

## A Study on Inventory Management in Manufacturing Industry with specific reference to Bangalore

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**Abstract:** The study evaluates inventory control aspects, including turnover, stock outs, carrying costs, and order fulfilment rates. Commendable aspects of industry of current practices include maintaining adequate stock levels and minimizing excess inventory. However, opportunities for improvement lie in enhancing demand forecasting accuracy and real-time stock monitoring. The study suggests integrating advanced technologies and data analytics to address these gaps. Using the secondary data of the balance sheet we have analysed the inventory turnover, growth of total inventory, current assets on raw materials. Also, we have analysed the ABC analysis of the materials. The result shows that the business has maintained a relatively high percentage of inventories on current assets, indicating its reliance on inventory as a key asset.

**Key words:** Inventory control, stock outs, carrying costs, real-time stock monitoring, demand forecasting.

### INTRODUCTION:

Managing inventories effectively is a cornerstone of running a successful Industry and contributing to its bottom line. Managing inventories effectively guarantees items are available to fulfil the client demand while minimising the costs for stocking, transporting, and replenishing those products. It entails keeping an eye on goods travelling from one place to another the next from suppliers to factories with stores to client.

The management of inventory is a systematic technique used to monitor and manage Products is moved from the point of purchase to consumption. It involves several processes including order fulfilment, Demand forecasting and inventory control. Satisfying consumer demand must be balanced with minimizing inventory holding costs for efficient handling of

inventories. This involves selecting appropriate stock levels, ensuring that replenishment occurs on schedule, and avoiding stock problems or overstocks.

### **LITERATURE REVIEW**

(Chen, L. 2023) it is examined the role of block chain technology in inventory management through a review of opportunities and challenges. The study discussed the potential benefits of block chain, such as enhanced transparency, traceability, and security in supply chain transactions. It also addressed the challenges related to implementation, integration, and scalability.

(Lopez, A. 2023) it conducted a comparative analysis of inventory control procedures in the medical equipment sector. The study compared inventory control approaches, such as consignment inventory, vendor-managed inventory, and Just-in-Time (JIT) systems. It discussed the factors influencing inventory decisions, including product lifespan, regulatory requirements, and demand variability. If operating in the medical equipment sector, could analyses these approaches to optimize their inventory management strategies and ensure timely availability of products.

(Kim, H. 2022) it is conducted a review of best practices in inventory management specifically for the food industry. The study emphasized the unique requirements of perishable goods, shelf-life management, and regulatory compliance. It discussed practices such as batch management, First Expired, first out (FEFO) method, and collaboration with suppliers to minimize food waste. If operating in the food industry, could adopt these best practices to ensure product freshness, reduce waste, and maintain inventory integrity.

### **NEED FOR THE STUDY**

This study will help uncover particular problems and bottlenecks in the manufacturing industry of inventory management system, enabling targeted interventions. By analyzing demand patterns, lead times and order quantities, the study provides insights into optimizing inventory levels to ensure adequate inventory is available without high carrying costs.

### **OBJECTIVES OF THE STUDY**

1. To assess inventory control within industry.
2. To assess the efficiency of inventory control within the business.
3. To ascertain the worth of inventory for the organization.
4. To find out current inventory management system inside the business.
5. To provide recommendations for improving inventory management performance.

### **SCOPE OF THE STUDY**

The study's focus includes analysing the inventory control procedures used by industry, with a certain focus on inventory levels, demand patterns, order fulfillment processes, and resource utilization. The study will cover a specific time frame and include data from various product categories and customer segments. It will consider both internal data from the business's information systems and external data sources such as market trends and industry benchmarks. The geographical study's range will be limited to Industry operational areas. The findings and recommendations will be specific to the industry's unique context and can be used to guide inventory control improvements within the industry.

### **ANALYSIS**

#### **Inventory turnover ratio**

<b>Years</b>	<b>Net Sales</b>	<b>Average inventory</b>	<b>Percentage%</b>
2018	3,235,295,086	424,001,649	<b>76.30</b>
2019	3,285,398,298	448,572,337.5	<b>73.24</b>
2020	3,470,658,604	580,720,702.5	<b>59.76</b>
2021	5,105,252,173	706,646,037	<b>72.2</b>
2022	5,375,735,700	884,113,934	60.80

**INTERPRETATION:**

The business experienced steady increase in net sales from 2018 to 2022. This indicates that the industry products or services gained popularity and generated increased revenue during this period. The percentage decreased from 76.30% in 2018 to 60.80% in 2022. This shows that the industry increased the effectiveness of its inventory management, as a lower percentage suggests better control over inventory levels relative to sales.

**Growth of Total Inventory**

<b>Year</b>	<b>Total Inventory</b>	<b>Percentage %</b>
2018	430,458,527	<b>12.81</b>
2019	466,686,148	<b>13.88</b>
2020	694,755,257	<b>20.67</b>
2021	718,536,817	<b>21.38</b>
2022	1,049,691,051	<b>31.23</b>
<b>Total</b>	<b>3,360,127,800</b>	<b>100</b>

**INTERPRETATION:**

The consistent rise in overall inventory and the corresponding rise in percentage signify the organization's ability to manage and expand its inventory levels effectively. This growth pattern indicates that the organization is either encountering rise in the demand for its items or adopting a strategy to maintain higher inventory levels. The sharp increase between 2020 and 2021 indicates a significant surge in inventory, potentially driven by changes in market conditions or Industry-specific factors.

**Current Assets on Raw Material**

<b>Years</b>	<b>Current assets</b>	<b>Raw material</b>	<b>Percentage %</b>
2018	1,218,489,960	1,648,086,169	<b>73.93</b>
2019	1,097,060,909	1,596,245,435	<b>68.72</b>
2020	1,320,730,286	1,913,677,747	<b>69.1</b>
2021	1,501,782,790	2,739,469,568	<b>54.82</b>
2022	1,978,430,657	2,476,811,047	<b>79.87</b>

**INTERPRETATION:**

The subsequent increase in 2022 suggests a rebound in the proportion of current assets. These variations highlight the need for further examination of the industry financial management decisions during that periods. A higher percentage could indicate the industry heavy reliance on maintaining a stock of raw materials, possibly due to production requirements or supply chain considerations. In contrast, a low share could indicate that the industry has diversified current assets or is not as dependent on stock of raw materials.

### ABC ANALYSIS OF MATERIALS

#### Calculation of ABC Analysis

A CLASS MATERIAL						
Mat code	Description	Consumption (years)	Maximum Stock (6month)	Minimum stock (1month)	Re-order level (2month)	Re-order quantity (4month)
24367	R-32 Extension rod	365	89	11	87	78
34525	Trailing cable 5core	843	140	30	54	90
23765	TC Drill steel	934	189	66	33	142
34527	Trinic make Energy saving electronic	876	430	78	210	330
12342	Activated carbon	9887	576	97	155	654
13425	Litharge powder	1430	765	114	223	543

<b>B CLASS MATERIAL</b>					
Mat code	Description on	Maximum stock (6month)	Minimum stock (1month)	Re-order level (2month)	Re-order quantity (4month)
31254	Reflector prefocus	321	77	164	915
72365	Roofing compound	413	95	66	186
2510	Screw spanner	231	37	57	84
51093	Tee piece	89	44	56	86
41732	Bell armature	53	69	12	43

## FINDINGS

1. The inventory turnover ratio evaluates the effectiveness of inventory management by calculating the frequency of sales and replacements of inventory during a specific period. From Table 4.1, this can be shown that the turnover of inventories proportion has been fluctuating over the years. In 2018, the ratio was 76.30, indicating that the industry sold and replaced its inventory approximately 76 times during that year. However, the ratio reduced in 2019 and 2022, suggesting a longer inventory holding period. It is noteworthy that the ratio improved significantly in 2021, reaching 72.20, indicating a faster inventory turnover.
2. Increase in overall inventory over the years. The industry's total inventory has consistently increased, with a substantial growth rate. Between 2018 and 2022, the entire stock experienced a growth rate of approximately 31.23%. This significant expansion suggests that the industry has been investing in its stock to fulfil increasing demand or stocking up for anticipated future sales.
3. Present raw material assets, displayed in Table 4.5, measures the proportion of the raw substance in relation to the industry total current assets. The percentage varied over the years, with a significant increase from 2018 to 2019 and a subsequent decrease in 2021.

In 2022, the percentage increased again, reaching 79.87%. This indicates variation in the industry's investment in raw materials, potentially since adjustments to production requirements or sourcing strategies.

## SUGGESTIONS

- 1. Improve Inventory Management:** Given the difference in the change of inventory ratio, the business must put a lot of effort into improving its inventory management. This can be achieved through effective demand forecasting, implementing just-in-time inventory practices, and closely monitoring inventory levels to avoid overstocking or stockouts.
- 2. Working Capital Management:** As the ratio of inventory to working capital is consistently negative, the business should prioritize management of operating funds. That can be achieved by optimizing cash flow, negotiating advantageous terms of payment with suppliers, and exploring options for inventory financing to reduce the reliance on external funding.
- 3. Raw Material Sourcing:** The difference in the proportion in terms of current assets allocated to raw materials indicates a potential improved raw material needed sourcing strategies. The business should assess its sourcing practices, diversify suppliers if necessary, and explore opportunities for bulk purchasing or long-term contracts to optimize raw material costs and ensure a stable supply.
- 4. Continuous Monitoring and Analysis:** Regularly monitor key financial ratios, inventory metrics, and profitability indicators to identify trends and deviations. Conduct regular financial analysis to gain insights into the industry's financial health, identify potential risks, and make informed strategic decisions.

## CONCLUSION

In conclusion, the evaluation of the provided financial tables and data reveals important insights into the industry's inventory management. The findings highlight both strengths and areas for improvement.

The industry has consistently grown in net sales, indicating a positive market demand for its products. However, the fluctuating inventory turnover percentage suggests the necessity of better techniques for inventory management to optimize stock levels and avoid excess or insufficient inventory. The business has grown significantly in total inventory, indicating a purchase of inventory to fulfil increasing demand or future sales expectations. However, this growth should be accompanied by effective supply chain management to minimize holding costs and maximize inventory turnover. The negative from working capital to inventory ratio indicates a reliance on external financing to cover inventory costs. The business should give working capital priority control strategies to ensure a healthy financial position and reduce dependency on external funding.

## REFERENCES

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