

**INVENTORY MANAGEMENT
IN ARIGNAR ANNA SUGAR MILLS, KURUNGULAM**

V.Anu # Dr.R.Amudha*

MBA Student, School of Management, SASTRA University, Thanjavur.

*Senior Assistant Professor, School of Management, SASTRA University, Thanjavur.

E mail: amudha@mba.sastra.edu

anuvaiithi@gmail.com

ABSTRACT

Inventory is a list of goods and materials held and available in stock by a business. Inventory is also maintained to take care of fluctuation in demand and lead time. In some cases, it takes care of increasing price tendency of materials. The most important objective of inventory control is to maintain an optimum level of investment in the inventory which minimizes the cost and to classify the various components based on their value. Inventory control and management must be designed to meet the dictates of the market place and support the company's strategic plan. The main objective of the study is to evaluate the efficiency of inventory management in Arignar Anna Sugar Mill, Kurungulam using the costing techniques like ABC Analysis, Inventory turnover ratio and Economic Order Quantity. The study was conducted for a period of five financial years from 2008- 2009 to 2012-2013.

The secondary data were collected from the inventory maintenance records maintained by the company for the past five financial years. From the analysis, it is inferred that the company should strictly follow the Economic order quantity for optimum purchase. It can also maintain safety stock for its components in order to avoid stock-out condition and help in continuous production flow. The company should exercise tight control on stock levels based on ABC Analysis and maintain high percentage in inventory turnover ratio for efficient management of the inventory.

Key words: Inventory management, raw material, finished goods and work-in- progress

1. Introduction:

As on 2012, around 160 million tonnes of sugar are produced every year. The largest producers are Brazil (22%), India (15%) and the European Union (10%). The top five consumers of sugar use 51% of the world's sugar. They include India, the EU-27, China, Brazil and the US. Sugar is one of the most important commodities and is produced and consumed around the world. Sugarcane is primarily grown in nine states of India: Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Maharashtra, Punjab, Uttar Pradesh and

Tamil Nadu. More than 50 million farmers and their families are dependent on sugarcane for their livelihood. The sugar industry caters to an estimated 12% of rural population in these nine states through direct and indirect employment. The sugar industry in Tamil Nadu is an important agro-based next to textile industry. It plays a major role in the economic development of rural areas in Tamil Nadu. The sugar industry generates large-scale direct employment, apart from providing indirect employment to thousands of persons in rural areas who are involved in cultivation, harvesting, transport of cane and other services. There are 38 sugar mills in this state of which 16 are in co-operative sector, 3 are in public sector and 19 are in private sector. The Department of sugar was formed in the year 1969, in order to devote special attention to the development of sugarcane and to regulate and oversee the establishment of sugar mills in the Co-operative and Private sector.

The Director of sugar is the Head of the Department for regulating and coordinating the various functions relating to the sugar mills in the State. All the powers of the Registration of cooperative Societies under the Tamil Nadu Cooperative Societies Act are vested with the Director of Sugar. The Director of sugar has been designated as cane Commissioner and has to enforce the provisions of sugarcane control order, 1966 and Tamil Nadu Sugar Factories Control Act, 1949. As the main functions of this Department are limited to supervision and co-ordination of the working of the Cooperative and public Sector Sugar Mills in the State, this department has no direct contact with the public.

2. Review of literature:

Ahmet, Popeseu and Ioana (2003) have proved that pricing and inventory control decisions are closely related. Buzacott, John A and Racheal Q (2002) revealed the importance of joint consideration of production financing and financing decisions in a start-up setting in which ability to grow the firm is mainly constrained by its limited capital and dependent on bank financing. Ashok kumar N and Manohar V(2010) state that inventory holding assumes greater importance as inventories constitute a large proportion of the total assets of many concerns. Farsad and Stephen (2007) opined that the optimum inventory that should be on hand for each item of the amount that is needed to fulfil customer demand between the vendors scheduled deliveries. Fildes, Robert (1992) stated that there was no single forecasting method was suited to all data series. Fred W. Cooper (1997) founded that model selection has a significant impact on the minimization of forecasting error measures. Hayes, Timothy R (1994) has coined that inventory system was needed to achieve a balance between workers need for flexibility to adapt to uncertain and highly varying demand. Hilton (1976) found the variable the inventory control was mainly confirmed to materials management leading to the neglect of stores and spares. Johan Marklund (2011) has derived an exact recursive procedure for determining the expected inventory holding and backorder costs for the system. Koen Cobbaert (1996) has founded that simple inventory models were developed for fast moving spare parts subject to the risk of unexpected, immediate obsolescence. Yanzhi LI (2006) has focused initially on two problems namely, pricing and inventory control for perishable products. Sarbjeet Khurana (2008-2009) stated that substantial improvement in the hospital inventory and expenditures should be made by the inventory control techniques ABC-VED matrix analysis. Sastry's study (1996) has focused on a cross section analysis of total

inventories of companies across several heterogeneous industries it also shows negative influence of fixed inventory investment. Grzegorz Michalski (2009) stated that the basic financial purpose of an enterprise is maximization of its value and inventory management should also contribute to realization of this fundamental aim. The enterprise value maximization strategy is executed with a focus on risk and uncertainty. Shale E.A, Kapoor S and Sheth A (2011) have discussed the inventory management issues in a distribution network. The breadth of range of stock keeping units (SKU) held at a stocking location and the quantity of each SKU held is normally treated in isolation. Singh and Pradeep (2002) have founded that the size of inventory directly affects working capital and its management.

3. Statement of the problem:

The sugar industry has grown tremendously in the recent years as like other industries. Sugar industries are concentrating on their domestic market as well as on international market. The question of survival and sustainability of a sugar company in the market depend mainly on internal issues like their financial performance, because this industry is adversely affected by problems like raw material availability, price fluctuations, tax burden etc. Financial prudence is based on several factors, of which inventory plays a predominant role in determining the financial stability of an organization. Arignar Anna Sugar Mill, Kurungulam, a unit of Tamil Nadu Sugar Corporation Ltd Chennai has won the best sugarcane development award for the year 2012-13 from South Indian Sugarcane and Sugar Technologists' Association (SISSTA).

4. Objective of the study:

The most important objective of inventory control is to maintain an optimum level of investment in the inventory which minimizes the cost and to classify the various components based on their value. The main objective of the study is to evaluate the efficiency of inventory management in Arignar Anna Sugar Mill, Kurungulam.

5. Sources of data and tools used:

The secondary data were collected from the inventory maintenance records maintained by the company for the past five financial years. The study aimed to analyse the efficiency of inventory management of the company using the costing techniques like ABC Analysis, Inventory turnover ratio and Economic Order Quantity. The study was conducted for a period of five financial years from 2008- 2009 to 2012-2013.

6. Analysis and Discussion:

The secondary data were collected from the inventory maintenance records maintained by the company were analysed using the costing techniques like ABC Analysis, Inventory turnover ratio and Economic Order Quantity in the following tables.

6.1 Inventory turnover ratio:

Inventory turnover ratio indicates the velocity with which the inventory changes through the business. It establishes the relationship between the cost of goods and average inventory for a specified period. It shows whether the inventory is efficiently used or not. Inventory management of the company is vital role for the sustainability and survival. Proper inventory

control ensures adequate productivity and profitability with sufficient credit rating. Inventory should be managed effectively furthermore wherever possible in order to reduce the inventory holding period.

Table No: 1
Inventory turnover ratio

Year	Cost of goods sold (Rs)	Average stock (Rs)	Ratio
2008-2009	38,19,73,147	77,88,43,961	0.490
2009-2010	33,52,90,417	70,22,29,030	0.477
2010-2011	40,59,06,184	81,60,26,938	0.497
2011-2012	62,85,32,784	87,83,80,964	0.716
2012-2013	68,85,32,879	78,74,77,038	0.874

Source: Secondary Data

The above table shows that the inventory turnover ratio is increasing throughout the period. It is inferred that the ratio in the year of 2008-2009 is 0.490 and it is slightly varied in the year of 2009-2011. The ratio is increased suddenly from 0.477 to 0.716 in the year of 2011-2012 and it has increased gradually from 0.716 to 0.874 in the last year. The company's turnover ratio has increased throughout the period depicting the efficiency of the company in managing the inventory.

6.2 ABC Analysis:

ABC analysis is a selective credit control used in controlling the inventory. It is a mechanism for identifying the significance of inventory cost on the overall working capital of a concern. It states that different kinds of stock need different type of management control. The inventories are grouped as A, B and C items with tight, moderate and minimum control respectively. 10-20% of the inventory accounts for 70-80% consumption value and they are categorised as A items, nearly 30% of inventory accounts for 15 to 25% of consumption value and they are called as B items. C items constitute nearly 50% with the lowest consumption value of 5%.

Table: 2
ABC Analysis

S.NO	DESCRIPTION	UNITS	% TO TOTAL	TOTAL	% OF TOTAL COST	CATEGORY	ABC
1	RUBSEATING450X750X12	49303.96	6.854125	443435.6	25.64056	79.83614	A
2	RUB SEA 680X530X12MM	57569.63	8.0032	402987.4	23.30175		
3	STN STEEL SHEET 1.5	37355.65	5.193098	149422.6	8.639991		
4	STAIN STEEL PLATES 6	27203	3.7817	108812	6.291784		
5	MS PIPE 6"	222223.3	30.89299	88893.36	5.140038		
6	CI PIPE 150X1830 MM	34581.33	4.807418	69162.66	3.999159		
7	CI PIPE 150X2743 MM	33156.34	4.609319	66312.68	3.834366		

8	CI PIPE 150X2000 MM	25841.95	3.592489	51683.9	2.988493	14.988776	B
9	CI PIPE 150X2500 MM	17001.88	2.363563	51005.64	2.949275		
10	CI PIPE 150X1340 MM	18231.95	2.534564	36463.9	2.108435		
11	CI PIPE 150X1460 MM	34755	4.831561	34755	2.009622		
12	CI PIPE 100X130X183	15445.33	2.147175	30890.66	1.786176		
13	CUR.TOOTHFLEXGEARCOU	14852.91	2.064818	29705.82	1.717665		
14	CI COUPLING 16"OD	28355	3.941848	28355	1.639558		
15	CI CROSS 6" 460X460	12155.55	1.689837	24311	1.405723		
16	NEOSYNR.JTJH 2110X10	11866.67	1.649678	23733.34	1.372322		
17	INT.FLANEXCEN.REDUCE	10066	1.399353	20132	1.164083		
18	CI SLUICE VALVE 4"	12447.68	1.730448	12447.68	0.719756		
19	CI SLUICE VALVE 5"	9296.8	1.29242	9296.8	0.537564		
20	CI SLUICE VALVE 6"	8582.14	1.19307	8582.14	0.496241		
21	CI SLUICE VALVE 8"	7990.46	1.110816	7990.46	0.462029		
22	JH.RUB.JOIN 1800X12M	7779	1.081419	7779	0.449801		
23	6" TAPER VALVE AUDCO	6285.83	0.873842	6285.83	0.363463		
24	CI PULP VALVE 6"	6115.59	0.850175	6115.59	0.353619		
25	CI PULP VALVE 10"	5798.68	0.806119	5798.68	0.335294		
26	CIRT ANG VALVE 5"	5071	0.704959	5071	0.293218		
	TOTAL	719332.7	100	1729430	99.99998		

Source: Secondary data

From the above table, it is evident that the items of high value constitute 79.83614 of total cost constituting A items and should be maintained with strict control. The value of B-items was 14.988776 and it should be kept under normal control because these items are of moderate value. These items are checked once in three months. The value of C-items was 5.175068 and it can be kept with less control. As these items are of low-cost, they are should be made available at any time. These items are checked once in six months. It can be maintained by lower level management. This method of ABC analysis is to be followed strictly in order to minimise the locking funds in the inventory.

6.3 Non-moving stock:

Non- moving stock items are immovable items for more than a year. As it is used for only certain purpose, it is advisable to purchase only if the existing stock is exhausted.

Table No: 3
Non- moving stock

Year	Non- moving stock (Rs in lakhs)
2008-2009	363.88
2009-2010	451.69
2010-2011	466.30
2011-2012	432.95
2012-2013	432.35

Source: Secondary data

From the above table it is inferred that the value of non-moving stocks showing an increasing trend till 2010-2011. Then the value of non-moving stock has been constant during the last two years revealing the degree of control exercised by the company.

6.4 Economic Order Quantity:

EOQ is an inventory-related equation that determines the optimum order quantity that a company should hold in its inventory given a set cost of production, demand rate and other variables. This is done to minimize variable inventory costs.

Table No: 4
Economic order quantity

Year	Annual consumption (units)	EOQ (units)	Frequency of orders (times)
2008-2009	562980	33116.47	17
2009-2010	480806	28282.70	17
2010-2011	605926	35642.70	17
2011-2012	861339	47852.16	18
2012-2013	576270	33898.23	17

Source: Secondary data

From the above table, it is evident that the frequency of orders to be placed has been constant normally from the year 2008-2011 - 2012-2013.

7. Recommendations and Conclusion:

Inventories are resources of any kind having an economic value. It consists of raw materials work in progress, finished goods, consumable and stores. These things are to be managed in an efficient manner as it involves a major portion of working capital. The basic problems of inventory management is to strike a balance between the operating efficiency and the cost of investment and other associated costs with the objective of keeping the basic conflicts of the minimum while optimizing the inventory holding. Inventory should be managed effectively furthermore wherever possible in order to reduce the inventory holding period. In order to avoid locking of funds in raw material stock, an appropriate production plan and purchase plan are to be adopted. Non-moving stock is to be eliminated fully. The method like ABC, EOQ are to be followed strictly in order to minimize the stock. The decision has to which item to make and when to keep inventories in balance requires application of wide range techniques. The company can also apply the various measures of managing inventory like the maintenance of stock level, FSN Analysis, VED Analysis in addition to the analysis currently employed. As inventory management of the company is vital role for the sustainability and survival, proper inventory control should be emphasized to ensure adequate productivity and profitability with sufficient credit rating.

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