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A Study on Inventory Management of Servo Packaging Limited

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ABSTRACT
This study evaluates the inventory management practices at Servo Packaging Limited, focusing on optimizing stock levels and reducing costs. The research examines key techniques, including Economic Order Quantity (EOQ), ABC analysis, and stock level maintenance, using secondary data such as balance sheets and inventory reports. The findings show that Servo Packaging has effectively managed inventory to ensure smooth production while minimizing costs. However, improvements in supplier reliability and the implementation of Just-In-Time (JIT) inventory could further enhance efficiency. Overall, the company balances cost-efficiency with customer demand, though further optimization is possible.

Keywords: Inventory Management, Servo Packaging Limited, Economic Order Quantity (EOQ), ABC Analysis, Stock Levels, Just-In-Time (JIT), Cost Optimization.

1. INTRODUCTION OF THE STUDY

Inventory management plays a pivotal role in the success of businesses, particularly in manufacturing and production sectors. Effective inventory control ensures companies like Servo Packaging Limited can maintain a balance between stock levels and customer demand, optimizing operational efficiency and profitability. Servo Packaging Limited, a leader in packaging solutions for industries such as food and beverage, pharmaceuticals, and e-commerce, faces the complex challenge of managing diverse materials and products across its supply chain. This study explores the company's inventory management practices, identifies potential areas for improvement, and offers strategies to enhance efficiency while minimizing costs. By optimizing inventory processes, the company can better meet customer demands, improve profitability, and maintain its competitive edge.

OBJECTIVES OF THE STUDY

- To measure the Economic Order Quantity (EOQ) for the raw materials
- To Categorize the raw materials using ABC classification
- To analyse the maintenance of different stock level of servo packaging limited

2. REVIEW OF LITERATURE

Sharma et al: "Leveraging Real-time Data Analytics for Dynamic Inventory Optimization" (2023)
The improvement of inventory management by integrating advanced technologies like cloud computing and real-time data analytics. Their study highlights how these technologies allow firms to dynamically

adjust inventory levels across the supply chain, optimizing factors like lead times, order quantities, and demand variability. This dynamic approach helps firms to maintain more accurate and efficient inventory systems.

Zhang and Lee: "Advancing Multi-Echelon Inventory Systems and Optimization Models" (2022) Zhang and Lee explore multi-echelon inventory systems and dynamic inventory optimization models, which help firms manage inventory across various stages or locations in the supply chain. The study highlights how the integration of cloud computing and real-time analytics has advanced these techniques, enabling companies to adapt inventory levels based on factors such as demand variability and lead times

Perez and Leach (2021), "Risk Management in Global Sourcing and Inventory Systems." The study of risk management strategies in global sourcing, accounting for uncertainties such as transportation delays and geopolitical factors. The study emphasizes the necessity for resilient and adaptable inventory systems that incorporate contingency planning and real-time decision-making. Additionally, it stresses the importance of collaboration between suppliers and manufacturers to enhance forecasting and inventory management across international borders.

Mohamad S. J. A. N., Suraidi N. N., Rahman N. A. A., & Suhaimi R. D. S. R. : "Enhancing Business Performance through Efficient Inventory Management"(2016) The study concludes that efficient inventory management is crucial for businesses, with a focus on improving performance in areas like demand forecasting, inventory distribution, and cycle counting. The researchers emphasize the importance of these areas to improve overall inventory efficiency.

Srinivas Rao Kasisomayajula : "Inventory Management in India's Commercial Vehicle Industry" (2014) The analytical study investigates inventory management in India's commercial vehicle industry, using a sample of five companies. The study finds a significant relationship between inventory management and sales, indicating that proper inventory management is critical for improving organizational profitability.

Sahari, Tinggi, and Kadri:"Impact on Firm Performance of Capital Intensity and Inventory Management"(2012) The study, based on a sample of 82 construction firms in Malaysia from 2006 to 2010, finds a positive correlation between inventory management and firm performance. Additionally, it highlights that capital intensity is also positively correlated with inventory management practices.

S.Singh: "Inventory Control Practices at IFFCO" (2010) The inventory control practices at IFFCO, examining the relationship between inventory, consumption, sales, and growth variables. The study finds that an increase in inventory components leads to a higher proportion of inventory in current assets, which is crucial for the company's financial health.

3.RESEARCH METHODOLOGY:

This study adopts a systematic approach to evaluate the inventory management practices of Servo Packaging Limited. The research follows an analytical design, focusing on analysing existing data to assess the company's performance. Research involves a scientific investigation, where facts and data are carefully collected, analysed, and used to draw conclusions or propose solutions to problems.

RESEARCH DESIGN:

The research design is analytical in nature, aiming to critically evaluate the company's inventory practices using existing data. This approach helps ensure that the study is efficient and yields insightful findings with minimal time, effort, and resources.

DATA COLLECTION:

Secondary Data: Data previously collected and documented, such as the company's balance sheet, profit and loss account, and inventory records.

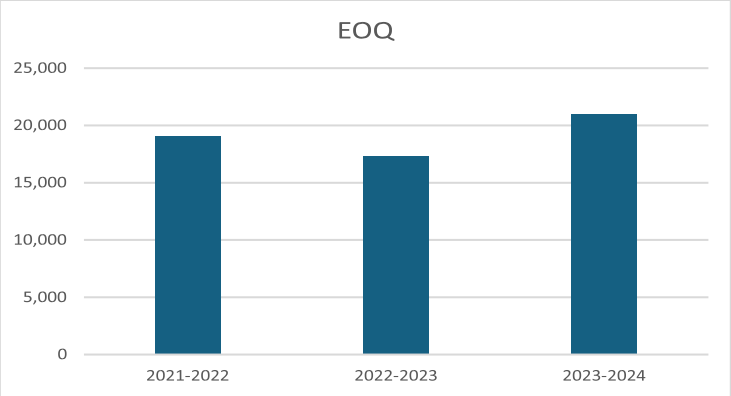
TECNIQUES USED FOR THE STUDY:

- Economic Order Quantity
- ABC Analysis
- Stock Level

4. DATA ANALYSIS AND INTERPRETATION

Economic Order Quantity for a period (2021-2024)

Year	Annual Demand	Ordering Cost	Holding Cost	EOQ Units
2021-2022	4,34,000	10,060	711	19,063
2022-2023	4,00,000	9,800	645	17,367
2023-2024	4,53,000	10,340	774	21,000



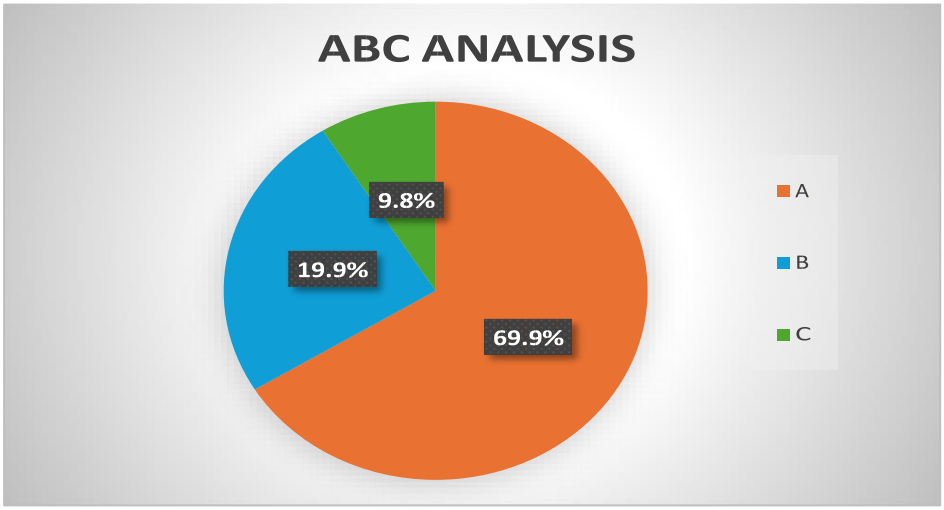
INFERENCE:

The above table infers that, the EOQ analysis from 2021 to 2024 reveals a variation in order quantities due to changes in demand, ordering costs, and holding costs. The EOQ values fluctuated from 19,063 units in 2021-2022 to 17,367 units in 2022-2023, and then increased to 21,000 units in 2023-2024, indicating that Servo Packaging Limited is adjusting its inventory strategy to optimize costs and manage changing market conditions.

ABc analysis

Raw Material	Total Value (₹)	Percentage of Total Value (%)	Cumulative Percentage (%)	Category
BOPP Granules	4,05,00,000	13.83%	13.83%	A
PP Granules	3,75,00,000	12.80%	26.63%	A
HDPE Granules	3,20,00,000	10.92%	37.55%	A
Raffia	3,20,00,000	10.92%	48.47%	A
LDPE Granules	2,97,50,000	10.15%	58.62%	A
Injection Moulding	2,25,00,000	7.67%	66.29%	A

Mastercatch (White)	1,75,00,000	5.97%	72.26%	B
Mastercatch (Black)	1,30,00,000	4.44%	76.70%	B
Filler Masterbatch	1,50,00,000	5.12%	81.82%	B
Additive Masterbatch	1,40,00,000	4.77%	86.59%	B
Modifiers	1,32,00,000	4.51%	91.10%	B
Masterbatch (colour)	1,17,00,000	3.99%	95.09%	C
Pigment (red)	90,00,000	3.07%	98.16%	C
Pigment (blue)	55,00,000	1.88%	100.00%	C

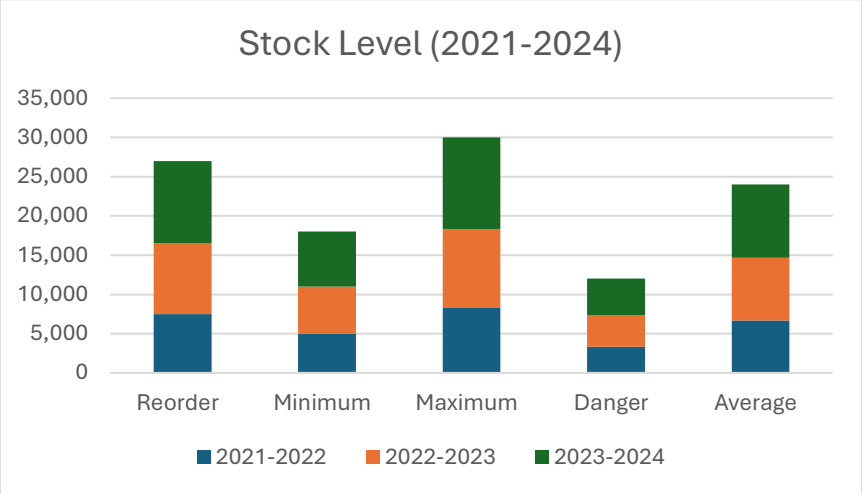


INFERENCE:

The above table infers that, the ABC analysis categorizes Servo Packaging Limited's materials into three groups. Category A (70% of total value) includes high-value items like BOPP Granules and PP Granules, requiring careful inventory management. Category B (20% of total value) comprises significant but less critical materials like Masterbatch, needing efficient management. Category C (10% of total value) consists of lower-cost materials like Masterbatch (Colour), manageable with flexibility and periodic monitoring

Stock level for a period (2021-2022,2022-2023,2023-2024)

Year	Reorder Level (Units)	Minimum Stock Level (Units)	Maximum Stock Level (Units)	Danger Level (Units)	Average Stock Level (Units)
2021-2022	7,500	5,000	8,333	3,333	6,667
2022-2023	9,000	6,000	10,000	4,000	8,000
2023-2024	10,500	7,000	11,667	4,667	9,334



INFERENCE

The stock levels for Servo Packaging Limited show a clear upward trend from 2021 to 2024, with increases in reorder, minimum, maximum, danger, and average stock levels. This indicates the company is adjusting its inventory strategy to meet rising demand and avoid stockouts. The higher reorder levels and minimum stock levels reflect a more cautious approach to maintaining adequate inventory buffers. At the same time, the increase in maximum stock levels suggests the company is prepared for potential supply chain disruptions. Overall, these adjustments highlight a proactive strategy to ensure smooth operations while minimizing the risk of running out of stock.

FINDINGS

- Servo Packaging Limited has demonstrated strong and consistent sales for the last five years, reflecting a stable market demand for its products.
- The company's Economic Order Quantity (EOQ) approach is well-calculated, leading to optimized order quantities and minimizing both ordering and holding costs.
- The ABC analysis indicates that the company effectively manages critical materials (Category A), and the focus on high-value items ensures that critical materials are available when needed.
- Effective allocation of resources to critical inventory categories (A, B, and C) ensures operational efficiency and cost-effectiveness in managing stock.
- Based on the data from EOQ, reorder levels, and stock levels, the company is adjusting its stock to meet future production needs, balancing between availability and cost.

CONCLUSION

From the study, I conclude that Servo Packaging Limited has implemented effective inventory management practices, utilizing models like Economic Order Quantity (EOQ) and ABC analysis to optimize stock levels and reduce costs. The company benefits from tools such as Tally ERP for efficient tracking and management, ensuring materials are available to meet production demands. However, variability in lead times suggests potential for improvement in supplier management and contingency planning, while adopting a Just-In-Time (JIT) system could help reduce excess stock and enhance operational efficiency. Overall, Servo Packaging's strategy balances cost efficiency with demand fulfilment, though further improvements in supplier reliability and JIT integration could boost performance.

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