

Inventory Management With Reference To Cedicom Electronics Shoranur.

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Abstract- *Efficient inventory management is pivotal for maintaining cost-effectiveness and ensuring customer satisfaction. This study examines the inventory management practices of Cedicom Electronics, a prominent player in the electronics distribution market. The research highlights how Cedicom utilizes a combination of traditional inventory control methods and cutting-edge technology to optimize stock levels, reduce operational costs, and improve product availability. Key inventory management strategies such as demand forecasting, order quantity optimization, and automated replenishment systems are analysed to understand their impact on operational performance. Furthermore, the study evaluates the role of inventory visibility and real-time tracking tools in enhancing decision-making processes and reducing stockouts. The paper also delves into the challenges Cedicom faces in managing inventory, particularly in response to fluctuating demand, product obsolescence, and supply chain disruptions.*

Keywords- Inventory Management, Cedicom Electronics, Economic Order Quantity (EOQ), ABC ANALYSIS, VED ANALYSIS, Demand Forecasting, Operational Efficiency, Cost Control, Electronics Industry, Procurement Strategy.

I. INTRODUCTION

Cedicom Electronics and the broader electronics sector. Inventory management is vital for businesses, especially in industries with rapid technological advancements and fluctuating demand, like electronics. This project focuses on Cedicom Electronics in Shoranur, a key player in the local market known for its diverse electronic products. Effective inventory management helps reduce costs, optimize resources, and maintain competitiveness. In an industry with short product lifecycles and evolving customer preferences, managing stock levels, demand forecasting, and adapting to supply chain disruptions are crucial.

Overstocking increases holding costs and risks obsolescence, while understocking leads to stockouts and lost sales. This study will explore how Cedicom Electronics can optimize inventory levels, improve order accuracy, and

enhance lead time management, with a focus on lean practices to reduce waste and improve efficiency. The goal is to provide actionable recommendations to enhance inventory management, boost profitability, and improve customer satisfaction, benefiting both

II. INDUSTRY PROFILE

The electronics industry in India is a key driver of economic growth, fueled by a growing middle class, rising disposable incomes, and rapid urbanization. This sector includes consumer electronics, telecommunications, automotive electronics, semiconductors, and medical devices, with increasing demand for products like smartphones, televisions, home appliances, and electric vehicles (EVs). India's electronics market is expanding due to technological advancements such as 5G, IoT, and AI.

The government's Make in India initiative and the Production-Linked Incentive (PLI) scheme have boosted local manufacturing, attracting over \$30 billion in investments. India is now the second-largest producer of mobile phones globally, and the semiconductor sector is set to grow with the Semiconductor Mission aimed at reducing import dependency.

III. COMPANY PROFILE

Cedicom Electronics, based in Shoranur, Kerala, is a leading player in India's electronics industry, offering products like televisions, home appliances, industrial automation equipment, and automotive electronics. Known for quality, reliability, and innovation, Cedicom serves both domestic and international markets.

The company operates a modern manufacturing facility with advanced technology and emphasizes strong quality control and R&D in areas like smart electronics and IoT. Despite challenges such as rising raw material costs and supply chain disruptions, Cedicom remains competitive by focusing on technological advancements and sustainability. With its robust infrastructure and strategic focus on innovation, Cedicom is poised for continued growth in the

global electronics market, benefiting from government initiatives like Make in India and the PLI scheme.

IV. STATEMENT OF PROBLEM

Cedicom Electronics faces significant challenges in its inventory management system, including inaccurate demand forecasting, overstocking of low-demand items, and stockouts of high-demand products. The company struggles with inefficient procurement cycles and poor supplier coordination, leading to delays and missed sales opportunities. Additionally, the lack of integration between manual and automated tracking systems results in errors and discrepancies, further impacting operational efficiency and increasing costs.

V. OBJECTIVES OF THE STUDY

Primary objective

- Analyze the inventory management techniques of cedicom electronics.

Secondary objectives

- To identify the inventory management cost in handling inventory
- To analyze different inventory control techniques
- Recommend efficient inventory management practices at cedicom

VI. REVIEW OF LITERATURE

- Chen and Li (2023): Studied the impact of global supply chain disruptions on inventory management post-COVID-19. Their research on multinational corporations revealed that firms with higher safety stock levels and diversified supplier bases were more resilient during crises. They recommended hybrid inventory models that blend JIT with buffer stock strategies.
- Patel et al. (2022): Investigated the effect of economic order quantity (EOQ) models in inventory management. They tested different EOQ models on pharmaceutical companies and found that adopting EOQ methods led to cost reductions of up to 15%. The study also compared traditional EOQ models with modern technology-driven EOQ approaches.
- Singh and Gupta (2022): Examined the effects of inflation on inventory management strategies. Their study found that during periods of high inflation, firms tended to overstock raw materials to hedge against price increases, leading to increased holding costs. The research suggested

that firms use dynamic pricing models and flexible inventory strategies to adapt to economic fluctuations.

- Ahmed and Rahman (2021): Examined the role of inventory turnover in the profitability of small and medium enterprises (SMEs). Their study, based on a sample of 200 SMEs in Bangladesh, found a significant positive correlation between inventory turnover and net profit margin. They suggested that overstocking led to increased holding costs, while understocking resulted in lost sales opportunities.

VII. RESERCH METHODOLOGY

Cedicom electronics inventory management follows a descriptive approach, combining both numerical analysis and detailed assessment. this study aims to identify inefficiencies in inventory management, analyze the impact of stockouts and outdated products, evaluate supplier and distribution coordination, and propose strategies for optimization.

SOURCE OF DATA

5-year secondary data of cedicom electronics

Company records: historical inventory data, stock reports, procurement records, and sales data

Academic research and books: literature on inventory management models such as ABC, EOQ, VED analysis

METHOD OF DATA COLLECTION

Data collection in inventory management involves quantitative data to evaluate the inventory efficiency at Cedicom Electronics, Shoranur. Quantitative methods use numerical data to provide measurable insights into inventory control-ABC, EOQ, VED

VIII. DATA ANALYSIS

A) ABC Analysis (Always Better Control Analysis)

ABC Analysis is based on the Pareto Principle (80/20 rule), which suggests 80% of the value comes from 20% of the items. It categorizes inventory to improve stock control:

- A Category (High-Value, Low-Quantity): These items make up 70–80% of inventory value but only 10–20% of stock. They require strict control and accurate forecasting.
- B Category (Moderate-Value, Moderate-Quantity): These items account for 15–20% of value and 30–40% of stock. They need moderate monitoring.

- **C Category (Low-Value, High-Quantity):** These items contribute 5–10% of value but make up **50–60% of stock. They require minimal control and bulk stocking.**

B) ECONOMIC ORDER QUANTITY (EOQ)

EOQ is a mathematical model that determines the optimal order quantity to minimize total inventory costs, including ordering costs and holding costs.

EOQ Formula: $EOQ =$

D= Annual demand (units per year)

S = Ordering cost per order (fixed cost per purchase)

H = Holding cost per unit per year (storage, insurance, and depreciation costs)

C) VED Analysis (Vital, Essential, Desirable)

It is an inventory classification method based on the criticality of items to operations, rather than cost or consumption.

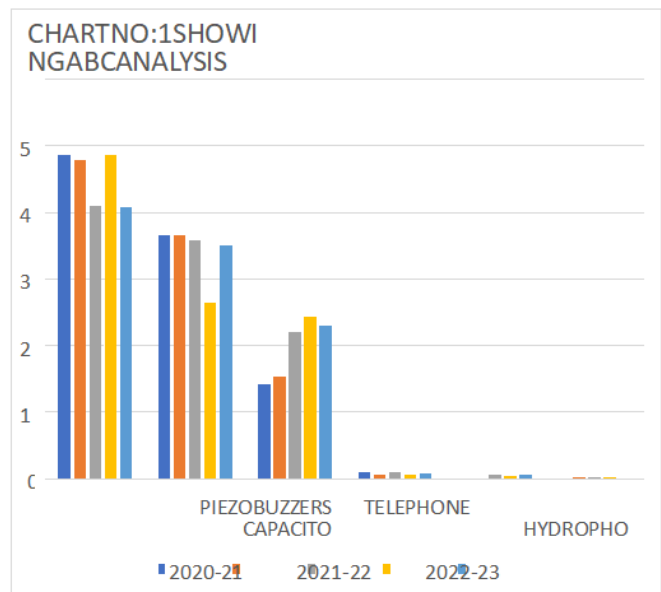
- **Vital (V):** Crucial for operations; stockouts cause severe disruptions. Requires constant monitoring and high safety stock.
- **Essential (E):** Important but not immediately critical; stockouts cause temporary disruptions. Requires moderate control and periodic restocking.
- **Desirable (D):** Least critical; stockouts have minimal impact. Can be ordered on demand rather

1. ABC ANALYSIS

TABLE NO: 1- TABLE SHOWING ABC ANALYSIS

YE AR	PIEZ O BUZ ZERS	CAPAC ITORS	META L OXID E VARIS TORS	TELEP HONE RINGE R	HYDRO PHONE	PU LSE OXI ME TE R
20 20 - 21	48.55	36.53	14.12	0.80		
20 21	47.77	36.41	15.18	0.58		0.05

- 22						
20 22 - 23	40.82	35.85	21.99	0.89	0.43	0.02
20 23 - 24	48.52	26.48	24.21	0.42	0.35	0.03
20 24 - 25	40.74	35.06	22.89	0.78	0.54	



INTERPRETATION

ABC analysis classifies inventory by value and importance. Category A (e.g., Piezo Buzzers, Capacitors) includes high-value items requiring strict monitoring, frequent orders, and accurate demand forecasting. Category B (e.g., Metal Oxide Varistors) represents moderate-priority items needing periodic reviews to balance stock. Category C (e.g., Telephone Ringer, Hydrophone, Pulse Oximeter) consists of low-value items with minimal impact, requiring less monitoring and bulk purchasing. This approach ensures efficient inventory control, cost optimization, and smooth production.

2. EOQ ANALYSIS

YE AR	CAPAC ITORS	HYDRO PHONE	META L OXID E VARIS TORS	PIEZ O BUZ ZERS	PU LSE OXI ME TE R	TELEP HONE RINGE R
20 20- 21	707.60		73.35	1263. 15		252.79
20 21- 22	28.21		283.29	484.7 9	3.82	33.13
20 22- 23	88.03	0.17	94.31	296.3 0		1.01
20 23- 24	240.03	20.00	840.26	19.85	20.0 0	23.16
20 24- 25	467.92		27.43	29.37		227.33

TABLE NO: 2 - SHOWING EOQ ANALYSIS

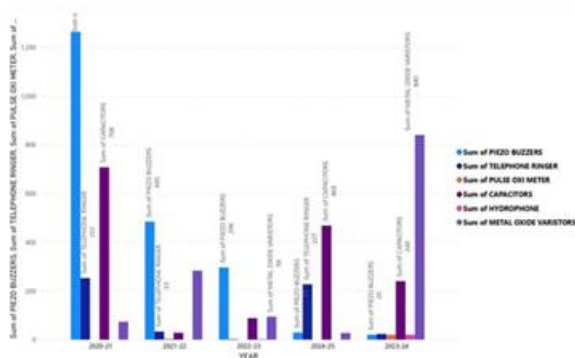


CHART NO: 2-SHOWING EOQ ANALYSIS

INTERPRETATION

The data reveals fluctuations in inventory levels for various components, emphasizing the need for an Economic Order Quantity (EOQ) model to optimize management. Capacitors and Piezo Buzzers show high demand in certain years, indicating the need for larger orders to balance ordering and holding costs. Metal Oxide Varistors experience demand fluctuations, requiring dynamic EOQ adjustments. The irregular demand for Hydrophone and Pulse Oximeter suggests bulk ordering at optimal intervals. Telephone Ringer

inventory also fluctuates, requiring careful monitoring. Overall, EOQ values should be adjusted annually based on demand patterns to balance inventory costs and stock availability.

3.VED ANALYSIS

TABLE NO:3-SHOWING VED ANALYSIS

YE AR	CAPAC ITORS	HYDRO PHONE	META L OXID E VARIS TORS	PIEZ O BUZ ZERS	PU LSE OXI ME TE R	TELEP HONE RINGE R
20 20- 21	21.53		77.54	0.90		0.04
20 21- 22	91.60		0.38	0.41	7.34	1.06
20 22- 23	37.88	0.44	22.50	38.07	0.02	1.10
20 23- 24	0.37	0.70	0.03	98.23	0.05	0.62
20 24- 25	0.21		39.10	60.68		0.02

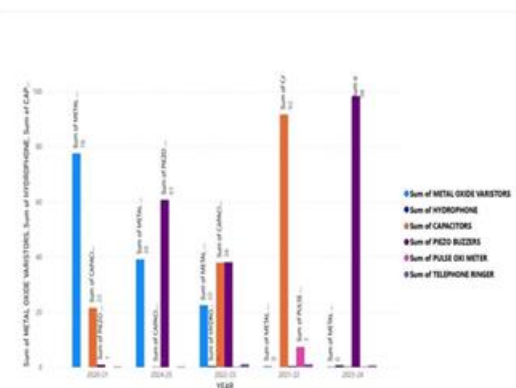


CHART NO :3 – SHOWING VED ANALYSIS

INTERPRETATION

The graph visually categorizes inventory items into Vital (V), Essential (E), and Desirable (D) categories. Metal

Oxide Varistors and Piezo Buzzers, with significant fluctuations, are classified as Vital (V), requiring consistent availability to prevent disruptions. Capacitors and Telephone Ringer, with moderate variations, are Essential (E) items, needing efficient stock management but not critical to immediate operations. Hydrophone and Pulse Oximeter show low or intermittent demand, placing them in the Desirable (D) category, suitable for bulk ordering. This VED analysis ensures efficient inventory control and cost-effectiveness while supporting smooth operations.

IX. FINDINGS, SUGGESTIONS

- Poor integration between manual and automated tracking systems leads to errors, delays, and inefficiencies in inventory management.
- Reliance on historical sales data without considering market trends, seasonality, or technological advancements causes overstocking of outdated models and shortages of high-demand items.
- Weak supplier relationships and irregular procurement cycles result in delayed restocking, longer lead times, and missed sales opportunities.
- Inefficient organization and layout planning increase retrieval times and labor costs, with high-value items not stored in easily accessible locations and slow-moving items taking up valuable space.

SUGGESTIONS

- items, use demand forecasting tools to maintain optimal stock levels.
- For desirable items, implement a minimum order policy to reduce unnecessary inventory carrying costs.
- Implement an inventory management system to track real-time stock levels.
- Use supplier contracts with Implement a centralized system integrating barcode scanning, inventory software, and procurement data to minimize discrepancies.
- Use real-time tracking to ensure stock levels are always accurate and accessible.
- For Category B items, use automated tracking systems to periodically review stock levels and adjust order quantities.
- For Category C items, optimize bulk purchasing to reduce procurement efforts and costs.
- For high demand items, implement dynamic EOQ calculations based on yearly demand patterns.

- For fluctuating demand items, develop a flexible procurement strategy that adapts to market and production changes.
- For low/irregular demand items, use forecasting models for bulk ordering intervals.
- For vital items, establish a safety stock policy to prevent production disruptions.
- For essential flexible order quantities to adjust for demand fluctuations.
- Conduct annual inventory reviews to update classifications and optimize stock levels.
- Incorporate market trends, seasonal demand variations, and technology adoption rates in forecasting.
- Establish long-term supplier agreements with performance-based incentives to improve consistency in supply chain schedules.

X. CONCLUSION

In conclusion, effective inventory management is vital for Cedicom Electronics to enhance productivity, reduce costs, and improve service levels. A well-structured inventory system ensures that the company can meet customer demand efficiently while minimizing excess stock and wastage. By implementing data-driven inventory strategies and modernizing its stock management practices, the company can reduce operational inefficiencies, improve order fulfillment speed, and enhance supplier coordination. Furthermore, adopting advanced forecasting techniques and automation will help the company respond proactively to market fluctuations, preventing both stock shortages and overstocking.

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