	XXX
(-) Estimated selling expenses of FG	XXX
NRV of FG	XXX
(-) Cost to complete (estimated)	XXX
NRV of WIP	XXX

VI. HOW TO DETERMINE EXPECTED SALE PRICE FOR NRV

1st Preference - Binding agreement on reporting date

2nd Preference - Sale agreed before approval of FS for issue

Last Preference - Fair estimation given by management

(c) Raw material

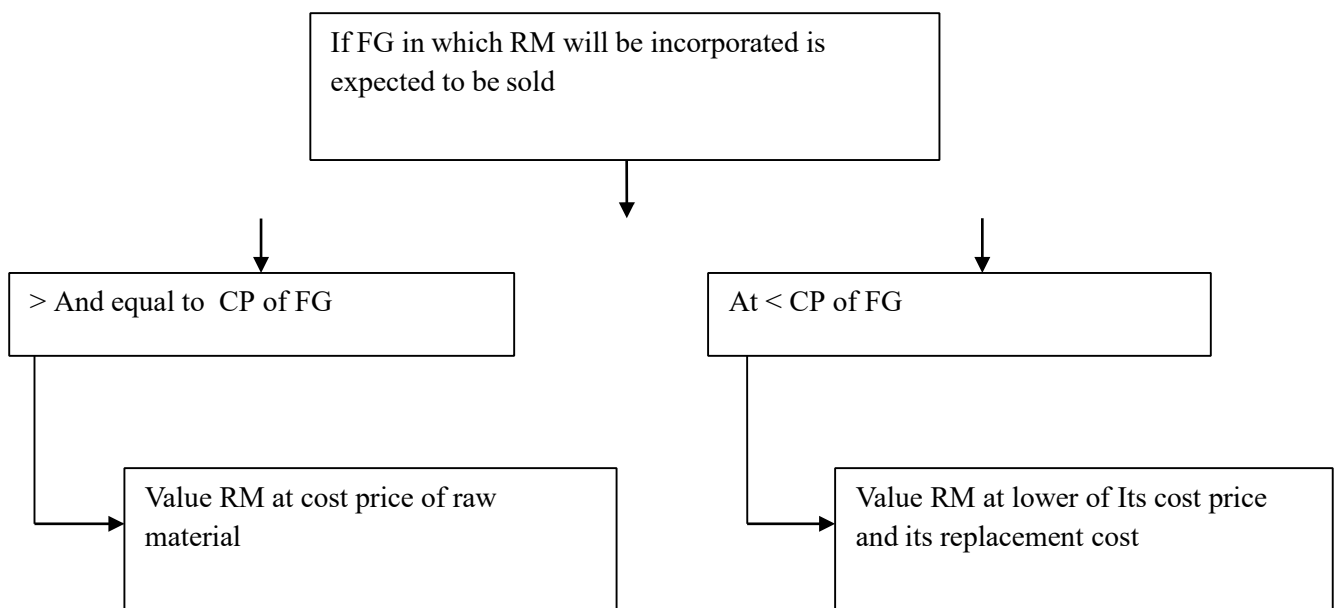


Figure 2.4 Raw material cost

VII. COST FORMULA

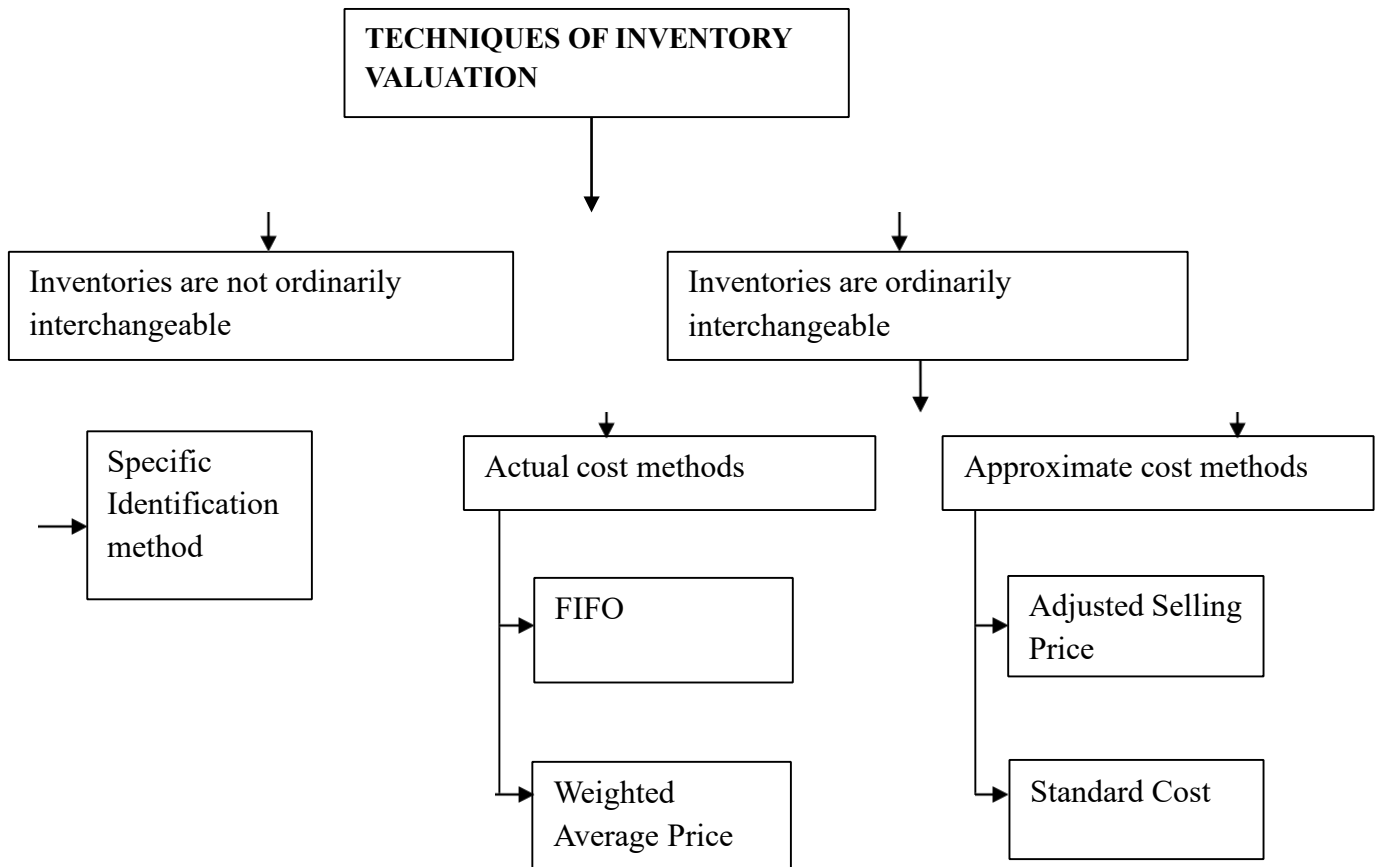


Figure 2.5 TECHNIQUES OF INVENTORY VALUATION

VIII. COMPARISON OF NRV & COST PRICE

Item by Item Basis or (group basis if circumstances require)

IX. REVERSAL OF WRITE DOWN

- a) RV should be reassessed at each reporting date
- b) If RV increases, the amount of previous write down is reversed so that new carrying amount of inventory is lower of

1) Cost price

2) Revised NRV

X. RECOGNITION OF EXPENSE

- (a) When inventories are sold - Recognize the carrying amount of inventory sold as an exp. In the period in which related revenue has been recognized.
- (b) When inventory is written down to NRV - Recognize such write down as expense in the period in which write down occurred.
- (c) When Reversal of write down - Recognize as a "reduction in the amount of inventory recognized as expense in the period in which reversal occur. **XI. SCOPE:**

This standard applies to all inventories, except:

- a) Financial instruments (Ind AS 32 and Ind AS 109); and
- b) Biological assets related to agricultural activity (Ind AS 41)
- c) Agricultural produce at the point of harvest (Ind AS 41)

This standard does not apply to the measurement of inventories held by:

- 1) Producers of agricultural and forest products, agricultural produce after harvest, and minerals and mineral products, to the extent that they are measured at NRV. When such inventories are measured at NRV, changes in that value are recognized in PL in the period of the change.
- 2) Commodity broker- traders who measure their inventories at fair value less costs to sell. When such inventories are measured at FVCS, changes in FVCS are recognized in PL in the period of the change.

XII. DISCLOSURES:

The financial statements shall disclose:

- 1) **Accounting policies** adopted in measuring inventories, including the cost formula used.
- 2) The total carrying amount of inventories and the carrying amount in classifications appropriate to the entity.

3) The carrying amount of inventories carried at fair value less costs to sell.

4) Amounts recognized in profit or loss

CA of inventories recognized as an expense during the period	XXX
Add: the amount of any write-down of inventories	XXX
Less: the amount of any reversal of any write-down.	XXX
Amounts recognized in profit or loss	XXX

Figure 2.6 Amounts recognized format

5) The carrying amount of inventories pledged as security for liabilities.

XIII. DIFFERENCE BETWEEN IND AS 2 & AS 2

	IND AS 2	AS2
Subsequent recognition as Expenditure	Deals	Silent
Reversal of Written Down	Deals	Silent
NRV vs. FV	Explanation given	Silent
Deferred settlement terms	Guidance given	Do not Deals
Machinery Spares	Silent	Guidance given

Figure 2.7 Difference between Ind As 2 & As 2

CHAPTER-III

3.1 INDUSTRYPROFILE:

The Indian automobile market is one of the largest in the world, both in terms of sales volume and production. Talking about historical roots of the car market in India, the first time that a vehicle came on road was in 1897. Till 1930, India did not have any manufacturing facility and cars were imported directly from other countries. The landmark decade in the manufacturing process was that of 1940s, in which Indian companies like Hindustan Motors and Premier started to manufacture cars of other firms. During the same decade, Mahindra & Mahindra also started to produce utility vehicles.

Soon after independence 1947, Government of India tried to create an automotive component manufacturing industry in order to supplement the automobile fraternity. From 1960 to 1980s, the Indian market was dominated by Hindustan Motors, which gathered a large amount of share due to its Ambassador model. However, during 1950s till 1960s, the overall industry moved at a slow pace due to trade restrictions set on imports. Soon after this repressive phase, demand surged but to a smaller extent, which was mainly seen in the tractor and commercial vehicles segment.

It was in 1980s that the two firms, Hindustan Motors and Premier, were challenged by a new entrant, Maruti Udyog Limited. Soon after liberalisation period, car makers that were previously not allowed to invest in Indian market due to stringent policies arrived in the country. Post liberalisation, the alliance between Maruti and Suzuki was the first joint venture between an Indian company and foreign one. Slowly and steadily, the economic reforms brought in the led to the entry of major foreign companies like Hyundai and Honda, which expanded their bases to the country. From 2000 to 2010, almost every major car company expanded its presence to India by establishing manufacturing facilities across different parts of the country.

As the manufacturing process during early 2000 decade gained traction, exports of cars was quite slow in that period. Maruti Suzuki was among the first car brands that started shipping vehicles to major European markets. During the same decade, the Government of India introduced mandatory emission norms in order to reduce pollution arising out from vehicles. The updated guidelines were known as 'Bharat Stage' came into effect in major cities as these standards were based on stringent European norms. At present, Bharat Stage IV is implemented in 13 cities that include Delhi (NCR), Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Ahmedabad, Pune, Surat, Kanpur, Lucknow, Solapur, and Agra while the rest of the nation is still under Bharat Stage III.

Over the years, the car market in India has evolved by leaps and bounds as almost all major companies are present in the country. India has now become a hub for auto makers to set up their plants for manufacturing vehicles intended for domestic and international markets. The three prominent regions in which the majority of Indian car industry is concentrated lies in south, west and north. In the southern region, Chennai is the hub for manufacturing vehicles while Mumbai and Pune belt comes in second place. For the north, the NCR holds a fair share as far as concentration of production facilities is concerned.

To list a few commendable feats of the Indian car industry, it emerged as the fourth largest exporter of passenger cars behind Japan, South Korea, and Thailand in 2009. While in 2010, India emulated its previous year's performance to become the third largest exporter of cars in Asia. The biggest reward came for the Indian car market in 2011 as it became the sixth largest country in the world in terms of production.

In 2020, India was the fifth-largest auto market, with ~3.49 million units combined sold in the passenger and commercial vehicles categories. It was the seventh-largest manufacturer of commercial vehicles in 2019. The two wheelers segment dominates the market in terms of volume owing to a growing middle class and a young population. Moreover, the growing interest of the companies in exploring the rural markets further aided the growth of the sector.

India is also a prominent auto exporter and has strong export growth expectations for the near future. In addition, several initiatives by the Government of India and major automobile players in the Indian market is expected to make India a leader in the two-wheeler and fourwheeler market in the world by 2020

3.2 Indian Automobile Industry SWOT Analysis

Strengths:

- ✓ The domestic market is large
- ✓ The government provides monetary assistance for manufacturing units
- ✓ Reduced labour cost
- ✓ Evolving industry
- ✓ Continuous product innovation and technological advancement
- ✓ Growth shifting to Asian markets
- ✓ Increase in demand for luxury commercial vehicles
- ✓ Manufacturing facilities in Asian nations to control cost
- ✓ Infrastructural setbacks

Weaknesses:

- ✓ Low productivity
- ✓ Too many taxes levied by the government increase the cost of production
- ✓ Low investments in Research and Development
- ✓ Reduction in Excise duty
- ✓ Rural demand is rising
- ✓ Income level is at a constant increase
- ✓ Introducing fuel-efficient vehicles
- ✓ Changing lifestyle and customer demand causing a rise in the sale of two-wheelers

Opportunities:

and compact cars

Threats:

- ✓ Increasing rates of interest
- ✓ Too much competition
- ✓ The rising cost of raw materials
- ✓ Steeply rising fuel prices
- ✓ Slow economy
- ✓ Economic recession

3.3 Top ten players in Indian Automobile sector:

The automobile sector is receiving foreign investment due to growth in this sector. India is a leading auto exporter. There are many automobile companies in India. But some of them are ruling the market since their inception such as Maruti Suzuki, Tata Motors Ltd, Mahindra & Mahindra, etc. Now every company is launching new models to keep pace with the changing needs of customers.

- ✓ Maruti Suzuki India Ltd.
- ✓ Mahindra and Mahindra Ltd.
- ✓ Bajaj Auto Ltd.
- ✓ Ashok Leyland Ltd.
- ✓ Hero MotoCorp Ltd.
- ✓ TVS Motor Company Ltd.
- ✓ Eicher Motor Ltd.
- ✓ Hyundai Motor India Ltd. (HMIL) ✓ Tata Motors Ltd.
- ✓ Toyota Kirloskar India Pvt. Ltd.

3.4 MARUTI SUZUKI INDIA LTD:

Maruti Udyog Limited was founded by the Government of India on 24 Jan 1981 with Suzuki Motor Corporation as a minor partner, only to become the formal JV partner and

license holder of Suzuki in August 2021. The first manufacturing factory of Maruti was established in Gurugram, Haryana, in the same year. A part of this company is owned by Suzuki Motor Corporation of Japan. It is the country's largest passenger car manufacturing company. Credited for having brought in the automobile revolution in the country, Maruti Suzuki India Limited was known as Maruti Udyog Limited till 2007. With its headquarters in Delhi, this 10 automobile company in India happens to be the largest producer and market shareholder of cars.

The company is offering various popular car models. The popular car model alto is from Maruti Suzuki. The company is one of the oldest companies that having expertise in the field of production of cars. The company accounted for consolidated revenues of Rs. 71,690.4 crore in 2020. Maruti Suzuki India Limited has been credited for manufactures a variety of passenger cars, SUVs, and Sedans. Some of Maruti's most popular cars are Alto, Gypsy, Omni, Wagon R, Maruti 800, Versa, Zen, Esteem, Baleno and Swift.

Maruti Suzuki India Limited accounting for nearly 50 percent of the total industry sales. In terms of number of cars produced and sold, the company is the largest subsidiary of Suzuki Motor Corporation, cumulatively; the company has produced over 10 million vehicles since the roll out of its first vehicle on 14th December, 1983.

Maruti Suzuki is the only Indian company to have crossed the 10 million sales mark since its inception. The company has two manufacturing facilities located at Gurgaon and Manesar, south of New Delhi, India. Both the facilities have a combined capability to produce over a 1.5 million (1,500,000) vehicles annually.

Maruti Suzuki offers 16 brands and over 150 variants ranging from people's car Maruti 800 to the latest Life Utility Vehicles, Ertiga. Maruti Suzuki's portfolio includes Maruti 800, Alto, Alto K10, A-Star, Estilo, Wagon-R, Ritz, Swift, Swift Dzire, SX4, Omni, Eeco, Kizashi, Grand Vitara, Gypsy and Ertiga.

The company employs over 9000 people (as on 31st March 2012). Maruti Suzuki's sales and service network is the largest among car manufacturers in India. The company has been rated first in customer satisfaction in the JD Power survey for 12 consecutive years.

Over two and half decades, Maruti Suzuki has won the hearts of customers through high quality products and services.

The company is engaged in the business of Manufacturing, Purchase and sale of motor vehicles and Spare parts. The other activities of the company includes facilitation of preowned car sales, fleet management and car financing.

The company has seven subsidiary companies, namely Maruti Insurance Business Agency Ltd, Maruti Insurance Distribution Services Ltd, Maruti Insurance Agency Solutions Ltd, Maruti Insurance Agency network Ltd, Maruti Insurance Agency Services Ltd, Maruti Insurance Agency Logistics Ltd and True Value Solutions Ltd.

The first six subsidiaries are engaged in the business of selling motor insurance policies to owners of Maruti Suzuki vehicles and seventh subsidiary, True Value Solutions Ltd is engaged in the business of sale of certified pre-owned cars under the brand ‘**Maruti True Value**’.

Maruti Suzuki believes in the simple concept of “smaller, fewer, lighter, shorter and neater.” The work culture is unique where a common uniform and a common canteen for everyone from the Managing Director to the worker.

Maruti Suzuki strongly believes on following core values-

- Customer Obsession
- Fast, Flexible & First Mover
- Innovation & Creativity
- Networking & Partnership
- Openness & Learning

The brand trust report published by Trust Research Advisory, a brand analytics company, has ranked Maruti Suzuki in the thirty seventh position in 2013 and ninth position in 2019 among the most trusted brands of India.

3.5 Services offered by Maruti Suzuki India Limited:

Sales and Service Network (Stations):

Maruti Suzuki’s Sales and Service network is the largest among car manufacturers in India. The company had 802 sales outlets in 555 cities and 2740 service workshops in 1335 cities as on 31 March 2010. The service network of the company includes Dealer Workshops, Maruti 12 Authorized Service Stations (MASSs), Maruti Service Masters (MSM) and Maruti Service Zones (MSZ). In FY 2011-12, Maruti Suzuki had opened its 1000th Sales outlet, another landmark achieved. The company with over 2950 service outlets reaches its customers across 1400 cities.

Maruti Suzuki's total sales outlet in year 2011-12 was 1100 whereas 801 cities were covered through its sales network. It was also observed that there 1653 authorized service stations in year 2011-12 whereas the total number of true value outlets in year 2011-12 was 409.

As far as service network is concerned, Maruti Suzuki has also given assurance to the families travelling on the highway as there is a service workshop at a distance of every 30 kilometres on most high density highways in India. Besides the helpline number is also provided by company.

Maruti Insurance:

Maruti launched Insurance service in the year 2002. Maruti provides vehicle insurance to its customers with the help of the National Insurance Company, Bajaj Allianz, New India Assurance and Royal Sundaram. This service was set up by the company with the inception of two subsidiaries Maruti Insurance Distributors Services Pvt Ltd and Maruti Insurance Brokers Pvt Limited.

Maruti Finance:

With an intention to promote the bottom line growth, Maruti launched Maruti Finance in January 2002. Maruti had started two joint ventures Citicorp Maruti and Maruti Countrywide with City Group and GE countrywide respectively to assist its client in securing loan. For this, Maruti tied up with ABN Amro bank, HDFC bank, ICICI Bank, Kotak Mahindra, Standard Chartered bank and Sundaram Finance to start this venture including its strategic partners in car finance. In March 2003, Maruti entered into a strategic partnership with State Bank of India.

Maruti True Value:

With an intention to not only generate incomes for dealers but to also promote sale of new Maruti cars by offering to buy old cars at reasonable prices and selling a new car in exchange, Maruti Suzuki launched a subsidiary, True Value.

Under True Value, the seller has the option to be paid in cash/cheque, or get a True Value car in exchange or a brand new Maruti Suzuki car in exchange. As a mark of confidence, and to promote reassurance to customers, every vehicle bought under Maruti True Value is inspected and certified by Maruti Engineers and the car carries a one year warranty and three free services.

Maruti Driving School:

Accidents and Road Safety has always been a key concern area for both the government and people on the road. With an objective to improve road safety and inculcate safe and systematic driving habits among people, Maruti Suzuki has opened Maruti Driving Training School (MDS). These driving schools are equipped with Practical Training and Attitude Training. World class driving simulators are used to give a hands-on feel to learners before taking the vehicles on the road. Having started in Bangalore in March 2005, Maruti Driving School has spread its network throughout the country in collaboration with the dealers; the company has set up over 200 Maruti Driving Schools across the country.

One distinguishing feature of Maruti Driving School is lady instructor for training females. According to the statement by Mr.R.C.Bhargava (Chairman-MarutiSuzuki), Modernization of automobile industry was incomplete unless people learnt to drive safely on the road.

Institute of Driving & Traffic Research (IDTR):

Maruti Suzuki introduced world class driving training facilities to India by launching Institute of Driving & Traffic Research. These include a specially formulated multilingual theory curriculum, scientifically laid-out driving tracks and advanced driving simulators that replicate Indian driving conditions.

The first IDTR was set up at Loni (on the outskirts of Delhi), in 2000 in collaboration with the Delhi government. In 2010-11, the IDTR was set up at Gujrat, in collaboration with the Tribal Development Department of Gujrat. The intention of this 14 initiative was to develop the driving skills of tribal youth.

The IDTR is presently exist at Haryana (two IDTR, each at Rohtak and Bahadurgarh), two in New Delhi (Loni and Sarai Kale Khan), and one in Gujrat (Vadodara), one in Uttarakhand (Dehradun)

National Road Safety Mission:

National Road Safety Mission is the flagship Road Safety initiative introduced by the company in December 2008. Under this initiatives, the company took a commitment of training over 5,00,000 people in safe driving practice in a span of 3 years. The main objective of this initiative was to make them employable in driving profession.

N2N Fleet Management:

N2N is the short form of End to End Fleet management which provides lease and fleet management solution to corporate. The list of clients who have signed up this service includes Reckitt Benckiser, Sona Steering, Gas Authority of India Ltd (GAIL), Dupont, Doordarshan, Singer-India, Transworld etc. This service includes end to end solutions across the vehicle's life, which includes Leasing, Maintenance, Convenience services and Remarketing.

3.6 COMPANYPROFILE

The Maruti Service Masters (MSM) was born in 13th Aug 1999 at Okhla, an industrial area in Delhi. Mr. Pankaj Narula, a very senior manager of maruti and Mr. Sharad Malhotra, a very experienced Person in an automotive business in a sumitomo corporation were deputed to run MSM. On 20\05\2000, MSM was awarded ISO 9002 certification.

MSM is controlled by a board of directors, consisting of seven people. Three are from Maruti, including Mr. Jagadish Khattar, the MD of Maruti, apart from Mr. Pankaj Narula. There are three from sumitomo (India) too, including their CMD, Mr. Yoshimoto. The Seventh, Mr. Vivek Agarwal is from Maruti Countrywide.

Overnight, Maruti Service Masters became a huge success in Delhi. Such was the Quality standard of service. Soon there was waiting time of over two weeks for one to get one's car serviced at MSS. The customers booked and waited ('or their turn, MSS proved itself. After becoming the name of reckons with, in four years flat, it was time to move on to other places. China became the first choice.

Maruti Service Masters (MSM) is a joint venture of Maruti Suzuki India Limited; Sumitomo Corporation. The joint venture between companies from 2 leading business groups had been envisaged to leverage the strengths, knowledge base and resources of each strategic partner to the maximum advantage of the joint venture company.

Maruti Service Masters set up model automobile workshops, having superior technology, systems and processes, in order to satisfy customer needs to a greater level and also act as a model to other players.

Maruti Service Masters provide the complete range of services to the Maruti customer over the entire product life cycle, thereby becoming a single window for all customer needs, to become a platform for introduction of various new initiatives of the shareholders in the automotive retail sector.

3.7 Maruti Service Masters (MSM)

Industry	Automobile
Agency name	Maruti Service Master company
Address	Plot no.9,thiru VI ka industrials estate, Guindy , Chennai- 600032 (Behind olympiya tech park)
Founded in	1999(24 years old)
Headquarters	New Delhi, India
Registered name	Maruti Suzuki India
Website	Marutimsm.com
Activity	Auto repair shop

Table 3.1 Maruti Service Masters profile

AIM:

To set up model workshops for Maruti. Automobiles as a benchmark to enhance the service infrastructure of Maruti.

VISION:

To achieve high standards of customer satisfaction by providing quality service with value additions to Maruti customers, over the product life cycle.

- ✓ Modernization of the Indian automobile industry
- ✓ Provide standards of customer satisfaction and quality service

OBJECTIVES

- ✓ To engage, with respect to Maruti automobiles, in the business of:
 - Service and repairs
 - Body repairs
 - Purchase and sale of used (pre-owned) cars through true value
 - Sales and spare parts
 - Accessory sales
- ✓ To engage, with respect to Maruti automobiles, in the business of Service and repairs and other services
- ✓ To provide value added service such as insurance, extended warranty and Maruti finance
- ✓ To make reasonable profit to sustain and expand the business.
- ✓ To provide feedback to Maruti regarding the product and services with respect to customer expectations

3.8. SWOT ANALYSIS

Analysis of the internal (strength and weakness) External environment (opportunity and threat) of the company.

STRENGTH

Recruitment is done in very tedious manner ensuring talent and best professionals, working culture, after sales services, distribution, and diversification.

WEAKNESS

Still depend upon Maruti Suzuki though Maruti Udyog limited has launched luxury cars as well it's still considered as poor man brand.

OPPORTUNITY

Importing new technology is controlled by government so there is plenty of untapped market and with increase in income scale, demand is rising.

THREATS

Number of new Technology driven players and manufacturing are in market.
Government reducing support and cutting down the gas supply quota.

3.9 ACHIEVEMENT AND AWARDS:

The achievements and awards following are:

- ✓ Achieve the most car seller dealership in Chennai

- ✓ Win the best workshop load growth-service & body shop **Infrastructural facilities:**

The firm has good infrastructural facilities these are,

- ✓ Built on an acre plot in the industrial area in the city. MSS China Boasts, ✓ It is situated in the main place of Chennai.
- ✓ Good servicing facilities for car with advanced technologies.
- ✓ The use Auto repair new technology in their management information system.
- ✓ Good entertainment facilities available for customers who were wait during the service of their car.
- ✓ A unique modern Structure made by of uniform sized steel columns and beams.
- ✓ Multi storied building, including shop floors ✓ Basement and terrace parking.
- ✓ Unidirectional ramps to drive the cars up/down ✓ A car lift for immovable cars.
- ✓ Polyurethane painted shops floors
- ✓ Fully air conditioned customer areas and offices ✓ Aesthetically glazed front elevation.

Strategy:

The firm has good strategy these are,

- ✓ Global sales and production data by country
- ✓ U.S. modelling inventory data
- ✓ Engine and equipment installation rates
- ✓ Product cycle chart
- ✓ International ships among major OEMs

International ships among major OEMs

- ✓ Medium and heavy duty- truck volumes
- ✓ Historical data and much more **Policies:**

The policies of consumer satisfaction through continuous improvement of our product and service by following PDCA in all function and levels of our organization.

METHODS TO ACHIEVE THE AIM

Humanity and therefore, easy, some of the Methods, Most of them Intangibles, are enumerated below, Intangibles are the foundations for tangibles and help in the long run.

MSM-C intends to run long.

- ✓ Good overall Knowledge of Maruti cars.

- ✓ Good Knowledge of Maruti Systems.
- ✓ General awareness of automotive field.
- ✓ Thorough Knowledge of own area of operation.
- ✓ Energetic and positive approach.
- ✓ Pleasant and impeccable behaviour.
- ✓ Respect for the customers.
- ✓ Love for customer cars, Maruti cars.
- ✓ Empathy for the customers ✓ Positive outlook.
- ✓ Imperturbable attitude.
- ✓ Humanity.
- ✓ Trust in MSM as its System.
- ✓ Trust in superiors.
- ✓ Belief in colleagues.
- ✓ Honesty.
- ✓ Integrity.
- ✓ Altruism (Unselfishness), as part of personality.
- ✓ Duty before Itself
- ✓ Friendly disposition. The longest word in English is "Smiles". Harmonious teamwork. ✓
Taking Responsibility.
- ✓ Sharing Responsibility.
- ✓ Helping colleagues in distress.
- ✓ Expanding the mental horizon to encompass the whole of MSM.
- ✓ Letting the Customers be the winner, without MSM losing. Win-Win situation.

Utilities

- ✓ Silent generator as a standby for HT power.
- ✓ Water and effluent treatment plants.
- ✓ Recycling of water used water, to minimize wastage.
- ✓ IM treatment plant for drinking water.
- ✓ Energy saving wind ventilators.
- ✓ Rain water harvesting.

Facilities

State of art and equipment's are installed to facilitate quick service and accurate Repairs to maintain the highest quality.

Some of these are:

- ✓ Electrical car lifts of different capacities.
- ✓ Hi-tech electrical test bench.
- ✓ High quality gas charging machine for A/c.
- ✓ Computer Controlled Wheel aligner.
- ✓ Accurate body puller to bring, body line to original dimensions.
- ✓ Modern, dust proof paint booth to give factory finish.
- ✓ Electronic paint mixer to give thousands of hues.
- ✓ Digital pollution check machine.
- ✓ Automatic car washing system.

SERVICE, OFFERED

The idea is to provide a single point contact for all the car needs of a Maruti owner No running from pillar to post.

Service & Repairs: Complete maintenance solutions.

- ✓ Free services
- ✓ Paid services ✓ Warranty jobs.
- ✓ Running repairs.
- ✓ Perfect diagnostics and repairs through hi-tech systems and equipment.
- ✓ Maruti Genuine Parts (MGP) ✓ High skilled Maruti trained manpower. ✓ Professional & personalized care.
- ✓ Japanese standards, practices and ethos

Body Repair & Paints:

- ✓ Back to factory finish.
- ✓ Crash Repair system, MIG - MAG & Sort welders, dust-free paint both.
- ✓ Fast and invisible repairs.
- ✓ 2k (Polyurethane) painting technology.
- ✓ Customization options include interior painting, two-toile painting.
- ✓ Over 70,000 shades available to choose from ✓ Virtually cashes repairs through insurance.
- ✓ Totally hassle-free processing of Insurance.

Purchase and sale of pre-owned cars (Maruti True Value):

As good as new cars.

Seller's Advantage:

If you wish to- sell your Maruti car.

- ✓ Right price for the car.
- ✓ Scientific evaluation for price assessment.
- ✓ Hassle free & prompt payment.
- ✓ No commission charged.
- ✓ Attractive new car exchange option.

Buyer's Advantage:

- ✓ If you wish to buy a pre-owned car. ✓ Antecedents of the car confirmed. 16 ✓ Maruti certified pre-owned cars.
- ✓ Cars refurbished by MSM.
- ✓ Up to 1 year / 15000 KMs warranty.
- ✓ 3 Free services.
- ✓ Exciting Finance schemes. **Insurance**

Sale - Maruti Insurance

Total peace of mind.

- ✓ Car insurance, renewals, claim processing, post accidents repairs all under one roof ✓ On the spot policy issuance. No cover notes, No waiting, period, No hassles.
- ✓ Trouble free claims. MSM will handle all aspect from surveyor appointment to Damage assessment to high quality image.
- ✓ Virtually cash-less repairs. Only on marginal difference of depreciation to be paid.

Extended Warranty Sale:

Worry free driving for long of

- ✓ Prior to expiry of primary warranty.
- ✓ Maximum discount within 60 days of effecting primary warranty.
- ✓ Warranty gets extended up to 4 years / 80,000 KMs.

Spare Sales:

- ✓ Assurance of high reliability.
- ✓ Spares supplied by Maruti.
- ✓ If from vendors, only authorized vendors.
- ✓ Exact spare for the exact model.
- ✓ Prices as fixed by Maruti.

Accessory Sale:

Especially for your cars.

- ✓ Only Maruti approved accessories.
- ✓ Provision for figments already given in car.
- ✓ Appropriate connectors provided in car.
- ✓ The need to cut/modify wires eliminated. .

3.10 THE PRODUCT PORTFOLIO INCLUDE

- Body Parts
- Lighting
- Suspension
- Air Conditioning
- Brake System
- Oils & Fluids
- Clutch System
- Filters
- Car Accessories □ Fasteners
- Cooling System
- Fuel System
- Electrical
- Steering
- Belt & Chain Drive
- Wheels & Tyre
- Windscreen Cleaning System
- Engine Parts

- Transmission
- Interiors Comfort & Safety
- Gasket & Seals
- Exhaust System
- Bike Accessories

3.11 Maruti Suzuki Premium Accessories Range

Modern MGA Accessories



Figure 3.1 Modern MGA Accessories

- TPMS (Tyre Pressure Monitoring System) - Let you know Tyre pressure of all 4 tyres all times through Easy Intuitive display in the car.
- Auto Dimming IRVM Mirror (Prevents Headlight Glare in Night Drive from other cars)
- Rear Seat Entertainment DVD Player with USB - Each Side (Ideal for Family Member to enjoy in Rear Seat Entertainment)
- Sony Touchscreen Music System with Android Auto, Apple Car Play
- Hertz 2 Channel Amplifier with Bass Tube (for Music lovers for best in class sound effect).
Also available 4 channel amplifier at Rs 8000 higher than 2 channel amplifier price

Maruti Suzuki Accessories



Figure 3.2 Maruti Suzuki Accessories

Safety and Security

- Gear Lock (not available these days from showroom, may check with showroom manager)
- MGA Front Fog Light Pair (Vision Plus / Lumax Fog Light)
- Remote Central Lock Security System with Wiring Harness (depend on car Model)
- Nippon Reverse Parking Sensor with Digital Display of Distance, Beep Sound. Has 4 Sensor installed in rear bumper
- Rear View Camera with Display in Separate 3.5 Inch Screen
- Rear View Camera with Display in Inbuilt Touchscreen System
- Reverse Parking System Assist: Rear View Camera + Parking Sensors with Display of both in 3.5 Inch Screen
- Maruti Suzuki Music System Fitment (Touchscreen Music System + Speaker)
- Sony XAV Ax 1000 Touchscreen AV without Anroid Auto, Apple Car Play
- Sony XAV Ax 3000 Touchscreen AV - .6.2 Inch Touchscreen AVN with Android Auto and Apple Car Play
- Sony XAV Ax 5500 AVN (2022 Series - Touchscreen AVN with Android Auto and Apple Car Play) - 6.95 Inch . JVC V10 KW
- MGA Tweeter Pair 80W - Tweeter produce high end sound frequency transforming into crystal clear sound and enhance Music Clarity

Maruti Suzuki Accessories for Car Interiors



Figure 3.3 Maruti Suzuki Accessories for car interiors

- Steering Wheel Cover (Fabric, Art Leather Range)
- Perfume Range
- Cabin Floor Mat (Basic Mat) - basis Vehicle Model
- Cabin Floor Mat (Basic Mat) - basis Vehicle Model Cabin Floor Mat (Basic Mat) - basis Vehicle Model
- Cabin Floor Mat (Designer Mat) - basis Vehicle Model
- Dicky Mat
- Child Seats - KA240 for upto 12Kg Weight
- Interior Styling Kit (Wooden) - basis Vehicle Model
- GPS Navigator (4.3 Inch Screen with Bluetooth) – Garmin
- Set of all 4 Door Power Window
- 2 Din CD Player with USB & Bluetooth (without Bluetooth Function will be Rs 3000 economical - Speaker Cost Additional)
- Integrated Music System - Nippon (Only Head Unit - Speaker Cost additional)
- Front Center seat Armrest with Utility Box (Beige in Ertiga & Dzire, Black in Swift & Baleno)
- Pure Leather Seat Cover (basis Car Model, Quality)

Maruti Suzuki Body Exteriors



Figure 3.4 Maruti Suzuki Body Exteriors

- Side Body Side Graphics - basis Vehicle Model Range
- Bumper Corner Protector (Front & Rear) - Set of 4
- Wheel Cover (Set of 4 basis Tyre Size & Design)
- Sun Door Visor - all 4 windows
- Rear Spoiler for Maruti Ciaz including Body Colored Paint
- Chrome Window Frame Kit (Chrome Lining on Door Window)
- Anti Rust Coating with 3 Year Warranty (Performed at Workshop)
- Paint Protection Coating with 1 Year Warranty (Performed at Workshop) Roof Luggage Carrier (For Ertiga)

Maruti Suzuki Alloys and Tyre Accessories

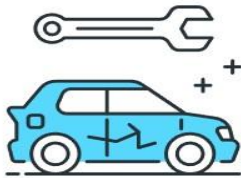
- Car Air Inflator - very useful in emergency situation to refill tyre pressure in case of low pressure or puncture. Fill Pressure from 0 to 33 psi in around 4 minute
- Tyre Pressure Gauge with LED Indicator
- Tyre Pressure Monitor with Colour Coded Indication (Green means Tyre Pressure okay, red means low pressure)
- Emergency Kit (Tubeless Tyre Repair, Battery Jump Cable, Tow Rope)
- Alloy Wheel (Set of 4 Alloys basis design) - 15 Inch
- Alloy Wheel (Set of 4 Alloys basis design) - 13 Inch Alloy Wheel: For More Details on MGA Alloy Wheels offered in Range of Cars



Figure 3.5 Maruti Suzuki Alloys & Tyre Accessories

Maruti Suzuki Spare Part (MGP Parts)

- It's important to use Original Maruti Genuine Parts and not fall in Trap of Counter / Fake Parts
- Each Maruti Genuine Part - is developed after major R&D by the manufacturer to provide best spare part for the car. A Counterfeit product like Chassis can undermine the Strength of the car and expose the passenger to risk, while an Original Chassis from MGP will help in retaining the strength of the vehicle and provides safety.



**Maintenance
Service Parts**



Steering



Car Accessories



**Electric
Components**



Oils and Fluids



Brake System

Figure 3.6 Maruti Suzuki Spare Part and service

3.12 Quality Certificates

- IATF 16949
- ISO 14001
- OHSAS 18001 ➤ ISO 50001

IATF 16949:2016 is a technical specification aimed at the development of a quality management system which provides for continual improvement, emphasizing defect prevention and the reduction of variation and waste in the automotive industry supply chain and assembly process. It is based on the ISO 9001 standard and the first edition was published in June 1999 as ISO/TS 16949:1999. IATF 16949:2016 replaced ISO/TS 16949 in October 2016. The standard was prepared by the International Automotive Task Force (IATF) and the "Technical Committee" of ISO.

It harmonizes the country-specific regulations of quality management systems. About 30 percent of the more than 100 existing motorcar manufacturers affiliate the requirements of the norm but especially the large Asian manufacturers have differentiated, own requirements for the quality management systems of their corporate group and their suppliers. ISO/TS 16949 applies to the design/development, production and, when relevant, installation and servicing of automotive-related products. The requirements are intended to be applied throughout the supply chain. For the first time vehicle assembly plants will be encouraged to seek ISO/TS 16949 certification.

ISO 14001 is the international standard that specifies requirements for an effective environmental management system (EMS). It provides a framework that an organization can follow, rather than establishing environmental performance requirements. Part of the ISO 14000 families of standards on environmental management, ISO 14001 is a voluntary standard that organizations can certify to. Integrating it with other management systems standards, most commonly ISO 9001 can further assist in accomplishing organizational goals. The International Organization for Standardization (ISO) defines an environmental management system as “part of the management system used to manage environmental aspects, fulfill compliance obligations, address risks and opportunities.” The framework in the ISO 14001 standard can be used within a plan-do-check-act (PDCA) approach to continuous improvement

OHSAS 18001, Occupational Health and Safety Assessment Series (officially **BS OHSAS18001**), was a British Standard for occupational health and safety management systems. Compliance with it enabled organizations to demonstrate that they had a system in place for occupational health and safety. BSI cancelled BS OHSAS 18001 to adopt ISO 45001 as BS ISO 45001. ISO 45001 was published in March 2018 by the International Organization for Standardization. Organizations that are certified to BS OHSAS 18001 can migrate to ISO 45001 by March 2021 if they want to retain a recognized certification.

ISO 50001 Energy management systems - Requirements with guidance for use, is an international standard created by the International Organization for Standardization (ISO). The standard specifies the requirements for establishing, implementing, maintaining and improving an energy management system, whose purpose is to enable an organization to follow a systematic approach in achieving continual improvement of energy performance, including energy efficiency, energy security, energy use and consumption. The standard aims to help organizations continually reduce their energy use, and therefore their energy costs and their greenhouse gas emissions. ISO 50001 was originally released by ISO in June 2011 and is suitable for any organization, whatever its size, sector or geographical location. The second edition, ISO 50001:2018 was released in August 2018. The system is modeled after the ISO 9001 Quality Management System and the ISO 14001 Environmental Management System (EMS) and the 2018 version has clauses modular with both.

A significant feature in ISO 50001 is the requirement to "... improve the EnMS and the resulting energy performance" (clause 4.2.1 c). The other standards mentioned here (ISO 9001 and ISO 14001) both require improvement to the effectiveness of the Management System but not to the quality of the product/service (ISO 9001) or to environmental performance (ISO 14001). It is anticipated that by implementing ISO 9001 and 14001 together an organization would improve quality and environmental performance, but the standards do not currently specify this as a requirement. ISO 50001, therefore, has made a major leap forward in 'raising the bar' by requiring an organization to demonstrate that they have improved their energy performance. There are no quantitative targets specified – an organization chooses its own then creates an action plan to reach the targets. With this structured approach, an organization is more likely to see some tangible financial benefits.

CHAPTER -IV

4. REVIEW OF LITERATURE ON INVENTORY MANAGEMENT

INTRODUCTION

This Chapter Presents the Review Of Literature In The Chronological Order. Inventory management is an important aspect of business operations, as it involves the planning, procurement, and control of goods and materials to ensure the efficient functioning of a business. There is a large body of literature available on inventory management, covering various aspects such as inventory control, inventory optimization, and inventory forecasting.

One of the most popular inventory management models is the Economic Order Quantity (EOQ) model, which was introduced by Harris in 1913. This model is widely used for determining the optimal order quantity and reorder point for a given product, based on the trade-off between ordering costs and holding costs. The EOQ model has been extended and modified over the years to account for various factors such as quantity discounts, lead time, and demand uncertainty

Another important model in inventory management is the Just-In-Time (JIT) system, which was popularized by Japanese manufacturers in the 1980s. The JIT system emphasizes the importance of minimizing inventory levels and achieving a smooth flow of materials through the production process. This approach aims to reduce waste and increase efficiency, but requires careful coordination and communication with suppliers.

Inventory forecasting is another critical aspect of inventory management, as it involves predicting future demand for products and materials. Various techniques have been developed for inventory forecasting, including time series analysis, regression analysis, and artificial intelligence-based models. These methods can be used to identify trends, seasonality, and other patterns in demand data, which can then be used to make accurate predictions.

Atnafu, D. & Balda, A. (2018) focuses on inventory management & explains the relationship between inventory management practices, competitive advantage& organisational performance. The finding of the study on basis of data analysis is that there is positive relationship between competitive advantages and inventory management performance and better organizational performance gives a firm bigger capital to apply various inventory management techniques.

Hong Shen, Qiang. Deng, Rebbaca Lao, Simon Wu (2016) focused on boosting the inventory management to improve the supply chain of the company. Drop in inventory is considered one of the most significant aspects of inventory management. In practice, small inventory level is not always a better solution, so manufacturers need to maintain the correct amount of inventory at the correct level.

Plinere, D. & Borisov, A. (2015), concluded that, inventory management is necessary to every company, having inventories. Companies have stock, but so much as to keep away from overstock and out-of-stock situations. Inventory management can better company's inventory control existing condition and reduce costs of the company.

Wisner et al, 2014 Inventory management involves balance between customer service, or product availability, and cost of inventory (**Wisner et al, 2014**). There are a number of factors that influence inventory decision-making. In this paper, only two will be considered: the cost factor and the uncertainty factor, which includes demand uncertainty and time uncertainty.

Jose, T., Jayakumar, A., & Sijo, M. T. (2013) found the difference between EOQ & number of pieces purchased. It is observed that the company is not using EOQ for buying the materials. Therefore, inventory management is not reasonable. From estimate of safety stock, company can decide how much inventory the company can keep in back stock per annum.

Michael C. C. Bergerac, former CEO of Revlon, Inc., noted that every management mistake ends up in inventory. It is now generally recognized that high inventory levels are wasteful (**Tayur et al., 2012**). Many management problems could be solved by removing excess inventory. Since inventory is strongly related to customer service, it is worth close attention.

Mohamad, S. J. A. N. bin S., Suraidi, N. N., Rahman, N. A. A., & Suhaimi, R. D. S. R. (2016) concluded that efficiency of inventory management is a major concern area of a business. Suggestions are given to improve the performance of inventory management, demand forecasting, scattered inventory & cycle counting.

As mentioned by **Sunitha, K. V. (2012)** in her thesis, inventory management is for keeping costs down, when meeting regulations. It is difficult to balance demand and supply and inventory management to make sure that the balance is untouched. The trained inventory management and good quality software will help make inventory management a victory. The ROI of Inventory management has seen better revenue and profits, positive employee ambience and increase in customer satisfaction.

Unlike a fixed-order quantity model, suppliers are in charge of managing the inventory at the location of customers and sending the right amount at the right time using information technology (**Romano, 2014**). Today, VMI literature has generally focused on the relationship between the manufacturer and the distributor (Taleizadeh et al., 2015). In most cases, it has been the large distributor, or purchaser, who has required the suppliers to institute VMI. These implementations have been required primarily to benefit the distributor without much thought as to the effect on the supplier (**Southard, 2001**).

Most studies have focused on the operational aspect of supply contracts, pricing modelling, quantity, and delivery (**Urban, 2000**). One common supply contract is the commitment contract that imposes certain restrictions on the buyer to buy certain quantities of products. For non-stationary commitment, **Lundin and Morton (1975)** developed forecast horizons using a dynamic lot-size model. **Schwarz (1977)** extended their work to include a continuous-review model. The research results can be applied to the recurrent newsvendor model, or utilizing procedures like those in **Chand and Morton (1986)**, or in **Feder Gruen and Tzu (1995)**.

A related field is the optimal solution for rolling horizons. The rolling horizon flexibility (RHF) Supply contract, as the tool for dealing with non-stationary commitment by rolling horizon planning, aims to make the prediction more accurate and decrease the uncertainty of demand by adjusting the quantity commitment period by period with limited flexibility. **Aupindi and Bassok (1998)** presented a general RHF contract with informative analysis. **Tsay and Lovejoy (1998)** developed a RHF contract for a multi-echelon system. This study utilizes these developed models and analysis.

Safety stock are to defend uncertainty, improve service level, and increase the Safety stability in planning and controlling systems (**De Bodt and Wassenhove, 1983**). **Howard (1984)** pointed out that to manage the opportunity cost of inventory control, firms must maintain a level of safety stock that balances the loss of sales and customer goodwill with the cost of carrying inventory. The complexity associated with this decision stems from the fact that daily demand from customers and lead time from suppliers may vary. Thus, the greater the variability, the larger the safety stock needed.

Beyond the quantitative method, which mainly focuses on optimizing inventory levels in departments, many manufacturers have turned their attention to new conceptual ideas about supply chain management, such as VMI and postponement which emphasize collaboration and sharing information with suppliers and customers, utilization of information technology, to reduce inventory and optimization of the whole supply chain. VMI model is designed as a powerful tool to deal with supply chain management from

which suppliers can make better decisions for inventory replenishment. The advantages of using VMI have been extolled by several authors. **Waller et al. (1999)** pointed out that the main advantages of VMI are cost savings and customer service levels, which can be improved on both sides. **Fox (1996) and Williams (2000)** suggested that these advantages can improve the level of service, reduce uncertainty in demand, and save costs.

Postponement can help build a quick response supply chain (**Skipworth and Harrison, 2004**). It will delay the final manufacturing process until the order is made and facilitates mass Customization. **Copper (1993)** also pointed out that postponement is widely applied to Or Supply chains. Further, many applications of postponement have been developed in manufacturing (**Choi et al., 2012; Kim, 2014**). Customers can now demand variation in each order with little or no time loss (**Coelho and Laporte, 2015; Khan et al., 2016**). Because of this postponement has also been utilized either singly or together with another approach such as VMI

Smoothing models of conceivable creation, for example, Beckman (1961), are additionally appropriate here. Beckman's model joins the expense of a straight yield with the per-unit expenses of rising and lessening the creation level for the dimension chose for the past period. At that point the smoothing models in this vein creation incorporate **Sobel (1969) and Sobel (1971)**. In our model, interestingly, the request cost work is reliable with noncracking and term, yet we take into account any number of straight pieces

In 1980 K. Sambasiva Rao directed an exploration contemplate called "Materials Management in the Public Sector Shipbuilding Industry". He made an audit of the investigation of overseeing things in Indian businesses and lit the arrangement and spending plan. Material Management at Hindustan Ships Limited He examined profoundly in the field of study, aggregation and accreditation, deals investigation, and stock control in the Light Of stock gauges set by the Bureau of Public Enterprises under the examination.

The main accommodation verification that we permit on **bensousson et al** is the requesting cost work that has **any direct pieces. (1983)**, restricted skyline all out expected cost criteria

Sobel (1970) concentrates such an example in which the area of the wrinkle is chosen at first and is then dated for a period. He contends for the limit of the general stock approach that is restricted under the normal cost criteria, given the area of the wrinkle under the markdown rate criteria and the constrained interest.

Hari R. Swamy's examination work "Materials Management in Public Inquiries", evaluates execution in focal open organizations of Rajasthan, instrumentation constrained, share unit: HMT, Ajmer unit: Hindustan Zinc Ltd, Debari unit; Hindustan Copper Limited,

Khetri Unit and Sambar Solts Limited. The investigation covers different parts of material administration in these enterprises from 1977-78 to 1981-82.

Ramakrishna Rao B., in(1979), in the investigation of Bharat Heavy Plate and Wessels Limited (BHPV) in Visakhapatnam, 'Substantial Engineering Industry Materials Management' has assessed the execution of the materials the executives in BHVV and some explicitly issues identified with material administration in BHPV and Bh Which ran the designing business.

BIBLIOGRAPHY

Referred following standard text and websites:

1. Financial Management I.M. Pandey, Vikas Publishing House Pvt Limited, 2009
2. Financial Management. Prasanna Chandra, Tata McGraw-Hill Education, 2007
3. Financial Management Van Horn, Pearson; 13th edition (4 November 2008)
4. Management Accounting and Control S.N.Maheswari, SULTAN CHAND (1 January 2015)
5. Inventory Management L C Jhamb, Everest Publishing House, 19th edition, 2013
6. Shen, H., Deng, Q., Lao, R., & Wu, S. (2016). A case study of inventory management in a manufacturing company in China. *Nang Yan Business Journal*, 5(1), 20-40.
7. Sunitha, K. V. (2012). A Study on Inventory Management in Sujana Metal Products Limited. *Master's Report, Jawaharlal Nehru Technological University, Hyderabad*.
8. Plinere, D., & Borisov, A. (2015). Case study on inventory management improvement. *Information Technology and Management Science*, 18(1), 91-96.
9. Jose, T. V., Jayakumar, A., & Sijo, M. T. (2013). Analysis of Inventory Control Techniques. *A Comparative Study: International J. of Scientific and Research Publications*, 3, 3.
10. Bin Syed, S. J. A. N., Mohamad, N. N. S., Rahman, N. A. A., & Suhaimi, R. D. S. R. (2016). A study on relationship between inventory management and company performance: A case study of textile chain store. *Journal of Advanced Management Science*, 4(4).
11. Atnafu, D., & Balda, A. (2018). The impact of inventory management practice on firms' competitiveness and organizational performance: Empirical evidence from micro and small enterprises in Ethiopia. *Cogent Business & Management*, 5(1), 1503219.
12. Tayur, S., Ganeshan, R., & Magazine, M. (Eds.). (2012). *Quantitative models for supply chain management* (Vol. 17). Springer Science & Business Media.

13. Sherwin, W. K., Ross, T. H., Rosenthal, C. M., & Petrozzi, J. W. (1979). An immunosuppressive serum factor in widespread cutaneous dermatophytosis. *Archives of dermatology*, 115(5), 600-604.
14. Wisner, J. D., Tan, K. C., & Leong, G. K. (2014). *Principles of supply chain management: A balanced approach*. Nelson Education.
1. Lundin, R. A., & Morton, T. E. (1975). Planning horizons for the dynamic lot size model: Zabel vs. protective procedures and computational results. *Operations Research*, 23(4), 711- 734.

Website:

www.financialmanagement.com www.principalsofaccounting.com

CHAPTER - V

5. COST ANALYSIS OF MATERIAL MANAGEMENT

5.1. ABC ANALYSIS

The concept ABC (Always Better Control) Analysis is based on 'Think on the Best and then on the Rest'. ABC analysis underlines a very important principle "Vital few: trivial many". Generally, companies are required to keep stock of large number of items used in production and distribution. In practice, it is not possible to maintain and control a similar/ proper level of inventory of all items, which is also not feasible due to resource constraints. Hence, the prevalent practice is that sincere efforts are made to have a proper control on the most circulating items and least on rare circulating ones.

ABC analysis offers a basis for grouping of items on certain basis of annual/ monthly consumption value. In other words, of an item's unit price is very little but if it is a most circulating item and its monthly/annual consumption value is maximum, then closer and careful control will be done and vice versa. Hence, In ABC analysis, items are categorized in three broad groups, namely; A, B, and C, on the basis of their monthly/annual consumption value.

CONSUMPTION VALUE

1. A Category Items - It is usually found that 20% of the total items account for 65% of the total money spent on the materials. These items require detailed and rigid control and need to be stocked in smaller quantities. These items should be procured frequently, the quantity per occasion being small. A healthy approach, however, would be to enter into contract with the manufacturers of these items and have their supply in staggered lots according to production programme of the buyer. This, however, will be possible when the demand is steady. Alternatively, the inventory can be kept at minimum by frequent ordering.

2. B Category Items - Average monthly/annual consumption valued items are grouped in category B. Generally, 30% items account for approximately 25% of the total sales or consumption value. This category of items needs a closer and more careful inventory management. These items cannot be overlooked but need a lesser degree of attention and control than those in class A but more than C category items.

3. C Category Items - The low monthly/annual consumption valued items are grouped in C. Again, generally, 50% items account for approximately 10% of total sales or consumption value. This category of items needs the least attention for inventory management. No doubt, a loose control of C category items leads to a total inventory cost but this will not be so much to affect overall inventory cost. 42

PROCEDURE:

To conduct ABC analysis, following steps are necessary:

- a) Prepare the list of the items and estimate their annual consumption(units)
- b) Determine unit price (or cost) of each item.
- c) Multiply each annual consumption by its unit price (or cost) to obtain its annual consumption in rupees (annual usage).
- d) Arrange items in the descending order of their annual usage starting with highest annual usage down to the smallest usage.
- e) Calculate cumulative annual usages and express the same as cumulative usage percentages. Also express the number of items into cumulative items percentage.
- f) Graph cumulative usage percentages against cumulative item percentages and segregate the items into A, B and C categories.
- g) Decide the policies of control for the three categories.

ABC Analysis of spare parts of the Maruti suzuki

1	Prod Line Desc	Item Number	Description	ABC	Qty on Hand	UM
2	Raw Materials-Resin	00232159-01-T304	THERMOPLASTIC - POM, HOM	C	294.47	KG
3	Raw Materials-Resin	00244441-01-NHZD	Thermoplastic - PE Copol	B	25	kg
4	Raw Materials-Resin	00246126-01-0000	Thermoplastic - POM, Cop	B	1,553.58	kg
5	Raw Materials-Resin	21352TY2-FA	RM BEIGE - PA GLOVE BOX	C	351.639	KG
6	Raw Materials-Resin	21359-TYPE1-FA	RM BEIGE - PA IP	C	650	KG
7	Raw Materials-Resin	AG01C120-0HF	RM:PC+ABS	C	87.13	KG
8	Raw Materials-Resin	DR-247-XBM	ACRYLIC POLYOL- DR- 247	A	-0.66	KG
9	Raw Materials-Resin	MAGNUM3525-RCAR	THERMOPLAS-HIGH HEAT ABS	C	460.92	KG
10	Raw Materials-Resin	MB-TPO3202	RAW MATERIAL TPO	C	2474.191	KG
11	Raw Materials-Resin	MS-21359-TY2	RAW MATERIAL PPTF	C	137.35	KG
12	Raw Materials-Resin	MS213-57TYDB1	RM- PPF SMOKY BROWN G.BO	C	36.5094	KG
13	Raw Materials-Resin	MS213-59TYA-2B1	RM PPF SMOKY BROWN IP	C	551.30	KG
14	Raw Materials-Resin	MT42-TBL	RM: PPTF	C	597.93	KG
15	Raw Materials-Resin	NC01605-NA	RM:PBT(G30)INX-1	C	324.21	KG
16	Raw Materials-Resin	PG05-C1200HF	RM:PC+ABS-CYCOLOY C1200H	C	858.02225	KG
17	Raw Materials-Resin	PG05X17-NA	RM:ABS	C	0.5075	KG
18	Raw Materials-Resin	PK79527U-BK701	THERMOPLAS-POM COPOLYMER	A	25	KG
19	Raw Materials-Resin	PK801533-NM	RM:PPCGRAD2 HIPOLYENE 1	C	112.364	KG
20	Raw Materials-Resin	PLC3-65301	D - 118 NPC HZ C/BASE	C	11	KG
21	Raw Materials-Resin	RBA8518TRY	MT42TBR-GS CALTEX -BLACK	C	461.66	KG
22	Raw Materials-Resin	RGRA7036-BK99	7036-BK-99 NOIR-GRAPHITE	C	3.9136	KG
23	Raw Materials-Resin	TPO4203	THERMOPLASTICS - (TPO)	C	1076.787	KG
24	Raw Materials-Resin	TRMB-101208-NA	MASTER BATCH - PBT - PG0	C	30.97	KG
25	Raw Materials-Resin	V0913080-HCRM	THERMOPLASTIC-PP OTHER	C	47.12	KG
26	Raw Materials-Resin	XA 10177	THERMOPLAS-PP HOMOPOLYMR	A	451.035	KG
27	Console	00136058-04-T056	Housing - Console	C	60.00	EA
28	Console	00239724-01-T056	Panel - Console	C	238	ea
29	Console	00241664-01-PG05	Box - Console	C	439.00	ea
30	Console	1954R-68104P01-NB	BEZEL - CONSOLE	C	7.00	EA

ABC Analysis of spare parts of the Maruti suzuki

1	Prod Line Desc	Item Number	Description	ABC	Qty on Hand	UM
31	Console	3BB0A-96933P01-1A	PUSH BIN-FIN CONSOLE - B	C	326.00	EA
32	Console	3BB1B-96911P01-1A	BODY-CONSOLE - GREY	C	8	EA
33	Instrument Panel	00137404-02-T056	Handle Assembly - Grab	C	147.00	ea
34	Instrument Panel	00137428-01-T056	Handle - Grab	C	70	EA
35	Instrument Panel	00234909-01-T278	Box Assembly - IPGL/BOX	C	98.00	ea
36	Instrument Panel	00237316-01-PG05	Cover - IP Misc	C	17	ea
37	Instrument Panel	00239586-01-T056	Latch - IP	B	1	ea
38	Instrument Panel	00241606-01-PG05	Column Assembly - Steeri	C	914.00	ea
39	Instrument Panel	00241631-01-PG05	Column - Steering	B	7.00	ea
40	Instrument Panel	00244781-01-PG05	Panel Assembly - Lower	C	4.00	ea
41	Instrument Panel	1HA0A-68410P01-2B	FIN-INST,A (RHD W/O PAIN	C	6	EA
42	Instrument Panel	1HA0A-68485P02-2A	Bracket - Fuse Block	A	30	ea
43	Instrument Panel	1HA0A-68560P04-1B	LID-GLVEBX,UPRRHDW/OPNT-	C	38.00	EA
44	Instrument Panel	1HB0A-68410P02-3B	VISOR	C	123.00	EA
45	Instrument Panel	1HB0B-68510P01-2A	LID-G/BOX,INR (LHD) - GR	A	2.00	EA
46	Instrument Panel	3031R-68100P02-NA	UPPER IP (CARBON FONCE)	C	2.00	EA
47	Instrument Panel	3031R-68100P05-NA	LOWER IP (CARBON FONCE)	C	2.00	EA
48	Instrument Panel	3AR0A-68410P01-1A	FIN INST, A (LHD) - BLAC	C	59	EA
49	Instrument Panel	3BB0A-68410P01-1A	FIN INST, A (RHD) - BLAC	C	18.00	EA
50	Instrument Panel	3BB0A-68750P01-NB	CASE-VENT-CTR,RH - BLACK	A	56.00	EA
51	Instrument Panel	3BB0A-68751P01-NB	CASE-VENT-CTR, LH - BLAC	A	56	EA
52	Instrument Panel	3BB0A-96942P01-NA	COVER SHIFT LOCK	C	125	EA
53	Instrument Panel	3BN0A-68260P02-1A	BEZEL ASSEMBLY - CLUSTER	C	7	EA
54	Instrument Panel	3HH0B-68560P04-1B	LID-GLOVEBOX,UPR(RHD W/O	C	2.00	EA
55	Instrument Panel	9532R-68260P02-Na	TRIM CENTER FASCIA	C	1	EA
56	Instrument Panel	C705084720TRYP01NA	Panel Assembly - Upper	A	22	ea
57	Instrument Panel	C705084720YYEP01NA	PANEL ASSEMBLY UPPER	A	13	EA
58	Instrument Panel	D84512-0X900-B1	COVER-GLOVE BOX-(SMOKY B	C	2.00	EA
59	Instrument Panel	D84711-0X100-GAP1	CRASHPAD MAIN(LHD+PAB+K/	C	17.00	EA
60	Door/Trim Module	00241699-01-PG05	Armrest Assembly - Conso	C	449.00	ea

ABC Analysis of spare parts of the Maruti suzuki

1	Prod Line Desc	Item Number	Description	ABC	Qty on Hand	UM
61	Door/Trim Module	1021R-829A1P02-NB	CARRIER-DOOR TRIM STRUCT	C	1.00	EA
62	Door/Trim Module	97352-C7900	NOZZLE - DEFROSTER 2 LH	C	125.00	EA
63	Door/Trim Module	97353-C7900	NOZZLE - DEFROSTER 2 RH	C	118.00	EA
64	Door/Trim Module	AS69-A27406-AAEP1	CR -DR TM STR -REAR DR T	C	6.00	EA
65	Console	00239467-01-T056	Handbrake	C	48	ea
66	Console	00241362-01-PG05	Box - Console	C	280	ea
67	Console	00241372-01-PG05	Console Assembly - Kit	C	24	ea
68	Console	00246190-01-T056	Vent Assembly - Console	B	164.00	ea
69	Console	74904-6600R	CONSOLE BOTTLE HOLDER RU	C	300	EA
70	Console	96910-3BB1A	CNSL ASY-CTR WIT PKCT&W/	C	56.00	EA
71	Console	96924-3BB0A	POCKET CONSOLE- BLACK	C	204.00	EA
72	Console	96924-3BB0B	POCKET CONSOLE- GREY	C	36.00	EA
73	Console	96991-3BB1A	BRKT CNSL RR	C	126	EA
74	Console	96992-3BB1A	REINF CONSOLE	C	256	EA
75	Console	96996-3BB0A	BRKT CNSL CTR	C	112.00	EA
76	Console	VP96941-3BN0A-NA	PANEL - CONSOLE	C	228	EA
77	Instrument Panel	00238458-01-T056	Shroud - Steering	C	27	ea
78	Instrument Panel	00239384-01-T056	Holder - IP	C	1,429.00	ea
79	Instrument Panel	00239439-01-R517	PANEL-INST W- Airbag &	C	24.00	ea
80	Instrument Panel	00239441-01-T056	PANEL-INST w- Airbag	C	24	ea
81	Instrument Panel	00240205-01-RCAR	Bracket - IP	C	24.00	ea
82	Instrument Panel	00241349-01-PG05	Bracket Assembly - IP	C	5	ea
83	Instrument Panel	00241527-01-PG05	Housing - IP	C	1518	ea
84	Instrument Panel	00246999-01-T056	Pad Assembly - IP	B	24.00	ea
85	Instrument Panel	1HB0B-68104-4A	COVER-IP MISC	C	168.00	EA
86	Instrument Panel	27727-1HH0A	DUCT ASSY-ASPIRATOR (LHD	C	128.00	EA
87	Instrument Panel	27800-1HB0A	NOZZLE ASSY-DEF,WS FR (L	C	158.00	EA
88	Instrument Panel	27860-3BB0A	DUCT-CTR VENT,FR LHD	C	64	EA
89	Instrument Panel	27871-0607R	ASSY BLOW DUCT AIRVENT L	C	24.00	EA
90	Instrument Panel	27871-6938R	ASSY BLOW DUCT AIRVENT R	C	32.00	EA

ABC Analysis of spare parts of the Maruti Suzuki

1	Prod Line Desc	Item Number	Description	ABC	Qty on Hand	UM
91	Instrument Panel	28038-1HA1A	BRKT-AUDIO, RH	C	884	EA
92	Instrument Panel	28039-1HA1A	BRKT-AUDIO, LH	C	960	EA
93	Instrument Panel	28590-1HA0A	IMMOBI INR RING	C	1,220.00	EA
94	Instrument Panel	36315-8385R-NA	PANEL- IP	A	3.00	EA
95	Instrument Panel	48489-1HA0A	PAD COL COVER	C	120	EA
96	Instrument Panel	67887-1HA0A	BRKT-FIN B (RHD)	C	200.00	EA
97	Instrument Panel	67887-1HB0A	BRKT-FIN B (LHD)	C	540	EA
98	Instrument Panel	68104-1HB0B	PNLAS-Y-INST LR CTR(LH W/	C	128.00	EA
99	Instrument Panel	68104-3AR0A	PNL ASY INST LWR CTR (LH	C	78.00	EA
100	Instrument Panel	68104-3BB0A	PANEL ASSY INST LWR CTR	C	9.00	EA
101	Instrument Panel	68135-0701R	ASSY MASK NO AIRBAG PAS	A	7	EA
102	Instrument Panel	68171-1HA0A	BRKT-INST,CTR	C	472	EA
103	Instrument Panel	68200-1HA2A	PNL&PAD ASY-INS(RHEURPAB	C	10	EA
104	Instrument Panel	68200-1HA2B	PNL&PD ASY-INS(RH EUR PA	A	10	EA
105	Instrument Panel	68238-1HA0A	TAPE SILENCER (50*40*T0.	C	3216	EA
106	Instrument Panel	68260-1HA2B	LID ASY-CLSTR.C(2-DIN W/	A	3.00	EA
107	Instrument Panel	68260-3BB3A	LID ASY CLUSTER. C - BLC	A	4.00	EA
108	Instrument Panel	68410-1HA0A	FIN ASSY-INST,A (RHD W/O	A	4	EA
109	Instrument Panel	68410-1HB0A	FIN ASSY-INST,A (LHD W/O	C	255.00	EA
110	Instrument Panel	68410-1HB1A	FIN ASY-INST,A (LHD W/PA	A	6	EA
111	Instrument Panel	68410-3AR0B	FIN ASY INST,A (LHD) - G	C	12.00	EA
112	Instrument Panel	68410-3BB0A	FIN ASY INST,A (RHD) -	C	42	EA
113	Instrument Panel	68411-1HA0A	FIN ASSY-INST,B (RHD) -	C	12.00	EA
114	Instrument Panel	68414-3AR0B	FIN ASY- INST,E (LHDW/OH	C	78	EA
115	Instrument Panel	68485-1HA1B	PANEL-SW (RHD MIRROR-CON	A	3.00	EA
116	Instrument Panel	68485-8AA0A	SWITCH PACK - IP	C	300.00	EA
117	Instrument Panel	68491-1HA4A	MASK-SW HOLE(MASK FR MIR	C	75	EA
118	Instrument Panel	68492-1HA4A	MASK-SW HOLE (MASK FOR	C	1,788.00	EA
119	Instrument Panel	68498-1HA0A	MASK-INST,RH - BLACK	C	192.00	EA
120	Instrument Panel	68498-1HA0B	MASK-INST,RH - GREY	C	240.00	EA

ABC Analysis of spare parts of the Maruti suzuki

1	Prod Line Desc	Item Number	Description	ABC	Qty on Hand	UM
121	Instrument Panel	68499-1HA0A	MASK-INST,LH - BLACK	C	168	EA
122	Instrument Panel	68499-1HA0B	MASK-INST,LH - GREY	C	72	EA
123	Instrument Panel	68499-BJ05B	MASK-INST,LH-RHD W/O AIR	A	378.00	EA
124	Instrument Panel	68510-1HA0A	LID ASSY-G/BOX (RHD) - B	C	18.00	EA
125	Instrument Panel	68510-1HA5A	LID ASSY-GLOVE BOX (IND)	A	1.00	EA
126	Instrument Panel	68510-1HB0A	LID ASSY-G/BOX (LHD) - B	C	153	EA
127	Instrument Panel	68510-1HB0B	LID ASSY-G/BOX (LHD) - G	C	134.00	EA
128	Instrument Panel	68640-1HA0A	STRIKER ASSY-G/BOX	C	908.00	EA
129	Instrument Panel	68922-BJ05B	COVER ASSY-INST LWR,CTR	A	848.00	EA
130	Instrument Panel	68925-1HA0A	BRKT-INST LWR COVER RHD	C	200.00	EA
131	Instrument Panel	68925-1HB0A	BRKT-INST LWR COVER LHD	C	508.00	EA
132	Instrument Panel	68962-1HA0A	FIN-INST,LWR (RHD) - BLA	C	144.00	EA
133	Instrument Panel	68962-1HB0A	FIN-INST,LWR (LHD) - BLA	C	191	EA
134	Instrument Panel	68962-1HB0B	FIN-INST,LWR (LHD) - GRE	C	138.00	EA
135	Instrument Panel	84710-0X000-GA	CRASHPADMAINASSY(LHD+N/P	A	2.00	EA
136	Instrument Panel	84710-0X100-GA	CRASH PAD MAIN ASSY (LHD	C	2.00	EA
137	Instrument Panel	84710-1V000HZ	PNL ASSY-C/PAD MAIN (NPA	A	1.00	EA
138	Instrument Panel	RP24322-1649R	COVER-FUSE	C	34.00	EA
139	Instrument Panel	RP68765-5FA0A	VENT ASSY - PLASTIC PART	C	90.00	ea
140	Instrument Panel	VP28557-8EA0A	MODULE ASSEMBLY - PASSEN	C	24	EA
141	Instrument Panel	VP68751-4FA0A-NA	VENT - IP	C	32.00	EA
142	Instrument Panel	VPB4847-10800-NA	INSTRUMENT PANEL ASSEMBL	C	3.00	EA
143	Door/Trim Module	00226716-02-T056	CUP - PULL	C	240.00	EA
144	Door/Trim Module	00238774-01-GLGR	FR LH FAB MIDDLE INSERT	C	17.00	ea
145	Door/Trim Module	00238775-01-GLGR	FR RH FAB MIDDLE INSERT	C	34.00	ea
146	Door/Trim Module	00238776-01-S832	FR LH VINYL MIDDLE INSERT	C	34.00	ea
147	Door/Trim Module	00238776-01-S906	VINYL BLACK FRONT LH	C	51	ea
148	Door/Trim Module	00238777-01-S832	FR RH VINYL MIDDLE INSERT	C	51	ea
149	Door/Trim Module	00238779-01-GLGR	RR RH FAB MIDDLE INSERT	C	16	ea
150	Door/Trim Module	00238781-01-S906	VINYL BLACK REAR RH	C	17	ea

1	Prod Line Desc	Item Number	Description	ABC	Qty on Hand	UM
151	Door/Trim Module	00239054-01-R605	Handle - Grab	C	56.00	ea
152	Door/Trim Module	RP80954-7138R	HANDLE ASSEMBLY - GRAB	A	7.00	EA
153	Raw Materials-Resin	3811016	NERO PRIMER	C	93.494	KG
154	Raw Materials-Resin	5HDX-24DL-AA	GREASE (KLUBER)	C	63.222	KG
155	Raw Materials-Resin	822-BIN-013	TOP COAT - BLACK	C	9.03	KG
156	Raw Materials-Resin	822-EIN-011	TOP COAT - LIGHT GREY	C	14.71	KG
157	Raw Materials-Resin	822-EIN-085	2K TOP COAT - GREY	C	-0.01	KG
158	Raw Materials-Resin	822-JIN-005	HARDENER	C	16.5427	KG
159	Raw Materials-Resin	822-ZIN-012	TOP COAT - SILVER	C	43.11	KG
160	Raw Materials-Resin	AKZO-SZ513T-00	DILUENT 513T - THINNER C	C	66.83	L
161	Raw Materials-Resin	BJ04A-68751P20	SILICON GEL	C	12.86727	L
162	Raw Materials-Resin	CHOKSPL2-71H	HARDENER(HARD FEEL)	C	0.07	KG
163	Raw Materials-Resin	CHOKTT44-2S	THINNER (HARD FEEL)	C	0.36	L
164	Raw Materials-Resin	FEVICOL-SP6	GLUE	C	68.442	L
165	Othr RM/PPrts-Interior	00237365-01-0000	Coating - Protective	C	-9.43	kg
166	Othr RM/PPrts-Interior	PUB869901	COATING INTERIOR	C	41.75282	KG
167	Othr RM/PPrts-Interior	SGI320003	T-980 THINNER	C	7.0725	L
168	Othr RM/PPrts-Interior	SGI320004	T-820 THINNER	C	5.95	L

Figure 6.1 ABC Analysis of spare parts of the Maruti suzuki In the above generated Reports:

Total Number of Items is 168.

In which,

A-7 Items

B-23 Items

C-138 Items

Here,

A Items are 5-10% of the total quantity.

This 5% Items covers 70-75% of cost.

B Items are near about 10-15% of the total quantity.

This 10-15% Items covers 10-15% of cost.

C Items are 80-85% of the total quantity.

This 5-10% Items Covers of cost.

Hence, Pareto Law proved.

Table 6.1 Calculation of ABC Analysis of Maruti Suzuki

Category of Items	% of Items	% of Annual Consumption Value	Degree of Inventory Management
A	18.61	70.69	Best
B	30.23	21.52	Better
C	51.16	7.79	Good
Total	100	100	

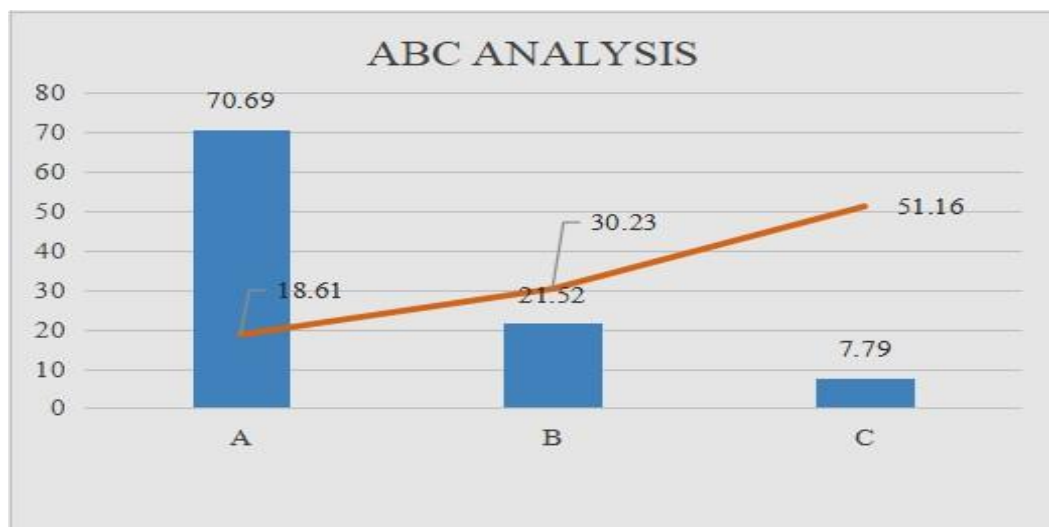


Figure 6.2 Graph Calculation of ABC Analysis

The above graph shows that ABC analysis, 70.69 % (70% standard) of the items are from A category in the organization, 21.52 % (20% standard) of items are from B category in the organization, and 7.79% (10% standard) of items are from C category. It is clear that the organization follows ABC analysis properly, but still, they can improve their inventory management.

SLOW MOVING, NON-MOVING AND OBSOLETE:

SLOW MOVING:

Slow-moving inventory is generally defined as stocks or products that sit in your storage room or warehouse (and have not moved) for a three to six months. Debit the 25% of **provision for slow moving inventory** (current asset) credit the inventory (current assets).

NON – MOVING:

Non-moving inventory is generally defined as stocks or products that sit in your storage room or warehouse (and have not moved) for a six to twelve months. Debit the 50% of provision for Non - moving inventory (current asset) credit the inventory (current assets).

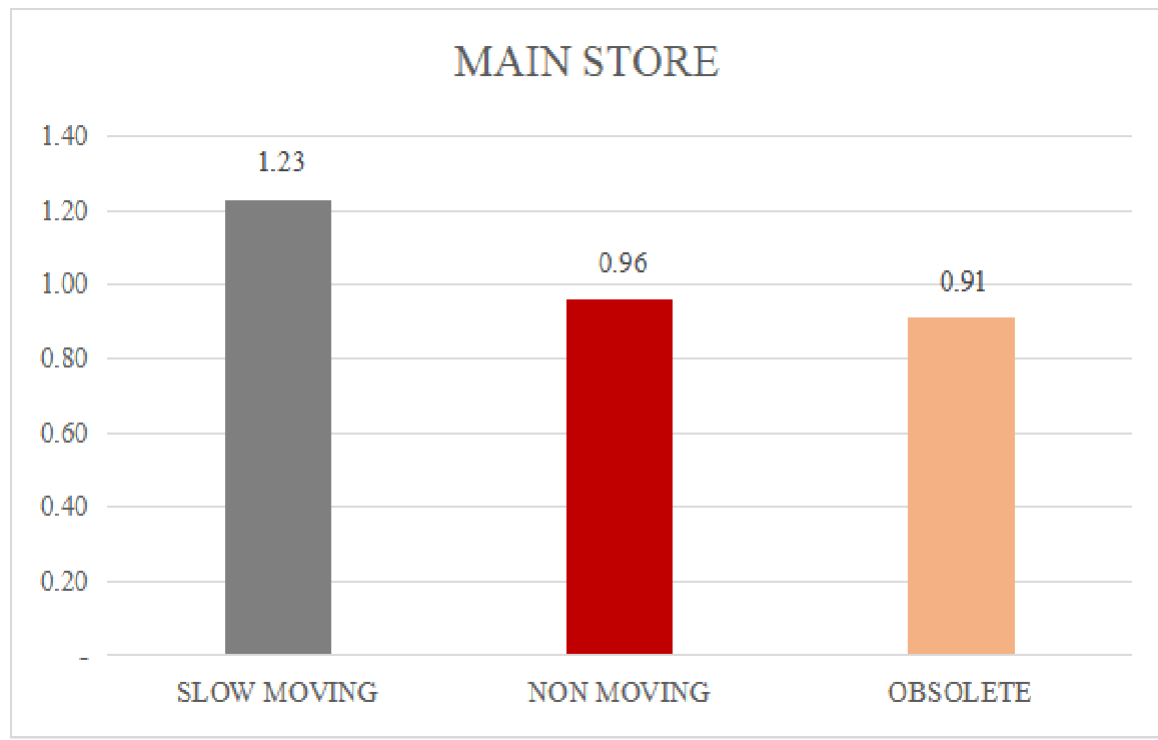
OBSOLETE:

Obsolete inventory is generally defined as stocks or products that sit in your storage room or warehouse (and have not moved) for a more than twelve months. Debit the 100% of provision for obsolete inventory (current asset) credit the inventory (current assets).

Table 6.2 Slow Moving, Non-Moving and Obsolete items at Maruti Suzuki

	MAIN STORE	WIP	FG
SLOW MOVING	1.23	0.04	0.04
NON MOVING	0.96	0.07	0.01
OBSOLETE	0.91	0.07	0.00

MAIN STORE

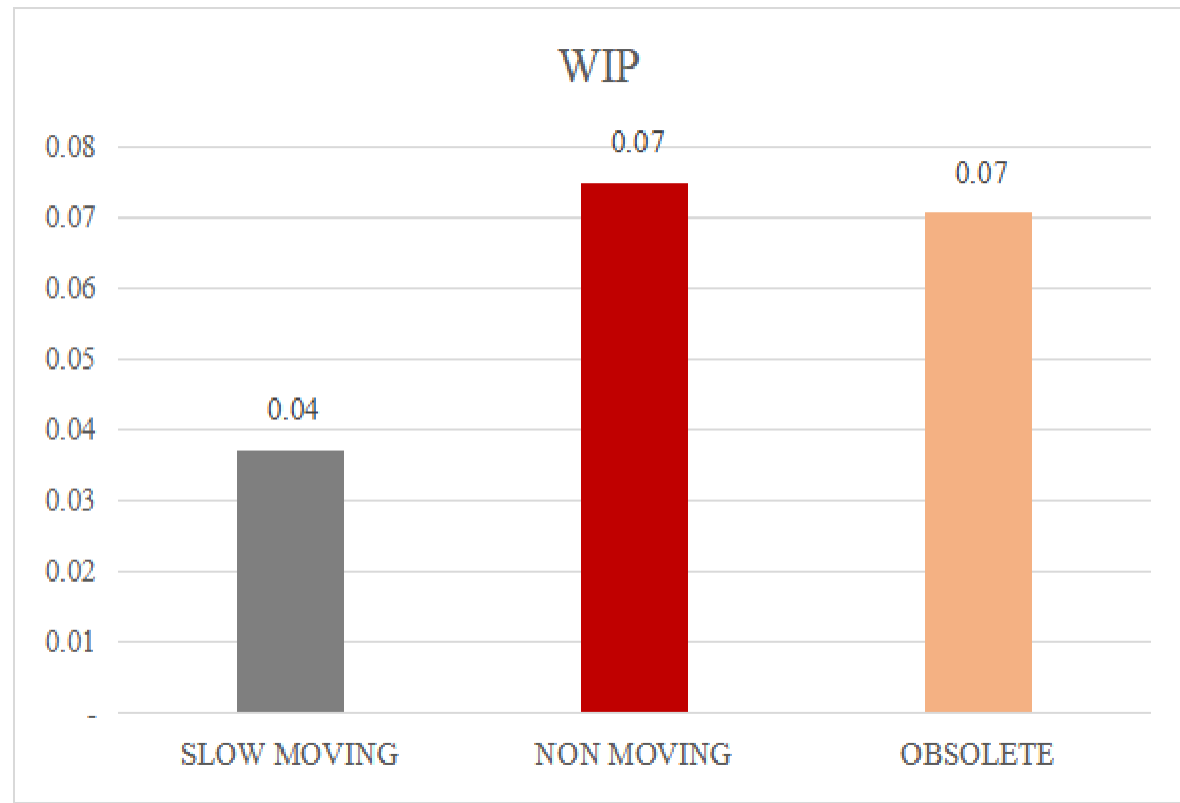


(Values in INR Mn)

Figure 6.3 Slow Moving, Non-Moving and Obsolete items in Main Store

The above graph shows that Slow Moving, Non-Moving And Obsolete items in Main Store INR1.23Mn of the items are from Slow Moving category in the organization, INR0.96Mn of items are from Non - Moving category in the organization, and INR0.91Mn of items are from Obsolete category.

WORK IN PROGRESS

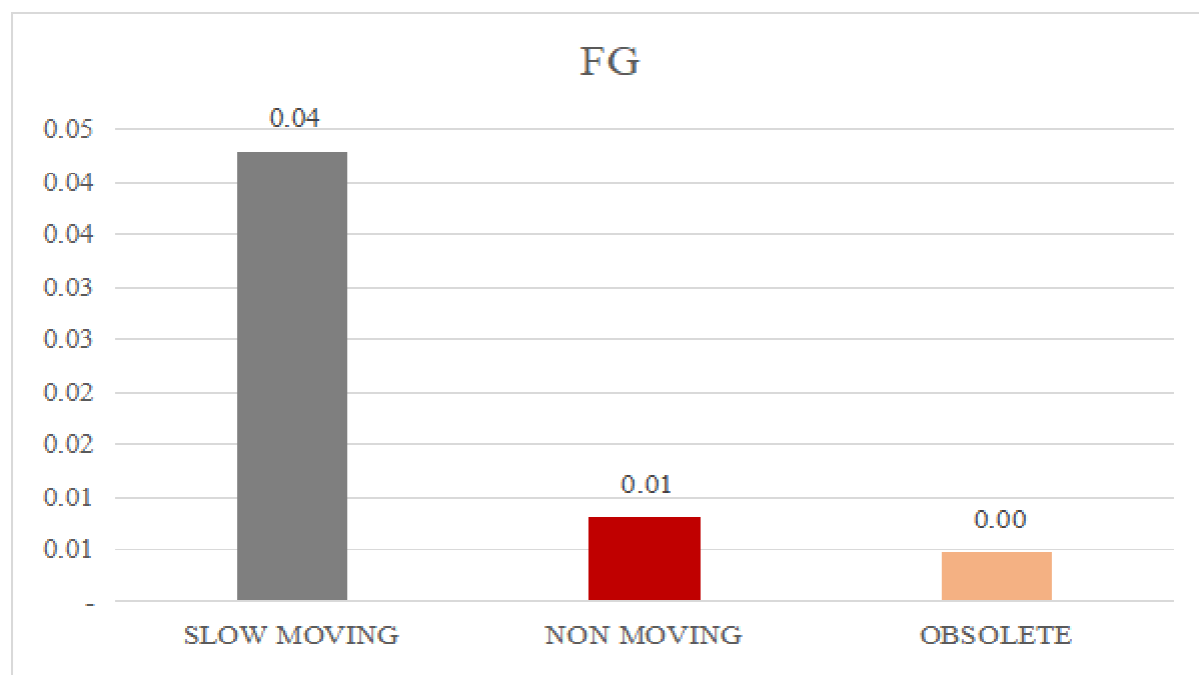


(Values in INR Mn)

Figure 6.4 Slow Moving, Non-Moving and Obsolete items in WIP

The above graph shows that Slow Moving, Non-Moving And Obsolete items in WIP INR0.04Mn of the items are from Slow Moving category in the organization, INR0.07Mn of items are from Non - Moving category in the organization, and INR0.07Mn of items are from Obsolete category.

FINISHED GOODS



(Values in INR Mn)

Figure 6.5 Slow Moving, Non-Moving and Obsolete items in Finished Goods

The above graph shows that Slow Moving, Non-Moving And Obsolete items in Finished Goods INR0.04Mn of the items are from Slow Moving category in the organization, INR0.01Mn of items are from Non - Moving category in the organization, and INR0.01Mn of items are from Obsolete category.

COST ANALYSIS:

Based on past trends, future forecasting or experts opinion standard cost is calculated and actual cost is calculated based of FIFO workings. Comparing both standard cost and actual cost price variance of Inventory is analyzed. If it is negative, inventory will be higher and if it is positive, inventory will reduce. Here in FIFO workings, adding the Standard cost based on the inventory for month end, freight (0.22%), Factory Overheads (38.74%), custom duty and finally subtracting the total with price variance (standard vs. actual).

Table 6.3 Cost Analysis

Row Labels	Sum of Ext GL Cost
FP	31,76,202

FP-Shoot & ship	2,08,671
MP	34,68,001
PP	2,26,20,938
Grand Total	2,94,73,812
Freight %	0.22%
Freight Amount	64,842
	64,842
Overheads %	38.74%
OHS Amount WIP & EI	25,73,847
Total	25,73,847
	25,73,847
BOH as per FIFO Inside	-
BOH as per FIFO Outside	3,31,55,673
Total BOH as per FIFO	3,31,55,673
Price Variance as per FIFO Inside	-
Price Variance as per FIFO Outside	14,72,488
Total Price variance as per FIFO	14,72,488
Remaining BOH	(36,81,861)
Remaining Price Variance	(1,63,516)
Total Price variance INSIDE	-
Total Price variance OUTSIDE	13,08,972
Jul Month Variance	13,08,972
Price Variance %	4.4%
Aug Month Variance	10,66,392
Net Difference	2,42,580
Inside	-
Outside	13,08,972

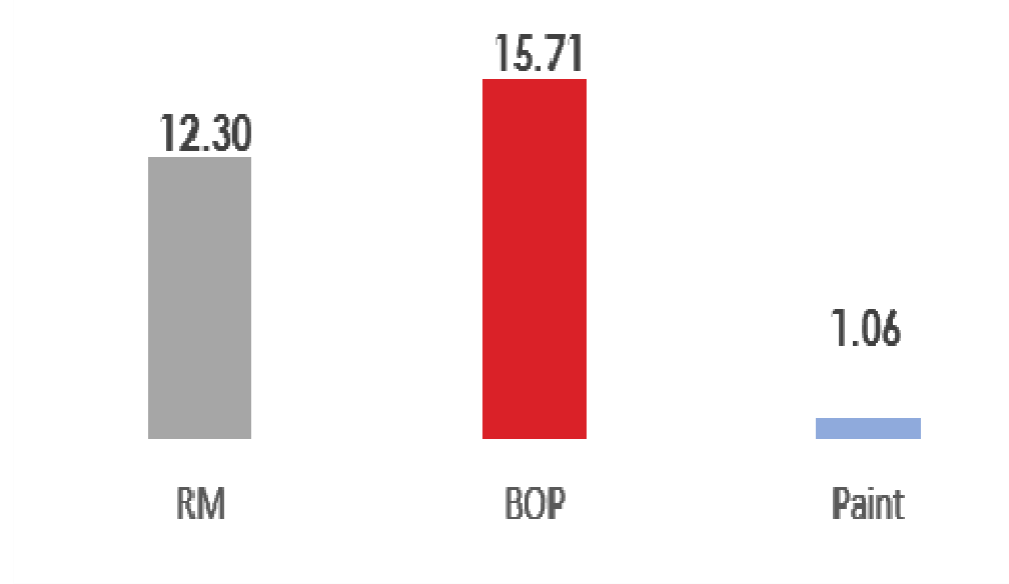
The above table shows that FIFO workings of Inventory, cost of raw materials, Bought out Parts, Paint, WIP, Shoot & Ship and finished goods are calculated. Freight is calculated based on last year FS, 0.22% and Factory Overheads also calculated, 38.74%. Finally price variance is calculated between the Standard Cost and Actual cost.

STOCK ANALYSIS

Accounting for inventory is the system that counts and records changes in the value of stock such as Raw materials, Bought out Parts, Paint, WIP, Shoot & Ship and finished goods, which are all considered assets. Financial accounting for inventory provides an accurate valuation of these stock assets.

Inventory accounting determines the value for stock items and the correct item count. These figures establish the costs of goods sold and the ending inventory value, which factor into the company's overall value.

MAIN STORE



(Values in INR Mn)

Figure 6.6 Stock Analysis in Main Store

The above graph shows that Stock Analysis in Main Store INR12.30Mn of the items are from Raw Materials category in the organization, INR15.71Mn of items are from Bought out parts category in the organization, INR1.06Mn of items are from Paint category in the organization.

WORK IN PROGRESS

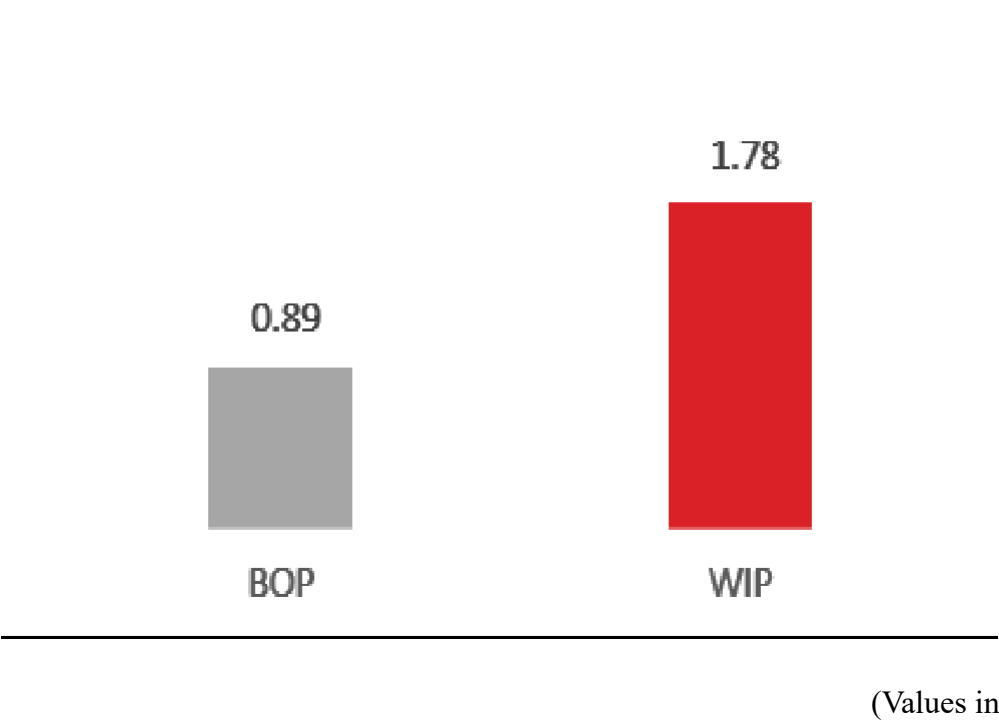


Figure 6.7 Stock Analysis in WIP

The above graph shows that Stock Analysis in WIP INR0.89Mn of the items are from Bought out Parts in the organization, INR1.78Mn of items are from WIP category in the organization.

FINISHED GOODS STORAGE

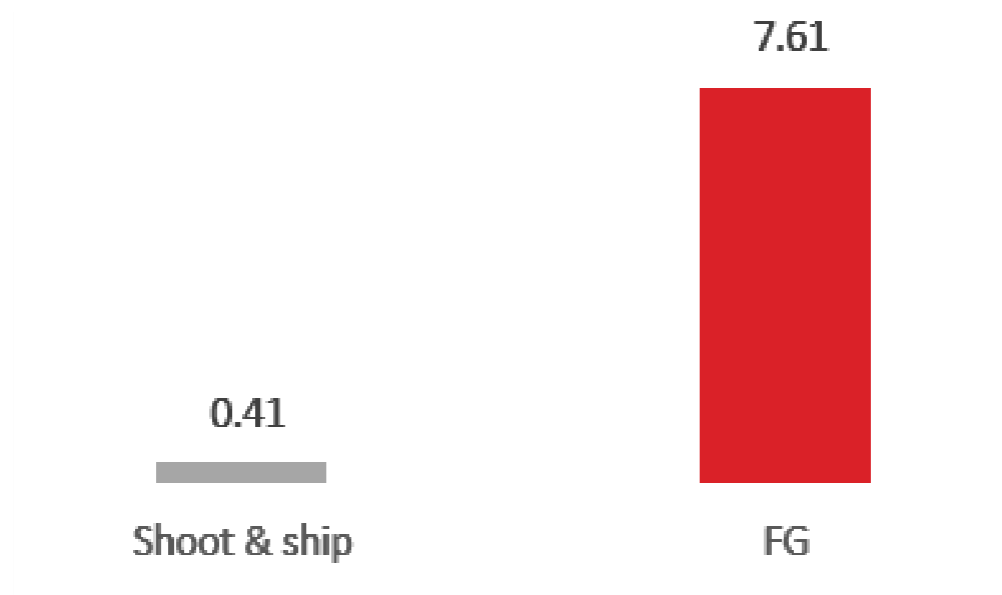


Figure 6.8 Stock Analyses in Finished Goods

The above graph shows that Stock Analyses in Finished Goods INR0.41Mn of the items are for Shoot and Shipping in the organization, INR7.61Mn of items is from Finished Goods category in the organization.

CHAPTER-VI

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

6.1. FINDINGS

Through ABC analysis one comes to know about important items in the organization. The company is following ABC technique of inventory management very efficiently.

The ABC analysis of Maruti service master shows that 70.69 % (70% standard) of the items are from A category in the organization, 21.52 % (20% standard) of items are from B category in the organization, and 7.79% (10% standard) of items are from C category. It is clear that the organization follows ABC analysis properly, but still, they can improve their inventory management.

The Slow Moving, Non-Moving and Obsolete calculated are evident that the company can obtain information about, for how long period stocks or products that sit in companies storage room or warehouse (and have not moved). Based on the calculation, company can debit the provision of

Slow Moving, Non-Moving and Obsolete inventory (current asset) credit the inventory (current assets).

In Main Store, INR1.23Mn of the items is from Slow Moving category, INRO.96Mn of items is from Non - Moving category, and INRO.91Mn of items is from obsolete category. In WIP, INRO.04Mn of the items are from Slow Moving category, INRO.07Mn of items are from Non Moving category, and INRO.07Mn of items are from obsolete category. In Finished Goods, INRO.04Mn of the items is from Slow Moving category, INRO.01Mn of items is from Non - Moving category, and INRO.01Mn of items is from obsolete category. Based on the calculation, company can debit the provision of Slow Moving, Non-Moving and Obsolete inventory (current asset) credit the inventory (current assets). Through that company can earn money without scraping it.

From the FIFO workings of Inventory, cost of raw materials, Bought out Parts, Paint, WIP, Shoot and Ship and finished goods are calculated. Freight is calculated based on last year FS, 0.2% and Factory Overheads also calculated, 38.74%. Finally price variance is calculated between the Standard Cost and Actual cost.

From the Stock analysis calculation, it can be determined changes in the value of stock such as Raw materials; bought out Parts, Paint, WIP, Shoot & Ship and finished goods inventory the company can keep in its reserve stock per annum. Through this analysis it is known that the organization is having enough stock at all times.

6.2. SUGGESTIONS

Existing inventory management system of the organization is good but if inventory management system is to be improved, they should adopt some new inventory management system. The Firm should adopt sophisticated techniques to manage its Inventory in a better manner.

The organization may also try to adapt more inventory management techniques like Just In time (JIT) inventory system. This technique will save the time of the also organization and will reduce the inventory holding cost in the organization. In other words, by following Just- in-Time technique, the firm can do away with waiting time for a receipt of materials.

There is a need to develop good communication marketing, system between various departments like planning, purchase, and distributions functions.

6.3. CONCLUSION

The Inventory management is significant for any organization. Each and every component of inventory is important and managing the inventories to keep in an optimum level is a must. Inventory forms a major part of their cost.

Therefore, Inventory management helps the organization in smooth running of its activities and in reducing the cost of managing the inventory. Though, the firm is having certain policies regarding this, still it requires thorough study of their policy and systems to some extent to understand the inventory management.

Inventory management is important for keeping costs down, while meeting regulation. Inventory management has to do with keeping precise records of goods. Accurately maintaining figures on the inventory makes it possible to quickly convey information to sales personnel supply and demand are a delicate balance and inventory management hopes to ensure that the balance is undisturbed.

Highly trained inventory management and high-quality software will help make inventory management more benefit able. The ROI of Inventory management will be seen in the forms of increased revenue and profits, positive employee atmosphere, and on overall increase of customer satisfaction.

APPENDIX

Row Labels	Sum of Ext GL Cost
FP	31,76,202
FP-Shoot & ship	2,08,671
MP	34,68,001
PP	2,26,20,938
Grand Total	2,94,73,812
Freight %	0.22%
Freight Amount	64,842
	64,842
Overheads %	38.74%
OHS Amount WIP & EI	25,73,847
Total	25,73,847
	25,73,847
BOH as per FIFO Inside	-
BOH as per FIFO Outside	3,31,55,673
Total BOH as per FIFO	3,31,55,673
Price Variance as per FIFO Inside	-
Price Variance as per FIFO Outside	14,72,488
Total Price variance as per FIFO	14,72,488
Remaining BOH	(36,81,861)
Remaining Price Variance	(1,63,516)
Total Price variance INSIDE	-
Total Price variance OUTSIDE	13,08,972
Jul Month Variance	13,08,972
Price Variance %	4.4%
Aug Month Variance	10,66,392
Net Difference	2,42,580
Inside	-

Outside	13,08,972
---------	-----------

Cost Analysis