A STUDY ON INVENTORY MANAGRMENT SYSTEM OF TATA MOTORS

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ABSTRACT:

Inventory control is associated with planning, purchasing, storing and supplying the right material in the right quality in the right quantity in the right environment with the aim of coordinating and scheduling manufacturing time in a integrated for business enterprises. Inventory management is actually the technique by which a company is stocked with products and delivers what it wants to meet its goals of sourcing, storing, and moving materials. The basic purpose of monitoring is to find out the items that impact inventory materials, to make statistics and examine the inventory control and management of production enterprises, and to effectively use the inventory materials. business inventory. , to overcome problems with actionable suggestions.

Key Words:- Inventory Management,Sourcing

Introduction:-

The Tata Group was founded by "Jamsetji Tata" in the mid 19th Century. Today the Tata Group comprises of 96 operating companies in seven business sectors viz. Information systems and communications; engineering; materials; services; energy; consumer products and chemicals.

Formerly: Tata Engineering and Locomotive Company Ltd. (TELCO)
Type: Public
Industry: Automotives
Founded: 1945
Founder: J. R. D. Tata
Headquarters: Mumbai, Maharashtra, India
Area served: Worldwide

Products: Automobiles, Luxury vehicles, Commercial vehicles, automotive parts, Pickup trucks, SUVs

The company, formerly known as Tata Engineering and Locomotive Company (TELCO), was established in 1945 as a manufacturer of locomotives. The company produced its first commercial vehicle in 1954 under a partnership with Daimler-Benz, which ended in 1969. Tata Motors entered the passenger car market in 1988 with the launch of the Tata Mobile, followed by the Tata Sierra in 1991, the first model in India. Manufacturers are realizing the ability to develop competitive indigenous cars. In 1998 Tata launched the Indica, India's first fully localized passenger car, and in 2008 the Tata Nano, a global affordable car. Tata Motors bought South Korean truckmaker Daewoo Commercial Vehicles in 2004 and Jaguar Land Rover from Ford in 2008.

□ The main subsidiaries of Tata Motors include the British premium car manufacturer Jaguar Land Rover (manufacturer of Jaguar and Land Rover vehicles) and the South Korean commercial vehicle manufacturer Tata Daewoo. Tata Motors has a bus manufacturing joint venture with Marcopolo S.A. (Tata Marcopolo), a construction equipment manufacturing joint venture with Tata Hitachi Construction Machinery, and a joint venture with Fiat Chrysler, which produces auto parts and vehicles under the brands Fiat Chrysler and Tata.

□ Tata Motors has automotive and OEM manufacturing plants in Jamshedpur, Pantnagar, Lucknow, Sanand, Dharwad and Pune in India as well as in Argentina, South Africa, UK and Thailand.

It has R&D centers in Pune, Jamshedpur, Lucknow and Dharwad, India and Korea, UK and Spain. Tata Motors is listed on the BSE (Bombay Stock Exchange) and is part of the BSE SENSX Index, the National Stock Exchange of India and the New York Stock Exchange. In 2019, the company ranks 265th among the world's top 500 companies.

□ Tata Motors was awarded the Golden Peacock Global Award in the Corporate Social Responsibility (CSR) Large Enterprise category by the Institute of Directors in 2007. Tata Motors acquires the Nissan plant in South Africa. Tata Motors has secured a prestigious order from the Delhi Transport Corporation (DTC) for 500 units of AC-less CNG powered buses.

Tata Motors Ltd. did mr. PM Telegang has been appointed Executive Director (Utility Vehicles).

OBJECTIVE OF THE STUDY:-

- Control investment in inventory and maintain it at an optimal level.
- Learn about the techniques they use for inventory control.
- Know the criteria for evaluating inventory systems.
- Minimize inefficient inventory and reduce inventory carrying costs.
- Maintain adequate stocks of raw materials during times of shortage.
- Maintain an adequate inventory of finished goods for smooth sales operations and efficient customer service.

LITERATURE REVIEW

➢ J. Roberto, M. A. Mesquita

Published 2011

Engineering

☐

The maintenance and repair of finished products, vehicles, machinery and industrial equipment require a stock of spare parts, which often requires large investments and significantly affects customer satisfaction. Inventory management is complicated due to the large number of different items and low demand. This article presents a review of the literature on single location parts inventory control, including demand forecasting techniques and inventory control decisions for different life cycle stages. Overall, the literature review identified the following research opportunities regarding inventory management: criteria for deciding whether to stock or not, order quantities for first and last batches, integration of demand forecasting models and inventory control, and practical case studies. global app.

➢ Punam Khobragade, Roshni Selokar, Rina Maraskolhe, Prof.Manjusha Talmale

 Published 2018

An inventory management system is software useful for businesses that operate hardware stores, where the store owner keeps records of sales and purchases. Poor inventory management means disappointed customers, excess cash in warehouses and slower sales. The program eliminates paperwork, human error, manual delays and expedited processes. Inventory management systems will be able to track sales and available inventory, telling store owners when to reorder and how much to buy. Inventory management system is a Windows application developed for Windows operating system, focusing on the field of inventory control and generating various required reports.

➢ Aysegul Sarac, Nabil Absi, Stéphane Dauzère-Pérès
 International journal of production economics 128 (1), 77-95, 2010

☐ RFID technology can increase the potential benefits of supply chain management by reducing inventory loss, improving process efficiency and speed, and improving information accuracy. Different RFID systems can be accessed using different tags, readers, frequencies and tag levels, etc. combined. The cost and potential profit of each system vary widely. In this article, the state of the art of the deployment of RFID technology in the supply chain is presented to analyze its impact on the performance of the supply chain. The potential benefits are briefly explored, particularly with respect to inventory inaccuracy issues, bullwhip effect, and restocking policies.

A variety of work involving analytical modeling, simulation, case studies and experiments, and ROI analysis are reviewed. Finally, conclusions and future research perspectives are presented

➢ Ramesh Subramoniam, Donald Huisingh, Ratna Babu Chinnam
 Journal of Cleaner Production 17 (13), 1163-1174, 2009

While the concepts of refurbishment and reverse logistics are gaining popularity in practice, the available literature and theory on strategic decision making in these areas is limited. This article aims to fill this gap, especially for the automotive industry aftermarket. To this end, the authors review the literature relating to customer needs, product design and development, residual cost-benefit analysis, basic supply management (i.e. say to used products), residual capacity and skills, product life cycle strategy, residual and reverse logistics. Network design, relationships between key stakeholders, environmental considerations, regulations and the impact of emerging economies.

Findings from the literature, together with our experience in dealing with automotive waste products, were

used as input data to guide the development of seven main propositions for strategic factors in decision-making in life. These proposals are then tested through case studies. Case studies cover many factors such as product life cycle, regulations, etc. Reconfirmed from literature review and identified new factors such as OE customer requirements. Our findings provide the basis for further research by companies engaged in original equipment (OE) sales, original equipment service (OES), and independent aftermarket (IAM) operations in the automobile industry.

Classification of Inventories:

- **Direct inventories:-**It includes items that play a direct role in manufacturing and become an integral part of the finished product. The direct stock is as follows:

  1. Raw materials inventories.
  2. Work in process inventories.
  3. Finished goods inventories.

- **Indirect inventories:-**Indirect inventory includes items necessary for manufacturing but not integral to the production of finished goods, such as lubricants, oils, greases, stationery, repair materials, etc.

TATA MOTORS LTD. is categorized in to two main categoriesaccording to its nature which are as follows:

1) Auto item
2) Non-Auto item

Auto Item

These are the items which are directly used for manufacturing a vehicle. It is inthe sense that the use of these items is done by it's specified plant not else. And a plant has a code (3100).

Plant have been divided into many workshop where we use the auto item whichare:

- ❖ TCF (Trim, Chassis, Finish)
- ❖ BIW (Body in white)
- ❖ GEAR SHOP
- ❖ ENGINE SHOP
- ❖ PAINT SHOP

Non-Auto Item

These items are used indirectly for manufacturing the vehicle. These itemsfurther classified in to two sub categories. Which are:

a) CMS / spare/ Tools: -The main work of Central machine spare (CMS) tomake the spare part of vehicle.

b) Indirect Materials (Oil,Thinner,Grease)

Other categories of inventory should be considered from a functionalstandpoint:

❖ **Consumables***:* Light bulbs, computer and photocopying paper, brochures, tape, envelopes, cleaning materials, lubricants, fertilizer, paint, packing materials, and so on are used in many operations. These are often treated likeraw materials.

❖ **Service, repair, replacement, and spare items (S&R Items):** These are after-market items used to keep things going. As long as a machine or device of some type is being used (in the market) and will need service and repair in the future, it will never be obsolete. S&R Items should not be treated like finished goods for purposes of forecasting the quantity level of your normal stock.

❖ **Quantity levels of S&R Items** will be based on considerations such as preventive maintenance schedules, predicted failure rates, and dates of various items of equipment.

Transit Inventory*:* This is inventory en route from one place to another. It could be argued that product moving within a facility is transit inventory.

RESEARCH METHODOLOGY:

Data was collected through interactions and discussions with executives working in the sector.Some important information was gathered through unstructured interviews with executives. Annual reports and other periodicals published by companies are used to gather the required information.

Primary data:-
The information collected as part of the raw data is mainly based on the analysis of TATA MOTORS.Raw data items were collected using a structured questionnaire.

Secondary data:-

The secondary data was obtained through the dealers, sales record, and internet also from various books.

Factors which influence inventory management system :-

1) Minimum stock level

2) Re-order level

3) Lead time

4)Maximum stock level

Inventory flow chart :

Vehicle report on gate and hand over invoice to security

⇩

Check and prepare the LECI with RFID by security for vehicle entry

⇩

Park the vehicle on parking area

⇩

Made the GRN by CRDO

⇩

Released the RFID by security person for vehicle in plant

⇩

Unloading the material vehicle & checked the quantity as per invoicequantity by store person

⇩

Made the mb02 by store person

⇩

Store acknowledgement

⇩

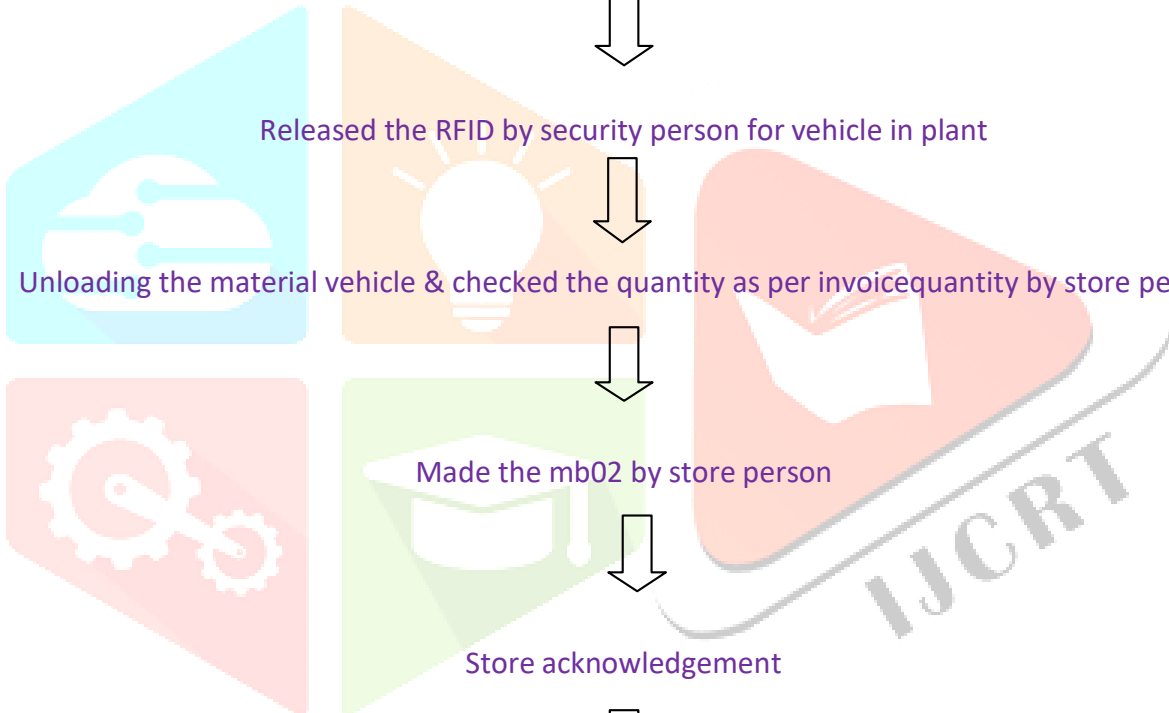Vehicle will go to out gate

⇩

Hand over RFID token and LECI to security by driver

⇩

Out the RFID in system

⇩

Exit the vehicle
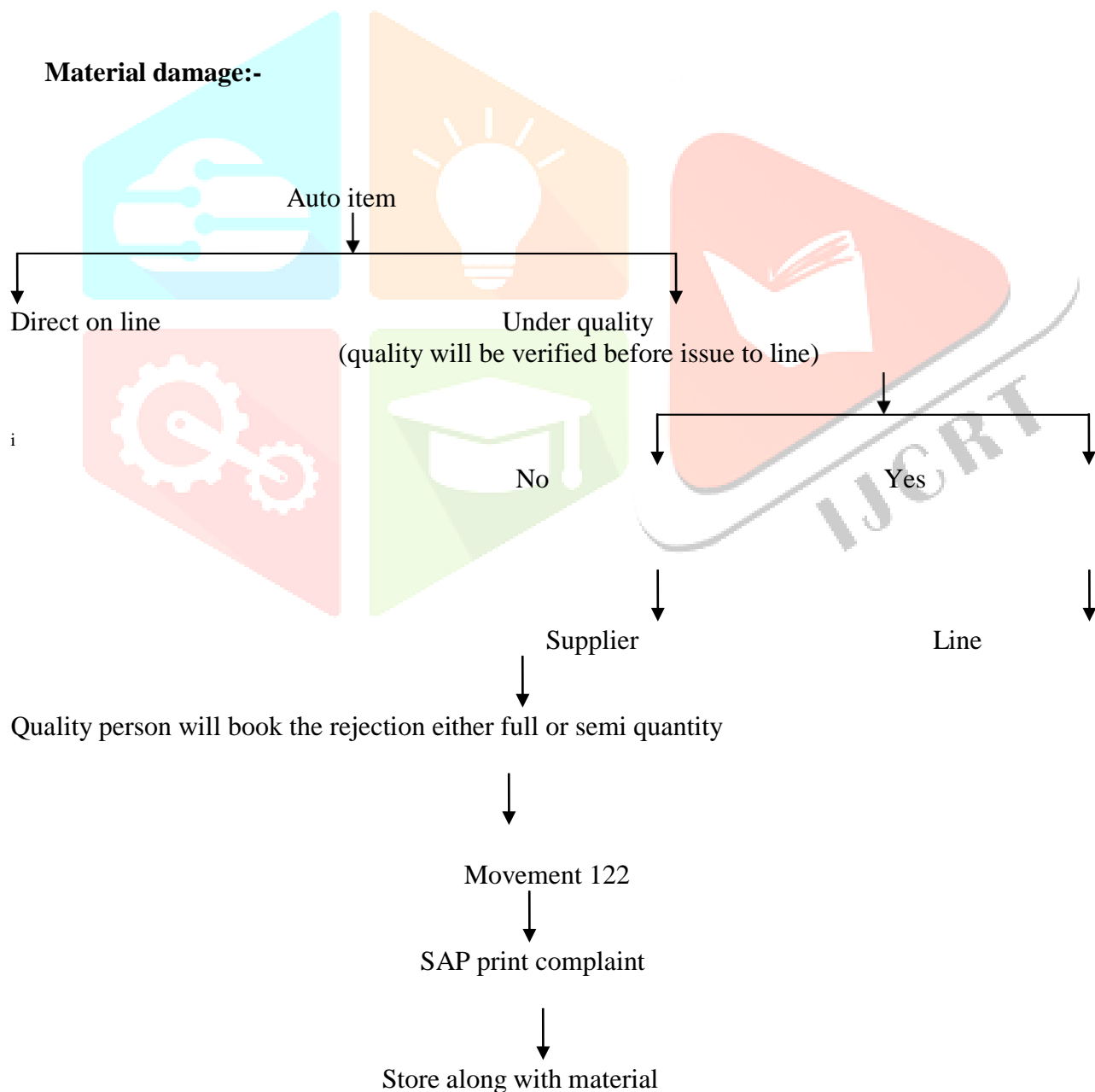
INVENTORY CONTROL TECHNIQUES

Determining and maintaining optimal inventory levels helps maximize owner wealth.
Inventory management issues can be addressed by a number of techniques which are:

- ✓   ABC analysis
- ✓ ☐ KANBAN system
- ✓ ☐ Just In Time (JIT)
- ✓ ☐ Safety Stock

REJECTION HANDLING :

There are two types of rejection in Tata motors

- ■ Material damage
- ■ Cross failure

Material damage:-

Auto item

Direct on line   Under quality
(quality will be verified before issue to line)

i

No   Yes

Supplier   Line

Quality person will book the rejection either full or semi quantity

Movement 122

SAP print complaint

Store along with material

     Cross Failure:- In this material handling tool The cross functional team was established by Tata Motors. It combines individuals from several departments. who collaborate to handle rejection materials.

Material would be found defected by three stage of material movement:-

- Process
- Supplier
- Store

When a product is found to be defective during production, supply, or storage, the product is sent to the scrap yard and a transaction movement number 122 is made in the system.

Inward and outward movement of material in SAP:-

Inward	Outward
101:- GR	122:- Return to vendor
102:- GR cancellation	261:- Consumption
	551:-Scrap by TML
	951:-Scrap on vendor

INVENTORY TURNOVER:

Tata Motors's Inventory Turnover for the quarter that ended in Mar. 2022 is calculated as(in USD)

Inventory turnover (Q.march22) =Cost of Goods Sold / Average Total Inventories

=Cost of Goods Sold (Q: Mar. 2022)/ ((Total Inventories (Q: Mar. 2021)+Total Inventories (Q: Mar. 2022))/count)

= 25045.842214685/ ((4955.6026124835+4625.9069479299)/2)

= 25045.842214685 / 4790.7547802067

= $ 5.23

Days of holding inventory =365/5.23 = 69.78

CONCEPT OF EOQ IN INVENTORY MANAGEMENT :-

The Economic Order Quantity (EOQ) is an important concept in inventory management that helps organizations determine the optimal order quantity of materials or goods to minimize inventory holding costs and ordering costs.

EOQ is based on the assumption that demand for a product is constant and that ordering and holding costs remain the same. The formula for calculating EOQ takes into account the cost of placing an order, the cost of holding inventory, and the annual demand for the product.

The formula is:

EOQ = $\sqrt{((2 \times \text{annual demand} \times \text{ordering cost}) \div \text{holding cost per unit})}$

The benefits of using EOQ in inventory management include:

➢ Cost savings: By ordering the optimal amount of inventory, organizations can minimize the costs associated with holding too much inventory or too little inventory.

➢ Improved efficiency: EOQ helps organizations optimize their inventory levels, leading to better use of warehouse space, reduced inventory write-offs, and improved customer satisfaction.

➢ Better cash flow management: EOQ can help organizations manage their cash flow more effectively by reducing the amount of capital tied up in inventory.

➢ Improved supply chain management: EOQ can also help organizations improve their relationships with suppliers by providing more accurate and timely order quantities.

In summary, EOQ is an important concept in inventory management that can help organizations optimize their inventory levels, reduce costs, and improve their overall efficiency and cash flow.

CONCLUSION:

Inventory control means the availability of the right material, in the right quantity and in coordination with the delivery time. Every component of your inventory is important and inventory should be managed to keep it at optimal levels. It may be obvious that inventory control is effective as long as inventory levels are low. But the truth is that inventory is poorly managed rather than effectively controlled if kept to a minimum while maintaining proper operations. Thus, the two basic purposes of inventory control seem contradictory in their nature. Inventory must be increased or decreased in quantity or time depending on sales requirements and production plans.

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