THINK INDIA (Quarterly Journal)

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

A Study on Inventory Management Control

Krishnaveni S.
MBA, Department of Management Studies
Bharath Institute of Science and Technology,
Selaiyur, Chennai, Tamil Nadu 600 073

ABSTRACT

Inventory analysis is one of the most popular topics in production and material management. One reason is that almost all types of business organizations have inventory. For many firms inventory is the largest current asset. Inventory also includes partially finished products at different stage of a manufacturing process, raw materials and components, resources, finished products, labor or cash. The purpose of inventory is to meet customer demand, to avoid stock-out of material which may cause stoppage of production or even to hedge against strikes and lock-out and to meet uncertainties in supply form vendors. Skillful inventory management can make a significant contribution to a firm's profit.

Therefore inventory management policies prove critical in determining the profits of such firms. Inventory control is a crucial aspect of successful management. The objectives of good service and efficient production must be met at minimum inventory levels.

1. INTRODUCTION

- Inventory management is the "management of the flow of materials into an organization to the point where, those materials are converted into the firm's end product." - **(Bailey and Farmer).**
- Inventory management is "the function responsibilities for the coordination of planning, sourcing, purchasing, moving, storing, and controlling materials in an optimum manner cost" - **(P. Gopala krishnan)**.

2. OBJECTIVE OF THE STUDY

PRIMARY OBJECTIVES

To identify the efficiency of Inventory Management at AVR Manufacturers

SECONDARY OBJECTIVES

1. To find the optimum stock level of AVR Manufacturers
2. To study the E.O.Q (Economic Order Quantity)
3. To analyze the inventory Turnover Ratio.
4. To exercise control over important items by way of ABC Analysis.
5. To estimate the ratios statistically for given period.

3. REVIEW OF LITERATURE

A number of studies have been done in the field of inventory management by various researchers. Some of them are given below;

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

DILIP ROY; **DEBDIP KHAN (2010)** in the Journal "International Journal of Industrial Engineering Computations" says –"we address the optimization of an integrated line balancing process with workstation inventory management. While doing so, we have studied the interconnection between line balancing and its conversion process. Almost each and every moderate to large manufacturing industry depends on a long and integrated supply chain, consisting of inbound logistic, conversion process and outbound logistic. In this sense an approach addresses a very general problem of integrated line balancing. Research works reported in the literature so far mainly deals with minimization of cost for inbound and outbound logistic subsystems. In most of the cases conversion process has been ignored.
We suggest a generic approach for linking the balancing of the line of production in the conversion area with the customers' rate of demand in the market and for configuring the related stock chambers. Thus, the main aim of this paper is to translate the underlying problem in the form of mixed nonlinear programming problem and design the optimum supply chain so that the total inventory cost and the cost of balancing loss of the conversion process is jointly minimized and ideal cycle time of the production process is determined along with ideal sizes of the stock chambers. A numerical example has been added to demonstrate the suitability of our approach".

ALEKSANDRA MARCIKIC ; BORIS RADOVANOV (2009) in the Journal "Perspectives Of Innovations, Economics And Business" says- "In this paper inventory management is analyzed as an organic part of the supply chain managing process. In today's competitive economic environment traditional inventory policies should be improved. Simulation models enable a priori managing and analyzing variety of possible results and implication of selected inventory policies. The model presented in this paper uses the Monte Carlo simulation method and variables taken as random, in order to depict a harmonization and integration of dynamic quantitative analysis and theoretical, qualitative concepts of inventory management".

4. RESEARCH METHODOLOGY

RESEARCH DESIGN

A research is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The research design adapted in the study was descriptive study.

PERIOD OF THE STUDY

The study was conducted for a period of 3 months during which the researcher studied the functioning of the company in relation to the materials management

DATA COLLECTION METHOD

Data collection has mainly been from two sources viz., primary data and secondary data.

SECONDARY DATA

Secondary data, are those which have already been collected by some others and already been processed No method can entirely eliminated uncertainty but scientific method more than any other procedure could minimize the elements of uncertainty which results from the lack of correct information.

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

TOOLS USED

The tools employed for conducting the technical study concept of financial and statistical tools such as ratios

1. Correlation Analysis
2. ABC Analysis
3. EOQ

5. DATA ANALYSIS AND INTERPRETATION RATIO ANALYSIS TABLE INVENTORY TURNOVER PERIOD

Formula

$$\text{Inventory Turnover Period} = \frac{\text{No. Of Days in a Year}}{\text{Inventory Turnover Ratio}}$$

Where,

$$\text{No of days in a year} = 365 \quad \text{Average inventory} = \frac{\text{opening stock + closing stock}}{2}$$

INVENTORY TURNOVER PERIOD

YEAR	NO OF DAYS IN A YEAR	TURNOVER PERIOD IN DAYS
2008	365	150.2
2009	365	148.98
2010	366	150.61
2011	365	147.77
2012	365	132.73

(Source: 2008-2012 annual report of AVR Manufacturers)

TABLE No 1

INVENTORY TURNOVER PERIOD

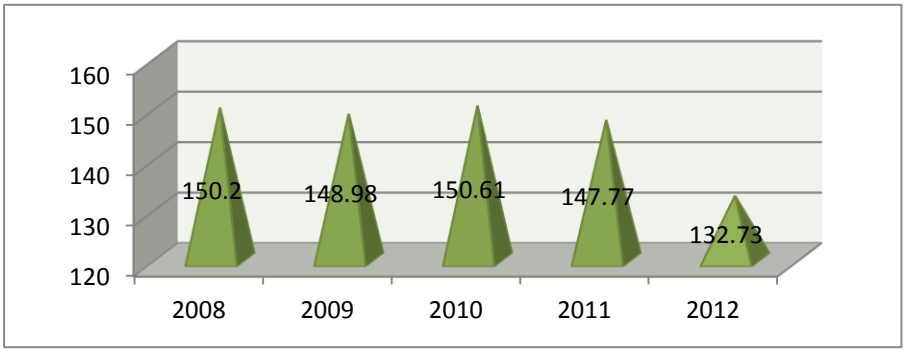


FIG 1

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

INFERENCE

The Chart shows the gradual increase in the period of inventories from 2008 to 2012

FORMULA

$$\text{Inventory to Networking Capital Ratio} = \frac{\text{Inventory}}{\text{Net Working Capital}}$$

$$\text{Inventory} = \frac{\text{opening stock + closing stock}}{2}$$

Net Working Capital = Current Asset – Current Liabilities

INVENTORY TO WORKING CAPITAL

YEAR	INVENTORY	NET WORKING CAPITAL	INVENTORY TO NET WORKING CAPITAL
2008	37637.06	16937.43	2.22
2009	67748.23	28340.84	2.39
2010	102109.05	36365.55	2.8
2011	120269.17	42247.45	2.84
2012	134033.15	47106.78	2.84
		MEAN	2.168
		S.D	0.292438028
		CORRELATION	0.996588382

(Source:2008-2010 annual report of Whitehouse)

TABLE No 2

INVENTORY TO WORKING CAPITAL

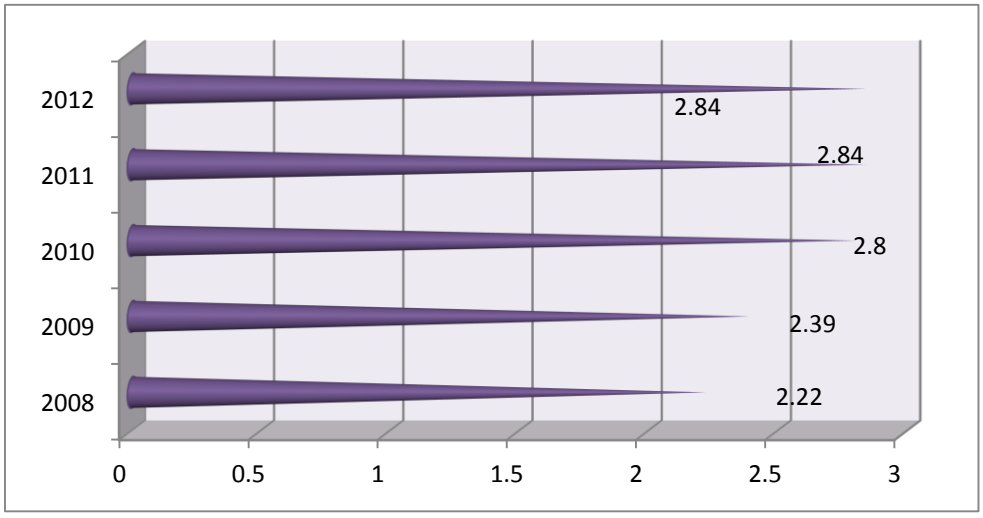


FIG 2

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

INFERENCE

The chart shows an increasing trend in inventory to net working capital ratio, because of the decreased in the net working capital ratio. This ratio mentions that what extent inventory affects the capital of the company.

RAW MATERIAL TO INVENTORY
. FORMULA

$$\text{Raw Material Inventory Turnover Ratio} = \frac{\text{Material Consumed}}{\text{Avg Inventory}}$$

Material consumed = raw material consumption + finished goods Inventory = opening stock + closing stock/2

RAW MATERIAL TO INVENTORY

YEAR	MATERIAL CONSUMED	INVENTORY	RATIO
2008	98162	37439.44	2.62
2009	162064.88	67748.23	2.39
2010	243179.19	102109.05	2.38
2011	294085.83	120269.17	2.44
2012	356105.14	134033.15	2.65
		MEAN	2.496
		S.D	0.129345
		CORRELATION	0.99208442

(Source: 2008-2012 annual report of Whitehouse)

TABLE No 3

RAW MATERIAL TO INVENTORY

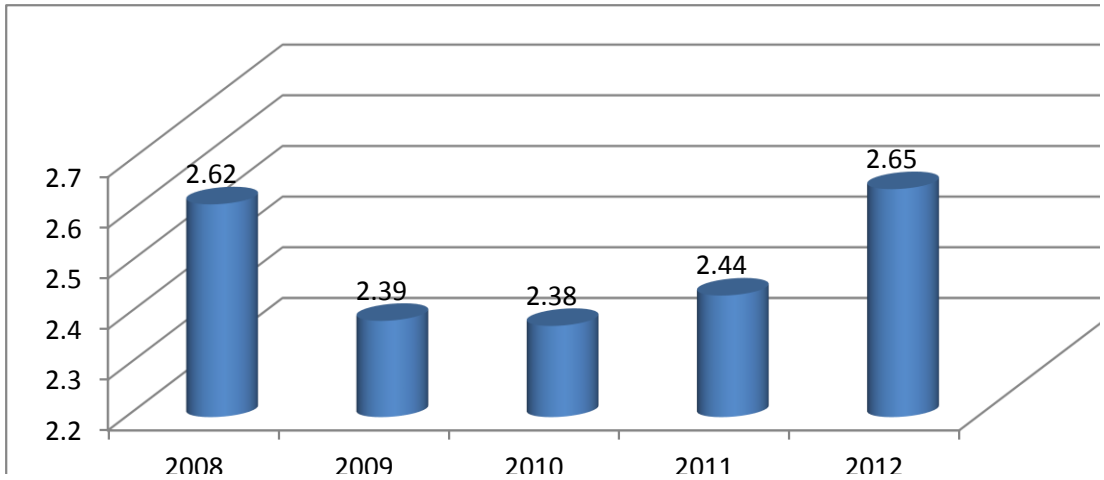


FIG 3

INFERENCE

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

The above table shows increasing trend in the raw material inventory turnover ratio, because of the increase in the material consumed.

ABC ANALYSIS
A ITEMS

SNO	DESCRIPTION	VALUE (in lakhs)	Percentage
1	Spindle Unit Assembly (1)	70.00	5.6
2	Brush, Plate, Plug, Swithch,Cover,Assembly	40.00	3.2
3	Cover Assembly K 200 M	99.54	8.05
4	Spindle Unit Assembly	47.50	3.84
5	Gear Boxing (Hyundai)	42.07	3.40
6	Mounting Bracket Assembly	85.25	6.90
7	Wiping System (Indica)	147.01	11.90
8	Assembly Bracket	37.23	3.01
9	Wheel Box Assembly	30.36	2.45
10	Brush Plate Assembly	30.52	2.47
11	Gear Box Assembly	30.52	2.34
12	Brush Plating Assembly	2.34	2.85
	TOTAL	**670.00**	**74.00**

TABLE No 4

B ITEMS

SNO	DESCRIPTION	VALULE (in lakhs)	Percentage
1	Link End Assembly	26.50	2.14
2	Limit Switch	21.00	1.70
3	Shaft Link & Pin Assembly	22.50	1.82
4	Bundy Tube	17.50	1.41
5	Brush Plate	23.00	1.86
6	Primary Tube Assembly	19.89	1.61
7	Ball Bearing	18.80	1.52
8	Thermal Cut	19.52	1.58
9	Shaft Link Pin Assembly	19.28	1.56
10	Yoke	21.16	1.71
11	Rear Mounting Bracket	40.5892	3.28
	TOTAL	**250.00**	**21.00**

TABLE No 5

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

C ITEMS

SNO	DESCRIPTION	VALUE (in lakhs)	Percentage
1	Washer	5.41	0.43
2	Steel Ball	5.63	0.45
3	Screw	5.31	0.42
4	Bolt	5.99	0.48
5	Nut	5.48	0.44
6	Pressure Pad	5.18	0.41
7	Spring Clip	5.16	0.41
8	Con & Bush Assembly	5.57	0.45
9	Felt Washer	5.12	0.42
10	Ferrule	6.96	0.56
11	Label	5.65	0.45
12	Switch Unit	5.64	0.44
13	Final Gear Assembly	8.40	0.68
14	Bearing Bush	8.11	0.65
15	Magnet	9.51	0.77
16	Pole	10.90	0.88
17	Commutator	6.56	0.53
18	Primary Link Assembly	7.72	0.62
29	Carbon Brush	6.10	0.52
20	Rotator Link	9.80	0.50
21	Bearing Pin	7.62	0.80
22	Rubber Pad	6.43	0.50
23	Armature Insul	6.21	0.90
24	Bundy Tube With Nut	10.00	0.80
25	Crank Pin	6.22	0.89
26	Crank Plate	7.61	0.72
27	Spindle	11.14	0.49
28	Needle Bearing	11.09	0.48
29	Plug Moulding	8.99	0.41
30	Nozzle Holder	6.09	0.44
31	Self Tap Screw	6.00	0.45
32	Lock Nut	5.48	0.44
33	Spring Washer	5.535	0.48
34	Circlip	5.635	0.44
35	Rivet	5.4625	0.44
36	Seal	5.94	0.48
37	Protective Cover	5.605	0.43
38	Breather Plug	5.50	0.44
39	Thrust Screw	5.975	0.48

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

40	Gasket	5.685	0.43
41	Trust Pad	5.265	0.43
42	Screw Cover Plate	5.16	0.45
	TOTAL	**315.00**	**5.00**

TABLE No 6

ABC ANALYSIS

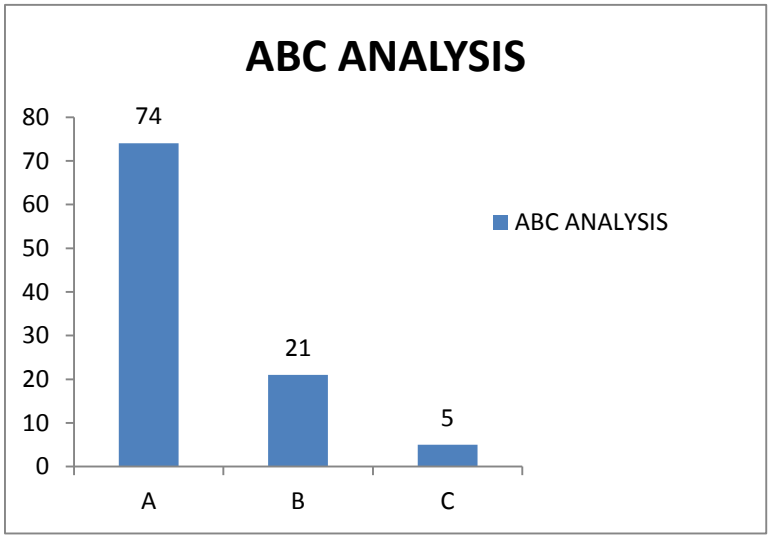


FIG 4

INTERPRETATION

The above raw material has been categorized as "A" clas material and should be kept under rigorous control as the investment in the inventory constitute more than 70% value of the total investment made in raw material inventory. The company should direct its most of the inventory control efforts to the items included in the category. Although the number of items which constitutes "B" & "C" category is not fairly large investment in these category is less than 30% and which warrant the minimum attention. During the discussion and clarification with the executives of the company controlling production and stores we were explained that the raw material which were grouped under "B" & "C" category even though critical to the production process were available easily. While making the analysis utmost care was taken not to include critical raw material essential for production process which is not available easily in the market even though it involves small investment in "B" & "C" category.

EOQ

1. Material code 2608135
   Annual Requirements = 24000 units
   Cost of materials =Rs. 11.40
   Cost of placing and receiving order = Rs.50
   Annual carrying Cost of Inventory 10% of inventory value
   EOQ $=\sqrt{(2*24000*50)/(11.40*0.1)}$
   =1450 units

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

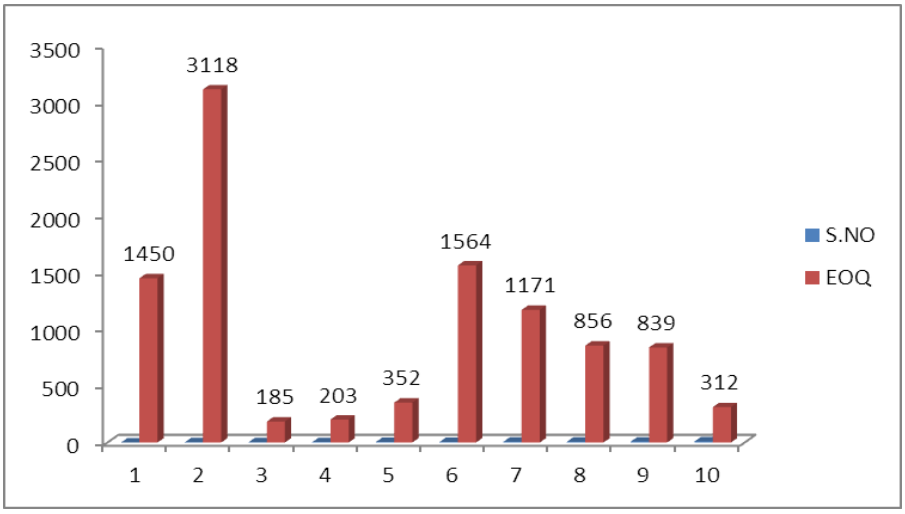
2. Material code 2657842
   Annual Requirements = 84000 units
   Cost of materials =Rs. 10.80
   Cost of placing and receiving order = Rs.50
   Annual carrying Cost of Inventory 8% of inventory value
   EOQ =√ (2*84000*50)/ (10.80*0.08)
   =3118 units
3. Material code 2606592
   Annual Requirements = 4800 units
   Cost of materials =Rs. 16.81
   Cost of placing and receiving order = Rs.12
   Annual carrying Cost of Inventory 20% of inventory value
   EOQ =√ (2*4800*12)/(16.81*0.2)
   = 185 units
4. Material code 2565173
   Annual Requirements = 3000 units
   Cost of materials =Rs. 14.52
   Cost of placing and receiving order = Rs.10
   Annual carrying Cost of Inventory 10% of inventory value
   EOQ =√ (2*3000*10)/(14.52*0.1)
   = 203units
5. Material code 2606967
   Annual Requirements = 9000 units
   Cost of materials =Rs. 14.51
   Cost of placing and receiving order = Rs.10
   Annual carrying Cost of Inventory 10% of inventory value
   EOQ =√ (2*9000*10)/(14.51*0.1)
   = 352 units
6. Material code 2671583
   Annual Requirements = 24000 units
   Cost of materials =Rs. 9.80
   Cost of placing and receiving order = Rs.150
   Annual carrying Cost of Inventory 30% of inventory value
   EOQ =√ (2*24000*150)/(9.80*0.3)
   = 1564 units
7. Material code 2766194
   Annual Requirements = 12000 units
   Cost of materials =Rs. 10.93
   Cost of placing and receiving order = Rs.50
   Annual carrying Cost of Inventory 8% of inventory value
   EOQ =√ (2*12000*50)/(10.93*0.08)
   = 185 units

S.NO	Material Code	Material Description	New Rate	Monthly Requirement	EOQ
1	2608135	Steel Ball	11.40	2000	1450
2	2657842	Bearing brush	10.80	7000	3118
3	2606582	Carbon Brush	16.81	400	185
4	2565173	Cover assembly	14.52	250	203

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

5	2606967	Limit Switch	14.51	750	352
6	2671583	Link end assembly	9.80	2000	1564
7	2766194	Wiping System	10.93	1000	1171
8	2867229	Gear boxing	13.08	800	856
9	2710654	Ball bearing	17.02	750	839
10	2618402	Magnet	11.04	750	312

TABLE No 7



INTERPRETATION

The Chart represents the EOQ of each product for 1 month some of the products, the quantity size is not mention EOQ. This indicates that the sale of the product is very low. Therefore, the order is placed when it is needed

6. FINDINGS

- The ration between work in progress and total inventory has been fluctuating for the last five years..
- In ABC analysis, the A Category constitutes more than 70% of total investment made in the raw materials. B and C category is not fairly large investment in this category is than 30% and which warrant the minimum attention.
- The EOQ of each product for 1 month indicates that the sale of the product is very low. So, the company should place the order whenever it is needed.

7. SUGGESTIONS.

- The total inventory of the company is high. So, the company should take the initiative for the proper utilization of inventory.
- Ratio between inventory and working capital is not satisfactory for last five years. It is fluctuating over the years and there is no standard ratios maintained. So the management should take steps to improve the inventory and working capital of the company.

8. CONCLUSION

ISSN:0971-1260
Vol-22-Issue-4-October-December-2019

The most important of inventory management in a manufacturing company where there are multi-locational stock points and large number of items dealt with had been well understood on observing the systems followed in the company. Added to the theoretical knowledge, the observations at the shop floor and stores have enabled clear understanding of the system and fulfillment of aim of this project. Thus inventory plays a vital role in the efficient functioning of the management of the firm. This requires effective control of the inventory and maintenance of optimum inventory levels of stock. Hence inventory coupled with cost control results in efficient performance of the company.

WEBSITE:

- www.lucas-tvs.com
- www.google.com