

## **A STUDY ON INVENTORY MANAGEMENT IN KALAIARASI AUTO AGENCIES, TRICHY**

**S.Mani Shankar\***

*\*\*II Year MBA Student, School of Management, SASTRA University, Thanjavur – 613 401*

### **ABSTRACT**

Inventory is important for every organization for smooth running of its activities. The purpose of inventory management is to ensure availability of materials in sufficient quantity, when required and also to minimize investment in inventories. Each type represents money tied up until the inventory leaves as purchased products. Because of the large size of the inventories maintained by firms, a considerable amount of funds is required to be committed to them. It is therefore necessary to manage inventories efficiently and effectively in order to avoid unnecessary investments. The reduction in excessive inventories carries a favorable impact on the company's profitability. The study focuses on inventory management of Kalaiarasi Auto Agencies. Inventory management is a very important function that determines the health of the supply as well as the impacts the financial health of the balance sheet. Every organization constantly strives to maintain optimum inventory to be able to meet its requirements and avoid over or under inventory that can impact the financial figures. It also includes making essential connections between the replenishment lead time of goods, the carrying costs of inventory, future inventory price forecasting, and physical inventory. One of the main areas of the project is the analysis part, where the data are analyzed & interpreted. The data was given by the company for 3 years (secondary data). To find out how the inventories were managed some of the tools used in inventory are Economic Order Quantity, Safety Stock, ABC Analysis and Inventory Turnover Ratio. It is found that, there is a variation in the EOQ & no. of unit purchased. The ratio is showing increasing trend from 8.04 to 9.74 in the year 2013-14 to 2015-16.

**Key Words:** Inventory management, Economic Order Quantity, Safety Stock, ABC Analysis and Inventory Turnover Ratio.

### **1. INTRODUCTION**

Financial Management is concerned with the duties of the financial manager in the business firm. Financial managers actively manage the financial affairs of any type of business, namely financial

and non-financial, private and public, large and small, profit seeking and non-profit. They perform such varied task, as budgeting, financial forecasting, cash management, credit administration, investment analysis, funds management and inventory management.

A term inventory refers to the stock file of the products a firm is offering for sale and the components that make up the product. In other words, inventory is composed of assets that will be showed in future in the normal course of the business operations. Inventory, as a current asset, differs from other current assets because only financial managers are not involved. Rather all the functional areas, finance, marketing, production, and purchasing are involved. The views concerning the appropriate level of inventory would differ among the different functional areas. The job of the financial manager is to reconcile the conflicting view points of the various functional areas regarding the maximizing the owner's wealth. Thus, inventory management, like the management of other current assets, should be related to the overall objective of the firm. It is in this context that the present chapter is devoted to the main elements of inventory management from the view point of financial management.

## **2. REVIEW OF LITERATURE**

**Guajardo, Mario; Ronnqvist, Mikael (2016)** Collaboration in transportation between two or more agents is becoming an important approach to find efficient solutions or plans. Efficiency can be measured in, for example, lower cost or more flexibility. An important aspect of the collaboration is to decide on how to share the benefits--for example, cost, profit, or resources. There are many sharing mechanisms or cost allocations proposed in the literature. Some are based on simple proportional rules and others are based on theoretical concepts found in game theory. We provide a survey on cost allocation methods found in the literature on collaborative transportation, including problems on planning, vehicle routing, traveling salesman, distribution, and inventory.

**Archetti, Claudia; Sperana, M Graia (2016)** consider an inventory routing problem in which a supplier delivers goods to customers over a given planning period. Before the advent of the supply chain management concept, customers usually applied as S policy for the inventory management. The supplier then, on the basis of the distribution schedule determined by the customers, organized the distribution routes. In an integrated approach, the supplier has access to the inventory levels at the customers and knowledge of their demand process. On the basis of this information the supplier

organies a complete distribution plan, determining the days of visit, quantities to deliver, and distribution routes.

**Choudri, Vincent; Venkatachalam, Mathiyazhgan; Panayappan, Sethuraman(2016)** This paper presents production-inventory model for deteriorating items with constant demand under the effect of inflation and time-value of money. Models are developed without shortages while using two production cost functions. In the first case, production cost is divided into two parts: an initial cost which occurs at the beginning of each cycle and is applied to the entire quantity produced during the cycle and a running cost that is incurred as production progresses and is applied to the initial units produced. In the second case, the production cost is incurred at the beginning of the cycle.

**Stanford, R E; Martin, W (2007)** This paper establishes a general ABC inventory classification system as the foundation for a normative model of the maintenance cost structure and stock turnover characteristics of a large, multi-item inventory system with constant demand. For any specified number of inventory classes, the model allows expression of the overall system combined ordering and holding cost in terms of (i) the re-ordering frequencies for the items in each inventory class and (ii) the inventory class structure, that is, the proportion of the total system's items that are in each inventory class. The model yields a minimum total maintenance cost function, which reflects the effect of class structure on inventory maintenance costs and turnover.

**Dharmaraj, A (2014)** Inventory is most important assets that most business possesses, because the turnover of inventory implicates one of the primary sources of gaining revenue and subsequent earning for the company's shareholders. Primarily inventory management about specifying the size and placement of stocked goods. The Indian Electronics is one of the fastest growing sectors of the Indian Industry. Determination of optimal inventory procedure for the procurement of the stocks of commodities to meet future demands. So present study is made to know the inventory in Keltron Electro Ceramics Limited, Kuttipuram - Kerala. Ratio analysis, correlation and ABC analysis are used to analysis the data.

### **3. OBJECTIVES OF THE STUDY**

- To study about the ordering levels for the important components of inventory.
- To understand and measure economic order quantity for the material.
- To analyze its inventory management methods with the help of ABC analysis.

- To offer suitable suggestions for the improvement of inventory management practices.

#### 4. SCOPE OF THE STUDY

Regardless of which type of inventory system a company uses, the scope of the inventory may change based on the strategic targets of the business. The different aspects of how inventory counts are conducted or to the way inventory information is used in KALAIRASI AUTO AGENCIES

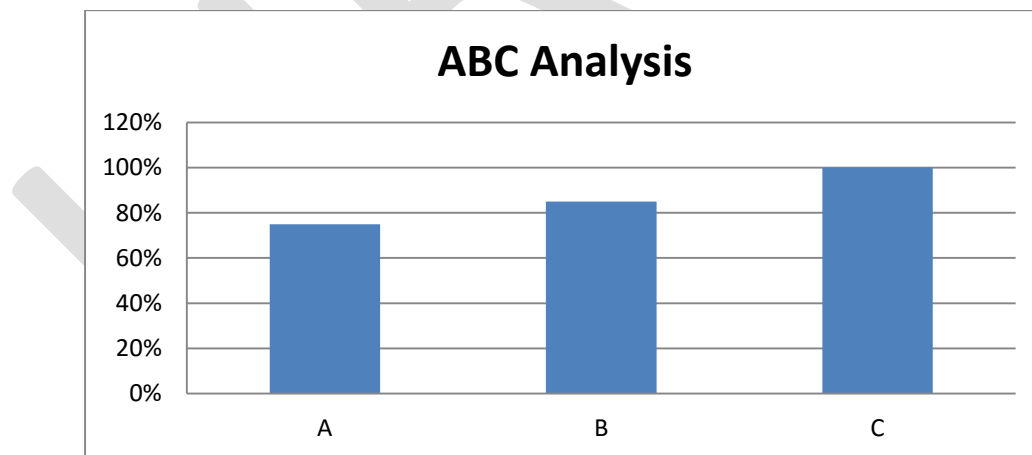
#### 5. ANALYSIS AND DISCUSSION

##### 5.1 ABC Analysis

Table: 5.1.1 ABC Analysis

Category	% of items	% of total cost of materials
A	5 – 10	70 – 85
B	10 – 20	10 – 20
C	70 – 85	5 – 10

Chart: 5.1.1 ABC Analysis



Source: Secondary Data

The above chart shows the classification of various components as A, B & C classes using ABC analysis techniques based on unit value. The classification A classes 75% of total components. B classes are 15% of total components and C classes are 10% of total components. It

is good that the company maintains its inventories based on its value using controlling techniques. A class has 19% on total inventory, class has 28% on total inventory, C class has 53% on total inventory.

**5.2 EOQ**

$$EOQ = \text{SQRT} (2 \times \text{Quantity} \times \text{Cost per Order} / \text{Carrying Cost per Order})$$

**Table: 5.2.1 EOQ**

NO	Particular	Quantity Annual	Cost Per Order	Carrying Cost	EOQ	Number of Orders per year
1	TVS XL PED. BUSH MET. NEW.....#	25475	33627	10	4139	6
2	UPASAN SPLEND INNER SPOKES (2101)	18800	14476	10	2333	8
3	FIEM SUPXL H L BACK DOOM* NEW MFR.*** SC	14544	130314.24	10	6156	2
4	ROL VICTOR CUSH RUB (S/CITY/CEN)	143	1287	10	61	2
5	DINESH SUPXL SIDE PANEL PATTI W/NUT 10MM...	2750	983.125	10	233	12
6	SW 100CC FLASHER.....OFF.1/10	1520	16991	10	719	2
7	MYPOL 2.75X18 (2.50X 18) TUBE	750	15750	10	486	2
8	UPASAN SUPXL H/D SPOKS INNER 2077	54100	39168.4	10	6510	8
9	UPASAN XL INNER SPOKES (2005)*	60400	50333	10	7798	8
10	UPASAN HONDA INNER SPOKES (2035)	32300	24871	10	4008	8
11	CK TL 110/80-17 ATT455R 57P TUBELESS+	332	37360	30	166	2

12	CK TL 90/90-17 ATT455F 49P TUBELESS+	313	30370	30	145	2
13	CK TT 100/90/17 55P JUMBO ATT650 +	292	37996	30	157	2
14	CK TT 275/18 JUMBO.. PT	262	28242	30	128	2
15	CK TT 275/18 JUMBO..... S	2084	195266	30	951	2
16	CK TT 300/10 DRAGON	647	46113	30	257	3
17	CK TT 300/17 JUMBO PT	265	29776	30	132	2
18	CK TT 300/17 JUMBO..... S	2375	227869	30	1097	2
19	CK TT 300/18 JUMBO ( )..... S	2138	218883	30	1020	2
20	Ck TU 250/16 XL.....Sc.....	91080	935164	30	13758	7
21	CK TU 275/10.....	1100	121550	30	545	2
22	CK TU 275/17 (300/17).....	26597	342170	30	4497	6
23	CK TU 275/18 100cc.....Sc.....	45498	643759	30	8068	6
24	CK TU 300/10.....Sc...	10787	113965	30	1653	7
25	CK TU 300/18 Rr.....Sc.....	39175	562227	30	6996	6
26	CK TU 350/10 (90/90/10).....S	8124	96107	20	1976	4
27	CK TU 400/8.....+	1835	23607	20	465	4
28	CK TU 90/90-12	2833	37983	20	734	4
29	CK TY 225/17 FR RIB TYRE ONLY.....	302	15524	20	153	2
30	CK TY 250/16 DRAGON XL.....	669	36595	20	350	2

31	CK TY 250/16 FR RIB.....SC	12774	455393	20	5393	2
32	CK TY 250/16 JUMBO..41 L (ATT650) .....SC.	12318	617655	25	4934	2
33	CK TY 2.50/16 JUMBO PT TYRE (SPL) 41L 6PR	248	14434	25	107	2
34	CK TY 250/16 NYLON (STUD)*.....	3460	158745	25	1326	3
35	CK TY 250/18 YAMAHA RIB.....	405	25675	25	182	2
36	CK TY 275/17 EG CT100 RIB...4PR.....	4052	266611	25	1859	2
37	CK TY 275/17 FR. RIB ATT525 EURO GRIP	237	20851	25	126	2
38	CK TY 275/18 ATT 175* FLAIR	735	57356	25	367	2
39	CK TY 275/18 ATT 450.....+	121	10330	25	63	2
40	CK TY 275/18 FR. RIB (ORDY)SC36....	6617	447690	25	3079	2

In the above table the EOQ & the no. of orders purchased per year for various components are calculated. The calculated EOQ is compared with the no. of units of each component purchased in the organization. It is found that, there is a variation in the EOQ & no. of unit purchased. It is understood that the company is not following EOQ for purchasing the materials.

### 5.3 Inventory Turnover Ratio

$$\text{Inventory turnover ratio} = \frac{\text{Net sales}}{\text{Avg. inventory}}$$

**Table: 5.3.1 Inventory Turnover Ratio**

Year	Net Sales (Rs.)	Avg. Inventory (Rs.)	Ratio
2013-14	151485346.4	18841846	8.04 times
2014-15	158302648.5	17060972.5	9.28 times
2015-16	149039482.3	15306495	9.74 times

The above table shows inventory turnover ratio for the past 3 years. The ratio is showing increasing trend from 8.04 to 9.74 in the year 2013-14 to 2015-16. This shows that the inventories are easily converted into sales within the shortest period.

### 5.4 Safety Stock

Safety stock = (Maximum Daily Usage \* Maximum lead time) – (Average Daily Usage \* Average Lead Time)

**Table: 5.4.1 Safety stock**

NO	Particular	Maximum Usage	Average Usage	Maximum lead time	Safety Stock
1	CK TL 110/80-17 ATT455R 57P TUBELESS+	27	14	30	20
2	CK TL 90/90-17 ATT455F 49P TUBELESS+	26	13	30	19
3	CK TT 100/90/17 55P JUMBO ATT650 +	24	12	30	18
4	CK TT 275/18 JUMBO.. PT	22	11	30	16
5	CK TT 275/18 JUMBO..... S	171	86	30	128
6	CK TT 300/10 DRAGON	53	27	30	40
7	CK TT 300/17 JUMBO PT	22	11	30	16
8	CK TT 300/17 JUMBO..... S	195	98	30	146
9	CK TT 300/18 JUMBO ()..... S	176	88	30	132



10	Ck TU 250/16 XL.....Sc.....	7486	3743	30	5615
11	CK TU 275/10.....	90	45	30	68
12	CK TU 275/17 (300/17).....	2186	1093	30	1640
13	CK TU 275/18 100cc.....Sc.....	3740	1870	30	2805
14	CK TU 300/10.....Sc...	887	443	30	665
15	CK TU 300/18 Rr.....Sc.....	3220	1610	30	2415
16	CK TU 350/10 (90/90/10).....S	668	334	30	501
17	CK TU 400/8.....+	151	75	30	113
18	CK TU 90/90-12	233	116	30	175
19	CK TY 225/17 FR RIB TYRE ONLY.....	25	12	30	19
20	CK TY 250/16 DRAGON XL.....	55	27	30	41
21	CK TY 250/16 FR RIB.....SC	1050	525	30	787
22	CK TY 250/16 JUMBO..41 L (ATT650) .....SC.	1012	506	30	759
23	CK TY 2.50/16 JUMBO PT TYRE (SPL) 41L 6PR	20	10	30	15
24	CK TY 250/16 NYLON (STUD)*.....	284	142	30	213
25	CK TY 250/18 YAMAHA RIB.....	33	17	30	25
26	CK TY 275/17 EG CT100 RIB...4PR.....	333	167	30	250
27	CK TY 275/17 FR. RIB ATT525 EURO GRIP	19	10	30	15

28	CK TY 275/18 ATT 175* FLAIR	60	30	30	45
29	CK TY 275/18 ATT 450.....+	10	5	30	7
30	CK TY 275/18 FR. RIB (ORDY)SC36....	544	272	30	408

In the above table, safety stock for the various components calculated is shown. Actual demand is given for each component for a period of 1 month and the lead-time is calculated at a maximum of 30 days & normal of 15 days. So, from calculation of safety stock, we can able to determine how much the company can hold the inventory in reserve stock per annum.

## 6. FINDINGS

- The inventory turnover ratio is on increasing trend year after year in the period of the study. It indicates efficiency of management in turning of their inventory into sales.
- It is found that, there is a variation in the EOQ & no. of unit purchased. It is understood that the company is not following EOQ for purchasing the materials. So, the inventory management is not satisfactory.
- The classification of various components as A, B & C classes using ABC analysis techniques based on unit value. The classification A classes 75% of total components. B classes are 15% of total components and C classes are 10% of total components. It is good that the company maintains its inventories based on its value using controlling techniques. A class has 19% on total inventory, B class has 28% on total inventory, and C class has 53% on total inventory.
- The safety stock for the various components calculated. Actual demand is given for each component for a period of 1 month and the lead-time is calculated at a maximum of 30 days & normal of 15 days. So, from calculation of safety stock, we can able to determine how much the company can hold the inventory in reserve stock per annum.
- The inventory turnover ratio for the past 3 years. The ratio is showing increasing trend from 8.04 to 9.74 in the year 2013-14 to 2015-16. This shows that the inventories are easily converted into sales within the shortest period.

## **7. SUGGESTIONS AND RECOMMENDATIONS**

- According to EOQ, as the company does not follow EOQ for its purchasing, the company can be adjusted to order materials. This will reduce the cost & help to enhance the profit of the company.
- Under ABC analysis, the management must have more control on A than B&C, because A class constitutes more (75%) of higher values. There should be tight control exercised on stock levels, to avoid deterioration. This is done through maintaining low safety stock, continuous check on schedules & ordered frequently in inventories, in order to avoid over investment of working capital.
- The company should maintain the safety stock level for the high demand products.
- The inventory turnover ratio indicates whether investment in inventory is within proper limit or not. It also measures how quickly inventory is sold. It requires to maintain a high turnover ratio. So the company can maintain its present inventory turnover ratio.

## **8. CONCLUSION**

A better inventory management will surely be helpful in solving the problems the company is facing with respect to inventory and will reducing the huge investment or blocking of money in inventory. From the analysis we can conclude that the Company can follow the Economic Order Quantity (EOQ) for optimum purchase and it can maintain safety stock for its components in order to avoid stock-out conditions & help in continuous production flow. This would reduce the cost and enhance the profit. Also there should be tight control exercised on stock levels based on ABC analysis for efficient running of the inventory. Since the inventory Turnover ratio shows the increasing trend, there will be more demand for the products in the future periods. If they could properly implement and follow the norms and techniques of inventory management, they can enhance the profit with minimum cost.

## **REFERENCES**

1. Alinaghian, M., Amanipour, H., & Tirkolae, E. B. (2014). Enhancement of Inventory Management Approaches in Vehicle Routing-Cross Docking Problems. *Journal of Supply Chain Management Systems*, 3(3).

2. Archetti, C., & Sperana, M. G. (2016). The inventory routing problem: the value of integration. *International Transactions in Operational Research*, 23(3), 393-407.
3. Aviv, Y. (2013). A time-series framework for supply-chain inventory management. *Operations Research*, 51(2), 210-227.
4. Ballou, R. (2000). Evaluating inventory management performance using a turnover curve. *International Journal of Physical Distribution & Logistics Management*, 30(1), 72-85.
5. Cardamone, P. J. (1996). Critical spares inventory management. *Transactions of AACE International*, MAT21-MAT24.
6. Cenker, i. J. (1999). Financial management for consignment inventory. *Management Accounting*, 80(8), 14.

\*\*\*\*\*