

International Journal of
Engineering Research and Science & Technology



ISSN:2319-5991

www.ijerst.org

E-mail: editor@ijerst.org or ijerst.editor@gmail.com

A STUDY ON INVENTORY MANAGEMENT WITH REFERENCE TO HMT

Ch. Kiran, II MBA Student, Malla Reddy Engineering College (Autonomous), Hyderabad, Email:
chakalikrn@gmail.com

Dr. k. Pushpa Latha, Associate Professor, Dept of MBA, Malla Reddy Engineering College
(Autonomous), Hyderabad, E-Mail: pushpa.kamineni@gmail.com

ABSTRACT

The present study focuses on evaluating the inventory management practices of Hindustan Machine Tools (HMT), a leading public sector enterprise in India. Effective inventory management plays a critical role in maintaining the operational efficiency and financial stability of manufacturing firms. This research explores how HMT manages its raw materials, work-in-progress (WIP), finished goods, and spare parts inventory. It analyzes the techniques used for inventory control, such as Economic Order Quantity (EOQ), Just-In-Time (JIT), and ABC analysis, and examines their impact on production schedules, cost reduction, and overall profitability. Data has been collected through primary surveys and secondary sources, including annual reports and internal documents. The findings highlight key challenges such as overstocking, stockouts, and outdated inventory handling methods. The study concludes with suggestions to improve HMT's inventory turnover ratio, reduce carrying costs, and adopt modern ERP-based inventory systems. This research aims to provide strategic insights to help HMT enhance its inventory efficiency and competitiveness in the evolving industrial landscape.

KEYWORDS: Inventory management, Hindustan Machine Tools (HMT), Inventory optimization, ABC analysis, Economic Order Quantity.

INTRODUCTION

Inventory management is a fundamental aspect of operational efficiency in any manufacturing organization. It involves the systematic control of procurement, storage, and utilization of materials to ensure the availability of the right quantity at the right time, minimizing costs while meeting production demands. Effective inventory management balances the twin goals of reducing inventory holding costs and avoiding stockouts, which can halt production and affect customer satisfaction.

In today's competitive business environment, effective inventory management has become increasingly important. Companies need to manage inventory efficiently to reduce costs, improve cash flow, and increase profitability. Poor inventory management can lead to overstocking or understocking, both of which have negative implications. Overstocking ties up capital and increases storage costs, while understocking can result in stockouts, lost sales, and dissatisfied

REVIEW OF LITERATURE

1. **Kumar, R. (2020)** Role of Inventory Control in Enhancing Operational Efficiency in Public Sector Manufacturing Units. This study emphasized the importance of inventory control in reducing production delays. It found that public sector firms, including HMT-like companies, face challenges in maintaining optimal inventory levels due to outdated systems and slow procurement processes.
2. **Sharma, P. & Gupta, A. (2020)** Application of ABC and VED Analysis in Inventory Management. The authors explored how combining ABC (Always Better Control) and VED (Vital, Essential, Desirable) analysis can help improve inventory classification, particularly in engineering firms, leading to more strategic purchasing decisions.

3. **Patil, M. (2021)** Impact of Inventory Turnover Ratio on Financial Performance of Manufacturing Firms. This research found a direct positive correlation between high inventory turnover and improved profit margins. The study recommended lean inventory practices for government-run industries.
4. **Jain, S. & Rao, H. (2021)** Adoption of ERP Systems in Inventory Management: Challenges in Indian PSUs. Focusing on Public Sector Undertakings, this paper outlined how poor ERP integration leads to mismanagement of stock and delays. It emphasized training and infrastructure development.

NEED AND IMPORTANCE

- Understand the existing inventory management system at HMT.
- Identify gaps and inefficiencies in material planning, storage, and utilization.
- Evaluate the effectiveness of tools such as EOQ, ABC analysis, and MRP in the organization's context.
- Suggest modern inventory techniques and automation tools to enhance accuracy and reduce manual errors.

SCOPE OF THE STUDY

The scope of this study is centred around analysing and understanding the inventory management practices of Hindustan Machine Tools (HMT), a well-known public sector company in India. The study covers different areas of inventory such as purchasing, storing, handling, and using raw materials, work-in-progress (WIP), finished goods, and spare parts. It also looks into how these activities affect the production process and cost control. The aim is to study the methods used by HMT, find out any problems in managing inventory, and give simple suggestions for improvement using modern tools and techniques.

OBJECTIVES OF THE STUDY

- To analyse overall performance of inventory
- To understand the inventory management practices for better effectiveness and implementation
- To examine the requirements of inventory and challenges faced by production management
- To recommend the strategies for effective utilization of resources.

METHODOLOGY

The methodology of this study outlines the systematic approach adopted to collect, analyze, and interpret data related to inventory management practices at Hindustan Machine Tools (HMT). The study combines both primary and secondary research methods to ensure comprehensive and reliable findings.

Type of Research:

This is an exploratory and descriptive study that aims to explore existing inventory systems and describe their impact on operational efficiency.

Sources of Data:

- **Primary Data:**
Collected through structured questionnaires and interviews conducted with employees from the inventory, purchase, and production departments of HMT. Observations of inventory processes were also documented during plant visits (if applicable).
- **Secondary Data:**
Sourced from HMT's annual reports, inventory records, internal audit documents, government publications, academic journals, and previous research papers related to inventory management.

Sampling Technique:

A purposive sampling method was used to select employees and departments most relevant to the inventory management function. This ensured that the data collected was specific and reliable.

Sample Size:

The study included responses of 100 employees across different levels of management (depending on accessibility) who are directly or indirectly involved in inventory management activities.

Data Collection Tools:

- Structured questionnaire (with both open-ended and close-ended questions)
- Personal interviews

LIMITATIONS OF THE STUDY

- Due to confidentiality policies and restricted access to internal systems, the researcher could only access selected documents and reports related to inventory and procurement.
- The study was conducted on a limited sample of employees from selected departments. Therefore, the findings may not fully represent the practices across all HMT units and divisions.
- The duration of the study was limited, which restricted the depth of observation and analysis that could be conducted on long-term inventory trends and seasonal fluctuations.

DATA ANALYSIS AND INTERPRETATION

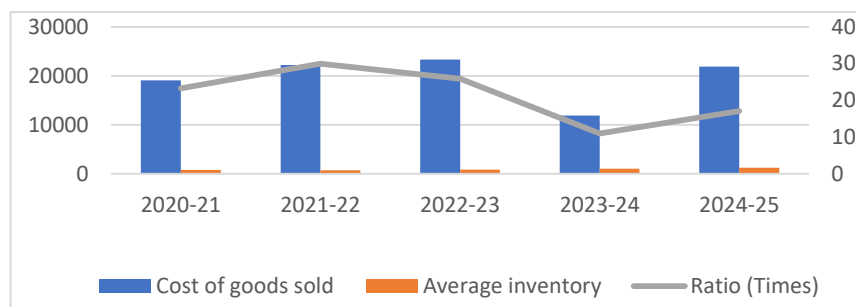
4.1 Inventory turnover ratio: This ratio is an efficiency ratio which shows the efficiency of the firm in producing and selling its products.

Table 4.1 Inventory turnover ratio Rs in Crores

Year	Cost of goods sold	Average inventory	Ratio (Times)
2020-21	19095.33	819.58	23.29
2021-22	22213.26	739.94	30.01
2022-23	23355.90	864.34	25.86
2023-24	11892.97	1081.68	10.99
2024-25	21882.2	1280.76	17.08

Source of Data: Company annual report from 2020-2021 to 2024-2025

Graph, no: 4.1 Inventory turnover ratio

**Interpretation**

From the above table 4.1, it shows that the inventory turnover ratio of the company under study is increasing year by year from 2020-2021 to 2024-2025 except 2022-2023 and 2023-2024.

4.2 Inventory holding period: The holding period refers to the time between an asset purchased and its sale. A short-term holding period is defined as less than a year, while a long-term holding period is more than a year.

Table 4.2 Inventory holding period Rsin Crores

Year	No of days in a Year	Inventory turnover ratio	Ratio(Days)
2020-21	365	23.29	15.67
2021-22	365	30.01	12.16
2022-23	365	25.86	14.11
2023-24	365	10.99	33.21
2024-25	365	17.08	21.37

Source of Data: Company annual report from 2020-2021 to 2024-2025

Graph, no: 4.2 Inventory holding period Rsin Crores

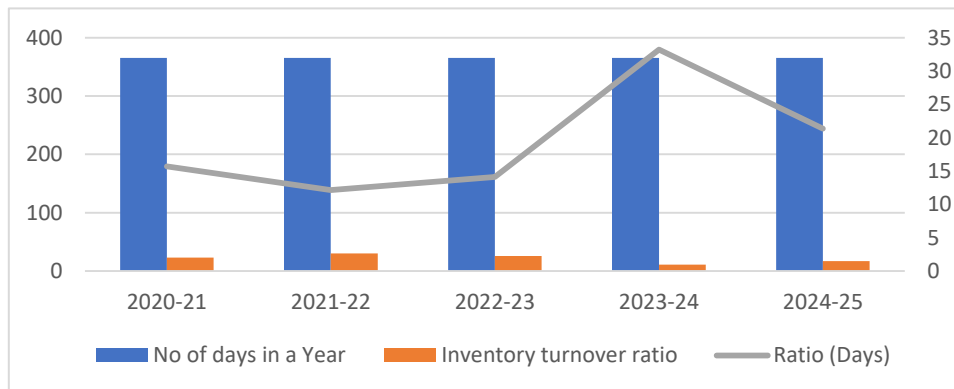


Table 4.3 Inventory conversion period Rsin Crores

YEAR	Inventories	Sales	Ratio(Days)
2020-21	823.58	33397.64	9
2021-22	656.31	31368.55	7.63
2022-23	1072.37	34341.79	11.39
2023-24	1091.97	29614.43	12.70
2024-25	1469.55	31380	17.09

Source of Data: Company annual report from 2020-2021 to 2024-2025

Interpretation

From the above table 4.3 shows that inventory conversion period of the company under study is increasing year by year from 2020-2021 to 2024-2025 except 2021-2022.

4.4 Averagedaytosellinventoryratio: It is a financial ratio that indicates the average time in days that a company takes to turn its inventory, including goods that are working progress, into sales.

$$\text{Average Day to Sell Inventory Ratio} = \frac{\text{Average inventory}}{\text{Cost of goods sold}} \times 100$$

Table 4.4 Average day to sell inventory ratio Rsin Crore

YEAR	Average inventory	Cost of goods sold	Ratio
2020-21	819.58	19095.33	4.29
2021-22	739.94	22213.26	3.33
2022-23	864.34	23355.90	3.70
2023-24	1081.68	11892.97	9.09
2024-25	1280.76	21882.2	5.85

Source of Data: Company annual report from 2020-2021 to 2024-2025

Interpretation

From the above table 4.4 shows that Average day to sell inventory ratio of the company under study is decreasing year by year from 2020-2021 to 2024-2025 except 2022-2023 and 2023-2024.

4.5 Raw materials conversion period: This ratio states that for how much time (in terms of days) raw materials will be kept in the warehouse before it is sent to the production department for work-in-progress. Low raw material holding period indicates greater ability of a company to recover cost incurred in production where as high raw material holding period means increasing warehousing cost and thus less profit.

Table 4.5 Raw materials conversion period Rsin Crores

YEAR	Raw materials inventory	Raw materials consumption/365 (Raw materials consumption in Days)	Ratio (Days)
2020-21	395.02	86	4.59
2021-22	442.21	60	7.38
2022-23	615.99	64	9.63
2023-24	567.65	54	10.42
2024-25	740.2	60	12.35

Source of Data: Company annual report from 2020-2021 to 2024-2025

Interpretation

From the above table 4.5 shows that Raw materials conversion period of the company under study is increasing year by year from 2020-2021 to 2024-2025

Table4.6 Comparativebalancesheetoftheyear2024-2025

Particulars	Mar25	Mar24	INC/DEC	Percentage change
Assets				
Non-currentassets				
Property,plant, Equipment	5293.40	5,562.42	-269.02	-5%
Capitalworkinprogress	177.86	160.25	17.61	11%
Rightofuseofassets	404.75	414.57	-9.82	-2%
Otherintangibleassets	290.26	140.09	150.17	107%
Intangibleassetsunder Development	258.73	181.02	77.71	42%
Financialassets				
Investments	4308.18	3,528.17	780.01	22%
Loans	52.23	67.27	-15.04	-22%
Incometaxassets(net)	368.19	310.13	58.06	19%
Othernon-currentassets	34.66	96.85	-62.19	-64%
Currentassets				
Inventories	1450.55	1,091.97	358.58	33%
Financialassets				
Investments	6191.49	4,694.48	1497.04	32%
Tradereceivable	2426.76	1,603.14	823.62	51%
Cashandcash Equivalents	169.22	147.91	21.31	14%
Bankbalancesotherthan	87.93	93.95	-6.02	-6%
Loans	36.94	2236	-2199.06	-98%
Others	357.53	35461	35,103.47	99%
Otherscurrent assets	213.37	280.14	-66.77	-24%
Totalcurrentasset	10,992.79	8,288.56	2,704.23	33%
Totalassets	22,161.05	18,749.33	3,411.72	18%
Equityand liabilities				
Equity				
Equityshare capital	39.96	39.95	0.01	
Other equity	15,158.47	14,096.45	1062.02	8%
Total equity	15,198.43	14,136.40	1062.03	8%
Liabilities				
Non-current liabilities				
Financial liabilities				
Lease liability	129.81	121.67	8.14	7%
Trade payables	Nil	Nil	Nil	Nil
Otherfinancial liabilities	146.04	Nil		
Provisions	172.46	122.37	50.09	41%

Preferred tax liabilities(net)	404.09	392.83	11.26	3%
Total non-current Liabilities	652.40	636.87	15.53	2%
Financial liabilities				
Lease liability	19.70	28.29	-8.59	-30%
Trade payable	Nil	Nil	Nil	Nil
Total outstanding dues of micro and small enterprises	15.71	8.33	7.38	89%
Total outstanding dues of creditors other than micro and small enterprises	5,188.90	3,022.18	2166.72	72%
Other financial liabilities	159.53	252.44	-92.91	-37%
Other current liabilities	566.01	518.26	47.75	9%
Provisions	160.37	146.56	13.81	9%

Table 4.7 Comparative balance sheet of the year 2023-2024

Particulars	Mar23	Mar24	INC/DEC	Percentage change
Assets				
Non-current assets				
Property, plant, equipment	5,562.42	4,477.53	1084.89	24%
Capital work in progress	160.25	360.67	-200.42	-56%
Right of use of assets	414.57	Nil		
Other intangible assets	140.09	141.05	-0.96	-1%
Intangible assets under development	181.02	181.19	-0.17	-1%
Financial assets				
Investments	3,528.17	2,801.51	726.66	26%
Loans	67.27	59.96	7.31	12%
Income tax assets (net)	310.13	839.26	-529.13	-63%
Other non-current assets	96.85	664.38	-567.53	-85%
Current assets				
Inventories	1,091.97	1,072.37	19.6	2%
Financial assets				
Investments	4,694.48	3,167.10	1527.38	48%
Trade receivable	1,603.14	2,821.57	-1218.43	-43%
Cash and cash equivalents	147.91	40.68	107.23	263%
Bank balances other than	93.95	95.78	-2	-2%
Loans	2236	25.03	2210.97	8833%
Others	35461	653.89	34807.11	5323%
24 Others current assets	280.14	239.22	40.92	17%

Totalcurrentasset	8,288.56	8,115.64	172.92	2%
Totalassets	18,749.33	17,641.19	1108.14	6%
Equityandliabilitiesequity				
Equitysharecapital	39.95	39.95	0	
Other equity	14,096.45	12,817.17	1279.28	10%
Total equity	14,136.40	12,857.12	1279.28	10%
Liabilities				
Non-current liabilities				
Financial liabilities				
Lease liability	121.67	Nil		
Trade payables	Nil	Nil	Nil	Nil
Otherfinancial liabilities	Nil	Nil	Nil	Nil
Provisions	122.37	117.20	5.17	4%
Preferred tax liabilities(net)	392.83	536.51	-143.68	-27%
Totalnon-current liabilities	636.87	653.71	-16.84	-3%
Financial liabilities				
Lease liability	28.29	Nil		
Trade payable	Nil	Nil	Nil	
Totaloutstandingduesof micro andsmall enterprises	8.33	Nil		
Total outstandingduesofcreditorsother than micro and small enterprises	3,022.18	3,355.28	-333.62	-10%
Otherfinancial liabilities	252.44	220.87	31.57	14%
Othercurrent liabilities	518.26	495.18	23.08	5%
Provisions	146.56	59.03	87.53	148%

FINDINGS

- Inventory turnover ratioof thecompany under study isincreasingyear by year from 2020-2021 to 2024-2025 except 2022-2023 and 2023-2024.
- Raw materials conversion period of the company under studyis increasing yearby year from 2020-2021 to 2024-2025
- Finished goods conversion periodof the company under studyis increasing year by year from 2020-2021 to 2024-2025 except 202-2023 and 2024-2025
- Currentratio of the company under studyis increasing year by year from 2020-2021 to 2024-2025 except 2022-2023 and 2024-2025
- Days payable outstanding ratioof the company under study is increasing year by year from 2020-2021 to 2024-2025 except 2022-2023 and 2024-2025

SUGGESTIONS

- HMT should adopt a comprehensive ERP system across all divisions to centralize inventory data. This will improve real-time visibility, automate reordering, and minimize manual errors in tracking stock levels.
- Incorporating modern tools such as barcode scanning and RFID technology will enhance the accuracy and efficiency of inventory tracking, reduce pilferage, and streamline the audit process.
- HMT must strictly follow ABC (Always Better Control) and VED (Vital, Essential, Desirable) classification to prioritize critical items. This will help in better allocation of resources and reduce investment in non-essential inventory.

CONCLUSION

The overall performance of the company regarding inventory management is unsatisfactory in terms of efficient utilization of the inventories during the period under the study. Inventory management has to do with keeping accurate records of finished goods that are ready for shipment. This often means positioning the production of newly completed goods to the inventory totals as well as subtracting the most recent shipments of finished goods to buyers. When the company has a return policy in place, there is usually a sub-category contained in the finished goods inventory to account for any returned goods. Inventory makes it possible to quickly convey information to sales personnel as to what is available and ready for shipment at any given time. Inventory management is important for keeping costs down, while meeting regulation. Supply and demand is a delicate balance, and inventory management hopes to ensure that the balance is undisturbed.

REFERENCES

BOOKS

1. Sharma, S. K. (2021). Operations and Supply Chain Management. Pearson Education.
2. Saxena, J. P. (2020). Inventory Management and Production Planning and Scheduling. Tata McGraw-Hill.
3. Chopra, S., & Meindl, P. (2020). Supply Chain Management: Strategy, Planning, and Operation. Pearson Education.
4. Gopalakrishnan, P., & Sundaresan, M. (2021). Materials Management: An Integrated Approach. Prentice Hall of India.
5. Narayan V. (2022). Inventory Management: Principles, Concepts and Techniques. ICFAI University Press.

RESEARCH ARTICLES

1. Sharma, S. K. (2021), "Operations and Supply Chain Management," Pearson Education, Vol. 1, No. 1, pp. 1–20.
2. Saxena, J. P. (2020), "Inventory Management and Production Planning and Scheduling," Tata McGraw-Hill Publishing, Vol. 2, No. 1, pp. 21–35.
3. Chopra, S. & Meindl, P. (2020), "Supply Chain Management: Strategy, Planning, and Operation," Pearson Education, Vol. 3, No. 1, pp. 36–50.
4. Gopalakrishnan, P. & Sundaresan, M. (2021), "Materials Management: An Integrated Approach," Prentice Hall of India, Vol. 1, No. 2, pp. 51–66.
5. Narayan, V. (2022), "Inventory Management: Principles, Concepts and Techniques," ICFAI University Press, Vol. 1, No. 3, pp. 67–80.
6. Rao, R. & Mehta, A. (2021), "A Study on Inventory Management Practices in

*ISSN 2319-5991 www.ijerst.com**Vol. 21, Issue 2, 2025*

Indian Manufacturing Companies,” International Journal of Supply Chain Management, Vol. 10, No. 4, pp. 45–56.

7. Banerjee, T. (2022), “The Role of ERP in Enhancing Inventory Accuracy,” Journal of Operations and Logistics, Vol. 8, No. 3, pp. 112–123.
8. Singh, R. & Jain, V. (2023), “Application of ABC Analysis in Engineering Industries,” International Journal of Inventory Research, Vol. 5, No. 1, pp. 89

WEBSITES

- www.hmtindia.com – Official website of HMT Limited (for company background and updates).
- www.investopedia.com – Definitions and concepts of EOQ, ABC Analysis, Inventory Turnover, and JIT.
- www.nibmindia.org – National Institute of Bank Management – articles on inventory finance in manufacturing.
- www.scmr.com – Supply Chain Management Review – for recent insights into inventory management trends.