# A Study on Inventory Management

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## ABSTRACT

Inventory management system which is helpful for the business operators, where shopkeeper keep the records of purchase and sales. This inventory management system will have the ability to track sales and available inventory, tells a shopkeeper when it's time to reorder and how much to purchase.

KEYWORDS: *Inventory Management, EOQ Analysis, ABC Analysis, Inventory Turnover Ratios*

## INTRODUCTION

Inventory means stock of goods like raw material, work in progress, finished goods etc.

Inventory management means planning, organizing, handling and storing adequate level of inventory with optimized cost to meet consumer's demand.

Inventory occupy 50–80% of the total current assets of the business concern. It is very essential part of working capital management and production management.

## Need for the study

➢ As inventory management is the necessary activity that helps for continuous production in the company.

➢ Inventory management is must for every organization to maintain the adequate stock.

## Scope of the study

➢ This study is confined to the **ANANTHA PVC PRIVATE LIMITED** only from a period of 2015-16 to 2019-20.

## Objectives of the study

➢ To Study the inventory management techniques in Anantha PVC Pipes Pvt. Ltd.

➢ To analyses the inventory turnover ratios of Anantha PVC Pipes Pvt. Ltd.

➢ To evaluate the efficiency of inventory management Anantha PVC Pipes Pvt. Ltd.

## Research methodology
## SECONDARY DATA:

The study is based on secondary data. It was collected from the company annual reports, websites and journals.

## Limitations

➢ The study is limited to Anantha pvc pipes Pvt.Ltd only.

➢ The study is limited to the 5 years data i.e., from 2015-16 to 2019-20 of Anantha pvc pipes Pvt. Ltd.

## EOQ ANALYSIS

The economic order quantity is that inventory level, which minimizes the total of ordering cost and carrying cost.

It is defined as the quantity of materials to be ordered at one time which minimizes the wastage and costs.

The basic objective of EOQ is to have an ideal order quantity for any item and to economize on the cost of the purchase.

**Economic Order Quantity is given by the formula**:

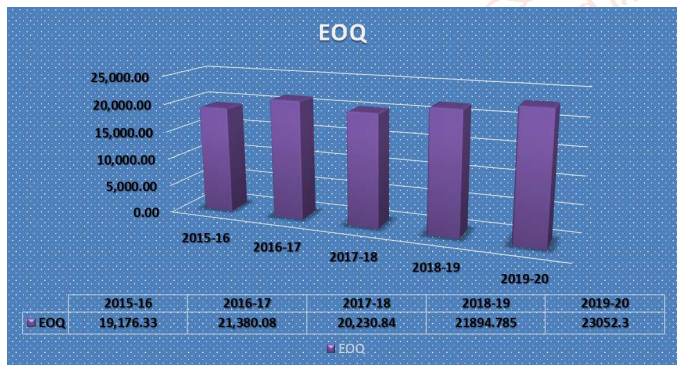$EOQ = \sqrt{\dfrac{2*A*O}{C}}$ Where,

A = Annual consumption
O = Ordering cost and
C = Carrying cost

## Calculation of EOQ during the years 2015-16 to 2019-20

| Years | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|---|---|---|---|---|---|
| Annual Consumption | 3855255 | 4042049 | 4714985 | 5387921 | 6060857 |
| Ordering Cost(Rs) | 24800 | 38450 | 31250 | 37168.81 | 41220.5 |
| Carrying Cost | 520 | 680 | 720 | 830 | 940 |
| EOQ | 19,176.33 | 21,380.08 | 20,230.84 | 21894.785 | 23,052.3 |



**Interpretation:**
From the above graph it is observed that EOQ is highest in the year 2019-20 i.e.,23052.3 units and it is lowest in the year 2015-16 i.e., 19,176.33 units. In 2016-17 it is 21380.08 and decreased to 20230.84 in the year 2017-18. carrying cost and ordering cost is increased when compared to last year.

## ABC Analysis
ABC analysis is a basic analytical management tool. The greatest effort for the greatest results is ultimate yield of such analysis of materials.

"A item" with very tight control and accurate records,

"B items" with less tightly controlled and good records, and

"C items" with the simplest controls possible and minimal records.

## ABC Analysis for The Financial Year 2015-16

| Category | Raw Material | No. Of Items | Quantity | Rate | %Of Quantity | %Of Rate |
|---|---|---|---|---|---|---|
| A | Alpha Blue & Processing Aid | 2 | 1993 | 450.81 | 0.99 | 61.80 |
| B | B.S, C.S, Carbon, PVC Resin, Block & PVC Stabilizer | 5 | 47964 | 269.00 | 23.90 | 36.88 |
| C | Calcium Titanium Dioxide & Scrap | 3 | 150671 | 9.60 | 75.1 | 1.3 |
| | Total | 10 | 200628 | 729.4 | 100 | 100 |

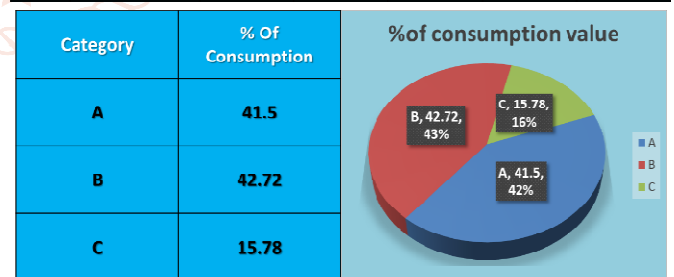| Category | % Of Consumption Value |
|---|---|
| A | 61.80 |
| B | 36.88 |
| C | 1.32 |
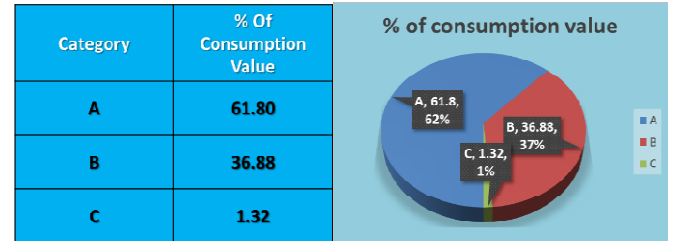


**Interpretation:**
In the year 2015-16 the company has invested 61.80% of annual consumption value in A class items, 36.88% of annual consumption value in B class items and 1.32% of annual consumption value in C class items.

## ABC Analysis for The Financial Year 2016-17

| Category | Raw Material | No. Of Items | Quantity | Rate | %Of Quantity | %Of Rate |
|---|---|---|---|---|---|---|
| A | Alpha Blue & Processing Aid | 2 | 1052 | 446.34 | 0.05 | 41.5 |
| B | B.S, C.S, Carbon, PVC Resin, Block & PVC Stabilizer | 5 | 43608 | 459.38 | 1.9 | 42.71 |
| C | Calcium Titanium Dioxide & Scrap | 3 | 223041.85 | 169.74 | 98.3 | 15.78 |
| | Total | 10 | 267701.8 | 1075.46 | 100 | 100 |

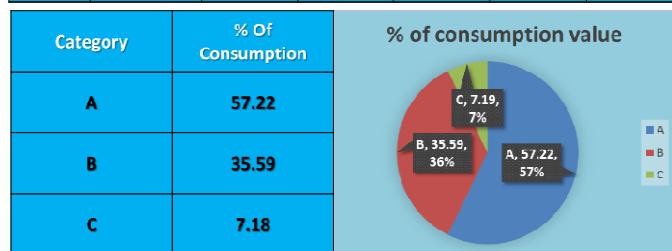| Category | % Of Consumption |
|---|---|
| A | 41.5 |
| B | 42.72 |
| C | 15.78 |



**Interpretation:**
In the year 2016-17 the company has invested 41.50% of annual consumption value in A class items, 42.72% of annual consumption value in B class items and 15.78% of annual consumption value in C class items.

## ABC Analysis for the Financial Year 2017-18

| Category | Raw Material | No. Of Items | Quantity | Rate | %Of Quantity | %Of Rate |
|---|---|---|---|---|---|---|
| A | Alpha Blue & Processing Aid | 2 | 460 | 459.05 | 0.005 | 57.22 |
| B | B.S, C.S, Carbon, PVC Resin, Block & PVC Stabilizer | 5 | 95432940 | 285.55 | 99.75 | 35.59 |
| C | Calcium Titanium Dioxide & Scrap | 3 | 233156 | 57.64 | 0.24 | 7.18 |
| | Total | 10 | 95666556 | 802.24 | 100 | 100 |

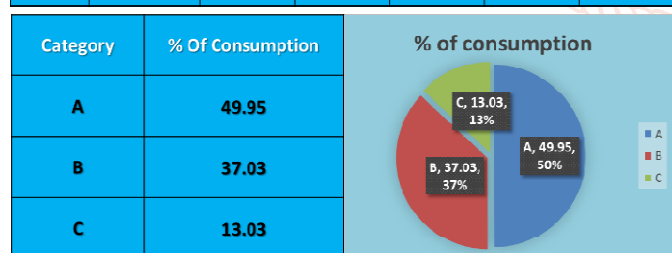| Category | % Of Consumption |
|---|---|
| A | 57.22 |
| B | 35.59 |
| C | 7.18 |


% of consumption value

### Interpretation:
In the year 2017-18 the company has invested 57.22% of annual consumption value in A class items, 35.59% of annual consumption value in B class items and 7.18% of annual consumption value in C class items.

## ABC Analysis for The Financial Year 2018-19

| Category | Raw Material | No. Of Items | Quantity | Rate | %Of Quantity | %Of Rate |
|---|---|---|---|---|---|---|
| A | Alpha Blue & Processing Aid | 2 | 1000 | 460 | 0.001 | 49.946 |
| B | B.S, C.S, Carbon, PVC Resin, Block & PVC Stabilizer | 5 | 130800000 | 341 | 99.784 | 37.025 |
| C | Calcium Titanium Dioxide & Scrap | 3 | 282400 | 120 | 0.215 | 13.029 |
| | Total | 10 | 131083400 | 921 | 100 | 100 |

| Category | % Of Consumption |
|---|---|
| A | 49.95 |
| B | 37.03 |
| C | 13.03 |


% of consumption

### Interpretation:
In the year 2018-19 the company has invested 49.95% of annual consumption value in A class items, 37.03% of annual consumption value in B class items and 13.03% of annual consumption value in C class items.

## ABC Analysis for the Financial Year 2019-20

| Category | Raw Material | No. Of Items | Quantity | Rate | %Of Quantity | %Of Rate |
|---|---|---|---|---|---|---|
| A | Alpha Blue & Processing Aid | 2 | 1132 | 470 | 0.001 | 48.454 |
| B | B.S, C.S, Carbon, PVC Resin, Block & PVC Stabilizer | 5 | 203933882 | 350 | 99.849 | 36.082 |
| C | Calcium Titanium Dioxide & Scrap | 3 | 307082 | 150 | 0.150 | 15.464 |
| | Total | 10 | 204242096 | 970 | 100 | 100 |

| Category | % Of Consumption |
|---|---|
| A | 48.45 |
| B | 36.08 |
| C | 15.46 |
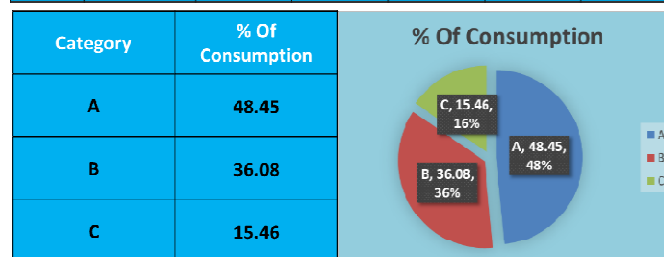

% Of Consumption

### Interpretation:
In the year 2019-20 the company has invested 48.45% of annual consumption value in A class items, 36.08% of annual consumption value in B class items and 15.46% of annual consumption value in C class items.

### Inventory Turnover Ratio
Inventory turnover ratio is concerned with the cost of goods and average inventory. Total inventory turnover ratio is showing how many times inventory is replaced during the year symbolically,

$$\text{Inventory turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Average Inventory}}$$

| Year | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|---|---|---|---|---|---|
| Cost Of Goods Sold(Cr) | 17.8 | 24 | 22 | 22.24 | 22.66 |
| Average Inventory | 4.37 | 4.52 | 2.91 | 3.62 | 3.63 |
| Inventory Turnover Ratio | 4.07 | 5.3 | 7.56 | 6.15 | 6.25 |


INVENTORY TURNOVER RATIO (Cr)
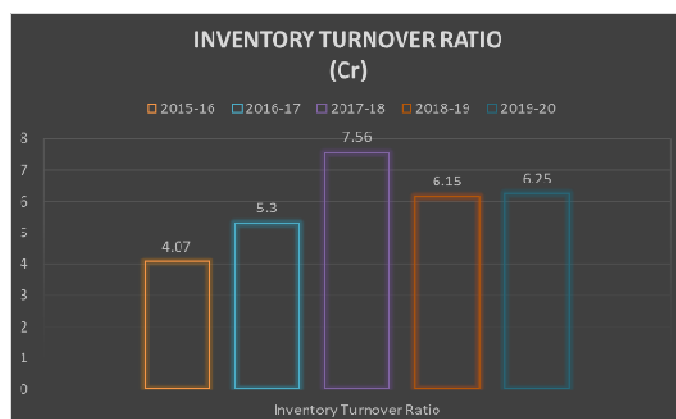
**Interpretation:**
From the above graph it is observed that inventory turnover ratio is more in the year 2017-18 i.e., 7.56 and it is less in the year 2015-16 i.e., 4.07. finally, when compared to previous year it is more in the year 2019-20 i.e.,6.25.

**Investment in raw material**

| YEARS | RAW MATERIAL(RS) |
|-------|------------------|
| 2015-16 | 20,97,91,713 |
| 2016-17 | 23,55,73,349 |
| 2017-18 | 21,15,15,198 |
| 2018-19 | 214109714 |
| 2019-20 | 208742554 |
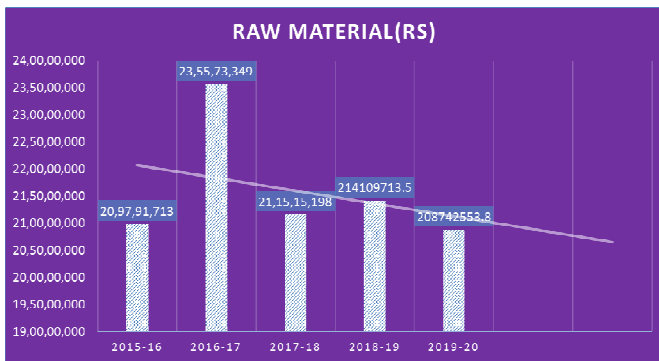


**Interpretation:**
From the above chart it is observed that the investment in raw material is high in the year 2016-17 i.e., 23.55Crs and it is low in the year 2019-20 i.e., 20.87Crs. When compared to the previous year the investment in the raw material was decreased in 2019-20 i.e., 20.87Crs.
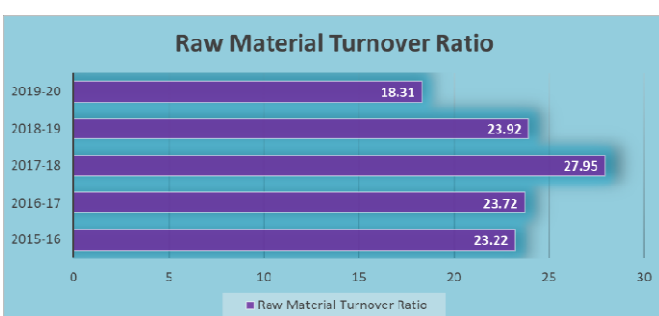
**Raw material turnover ratio**
Raw material turnover ratio is concerned with cost of raw materials consumed average raw material stock.

$$\text{Raw material turnover ratio} = \frac{\text{cost of raw material consumed}}{\text{Average stock of raw material}}$$

| Years | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|-------|---------|---------|---------|---------|---------|
| Cost Of Raw Material Consumed(Rs) | 202111238 | 237954012 | 218047040 | 229067461.9 | 184092124.1 |
| Average Stock Of Raw Material(Rs) | 8702729 | 10027682 | 7799556 | 9576863.899 | 10053642.69 |
| Raw Material Turnover Ratio | 23.22 | 23.72 | 27.95 | 23.92 | 18.31 |



**Interpretation:**
From the above graph it is observed that raw material turnover ratio is high in the year 2017-18 i.e., 27.95 and it is low in the year 2019-20. when compared to the previous year it was decreased in this year 2019-20 i.e., 18.31.

**Work in progress turnover ratio**
Work in progress turnover ratio is concerned with the cost of production and average work in progress inventory. It shows how many times work in progress inventory is replaced during the year. symbolically,

$$\text{Work in process turnover ratio} = \frac{\text{cost of production}}{\text{Average work in progress inventory}}$$

| YEARS | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|-------|---------|---------|---------|---------|---------|
| COST OF GOODS SOLD | 177700000 | 239500000 | 219900000 | 222409886 | 220428995 |
| AVG WIP(RS) | 17460103 | 16636265 | 5250854 | 11327253 | 11920565 |
| WIP TURNOVER RATIO | 10.17 | 14.39 | 41.88 | 19.63 | 18.49 |
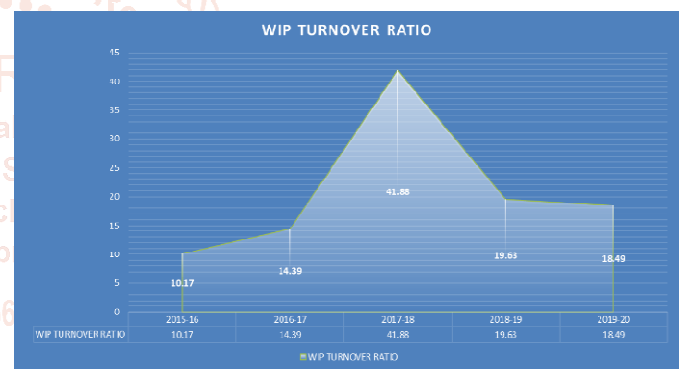


**Interpretation:**
From the above chart it is observed that WIP turnover ratio is high in the year 2017-18 i.e., 41.88 and it is low in the year 2015-16 i.e., 10.17. when compared to the last year it was decreased in the year 2019-20 i.e., 18.49.
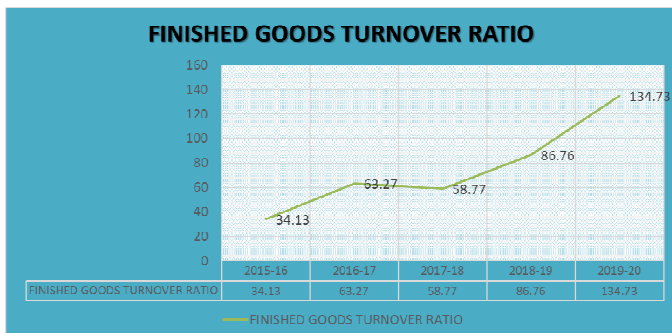
**Finished goods turnover ratio**
Finished goods turnover ratio is concerned with the cost of goods sold and average finished goods inventory. It indicates how many times finished goods are replacing then during the year.

$$\text{Finished goods turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Average finished goods}}$$

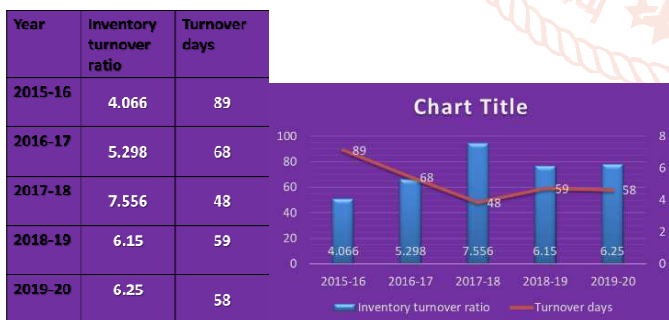| YEARS | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|---|---|---|---|---|---|
| COST OF GOODS SOLD | 177700000 | 239500000 | 219900000 | 222409886 | 220428995 |
| AVG FINISHED GOODS(RS) | 5205870.5 | 3785209.5 | 3741423.5 | 2563491.3 | 1636130.6 |
| FINISHED GOODS TURNOVER RATIO | 34.13 | 63.27 | 58.77 | 86.76 | 134.73 |



FINISHED GOODS TURNOVER RATIO

## Interpretation:
From the above chart it is observed that finished goods turnover ratio is high in the year 2019-20 i.e., 134.73 and it is low in the year 2015-16 i.e., 34.13. when compared to the last year it was increased in the year 2019-20 i.e., 134.73.

## Inventory conversion period
➢ Formula: 365/ inventory turnover ratio

➢ Inventory turnover ratios are calculated to indicate whether inventories have been used efficient or not.

➢ Inventory conversion period may also be calculated to find the average time taken to clear the stock.

| Year | Inventory turnover ratio | Turnover days |
|---|---|---|
| 2015-16 | 4.066 | 89 |
| 2016-17 | 5.298 | 68 |
| 2017-18 | 7.556 | 48 |
| 2018-19 | 6.15 | 59 |
| 2019-20 | 6.25 | 58 |



## Interpretation:
From the above chart it is observed that the conversion period high in the financial year 2015-16 i.e., 89 days and it is low in the year 2017-18 i.e., 48 days. when compared to previous year the conversion period is less in the year 2019-20 i.e., 58days

## Findings
EOQ is highest in the year 2019-20 i.e., 23,052.3 units and it is lowest in the year 2015-16 i.e., 19,176.33 units.

The inventory conversion period is 48 days during the year 2017-18, which indicates the inventory is converted in to sales in a lesstime when compared to other years. But in the following years it is increasing it indicates company performance is not sufficient.

The ordering cost and carrying cost per unit is high because of material transportation, insurance, tax and storage cost is high.

## Conclusion
A survey has been done to know about the inventory management of the ANANTHA PVC PIPES PVT LTD., with standard tools and techniques of inventory management.

This study found out that the inventory management of the company should concentrate on reduction of different types of costs and also systematic maintenance of inventory. Company has to reduce inventory and it has to increase inventory turnover ratio.

## SUGGESTIONS
Company should order in optimum quantity with help of EOQ analysis so that carrying and ordering cost should not go high.

The company can reduce carrying cost by following proper inventory management techniques like JIT (just in time).

The company inventory conversion period is more.it indicates company, company performance is not sufficient. The company is suggested to focus on reducing the conversion period of inventory to convert into sales.

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[4] Joseph G. Monks: Operations Management

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