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Role of Inventory Management and Control in A Manufacturing Company

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Abstract: ***A manufacturing company's performance depends on efficient inventory management and control. Inventory control and management play a crucial role in meeting customer demand, controlling costs, planning production effectively, ensuring quality, and managing cash flow. This paper discusses the role of inventory control and management in a manufacturing company and highlights the key ways in which inventory control and management are important to the success of a manufacturing company. The system's goal is to bridge the substantial gap between inventory management theory and practice and let industrial inventory managers conduct effective and successful inventory management.***
Keywords: Inventory, challenges, techniques, control and management.

I. INTRODUCTION

Inventory refers to the stock of goods or materials that a business holds for its use or sale. It can include raw materials, work-in-progress goods, and finished products.



Fig 1: types of inventories

1) *Raw Materials:* Raw materials are the items purchased for employ in production of finished manufactured goods by a firm.
2) *Work in Progress Goods:* Work-in progress are all those items currently in the process of production. These are in fact partly man-made products.
3) *Finished Products*: Finished goods are all those items, which have been already shaped but not yet sold.

Holding inventories enables the business to segregate the processes of goods acquisition, production, and marketing. Inventory is a current account because it is a part of the company's operating capital.

Additionally, inventories are thought to be the main source of money. The goal is to increase efficiency where costs are a factor. Scientific inventory control leads to increased stock levels on the one hand and a significant decrease in life-threatening shortages on the other.

A. Why is Inventory Management and Control so Important ?

Inventory control and management play a crucial role in the success of a manufacturing company. Here are some of the key ways in which inventory control and management are important:

1) *Meeting Customer Demand*: A manufacturing company needs to have sufficient inventory to meet customer demand. If the company doesn't have the right level of inventory, it may not be able to fulfil the customer orders on time, which can result in lost sales and dissatisfied customers.
2) *Cost Control*: Inventory control and management can help a manufacturing company control costs by minimizing the amount of inventory that is kept on hand. This can reduce the cost of storing and managing inventory, as well as the cost of capital tied up in inventory.

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3) *Production Planning*: Inventory control and management can help a manufacturing company plan its production more effectively. By keeping track of inventory levels and customer demand, the company can better predict how much inventory it will need in the future and adjust its production schedule accordingly.
4) *Quality Control*: Inventory control and management can also help a manufacturing company ensure the quality of its products. By tracking inventory levels and product performance, the company can identify quality issues and take corrective action to address them.
5) *Cash flow Management*: Inventory control and management can help a manufacturing company manage its cash flow by ensuring that inventory is turned over quickly. This can help the company avoid holding excess inventory for too long, which can tie up capital and reduce cash flow.

B. Problems Faced by Manufacturing Companies

Inventory management is used to determine the company's inventory performance and position, to identify its strengths and weaknesses, and to gauge its profitability. The majority of the resources used by the Indian enterprises are included in inventories. An organization's inventory is an asset, but if it is not managed properly, it can turn into a problem. Therefore, in order to avoid making unnecessary investments, it is crucial to manage inventories effectively and to pinpoint the issues or difficulties in the inventory management process. Inventory-related issues affect manufacturing businesses in a variety of ways. Among these are:

1) *Overstocking:* Overstocking happens when a business keeps more inventory than it requires. This may cause capital to be restricted, storage expenses to rise, and inventory obsolescence.
2) *Stock outs:* Stock outs happen when a business runs out of a specific item. Missed production deadlines, lost sales, and unhappy customers may all result from this.
3) *Inaccurate Demand Forecasting:* If a business underestimates consumer demand, it may store too much inventory or run out of supplies, which could result in overstocking or stock outs.
4) *Ineffective Inventory Control:* Ineffective inventory control can cause inefficiencies in the supply chain, such as longer lead times, more expensive storage and handling, and a higher risk of stock obsolescence.
5) *Insufficient Visibility:* Inventory imbalances, stock outs, and overstocking can result from a lack of visibility into inventory levels throughout the supply chain.

II. LITERATURE REVIEW

The study done by Naliaka V.W. (2015) revealed that information technology, inventory control systems, inventory lead time and inventory control practices are important factors in the attainment of competitive advantage of manufacturing firms in Kenya. In order to increase and enhance competitive advantage, the study advised the company to adopt information technology and inventory control systems [1]. Maintaining inventory levels and paying for orders may improve an organization's performance, helps employees develop an understanding of the philosophy behind managing inventories, provides an organisation with enough resources, and that cutting inventory costs aids in achieving profitability goals. Information exchange, organisational growth, inventory control, and channel partnerships all have an impact on how well manufacturing companies execute[3]. Because inventory control practises concentrated on cutting costs and maximising profitability to obtain a competitive edge, they had an impact on competitiveness. Due to the fact that inventory management may be established or enhanced inside the firm from the execution of guidelines that are suited to the context of each SMEs, much of the competitive advantage was centred on cost, quality, and delivery, in line with inventory control practices [4]. In order to manipulate logistics, inventory management is essential. A strong system requires a defined logistical framework, appropriate inventory implements, and strategies to connect the producing processes, according to a review of the situation systems for inventory and logistics are interdependent on one another. Inventory management is necessary for logistics management to carry out its tasks, and an effective logistics system can enhance the working conditions in the warehouse and operational processes.Joseph Afolabi Oluwaseyi and Morakinyo Kehinde Onifade showed how the logistics system heavily relies on inventory, and numerous logistics process parts involve inventory activities in their paper[2]. Inventory control procedures are affected by inventory control systems. Both of these elements were present. The inventory control system improved warehouse procedures for efficiently managing inventories. Instead, inventory control procedures measured expenses and earnings to determine the effectiveness of the operations.

Consequently, a successful inventory management system would result in reduced expenses and increased profitability [5]. A method for inventory control affected competitiveness.

In keeping with quality-focused competition, inventory control systems provide a strong emphasis on quality assurance and delivery timing in order to supply customers with high-quality goods at the precise moment they need them. Additionally, shorter cycle durations could result in faster and more effective product delivery to clients. Stock levels had to be cut, which was necessary to raise enough stock to satisfy demand. This decrease in stock represented a direct cost reduction and permits an actual rise in competitiveness [5]. Hong Shen, Qiang Deng, Rebbaca Lao, and Simon Wu (2016) concentrated on enhancing inventory management to enhance the company's supply chain. One of the most important parts of inventory management is the drop in inventory. In actuality, having a low inventory level isn't always the best course of action, thus producers must have the right amount of inventory at the right level [6]. The return on investment from inventory management has improved revenue and profits, a pleasant work environment, and an improvement in customer satisfaction. Inventory management, according to Plinere, D., and Borisov, A. (2015), is essential for every business with inventories. Companies keep enough inventory on hand to prevent situations like overstock and out-of-stock [7]. Inventory control may be improved with proper management, and expenses can be cut for the business. Jose, T., Jayakumar, A., & Sijo, M. T. (2013) determined the distinction between EOQ & quantity bought. It has been noted that the corporation does not purchase materials utilising EOQ. Inventory management is therefore not rational. The company can determine how much inventory it can maintain in back stock annually based on an estimate of its safety stock [8]. Focusing on inventory management, Atnafu, D., and Balda, A. (2018) discuss the connection between inventory management practises, competitive advantage, and organisational performance[9].According to the study's data analysis, there is a correlation between competitive advantages and effective inventory management. Additionally, improved organisational performance provides a company with more funding to implement different inventory management strategies [10].

III. OBJECTIVES

1) To analyze the inventory management of *SACHDEVA ENGINEERING COMPANY.*
2) To analyze the control measures taken by Manufacturing Company on their own terms using on inventory management.
3) To analyze the techniques used by the company in inventory management.
4) To suggest the suitable technique to the company to have improved control over the inventory.

A. Sachdeva Engineering Company

Sachdeva Engineers Manufacturer Exporter of Engine components and Automotive spare parts company located in Delhi. They manufacture spare parts for engines, Agriculture Machinery, tractors, three wheelers, heavy Machinery, Light Commercial Vehicle. They can develop any Automobile component as per the customer's needs.

IV. METHADOLOGY

The study is based on primary data collected by finance executives of the SACHDEVA Company and secondary data which are collected from the books, journals, articles and annual reports of the company & websites.ABC Analysis, EOQ, Inventory turnover ratios & Safety Stock are the techniques used in this paper.

V. RESULTS AND DISCUSSION

The optimum order quantity (EOQ), which is the one that lowers the total of its carrying costs and order, is found using the inventory management tool known as EOQ.

TABLE I CALCULATION OF EOQ

s.no	particulars	Demand/per year	Demand/per year	Carrying cost/unit/year	Reorder cost/ order	eoq	No of orders last year
1.	Cylinder head	10000	10000	300	8000	730.29	15
2.	Cam shaft engine 3ld 450 3ld 510 sach	30000	30000	5	200	1549.19	20
3.	LD output shaft	95000	95000	15	3000	6164.41	19
4.	Hd output shaft	10915	10915	9	2000	2202.52	7
5.	Vent plug 3ld 510 sach	45000	45000	4	250	2371.71	23

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6.	Rocket cover 3ld 450 sach	79268	79268	75	4000	2907.79	19
7.	Rocket cover 3ld 510 sach	21936	21936	50	3500	1752.43	14
8.	Main bear housing lda 450 3lda 510 sach	320	320	45	2500	188.56	3
9.	Cylinder for lombardini engines	68	68	70	1200	48.2	2
10.	Extra fuel device for lombardani 510/450 engine	200	200	40	1000	100	2

Source: company annual report

Table 1 demonstrates the comparison between the economic order quantity estimated and the number of units of each component acquired by the organisation. It is discovered that the number of units purchased and the Economic Order Quantity differ. Although the inventory management at the company is excellent because it uses the Economic Order Quantity technique to buy the materials, there is still room for improvement.

Safety stock is the reduced surplus inventory that acts as a buffer against an unanticipated rise in consumption brought on by an unusually high demand and an uncontrollably tardy arrival of incoming product.

TABLE II SAFETY STOCK CALCULATION

s.no	particulars	Max lead time	Avg lead time	Avg consumers	Max consumers	Demand/per year
1.	Cylinder head	90	60	6	12	10000
2.	Cam shaft engine 3ld 450 3ld 510 sach	90	60	120	135	30000
3.	LD output shaft	90	60	450	500	95000
4.	Hd output shaft	90	60	45	60	10915
5.	Vent plug 3ld 510 sach	90	60	170	190	45000
6.	Rocket cover 3ld 450 sach	90	60	190	250	79268
7.	Rocket cover 3ld 510 sach	90	60	65	80	21936
8.	Main bear housing lda 450 3lda 510 sach	90	60	2	6	320
9.	Cylinder for lombardini engines	90	60	1	3	68
10.	Extra fuel device for lombardani 510/450 engine	90	60	2	5	200

Source: company annual report

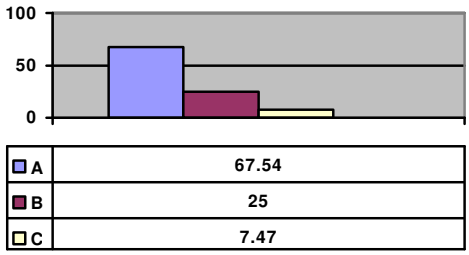
The safety stock calculation is shown in Table 2. Every product has a safety stock that is calculated. For each product, the actual demand is shown for a year. The maximum lead time is 90 days, while the typical lead time is 60 days. The organisation learns how much stock it should keep on hand at any particular time of the year by determining the quantity of safety stock. Safety supplies will enable the company to handle any situation. It is evident from Table 2 that the organisation is keeping enough safety stock.

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TABLE III CLASSIFICATION OF A,B AND C ITEMS IN THE ORGANISATION

s.no	Avg no of units	Cost per unit	Total cost	percentage
1.	7000	42	294000	3.95
2.	22000	67	1166000	15
3.	81000	14	1134000	15.2
4.	8000	95.76	766080	10
5.	42000	2.9	121800	1.6
6.	45000	56.4	2538000	35.43
7.	12000	104.7	1256400	16.9
8.	290	350.37	101607.3	1.3
9.	40	335	13400	0.18
10.	170	195	33150	0.44
			7424437.3	100

Source: company annual report



Source: secondary data
Fig 2: classification of A,B and C items in the company

According to Fig. 2, 67.53% (70% standard) of the objects in the organisation are from Category A, 25% (20% standard) are from Category B, and 7.47% (10% standard) are from Category C. Although it is obvious that the company correctly applies the ABC analysis, its inventory management might still be improved.

TABLE IV inventory turnover ratio

year	ratio
1	1.12
2	1.64

Source: company annual report

Table 4 shows the increase in trend of stock turnover ratio.

VI. FINDINGS

1) It's set up that the association is following EOQ fashion. The company is working as per the defined EOQ position. Overall the working of EOQ is reasonable.
2) From the safety stock computation, it can be determined how important force the company can keep in its reserve stock per annum. Through this analysis it's known that the Sachdeva Engineering is having enough stock at all times
3) Through ABC analysis one comes to know about important particulars in the association. The company is following ABC fashion of force operation veritably efficiently. There are 67.53% in the A order. B order has 25% and C order has 7.47%.
4) The inventory turnover ratio of the organization is satisfactory. It is according to its standard ratio. The ratio in the first year was 1.12 which rose to 1.64 in the second year.

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VII. SUGGESTIONS

The company's current inventory management system is effective, but if it is to be improved, a new inventory management system needs to be implemented. Additionally, the company ought to explore using more Just In Time (JIT) inventory management strategies. This method will help the company save time and cut down on the expense of keeping inventory on hand. Given that the company now practices lean manufacturing, it can now experiment with TQM, Six Sigma, and other production methodologies.

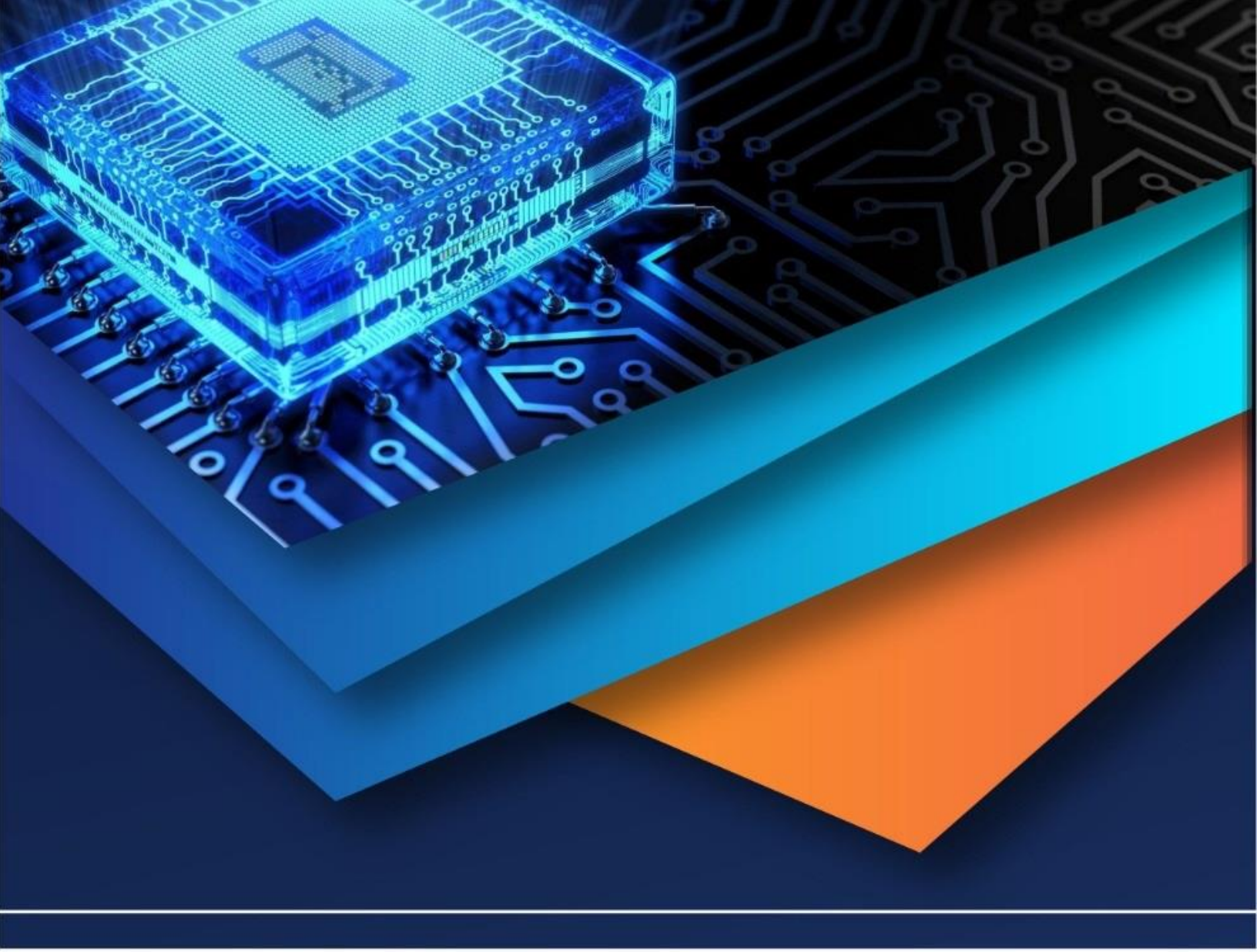
VIII. CONCLUSION

For any manufacturing organization, inventory management is crucial. It aids in the organization's seamless operation of its operations and lowers the expense of inventory management. It is clear from the data analysis above that Sachdeva engineering company is quite effective at controlling its inventory. The organization's approaches are assisting it in maintaining a steady flow of its production activities. The EOQ, safety stock analysis, and ABC analyses are carried out proficiently and successfully. The inventory turnover ratio is also trending upward, which suggests that the company's revenues are rising annually. In conclusion, efficient inventory management and control are essential to a manufacturing company's success. Inventory control and management can help a manufacturing company stay competitive and profitable by ensuring that the company has the proper level of inventory, controlling costs, successfully planning production, assuring quality, and managing cash flow.

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