

## **ENHANCING INVENTORY MANAGEMENT WITH REFERENCE TO ZTT INDIA PVT LTD, TADA(SRI CITY)**

**\*K Hema Raju<sup>1</sup>, and Dr. B. Ankaiah<sup>2</sup>**

Department of Management Studies, Narayana Engineering College (Autonomous), Gudur

### **ABSTRACT**

This study focuses on analyzing the inventory management practices at ZTT India Private Limited, located in Sri City (Tada), with the objective of understanding how effective inventory control contributes to operational efficiency and cost management. ZTT India, a prominent player in the manufacturing of optical fiber and communication equipment, relies heavily on streamlined inventory systems to meet its production and delivery schedules. The research explores various aspects of inventory management including stock categorization, procurement processes, inventory turnover, and warehouse management. Primary and secondary data were collected to assess current practices, identify gaps, and evaluate the effectiveness of existing inventory policies. The study highlights challenges such as excess stock, stockouts, and lead time fluctuations, and recommends improvements through better forecasting, adoption of automation tools, and inventory optimization techniques. The findings aim to support ZTT India in enhancing its inventory operations, thereby improving productivity and customer satisfaction.

**Keywords:** Operational Efficiency, Cost Management, ,Stock Categorization, Procurement Process.

### **INTRODUCTION**

Good planning is good inventory management and good inventory management is good financial management". – S.K. Kuchal. Inventory comprises stock of raw materials, work-in-process, finished products, stores and components. "John HAMPTON"— treats inventory as "locked up capital". Inventory measured by rupee value constitutes, the major element in the "Working Capital" (approximately 60 percent of current assets) of many businesses undertaking in India.

ZTT India Private Limited, established in 2012, is a subsidiary of Jiangsu Zhongtian Technology Co., Ltd. (ZTT Group), a global leader in optical fiber and power cable manufacturing. Located in Sri City, Tada, Andhra Pradesh, ZTT India specializes in producing a wide range of telecom and power transmission products, including Optical Ground Wire (OPGW), Optical Phase Conductor (OPPC), All-Dielectric Self-Supporting (ADSS) cables, and Optical Fiber Cables (OFC) . The company also serves as a prominent Engineering, Procurement, and Construction (EPC) service provider, contributing to power grid infrastructure projects across India. Aligned with the "Make in India" initiative, ZTT India is expanding its manufacturing capabilities to cater to both domestic and international markets

ZTT India Private Limited is a leading manufacturer and EPC (Engineering, Procurement, and Construction) service provider in India's power and telecommunications sectors. Established in May 2012, it operates as a wholly-owned subsidiary of Jiangsu Zhongtian Technology Co., Ltd. (ZTT Group), a prominent Chinese enterprise specializing in optical communications, power transmission, renewable energy, and marine systems.

## **LITERATURE REVIEW**

Ghosh & Singh (2024) examined the classification and engagement of faculty in medical education technology, highlighting the need for structured faculty development programs and their role in improving instructional quality and learning outcomes in the healthcare education domain. Agarwal et al. (2023) analyzed how Environmental, Social, and Governance (ESG) initiatives influence the financial performance of Indian healthcare firms. They found that competitive dynamics significantly moderate this relationship, emphasizing the strategic importance of ESG in industry positioning.

Njoku et al. (2024) explored the effects of intellectual capital investment on the value creation of Nigerian financial firms. Their findings indicate that human and structural capital are crucial for enhancing firm performance and gaining a competitive edge.

Verma & Bhattacharyya (2017) investigated the perceived strategic value of Big Data Analytics (BDA) in Indian firms, revealing that cultural readiness, top management support, and industry competition drive adoption in emerging markets, offering valuable insights for digital transformation strategies.

ARANGI (2024) conducted a study on dividend decisions in Indian companies, emphasizing how profitability, market conditions, and corporate governance impact dividend policy formulation, particularly in developing economies with evolving financial systems.

Habib et al. (2025) examined the role of corporate governance in shaping forward-looking disclosures in integrated reporting among Bangladeshi banks. They highlighted that strong governance frameworks enhance transparency and stakeholder trust.

Ubertazzi (2022) focused on the intersection of intellectual property rights and intangible cultural heritage, particularly in the context of UNESCO listings. The study underscores the importance of legal protection mechanisms for cultural preservation and sustainable development.

Bhattacharya et al. (2015) provided a broad perspective on policy challenges in India, covering topics from education and infrastructure to environmental sustainability. Their analysis calls for integrated policy responses to address multidimensional development hurdles.

Dave et al. (Year not specified) offered insights into core principles of financial management, covering capital budgeting, risk analysis, and strategic financial decision-making, thus serving as a foundational text for financial planning and analysis.

Tortorella et al. (2023) explored how digitalization and resilience practices are transforming healthcare supply chains in emerging economies. Their study highlights the need for agility and technological integration to withstand disruptions and ensure service continuity.

Gupta (Year not specified) discussed strategies for building global business resilience during crises, emphasizing leadership, agility, and innovation as key drivers of recovery and long-term sustainability in turbulent environments.

Nandy (2022) assessed the impact of R&D investments on the financial performance of Indian pharmaceutical companies, showing a strong positive correlation and advocating for continuous innovation to maintain competitive advantage.

The reviewed literature highlights the growing emphasis on strategic investments such as ESG practices, intellectual capital, and R&D activities as drivers of financial performance and value creation, especially in the healthcare and pharmaceutical sectors. Studies underline the

significance of digital transformation, including Big Data Analytic and supply chain digitalization, in enhancing resilience and competitiveness in emerging markets. Additionally, the role of corporate governance and forward-looking reporting is emphasized for ensuring transparency and stakeholder trust. Research in medical education technology and dividend decision-making reveals how organizational behavior and policy decisions are evolving to meet modern industry challenges. Collectively, these findings underscore a strategic shift toward innovation, sustainability, and digital adaptation in both corporate and healthcare settings.

A significant research gap in inventory management lies in the disconnect between theoretical models and real-world implementation, with many studies focusing on idealized scenarios without fully considering the complexities of practical application in diverse industries, especially regarding factors like dynamic demand fluctuations, supply chain disruptions, and rapidly evolving technologies further research is needed to bridge this gap by developing actionable insights for businesses to optimize inventory management strategies in real-world settings.

## **RESEARCH METHODOLOGY**

In today's competitive scenario especially in the manufacturing sector, the management of inventory is given the highest importance. Organizations are in the process of implementing various techniques in order to maintain inventory at an optimum level. Hence this study is undertaken to look into various aspects of inventory management of ZTT India Pvt Ltd. The choice of area of the study for the project work was given after initial study of company's operations and the system of working. Though the company has several departments, the prime area of my interest was in Finance

Inventory control techniques used in managing raw materials, work-in-progress (WIP), and finished goods The impact of inventory management on operational efficiency and cost reduction at ZTT Analysis of the existing inventory systems, including warehousing, order fulfillment, and demand forecasting Technological advancements in inventory management systems like ERP (Enterprise Resource Planning) that ZTT may be utilizing.

## **OBJECTIVES**

- To assess the current inventory management practices at ZTT Indian Private Limited and identify areas for improvement.
- To analyze the effect of effective inventory management on reducing operational costs and improving cash flow.
- To evaluate the role of technology in enhancing the inventory management system at ZTT.
- To recommend strategies for improving inventory control, reducing lead times, and ensuring the timely availability of stock.

This study adopts a descriptive research design to analyze the financial performance of ZTT India Pvt Ltd. from 2020 to 2024. The design focuses on examining and interpreting financial statements using tools such as ratio analysis, trend analysis, and comparative financial statements. Secondary

data has been collected from the company's annual reports, financial databases, and other reliable sources. The objective is to evaluate the firm's profitability, liquidity, solvency, and overall financial stability.

The study on financial statement analysis of ZTT india Pvt Ltd follows a descriptive research design. It aims to analyze the financial performance of the company by interpreting financial statements such as the balance sheet, income statement, and cash flow statement over a period. The research identifies trends, financial strengths, and weaknesses to provide insights into the company's overall financial health.

- Inventory Turnover Ratio
- ABC Analysis
- EOQ( Economic order Quantity)

This study relies on secondary data obtained from company annual reports, financial statements, audit reports, and relevant industry reports. Additional financial data may be collected from company websites, stock market reports, and government publications.

## **DATA ANALYSIS AND INTERPRETATION**

### **ABC Analysis**

ABC analysis is an inventory categorization technique that divides items into three categories A, B, and C based on their importance, value, or usage frequency. Category A includes the most valuable items, which require tight control and accurate records. Category B represents moderate-value items, while Category C contains the least valuable and most frequently used items. This method helps organizations prioritize inventory management efforts and optimize resources.

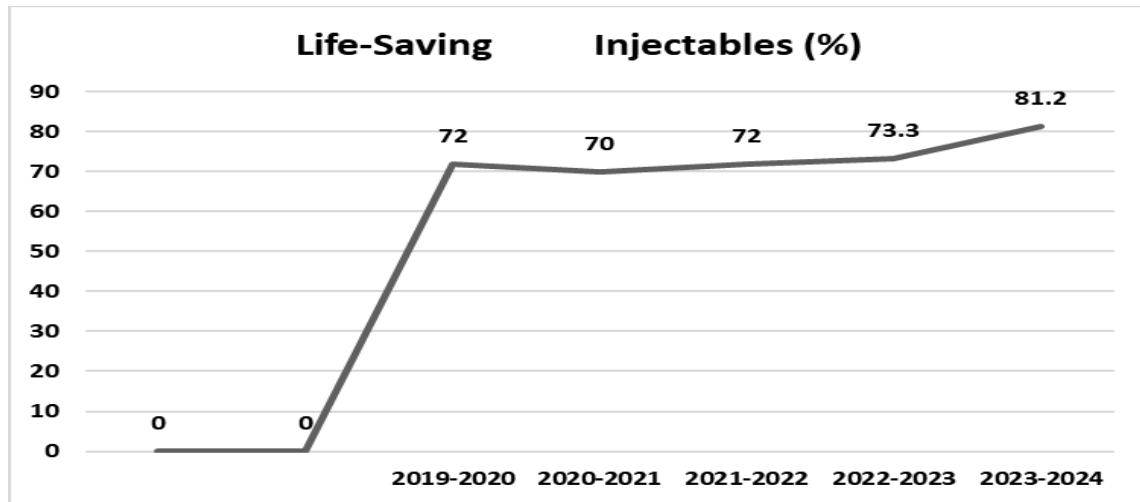
**Table 1 ABC Analysis technique followed in the organization**

<b>FINANCIAL YEAR</b>	<b>LIFE-SAVING INJECTABLES (%)</b>	<b>STANDARD IV FLUIDS (%)</b>	<b>PACKAGING MATERIALS (%)</b>
2019-2020	72	19	9
2020-2021	70	23	7
2021-2022	72	20	8
2022-2023	73.3	18.4	8.3
2023-2024	81.2	13.4	5.4

**Source: Secondary Data**

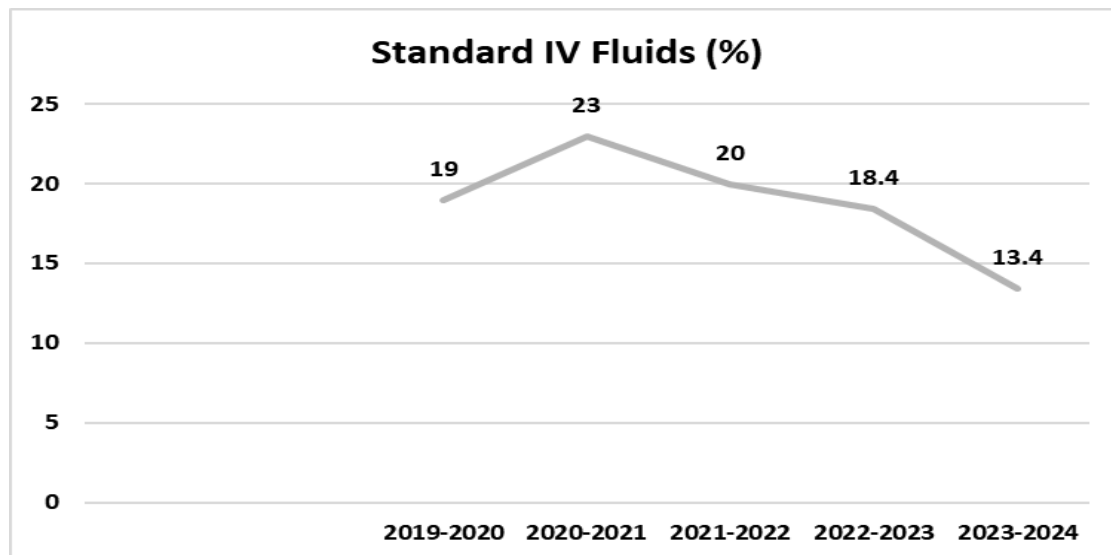
Life-Saving Injectables: High-value items rose from 72% (2019-2020) to 81.2% (2023-2024), showing a focus on critical medicines, likely due to export demand  
Standard IV Fluids: Medium-

value items dropped from 19% (2019-2020) to 13.4% (2023-2024), indicating less focus, possibly from streamlined production Packaging Materials: Low-value items fell from 9% (2019-2020) to 5.4% (2023-2024), reflecting efficient management, likely via bulk purchasing.



**Figure 1 Life-Saving Injectables**

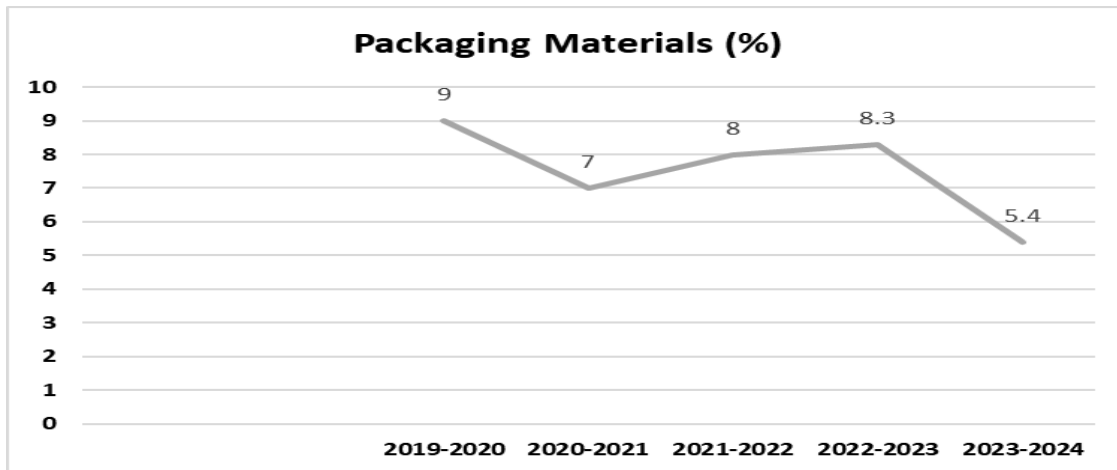
Figure 1 reveals that the Life-Saving Ineluctable: High-value, critical medicines requiring strict control. Their share increased from 72% in 2019-2020 to 81.2% in 2023-2024, indicating a strategic focus on high-value products, likely due to export demand (AXA exports to 61 countries) or a shift to specialized injectables.



**Figure 2:Standard IV Fluids**

Above Fig 1.2 Reveals that the Standard IV Fluids: Medium-value items like saline and dextrose solutions. Their share decreased from 19% to 13.4% over the same period, suggesting reduced

focus, possibly due to streamlined production or outsourcing.



**Figure 2 Packing Materials**

Figure 2 Reveals that the Packaging Materials Low-value, high-volume items like vials, syringes, and labels. Their share dropped from 9% to 5.4%, reflecting efficient inventory management, likely through bulk purchasing or standardization.

### **INVENTORY TURNOVER RATIO**

A ratio which measures the number of times that a firm inventory is sold during the year. Inventory or stock turnover is measured in terms of ratio of the use of materials consumed to the average inventory during the period. High ratio indicates that the material is a fast moving one, when the ratio is low it indicates that material did not goes up to the desirable item.

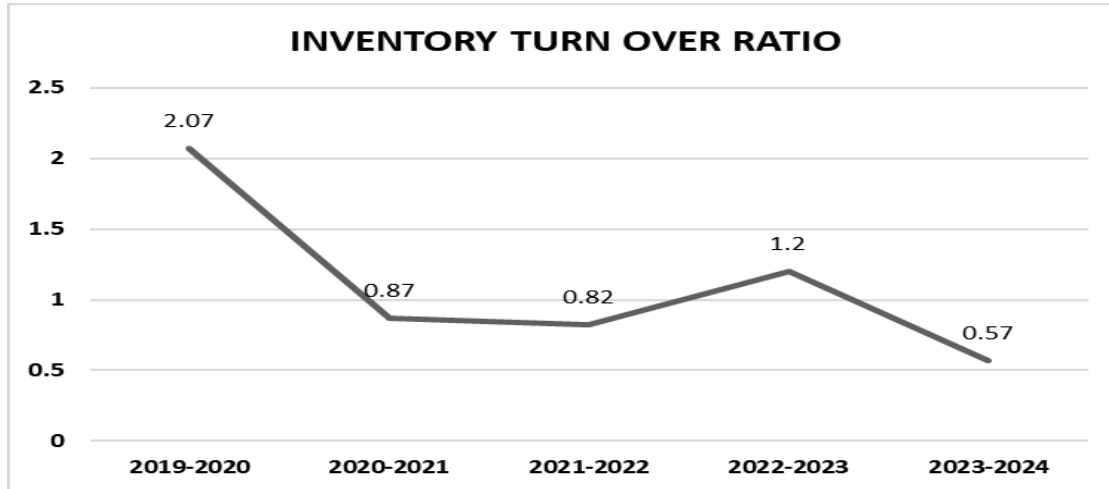
**Table -2: Inventory turnover ratio table**

**Source: Secondary Data**

Year	ITR
2019-2020	2.07
2020-2021	0.87
2021-2022	0.82
2022-2023	1.2
2023-2024	0.57

The inventory turnover ratio (ITR) shows how often a company sells and replaces its inventory in a year. For AXA Parenterals Limited, the ITR started at 2.07 in 2019-2020, which is typical for pharmaceuticals (2-4 times yearly). It then dropped sharply to 0.87 in 2020-2021, possibly due to COVID-19 disruptions, and continued to decline to 0.82 in 2021-2022. There was a slight recovery

to 1.2 in 2022-2023, but it fell again to 0.57 in 2023-2024, the lowest point, suggesting slow inventory turnover.



**Figure 3 Inventory Turnover Ratio**

Figure 3 reveals that it is clearly states that the Inventory turnover Ratio is higher in the 2019-2020 than the other years and in the year 2022-2023 is also increased to 1. More than 1 represents the company is selling and making the ordering time perfectly and the materials consumed is in the good state and for the year 2019-2020 and in the year 2021-2022 is above 1, and so that the materials consumption and the management of inventory is not that much good state. In the year 2023-2024, the Inventory turnover ratio is 0.57 and it shows that the inventory system is not in a good state because it is not nearer to the 1 and it shows that the inventory monitoring and controlling is not in a good state. It is suggested to make the control and monitor the inventory in the company.

### **ANALYSIS OF FINDINGS**

The data indicates a fluctuating trend in the Inventory Turnover Ratio (ITR) of the company from 2019–2020 to 2023–2024, with a significant decline from 2.07 to 0.57 over the five-year period. This suggests a slower movement of inventory in recent years, potentially pointing to overstocking or reduced sales efficiency. Additionally, the composition of inventory reveals that life-saving injectables consistently occupy the largest share, increasing from 72% to 81.2%, highlighting the company’s growing focus on critical care products. Conversely, standard IV fluids and packaging materials show a declining trend, particularly packaging materials which dropped from 9% to 5.4%. These shifts suggest a strategic realignment towards high-priority medical products.

### **RECOMMENDATIONS**

#### **Managers**

Managers at ZTT India should focus on continuous innovation by investing in R&D to stay ahead in the rapidly evolving power and telecom sectors. Strengthening quality control and ensuring adherence to global standards will enhance product reliability and competitiveness. Emphasizing skill development and employee training can boost workforce efficiency and retention. Expanding partnerships with government and private stakeholders will open new growth avenues. Lastly, promoting sustainable practices and green technologies can improve the company’s environmental and social impact.



### **Policy makers**

Policy makers at ZTT India should develop forward-looking strategies that align with national initiatives like “Digital India” and “Make in India.” They should prioritize policies that support sustainable manufacturing, local sourcing, and energy-efficient technologies. Encouraging investment in automation and digital transformation can enhance operational efficiency. It’s also important to foster a culture of innovation through supportive R&D policies and collaborations with academic and industry partners. Finally, implementing robust compliance and risk management frameworks will ensure long-term stability and global credibility.

### **Industry development**

To support industry development, ZTT India should focus on expanding its manufacturing capacity and diversifying its product portfolio to meet growing domestic and international demand. Strengthening collaborations with local suppliers and SMEs can boost the supply chain ecosystem. Investing in cutting-edge technologies like smart cables and IoT-integrated systems will position the company as an innovation leader. Enhancing export capabilities through strategic alliances and certifications can open up new global markets. Additionally, adopting eco-friendly practices will ensure sustainable and responsible industry growth..

### **Scholarly contribution**

ZTT India should actively engage in scholarly contributions by promoting research collaborations with universities and technical institutions. Publishing case studies, white papers, and technical research on cable technologies and infrastructure development can enhance industry knowledge. Encouraging employees to participate in seminars, conferences, and academic journals will build technical credibility. The company can also support internships, training programs, and joint research projects to nurture future talent. These efforts will strengthen ZTT India’s role as a thought leader in the power and telecom sectors.

### **Scope for further study**

There is significant scope for further study in areas such as the development of advanced cable materials for higher efficiency and sustainability. Research could explore the integration of IoT technologies with telecom and power transmission cables to enhance real-time monitoring and predictive maintenance. Additionally, studies on energy-efficient manufacturing processes and environmental impact assessments could help ZTT India align with global sustainability standards. Another promising area is the expansion of smart grid solutions and 5G network infrastructure, which are critical for India's growing digital and power needs..

### **Limitations**

Despite its growth, ZTT India faces limitations such as dependency on raw material imports, which can expose it to global supply chain disruptions. There may be challenges in scaling up production to meet the increasing demand for advanced telecom and power transmission products.



Additionally, limited brand recognition compared to global competitors can impact its market share. Regulatory hurdles, especially in fast-evolving sectors like telecom, may also create operational challenges. Lastly, while the company has made strides in sustainability, further efforts are needed to fully integrate eco-friendly practices across all its operations.

## CONCLUSION

In conclusion, ZTT India Private Limited plays a pivotal role in strengthening India's power transmission and telecom infrastructure, contributing to the nation's economic and technological growth. Through its innovative products, robust manufacturing capabilities, and alignment with key initiatives like "Make in India," the company is positioned for continued success in a rapidly evolving sector. However, addressing challenges like supply chain dependence, brand recognition, and regulatory hurdles will be crucial for sustaining long-term growth. With strategic focus on sustainability, research, and global expansion, ZTT India can further solidify its leadership in the industry.

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