INTERNATIONAL RESEARCH STARS
ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

# AN ANALYTICAL FINANCIAL INVENTORY MANAGEMENT WITH REFERENCE TO KALPATARU GLOBAL ALLOYS (P) LTD, KADIVEDU

*Purini Reshma[1], and Nimirthi Raghavendra Rao[2]

Department of management studies, Narayana Engineering College (Autonomous), Gudur

## ABSTRACT

This study aims to analyse the inventory management practices at Kalpataru Global Alloys Pvt. Ltd., a company in the silicon industry. The main objective is to understand how the company manages inventory to reduce costs without compromising the quality of raw materials. It focuses on evaluating the efficiency of their inventory system and examining the handling of raw materials, intermediaries, and finished goods. The study also explores various inventory techniques used by the company to maintain smooth operations and optimize storage and supply. Findings from this research can help improve cost-effectiveness and ensure better inventory control in the silicon manufacturing process.

**Key words:** Inventory Management, Silicon Industry, Inventory Analysis, Inventory Techniques.

## INTRODUCTION

Kalpataru Global Alloys Private Limited is a private company established on June 7, 2013, headquartered in Chennai, Tamil Nadu. It specializes in the manufacturing of basic iron and steel products such as alloy plates, ferro chrome, and Inconel sheets. The company also operates a production facility in Kadivedu Village, Chillakur Mandal, in Andhra Pradesh. Managed by members of the Jain family, it functions with an authorized and paid-up capital of ₹50 lakh. Despite a decline in revenue and profit in the recent financial year, the company showed a positive increase in its net worth.

Kalpataru Global Alloys Private Limited holds significance in the metal and alloy manufacturing sector, contributing to the supply of essential raw materials used in various industries such as construction, engineering, and infrastructure. By operating within this critical segment, the company supports industrial development and plays a role in the broader economic growth. Its presence in Chennai, a major industrial hub, enhances regional industrial activity and employment, positioning it as a valuable player in the local and national manufacturing landscape.

The silicon industry plays a crucial role in the Indian economy as it forms the foundation of the electronics and semiconductor sectors. With India being the second-largest smartphone market in the world and electronics demand expected to reach USD 400 billion by 2025, silicon-based components are essential for powering devices and digital infrastructure. India currently imports over $15 billion worth of semiconductors annually, highlighting the need for domestic production. Through initiatives like “Make in India” and the Sem icon India Programme (with an outlay of ₹76,000 crore or approximately $10 billion), the country is actively promoting local semiconductor manufacturing. The industry is projected to create over 100,000 direct and indirect jobs in the coming years. It also drives innovation among over 10,000 tech startups, many of which rely on silicon-based technologies in AI, IoT, and automation. A robust silicon

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

ecosystem will enhance India's export potential, support strategic sectors like defence and space, and boost the digital economy, which is projected to contribute $1 trillion to India's GDP by 2025. Strengthening domestic chip production will not only reduce the electronics trade deficit, which currently stands at around $60 billion, but also position India as a global technology hub.

The silicon industry has a profound impact on society due to its central role in technology and innovation. Silicon is the key material used in semiconductors, which power essential devices like smartphones, computers, and medical equipment. It drives advancements in communication, healthcare, transportation, and education, making everyday life more efficient and connected. Additionally, silicon-based solar panels support clean energy initiatives, promoting environmental sustainability. Overall, the industry enhances both economic development and the quality of life across the globe.

Inventory management plays a crucial role in ensuring smooth production and minimizing costs. At Kalpataru Global Alloys, the focus is on maintaining an optimal balance of raw materials, intermediates, and finished goods to meet production demands while avoiding overstocking. By adopting advanced inventory control techniques and digital tools, the company enhances efficiency and reduces waste. Kalpataru Global Alloys strives to maintain high-quality standards while managing its resources effectively. Effective inventory management is central to its goal of cost reduction and operational excellence.

The paper explores the link between effective inventory management and customer satisfaction through reduced stockouts. Quantitative analyses show that agile systems drive market responsiveness and customer loyalty.

## REVIEW OF LITERATURE

Orobia et al. (2020) investigate the interplay between inventory management, managerial competence, and financial performance in small businesses. Their findings suggest that skilled management enhances inventory control, thereby improving profitability. The study emphasizes the importance of aligning competencies with operational strategies. Small businesses, in particular, benefit from structured inventory practices led by competent managers.

Steinker et al. (2016) explore inventory management under conditions of financial distress through an empirical approach. The study reveals that financially constrained firms often adopt conservative inventory strategies, impacting overall efficiency. Their analysis highlights how inventory policies adapt in response to financial pressure. This research contributes to understanding risk-averse behavior in supply chain decisions.

Anantadjaya et al. (2021) examine the relationship between supply chain management, inventory management, and financial performance in manufacturing firms. They find that effective coordination across the supply chain strengthens inventory control and enhances firm profitability. The research supports the integration of SCM practices for better financial results. Emphasis is placed on holistic management to drive performance.

Taheri et al. (2023) present a fuzzy programming model for optimizing inventory decisions in the dairy industry, incorporating financial considerations. Their model accounts for

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

uncertainties in demand and financial constraints. The study illustrates how advanced quantitative tools can improve inventory decisions. It advocates for decision-making frameworks that blend financial and operational objectives.

Okeke et al. (2022) investigate the link between inventory management and financial sustainability among quoted manufacturing firms in Nigeria. Their findings confirm that robust inventory systems contribute to long-term financial stability. The study highlights inventory efficiency as a critical factor in sustaining business operations. It calls for strategic inventory practices to enhance resilience.

Ramadan et al. (2024) focus on the influence of managerial competence and inventory management on SME financial performance in Hungary. Their results show a strong correlation between skilled management, efficient inventory practices, and improved financial outcomes. The study underscores training and competence development as key enablers. It contributes to SME performance literature with practical insights.

Shire Anshur et al. (2019) analyse the role of inventory management in shaping the financial performance of manufacturing firms in Mogadishu. The research highlights that proper inventory control leads to cost savings and better financial results. The study provides regional insights into inventory practices in emerging economies. It emphasizes operational discipline as a performance driver. There is limited research on applying cost-reduction standards without compromising raw material quality at Kalpataru Global Alloys Pvt. Ltd. Studies rarely examine the efficiency of inventory management using techniques like ABC analysis and EOQ in such medium-scale manufacturing firms. The practical implementation of these methods in the company's operations remains underexplored.

## RESEARCH METHODOLOGY

The need for this study arises from the growing importance of effective inventory management in manufacturing industries. With rising raw material costs, companies must identify standards that help minimize expenses without compromising quality. Efficient inventory control is crucial for maintaining smooth operations and optimizing resource use. Understanding the flow and management of raw materials, intermediaries, and finished goods can reveal potential areas for improvement. This study helps the company enhance operational efficiency and competitiveness through strategic inventory practices.

The study focuses on evaluating the inventory management practices at Kalpataru Global Alloys Pvt. Ltd., aiming to identify standards that reduce costs without compromising raw material quality. It encompasses an analysis of inventory efficiency across raw materials, intermediaries, and finished goods. Additionally, the study examines the inventory techniques currently employed by the company to suggest potential improvements.

### Objectives Of the Study

- To analyse the standards which helps to reduce the cost without compromising on the quality of raw materials
- To know the efficiency in inventory management in the company
- To understand and analyse the inventory of various raw materials that are intermediaries and finished goods.

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

### Research Design

This study adopts a descriptive research design to analyze the inventory management practices of Kalpataru Global Alloys from 2020 to 2024. The design focuses on examining and interpreting inventory-related data using tools such as inventory turnover ratio, EOQ (Economic Order Quantity), ABC analysis, and trend analysis. Secondary data has been collected from the company's internal records, inventory logs, financial statements, and other reliable sources. The objective of the research is to evaluate the efficiency, cost-effectiveness, and overall performance of the inventory management system. It also aims to identify gaps and suggest improvements to optimize inventory control and reduce holding and ordering costs. EOQ Analysis, Average stock level, Minimum stock level, Maximum stock level, ABC Analysis 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. The collected financial data will be analyzed using various financial tools and techniques Trend Analysis to observe financial performance over multiple years, Comparative Financial Statements to compare different periods, Common Size Analysis to understand the proportion of different financial components.

## 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 value and usage frequency. 'A' items are high-value but low-quantity, 'B' items are moderate in both value and quantity, while 'C' items are low-value but high in number. This method helps prioritize management efforts and optimize inventory control effectively.

Total Value of Inventory = Sum of (Price × Quantity for each item)

Percentage of Total Value = (Value of each item / Total Value of Inventory) × 100

**Table 1. ABC Analysis technique followed in the organisation**

| YEAR | Charcoal | IP, Q | EP, O |
|---|---|---|---|
| 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**

According to the ABC Analysis calculations, the raw materials namely charcoal, Quartz, Electrode paste, Iron powder and oxygen and form these materials ABC Analysis is calculated and from this analysis, Charcoal is categorized as a "A" material, quartz and Iron powder is categorized as "B" material. Electrode paste and oxygen is categorized as "C" materials. These are the primary materials. From the all graph, we can understand that in the year 2022-2023 category "A" is higher (81.2) than the all past years and category "B" is

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

higher (13.4) is also least in this year compared to past years and in the same year the category "C" is lowest usage from the previous years.

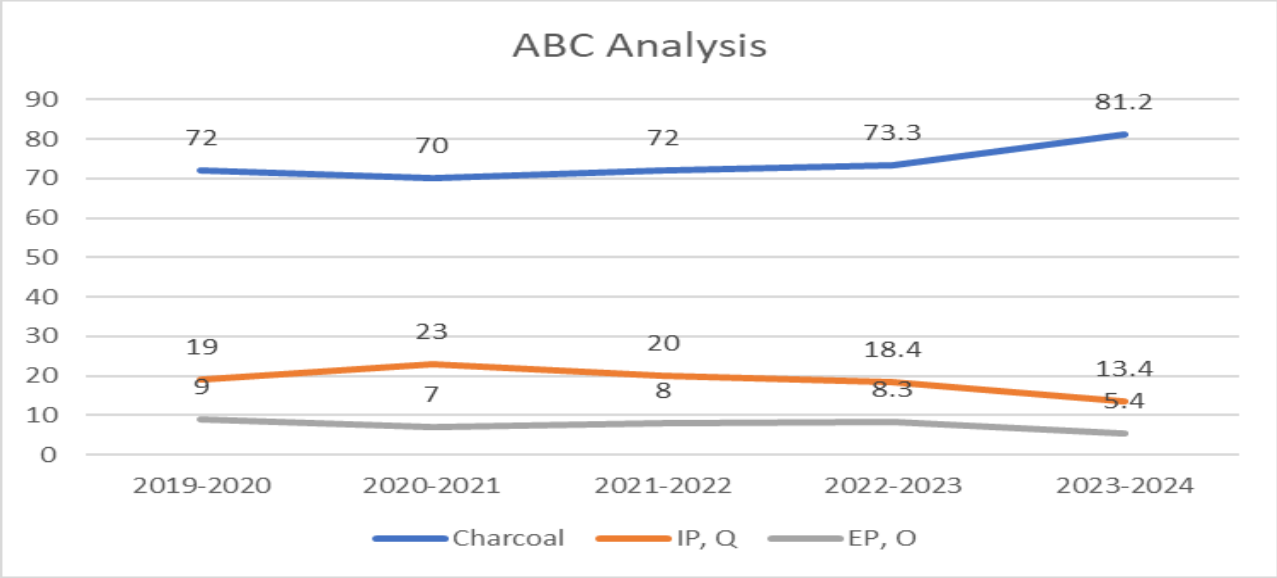


**Fig 1: ABC Analysis technique followed in the organisation**

The fig 1 shows that Charcoal inventory turnover steadily increased, peaking at 81.2 in 2023-2024, indicating better efficiency. IP, Q peaked in 2020–2021 at 23 but declined to 13.4, while EP, O remained low throughout, dropping to 5.4. This suggests Charcoal is well-managed, while IP, Q and EP, O need improvement.

**Inventory Turnover Ratio**

The Inventory Turnover Ratio is a key financial metric that measures the number of times a firm's inventory is sold and replaced over a specific accounting period, typically a year. It serves as an important indicator of inventory management efficiency and the speed at which goods move through the company's operational cycle. Inventory or stock turnover is determined by calculating the ratio of the cost of goods consumed to the average inventory maintained during the same period. A high inventory turnover ratio suggests that the materials or goods are fast-moving, meaning they are sold quickly and frequently, which is generally a positive sign of strong market demand, efficient sales processes, and effective inventory management. On the other hand, a low inventory turnover ratio indicates that inventory is moving slowly, potentially signaling issues such as overstocking, declining sales, or poor product marketability, which could lead to increased holding costs and potential obsolescence.

The formula for calculating the Inventory Turnover Ratio is the Cost of Goods Sold (COGS) divided by the Average Inventory. Cost of Goods Sold (COGS) refers to the direct costs attributable to the production of the goods that a company sells during a specific period, including expenses such as raw materials, direct labor, and manufacturing overhead. Average Inventory is determined by taking the sum of the opening inventory and closing inventory for the period and dividing it by two, which provides a representation of the inventory levels during the period.

A consistently high inventory turnover ratio reflects strong operational performance and effective inventory control practices, while a persistently low ratio may prompt management

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

to review inventory strategies and improve sales efforts. Monitoring this ratio helps businesses optimize stock levels, reduce holding costs, improve cash flow, and maintain a healthy balance between inventory investment and revenue generation.

**Table 2. Inventory Turnover Ratio**

| FISCAL YEAR | INVENTORY TURNOVER RATIO |
|---|---|
| 2019-2020 | 2.5 |
| 2020-2021 | 1.5 |
| 2021-2022 | 1.3 |
| 2022-2023 | 1.56 |
| 2023-2024 | 1.2 |

**Source: secondary data**

The inventory turnover ratio from 2019–2020 to 2023–2024 shows a fluctuating decline, starting at 2.50 in 2019–2020, indicating efficient inventory management. However, it dropped to 1.50 in 2020–2021, likely due to reduced sales or external disruptions like the pandemic. The ratio continued to decline to 1.30 in 2021–2022, with a slight recovery to 1.56 in 2022–2023, but fell again to 1.20 in 2023–2024. This consistent decline suggests inefficiencies, possibly due to poor demand forecasting or overstocking, requiring a reassessment of inventory practices.

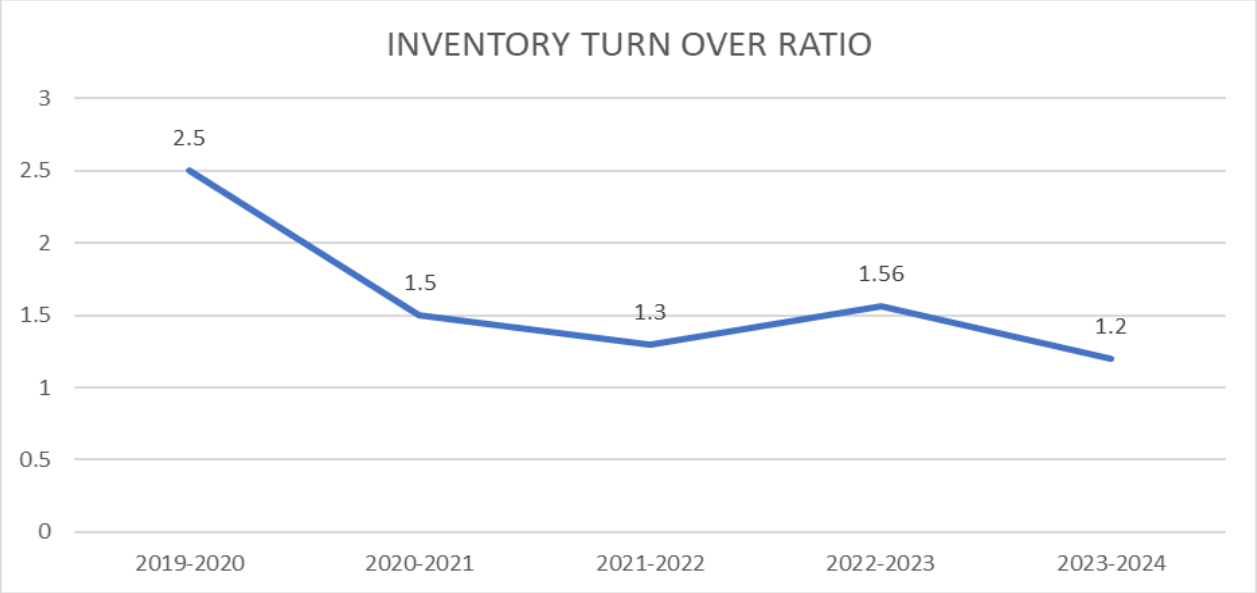


**Fig 2: Inventory Turnover Ratio**

The inventory turnover ratio decreased from 2.5 in 2019–2020 to 1.2 in 2023–2024. This indicates a decline in how efficiently inventory is being managed. There was a slight improvement in 2022–2023 with a rise to 1.56, but it dropped again in the following year. The overall downward trend suggests slower movement of inventory or possible overstocking. This calls for better inventory planning and control measures.

## ANALYSIS OF FINDINGS

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

The ABC analysis reveals that charcoal, an "A" category item, recorded the highest consumption in 2022–2023 (81.2), highlighting its critical role in production and the need for strict inventory control. In contrast, materials like quartz and iron powder under category "B" had moderate usage (13.4), suggesting opportunities to optimize order frequency and reduce holding costs. Low-consumption "C" items such as electrode paste and oxygen require minimal stock but still warrant oversight to prevent wastage. The company's strategic classification of materials based on consumption value reflects sound inventory practices; however, the fluctuating trends in B and C items over five years emphasize the importance of real-time inventory planning. Additionally, the steady decline in the inventory turnover ratio—from 2.50 in 2019–2020 to 1.20 in 2023–2024—signals inefficiencies in stock movement, possibly due to overstocking or poor demand forecasting, thus straining cost control and working capital management.

## RECOMMENDATIONS

### Managers

Managers at Kalpataru Global Alloys should implement an efficient inventory management system to ensure accurate tracking of materials and finished goods. Adopting Just-in-Time (JIT) techniques can help reduce unnecessary stock and save storage costs. Regular demand forecasting and stock audits are essential to avoid overstocking or stockouts. Using modern inventory software will improve accuracy and streamline operations. Training employees in proper inventory handling can further enhance overall efficiency and reduce losses.

### Policy Makers

Policy makers should develop structured and efficient inventory management policies to optimize resource utilization. At Kalpataru Global Alloys, implementing such policies can help reduce waste, control costs, and improve overall productivity. Emphasis should be placed on adopting advanced inventory software, promoting regular stock audits, and encouraging data-driven forecasting. Policies should also support supplier collaboration and timely procurement to ensure uninterrupted operations. Continuous monitoring and revision of these policies will contribute to sustainable growth and operational excellence.

### Industry Development

To drive industry development through improved inventory management, it is essential to implement modern, standardized practices across the sector. At Kalpataru Global Alloys, focusing on digital transformation through ERP and inventory management systems can significantly enhance operational efficiency. Real-time tracking and automation reduce errors, minimize wastage, and support timely decision-making. Collaboration with suppliers and logistics partners should be strengthened to ensure seamless inventory flow and reduced lead times. Industry-wide training programs and knowledge-sharing platforms can help employees and managers stay updated with the latest techniques. Promoting research and innovation in inventory technologies will further support competitiveness and sustainable growth in the alloy and manufacturing industry.

### Scholarly Contribution

For scholarly contribution on inventory management, researchers should focus on exploring innovative and practical solutions tailored to the manufacturing sector. At Kalpataru Global Alloys, studies can analyse the effectiveness of digital inventory systems, Just-in-Time (JIT)

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

practices, and lean inventory models. Scholarly work should aim to develop frameworks that optimize stock levels while reducing costs and improving supply chain responsiveness. Case studies and real-time data analysis from the company can provide valuable insights into current challenges and potential improvements. Collaborative research with industry experts can also bridge the gap between theory and practice, contributing to both academic knowledge and industrial efficiency.

## SCOPE FOR FURTHER STUDY

Further research on inventory management at Kalpataru Global Alloys can explore the use of AI and machine learning for enhanced demand forecasting and inventory optimization. The study of sustainable inventory practices, like minimizing waste and adopting green packaging, can help reduce environmental impact. Evaluating inventory models such as Just-in-Time (JIT) and Vendor Managed Inventory (VMI) could reveal their effectiveness in improving operational efficiency. Additionally, investigating strategies for strengthening supply chain resilience and risk management will be crucial for navigating market disruptions. Research into the role of employee training in improving inventory accuracy and operational performance would also be beneficial.

## LIMITATIONS

The limitations of inventory management at Kalpataru Global Alloys may include challenges in accurately forecasting demand, which can lead to stockouts or overstocking. The reliance on manual processes or outdated systems may result in data discrepancies and inefficiencies. High storage costs and limited warehouse space can also hinder optimal inventory control. Additionally, supply chain disruptions, such as delays from suppliers or transportation issues, can affect inventory levels and production schedules. Finally, a lack of skilled staff or insufficient training in inventory management may impact the accuracy and efficiency of operations.

## CONCLUSION

From this study, it is concluded that the physical asset is very important for the manufacturing industry and it is very essential to circulate the inventory in the company. If there is a storage and if there is a limited stock in the company it creates the massive impact of the company. So that it is important to manage and maintain with the proper techniques of the inventory in the organization.

## REFERENCES

Orobia, L. A., Nakibuuka, J., Bananuka, J., & Akisimire, R. (2020). Inventory management, managerial competence and financial performance of small businesses. *Journal of Accounting in Emerging Economies*, *10*(3), 379-398.

Steinker, S., Pesch, M., & Hoberg, K. (2016). Inventory management under financial distress: an empirical analysis. *International Journal of Production Research*, *54*(17), 5182-5207.

Anantadjaya, S. P., Nawangwulan, I. M., Irhamsyah, M., & Carmelita, P. W. (2021). Supply chain management, inventory management & financial performance: evidence from manufacturing firms. *Linguistics and Culture Review*, 781-794.

ISSN: 2583-276X (Online)
Volume: 4, Issue: 1, Jan -March, 2025

Taheri, M., Amalnick, M. S., Taleizadeh, A. A., & Mardan, E. (2023). A fuzzy programming model for optimizing the inventory management problem considering financial issues: A case study of the dairy industry. *Expert Systems with Applications*, *221*, 119766.

Okeke, O. C., Okere, W., Dafyak, C. F., & Abiahu, M. F. C. (2022). Inventory management and financial sustainability: insight from quoted manufacturing firms in Nigeria. *International Journal of Managerial and Financial Accounting*, *14*(1), 84-97.

Ramadan, A., Alkhodary, D., Alnawaiseh, M., Jebreen, K., Morshed, A., & Ahmad, A. B. (2024). Managerial competence and inventory management in SME financial performance: A Hungarian perspective. *Journal of Statistics Applications & Probability*, *13*(3), 859-870.

Shire Anshur, A., Ahmed, M. M., & Hassan Dhodi, M. (2019). The role of inventory management on financial performance in some selected manufacturing companies in Mogadishu. *International Journal of Accounting Research*, *6*(02).