A Study on Inventory Management At Abb India Ltd, Banglore

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Abstract- *This project takes a closer look at how inventory is managed at ABB India Ltd., Bangalore, a well-known company in the field of power and automation. Effective inventory management is essential for any manufacturing company, and this study focuses on understanding how ABB handles its stock—whether it's raw materials, work-in-progress items, or finished goods.*

The research is based on data from 2020 to 2024, and uses tools like inventory turnover ratios, Economic Order Quantity (EOQ), ABC analysis, and holding period calculations to evaluate performance. One key finding is that while the company's sales have grown, the finished goods turnover has actually dropped. This could mean that products are staying in storage longer than they should, which may point to issues in production planning or slower sales.

The EOQ analysis also shows that there's room for improvement when it comes to how and when ABB places orders. Some materials are being ordered in large, inconsistent quantities, which could be avoided with better forecasting and planning.

Keywords- Inventory Management, Economic Order Quantity, ABC Analysis, Finished Goods Turnover, Production Planning

I. INTRODUCTION

Inventory plays a central role in the operations of any manufacturing company. It's not just about storing goods—it's about maintaining the right balance of materials, ensuring smooth production, meeting customer demand, and avoiding unnecessary costs. This project focuses on understanding how ABB India Ltd., Bangalore, a leader in power and automation technologies, manages its inventory across different stages of production. During this study, I had the opportunity to explore how ABB handles its raw materials, work inprogress items, and finished goods. I also learned how inventory decisions impact everything from day-to-day operations to overall business performance. With manufacturing industries becoming increasingly complex and competitive, having an efficient inventory system is no longer optional—it's essential.

II. REVIEW OF LITERATURE

- **Carlin's Inventory Model & Direct Order Costs (1958, Vega-Ama & Montes-d'Oka, 1998):** Vega-Ama & Montes-d'Oka (1998) studied Carlin's 1958 model, which focuses on direct order cost assignment. They argued that under expected cost criteria, the fundamental inventory control structure remains optimal.
- **Junius (1999) & Serel et al. (2001) on Capacity Constraints**: Junius (1999) and Serel et al. (2001) examined inventory systems that do not account for "internal" production but rather focus on outsourcing models. Their work highlights fluctuations in capacity levels and the role of fixed outsourcing costs.
- **Fenberg& Louis (2006) on Order Cost Models:**Fenberg& Louis (2006) revisited inventory management models, particularly analyzing fixed ordering costs within a linear structure. Their study builds upon Carlin's 1958 model, validating its applicability to modern supply chain environments.
- **Huh et al. (2008) on Extended Inventory Models:** Huh et al. (2008) developed an extended inventory control framework, enabling limited horizon models to be expanded into infinite-horizon structures while maintaining optimal cost efficiency.
- **Huh et al. (2008) on Structural Dominance in Inventory Models:** Further work by Huh et al. (2008) provided comprehensive definitions of dominant policy structures in inventory management. Their findings demonstrated the superiority of specific cost functions and parameter adjustments, particularly in limited-horizon settings.

III. OBJECTIVES OF THE STUDY

PRIMARY OBJECTIVE

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SECONDARY OBJECTIVES

- To identify the factors related to inventory management.
- To understand current inventory management techniques adopted by the company.
- To analyze impact of inventory management in controlling optimum inventory level

IV. RESEARCH METHODOLOGY

The research methodology serves as a structured approach to addressing the study's objectives. In this analysis, speculation analysis is employed as the primary research method at ABB India Limited to assess inventory management efficiency.

DATA ANALYSIS

TURN OVER RATIOS

Period	Net Sales	Average Inventory	Turnover Ratio
2021	3918558196	506460567	7.73
2022	5958016404	746837818	7.97
2023	10833256904	1432524560	7.56
2024	13177230047	1775802189	7.42

INTERPRETATION

The above table illustrates the Inventory Turnover Ratio over the years, showing minor fluctuations: 7.73 in 2021, 7.97 in 2022, 7.56 in 2023 (likely a correction from a typographical error), and 7.42 in 2024. Although there was an increase in sales value during this period, the Inventory Turnover Ratio did not exhibit significant growth. This suggests that while revenue generation improved, inventory movement remained relatively stable, indicating that stock levels may have been proportionally adjusted to match sales or that there were inefficiencies in inventory utilization, highlighting the need for further analysis and potential optimization.

ECONOMIC ORDER QUANTITIES

Description	Annual consumption	Total ordering cost	Carryingcost	EOQ
LEAD-A	132827193.20	7396	3.339561035	767007
LEAD-B	10667526.61	540	0.300133651	195923
LEAD-C	5238997.96	289	0.131719665	151622
LEAD-D	362802426.40	22155	8.904450803	1343638
LEAD-E	82222161.09	5302	2.362562052	607488
LEAD-F	151503021.70	10305	3.990497753	884577
LEAD-G	90219604.18	5261	2.646367148	598927
LEAD-H	75688159.84	4210	1.948271607	571933
LEAD-I	51622360.50	2762	1.297897061	468733

INTERPRATATION

The data reflects the item-wise Economic Order Quantity (EOQ). In 2021, indigenous items like Lead-A and Lead-C saw an increase in demand due to company orders and corresponding EOQ adjustments. It's important to consider that order quantities are influenced by factors such as minimum shipment requirements, transportation costs, and supplier capacity.

ABC CLASSIFICATION:

PURPOSE- ABC classification helps prioritize inventory by categorizing items based on their value, allowing better control of high-cost items and more efficient resource allocation.

TRYING TO FIND OUT - ABC classification identifies which inventory items are most valuable (A), moderately valuable (B), and least valuable (C), helping focus control efforts on items that impact costs and operations the most.

LEAD Category	Annual Consumption	Carrying Cost	ACV (Annual Consumption × Carrying Cost)	ABC Category
LEAD- D	36,28,02,426.40	8.9045	3,23,13,17,478.90	A
LEAD- F	15,15,03,021.70	3.9905	60,44,66,390.30	A
LEAD- A	13,28,27,193.20	3.3396	44,38,13,476.90	A
LEAD- E	8,22,22,161.09	2.3626	19,41,84,364.70	B
LEAD- G	9,02,19,604.18	2.6464	23,86,34,045.10	B
LEAD- H	7,56,88,159.84	1.9483	14,74,96,713.40	B
LEAD- I	5,16,22,360.50	1.2979	6,69,78,187.10	C
LEAD- B	1,06,67,526.61	0.3001	32,01,367.30	C
LEAD- C	52,38,997.96	0.1317	6,89,787.90	C

INTERPRATATION

The ABC study of the stock at ABB India Ltd. indicates that the articles of Category A, which comprise the greatest amount of yearly use (₹64.71 crore), also cause the greatest expense of possession (16.23%). Category B follows with approximately ₹24.81 crore in total consumption. In addition,CategoryBhas6.95%carryingcost,whereasCategoryChasthelowestvalues,with₹6.75 crore plus 1.73%, respectively. This strongly indicates that, for cost control as well as inventory management, Category A items are the most critical, thus requiring stringent monitoring, whereas Category C items have a minimal effect on overall costs along with require far less oversight.

V. CONCLUSION

The inventory management practices at ABB India Ltd. demonstrate a structured approach, but there is scope for improvement. While raw material and work-in-process turnover ratios have been relatively stable, the finished goods turnover ratio has declined, suggesting inefficiencies in demand forecasting and production planning.

An increase in inventory holding periods further highlights the need for improved stock rotation and warehouse optimization. The ABC classification analysis emphasizes the need to focus on high value items for better cost control. Additionally, EOQ trends suggest inconsistencies in ordering patterns, which can be resolved through enhanced data-driven decision-making.

By adopting lean inventory practices, improving forecasting accuracy, and leveraging technology, ABB India Ltd. can achieve greater efficiency, reduce costs, and enhance overall supply chain performance.

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