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A Study on Inventory Management and its Impact on Supply Chain Performance in Sri Sabari Textiles

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Abstract: ***Inventory management plays a critical role in ensuring operational efficiency and enhancing supply chain performance, particularly in manufacturing industries such as textiles. This study examines the inventory practices of Sri Sabari Textiles and evaluates their impact on supply chain efficiency, production continuity, and customer satisfaction. Using a descriptive and analytical research design, data were collected from 86 respondents through structured questionnaires and analyzed using percentage analysis. The findings reveal that while the company adopts effective inventory control methods such as FIFO and JIT, challenges like overstocking, understocking, and partial digital adoption persist. The study concludes that improved forecasting, automation, and integrated systems can significantly enhance supply chain performance.***
Keywords: Inventory Management, Supply Chain Performance, Textile Industry, FIFO, JIT, Demand Forecasting

I. INTRODUCTION

In today's competitive business environment, efficient inventory management is essential for maintaining cost control, ensuring production continuity, and achieving customer satisfaction. In textile manufacturing, inventory acts as a critical link between procurement, production, and distribution. Sri Sabari Textiles operates in a dynamic market characterized by seasonal demand and fluctuating raw material availability. Ineffective inventory control can lead to stockouts, increased holding costs, and operational inefficiencies. Therefore, this study focuses on analyzing inventory management practices and their impact on supply chain performance at Sri Sabari Textiles, aiming to identify gaps and propose actionable improvements.

II. REVIEW OF LITERATURE

1) Heizer & Render (2020) highlighted the role of ERP systems in improving inventory accuracy and reducing operational costs in manufacturing firms. Their research confirmed that technology-driven systems enhance real-time visibility across supply chains.
2) Christopher (2016) emphasized the application of Just-in-Time (JIT) inventory strategy for reducing holding costs and improving supply chain responsiveness, particularly in dynamic manufacturing environments.
3) Goyal & Giri (2001) discussed classical inventory models such as EOQ (Economic Order Quantity) and their role in cost optimization and balancing ordering frequency with carrying costs.
4) Gunasekaran et al. (2018) stressed the importance of technological integration for enhanced supply chain responsiveness, arguing that digitally connected inventory systems improve demand forecast accuracy.
5) Beamon (1999) linked poor inventory control to operational inefficiencies, noting that imbalanced stock levels disrupt production schedules and negatively affect customer satisfaction.

These studies collectively indicate that technology-driven inventory systems improve efficiency and competitiveness in manufacturing supply chains.

III. OBJECTIVES OF THE STUDY

1) To examine the inventory management practices adopted at Sri Sabari Textiles.
2) To assess the impact of inventory management on supply chain performance.
3) To identify major challenges in inventory control faced by the organization.
4) To suggest measures for improving inventory efficiency and supply chain outcomes.

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IV. RESEARCH METHODOLOGY

The study adopted a descriptive and analytical research design. Primary data were collected using a structured questionnaire administered to 86 respondents at Sri Sabari Textiles through the census method, covering all employees across relevant departments. Secondary data were obtained from company records, academic journals, and textbooks. The tool used for analysis is percentage analysis, which enables clear and interpretable presentation of respondent responses across key inventory and supply chain variables.

V. RESULTS AND ANALYSIS

Table 1: Demographic Profile of Respondents

Variable	Category	Percentage (%)
Gender	Female	63.95%
Age Group	25–35 years	39.53%
Educational Qualification	HSC	46.52%
Department	Logistics	37.20%

- Interpretation: The majority of respondents are young, moderately educated female employees working in the logistics department, indicating strong operational-level involvement in inventory and supply chain activities.

Table 2: Inventory Management Practices Adopted

Inventory Method	Percentage (%)
FIFO (First-In-First-Out)	38.37%
JIT (Just-In-Time)	26.75%
LIFO (Last-In-First-Out)	25.58%
EOQ (Economic Order Quantity)	9.30%

- **Interpretation:** FIFO is the most widely adopted method (38.37%), indicating the company's focus on reducing material obsolescence. JIT adoption at 26.75% reflects efforts to minimize holding costs, though full integration remains partial.

Table 3: Inventory Management Challenges

Challenge	Percentage (%)
Overstocking	40.70%
Understocking	38.37%
Delayed Restocking	12.80%
Inaccurate Records	8.13%

- Interpretation: Maintaining optimal inventory levels is the most significant challenge, with overstocking (40.70%) and understocking (38.37%) together accounting for nearly 80% of reported issues, pointing to weak demand forecasting capabilities.

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Table 4: Impact of Inventory Issues on Supply Chain Performance

Impact	Percentage (%)
Stockouts affecting production	41.86%
Delivery delays to customers	34.89%
Negative customer feedback	17.44%
Increased operational pressure	5.81%

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- Interpretation: Inventory issues directly affect production continuity and customer satisfaction. Stockouts (41.86%) and delivery delays (34.89%) together demonstrate how poor inventory control cascades into supply chain disruptions.

Table 5: Level of Digital Adoption in Inventory Management

Level of Digital Adoption	Percentage (%)
Partially Digital	44.19%
Basic Tools Only	25.59%
Fully Digital	24.41%
No Digital System	5.81%

- Interpretation: Digital adoption is moderate but not fully integrated. Only 24.41% of operations are fully digitized, while the majority (44.19%) remain partially digital, limiting real-time inventory visibility and automated decision-making.

VI. DISCUSSION

The findings indicate that Sri Sabari Textiles has a structured inventory system but faces operational inefficiencies due to limited automation and forecasting inaccuracies. While methods like FIFO and JIT are implemented, challenges such as overstocking and understocking persist due to fluctuating demand patterns and absence of predictive analytics. Partial digital adoption limits real-time visibility and reduces the speed of decision-making in inventory replenishment and order processing. These findings are consistent with Beamon (1999) and Gunasekaran et al. (2018), who emphasized that integrated, technology-enabled inventory systems are essential for supply chain resilience. Improved integration between inventory, procurement, and distribution functions is necessary for better overall performance.

VII. CONCLUSION

The study concludes that inventory management significantly impacts supply chain performance at Sri Sabari Textiles. Efficient inventory practices improve production flow, reduce operational costs, and enhance customer satisfaction. However, gaps in forecasting accuracy, digital integration, and inventory optimization continue to limit overall supply chain efficiency. Implementing advanced technologies such as ERP systems, adopting AI-driven demand forecasting, and enhancing inter-departmental coordination can substantially strengthen supply chain performance. Future research may extend this study to multiple textile firms for comparative analysis.

VIII. RECOMMENDATIONS

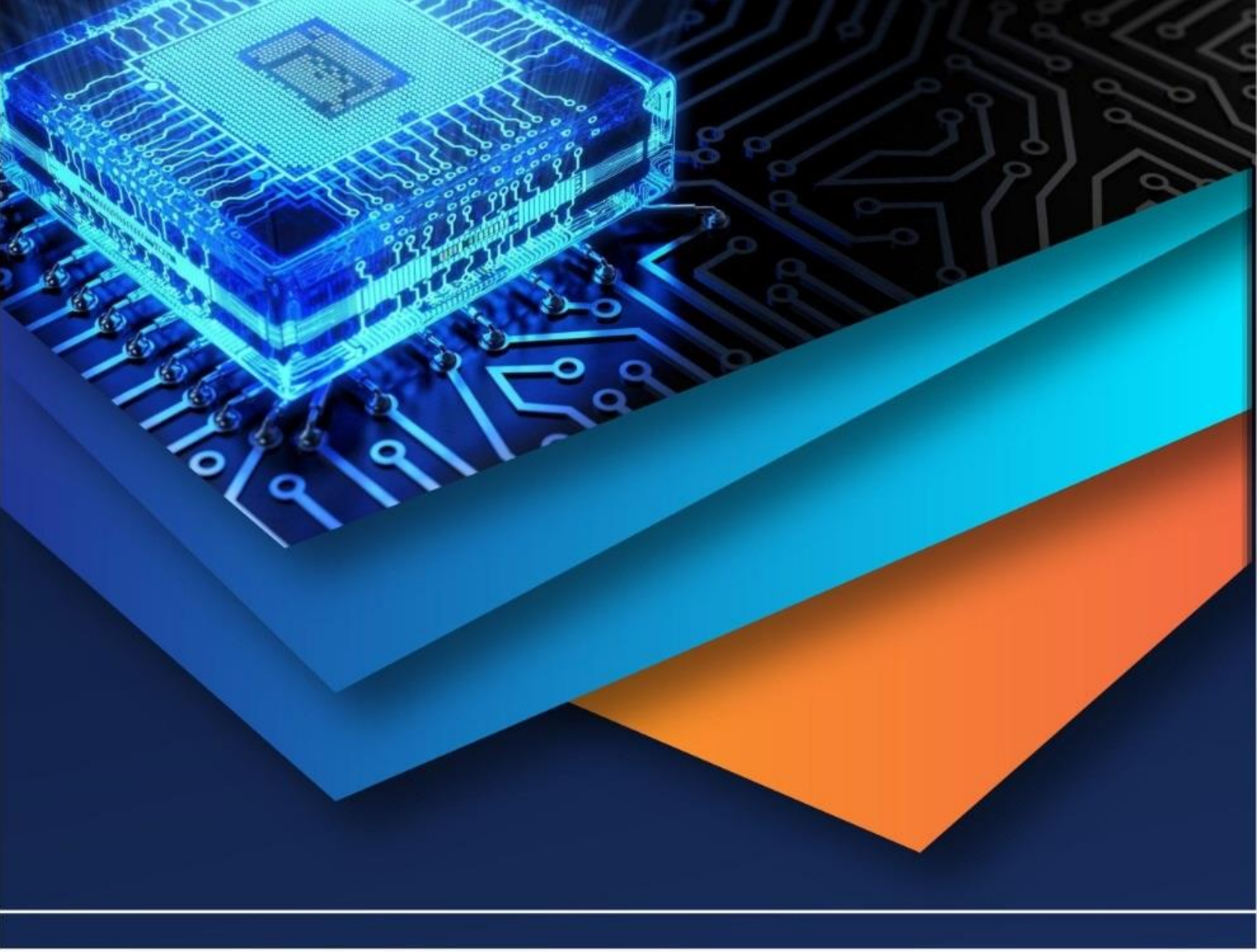
1) Implement ERP and real-time inventory tracking systems to improve visibility across the supply chain.
2) Improve demand forecasting techniques using historical sales data and market trend analysis.
3) Adopt automated inventory replenishment systems to reduce manual errors and restocking delays.
4) Enhance inter-departmental coordination between procurement, production, logistics, and sales teams.
5) Reduce dependency on manual record-keeping by transitioning to fully digital inventory management platforms.

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