Inventory Optimization in Dodhia Industries Ltd.: A Strategic Approach to Supply Chain Efficiency

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***Abstract*—Modern manufacturing, especially in the textile and chemical industries in India, needs strong cost control to stay competitive in the global market. Inventory is often one of the biggest costs that a company can control. This study looks at how inventory is managed at Dodhia Industries Ltd., which is a well-known company in the textile and yarn sector. The main goal of the study is to find problems in stock management that cause either too much storage cost or shortages of materials.**

The research uses both primary data (collected from procurement and warehouse managers) and secondary data (such as financial records). The results show that using simple tools like the Economic Order Quantity (EOQ) method and ABC-VED analysis can help reduce storage costs and improve availability of materials. In the end, the study suggests a plan that includes real-time tracking and better data analysis to manage inventory more efficiently and improve the company's working capital.

***Index Terms*—Inventory Optimization, Dodhia Industries Ltd., Supply Chain Management, EOQ, ABC Analysis, Textile Industry, Working Capital, Logistics.**

I. INTRODUCTION

The textile industry in India is undergoing a massive transformation driven by digital integration and global export demands. For large-scale manufacturers like Dodhia Industries Ltd., the ability to balance raw material availability with finished goods demand is a critical success factor. Inventory optimization is not about reducing stock; it is about ensuring the right material is in the right place at the right time at the minimum cost.

Dodhia Industries operates in a high-volume environment where fluctuations in raw material prices can directly impact profit margins. Unlike the courier sector—where value is perceived through speed and tracking (similar to Blue Dart's model in Gujarat)—manufacturing value is derived from operational lean and cost efficiency.

1.1. Problem Statement

Despite its market presence, Dodhia Industries faces challenges in manual inventory tracking and traditional procurement. This often results in:

- Overstocking: Leading to high capital blockage and risk of Deadstock.
- Understocking: Causing production delays and missed delivery deadlines for international clients.
- High Carrying Costs: Including warehousing, insurance, and handling expenses that destroyed the bottom line.

1.2. Objectives of the Study

- To evaluate the existing inventory management techniques at Dodhia Industries Ltd.
- To categorize inventory items using ABC and VED analysis for prioritized control.
- To determine the optimal order size using the Economic Order Quantity (EOQ) model.
- To assess the impact of technology integration on inventory visibility and accuracy.
- To provide actionable recommendations for reducing total inventory investment.

II. LITERATURE REVIEW

- Inventory management has changed a lot over the years. It started as simple record-keeping in paper books, but today, it uses advanced computer formulas to predict what a business will need.

- In the manufacturing world, efficiency is key. For business-to-business (B2B) relationships, clients care most about two things: getting their orders on time and keeping costs low.
- Service Quality and Reliability
- Research shows that being reliable is the most important part of providing good service. In manufacturing, reliability depends on having a strong inventory system. If a company manages its stock well, it can avoid production delays and "out-of-stock" problems.
- Studies also suggest that when a supply chain is consistent and predictable, it builds long-term trust between businesses. Simply put: when a company always delivers what it promises, its partners are more likely to stay loyal.

The Role of Digitalization:
Recent studies emphasize that digital tools like ERP (Enterprise Resource Planning) and real- time tracking are no longer optional. For firms in industrial hubs like Gujarat, technology provides the visibility needed to move toward Just-In-Time (JIT) manufacturing, significantly reducing the "safety stock" cushion that many Indian firms traditionally maintain.

III. RESEARCH METHODOLOGY

Study Design: The research utilizes a descriptive-analytical framework, focusing on the correlation between inventory control methods and financial performance.

Data Collection:
- Primary Data: Structured interviews and surveys with 40 employees across the procurement, warehousing, and finance departments of Dodhia Industries.
- Secondary Data: Analysis of the company's annual reports (2023-2025), stock ledgers, and procurement logs.

Sampling Method:
A purposive sampling technique was used to select participants who have a direct impact on the inventory lifecycle.

Analytical Tools:

The data was analyzed using:

1. ABC Analysis: Categorizing items based on annual consumption value.
2. EOQ Modeling: To calculate the point where ordering costs and carrying costs are minimized.

IV. RESULTS AND DISCUSSION

4.1. ABC Analysis of Raw Materials
An analysis of 100 key raw material stock-keeping units (SKUs) at Dodhia Industries revealed a classic Pareto distribution:

Category	% of Items	% of Value	Control Level
A (High Value)	15%	75%	Strict / Daily
B (Moderate)	30%	20%	Moderate / Weekly
C (Low Value)	55%	5%	Loose / Monthly

4.1. EOQ Calculation Example
For a high-usage yarn SKU:

- Annual Demand (D): 10,000 units
- Ordering Cost (S): ₹500 per order

Holding Cost (H): ₹50 per unit/year Using the formula

$$EOQ = \sqrt{\frac{2DS}{H}}$$

$$EOQ = \sqrt{\frac{2 \times 10,000 \times 500}{50}} \approx 447 \text{ units}$$

Implementing this EOQ ensures that Dodhia Industries avoids the "bulk buying" trap which currently leads to excessive warehousing costs.

4.3 Data analysis and interpretation
The survey findings reveal strong support for inventory optimization practices.

A large number of respondents indicated that awareness of inventory optimization practices in the company for the growth of the company.

To manage the inventory properly the ABC analysis helps the most to the employee and EOQ reduces the work of the employee.

With the help of these tools employee can easily detect the situation of the inventory and current scenario of the company.

Or it will help the company to reduce their holding cost of inventory and prevent from stockout in return there is no delay in the production process.

4.4 Results and findings

The key findings of the study are as follows:

Awarness towards the inventory optimization tools among the employees is high.

ABC analysis and EOQ is considered highly important in all of the strategy.

Lean practices positively influence employees towards the work after the implementation of lean.

Less inventory means less warehouse expenses. Less inventory more cash available for business.

Leand practices cut unnecessary costs and waste.

V. LIMITATION OF THE STUDY

The study has certain limitations.

Wrong demand forecasts can lead to stockouts or excess inventory.

To learn lean employee need training that need time and costs.

VI. CONCLUSION

The study shows that Dodhia Industries Ltd. can significantly improve its business by changing how it manages stock. Right now, the company is losing money by holding too much inventory and using old-fashioned tracking methods.

The main takeaways are:

- By focusing more on "Category A" items, they can control the majority of their spending.
- Using the EOQ formula will prevent them from buying too much or too little.
- Investing in digital tracking (ERP) might be expensive at first, but it will save the company much more money in the long run by reducing waste.

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