

INVENTORY MANAGEMENT BY IMPLEMENTATION OF ABC ANALYSIS UPON MEDIUM SCALE INDUSTRY



Engineering

KEYWORDS : ABC, Inventory, Ratio Analysis, Cumulative Percentage.

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ABSTRACT

Conversion of raw materials into finished goods is the main function of every production firm. Required raw materials if purchased and stocked in advance, ensures smooth production process. But, how much should be purchased? How to stock it? How to release the stock? What costs are involved? How to control the costs of acquiring and storing materials? All these issues call for Materials Management. Materials management involves Materials acquiring-purchasing, receiving and storing, inventory control, disposal of surplus and control on scrap. Effective materials management is key to a firm's profitability. The purpose of this paper is to investigate the reasons behind the inventory management inefficiency in Industry by implementation of ABC, and then the proposed managerial suggestions will be presented to deal with the issues.

1 INTRODUCTION:

The study is considered as qualitative study. Data collection is mainly through the interviews with the top manager and other staff involved in inventory control operations. Secondary data is retrieved from the information system to provide the annual purchasing and sales report about twenty items using a purposive sampling approach. Data analysis follows the theoretical framework.

2 Objectives of the study:

1. To study the inventory management based on the ratios.
2. To find out the impact of inventory on working capital.
3. To study the inventory management and its effective control through various techniques.
4. To suggest the measures for improving the inventory level.

3 Research methodology:

Primary Data: Interaction with personnel of the company & Direct Observation.

Secondary Data: Turnover Statements, Monthly Inventory Statements & Company Records.

Tools Used: MS-Excel has been used for calculations.

4 TOOLS OF INVENTORY CONTROL: ABC ANALYSIS:

ABC Analysis is a basic analytical materials management tool.

Fundamentally ABC Analysis may be applied to any branch of management with ease and success. It calls upon the top management to place its efforts where the results will be the greatest. It is the selective approach popularly known as Always (A) Better (B) Control (C). The ABC Analysis goes by its name.

4.1 Selective Method

From the above it may be concluded that the method may safely be called as Selective Method of Inventory Control.

The method takes the following points into consideration:

- (i) Different inventory levels;
- (ii) Order quantities;
- (iii) Monetary value of materials; and
- (iv) Extent and closeness of the control desired.

According to this method of inventory control, inventory items are classified into three classes/under two heads: Number of items and value of Items. The percentage study is supposed to be the best for arriving at correct and graphical results.

4.2 ABC Analysis Pattern

The control on inventories under selective approach may follow the following pattern:

No	Summary of control	items A	items B	items C
1.	Control (Process)	Tight	Moderate	Loose
2.	Requirement	Exact	Exact	Estimate
3.	Postings/Recording	Individual/Complete	Individual/Complete	Group/None
4.	Check of Revisions	Close	Some	Little
5.	Quantity Control	Exact	Exact	Approximate
6.	Expediting	Regular	Some	No

5 ABC Analysis:

At present, there have been a lot of different Heavy Machinery Equipment products in BN Industry. If the manager and staffs allocate same time and effort on inventory control for each item, it would take them extra time and effort that would have been used otherwise, hence increasing labor costs. Based on the content in the theoretical framework, if we classify all the inventory items into several different level groups, then the different inventory groups can be treated differently.

we have the annual sales report of Industry for only twenty (20) items. Following the procedures of ABC analysis, Table 1 presents each item's annual quantity usage and annual Rupees usage.

Item	Item name	Item No.	Number of Sold Per Year	Unit Cost (Rs.)	Value (Rs.)
1	Work roll	512831	68	3575	243100
2	Drive Shaft	8001-b	1716	332.75	570999
3	Retainer Block	700506	198	170.5	33759
4	P.B. Bush	512003	550	138.6	76230

Item	Item name	Item No.	Number of Sold Per Year	Unit Cost (Rs.)	Value (Rs.)
5	M.S bush	512152	1026	46.2	47401.2
6	Coiler Wheel	512363	595	742.5	441787.5
7	Coil Car Frame	312020	26	37207.5	967395
8	Back up roll	312005	56	4900.5	274428
9	Rack -24 Teeth	512858	290	465.85	135096.5
10	Shearing M/C Base Structure	312017	13	27104	352352
11	Coiler wheel	512068	1190	123.75	147262.5
12	Sleeve	512114	169	1177	198913
13	P.U. wheel	ASA059B	668	239.25	159819
14	Shearing M/C Top Structure	312050	4	25531	102124
15	Ejector Arm	313001	13	23100	300300

Item	Item name	Item No.	Number of Sold Per Year	Unit Cost (Rs.)	Value (Rs.)
16	Shear cutting blade	700004	979	1369.5	1340741
17	Un-Coiler wheel	700008A	198	1166	230868
18	Fabricated Lift - Table	312051	9	39952	359568
19	Crom platening shaft	312229	22	6534	143748
20	Roller wheel	312224	12	4598	55176
Total:			7802		6181067

Table 1: Determination of Rupees value

According to Table1, we can get the list of these items in rank order by percentage of Rupees usage and classify them into A, B or C. As what has been mentioned in theoretical framework, the classification is using a model of 10-40-50 percentages of the items. This percentage is the approximate number and will vary from company to company. In accordance with the real situation of

the sampled twenty items in Industry, we established 20-40-40 as the appropriate percentage of the items for the classification as shown in Table2.

Item	Item No.	Number Sold/ year	Unit Cost (Rs.)	Value (Rs.)	% of Rs Value	Cumulative Percentage		Classification Category
						Value (Rs)	Items	
16	700004	979	1369.5	1340741	21.69%	21.69	5.00	A
7	312020	26	37207.5	967395	15.65%	37.34	10.00	A
2	8001-b	1716	332.75	570999	9.24%	46.58	15.00	A
6	512363	595	742.5	441787.5	7.15%	53.73	20.00	A
18	312051	9	39952	359568	5.82%	59.55	25.00	B
10	312017	13	27104	352352	5.70%	65.25	30.00	B
15	313001	13	23100	300300	4.86%	70.11	35.00	B
8	312005	56	4900.5	274428	4.44%	74.55	40.00	B
1	512831	68	3575	243100	3.93%	78.48	45.00	B
17	700008A	198	1166	230868	3.74%	82.22	50.00	B
12	512114	169	1177	198913	3.22%	85.44	55.00	B
13	ASA059B	668	239.25	159819	2.59%	88.03	60.00	B
11	512068	1190	123.75	147262.5	2.38%	90.41	65.00	C
19	312229	22	6534	143748	2.33%	92.74	70.00	C
9	512858	290	465.85	135096.5	2.19%	94.93	75.00	C
14	312050	4	25531	102124	1.65%	96.58	80.00	C
4	512003	550	138.6	76230	1.23%	97.81	85.00	C
20	312224	12	4598	55176	0.89%	98.70	90.00	C
5	512152	1026	46.2	47401.2	0.75%	99.45	95.00	C
3	700506	198	170.5	33759	0.55%	100.00	100.0	C

Table 2: Ranking of items, using a 20-40-40% ABC classification

ABC analysis is a kind of technique, which provides the means for identifying those items that make the largest impact on a company's overall inventory cost performance. Following the ranking from the analysis, we can place different controls on items A, B and C to improve the total inventory performance.

From Table2, we can conclude that the first four items (Item No. 700004, 312020, 8001-b and 512363) are the high priority A items. They should be controlled more closely on inventory records, and they need more frequent reviews in terms of fore-

casting, demand inquiry and order quantity determination. The next eight items (Item No. 312051, 312017, 313001, 312005, 512831, 700008A, 512114 and ASA059B) are the medium priority B items. They should have less control compared to A items and be reviewed less frequently. The last eight items (Item No. 512068, 312229, 512858, 312050, 512003, 312224, 512152 and 7000506) belong to the lowest priority C items. They should have the least control and be reviewed over a long time, at the same time C items can be ordered in large quantities and have more safety stocks.

Item no.	Monthly Demand in Volume & Ratio												Annual Sales	Classification Category
	January	February	March	April	May	June	July	August	September	October	November	December		
700004	95	42	101	18	68	14	18	137	240	241	0	5	979	A
%	9.70	4.30	10.30	1.80	6.90	1.40	1.80	14.00	24.50	24.60	0.00	0.50		
312020	0	1	4	8	-3	0	0	0	0	2	14	0	26	A
%	0.00	3.80	15.40	30.80	-11.50%	0.00	0.00	0.00	0.00	7.70	53.80	0.00		
8001-b	134	261	240	140	72	4	33	220	208	208	196	0	1716	A
%	7.80	15.20	14.00	8.20	4.20	0.20	1.90	12.80	12.10	12.10	11.40	0.00		
512363	100	12	58	26	44	20	38	14	201	18	30	34	595	A
%	16.80	2.00	9.70	4.40	7.40	3.40	6.40	2.40	33.80	3.00	5.00	5.70		
312051	0	0	1	1	0	0	0	2	1	1	3	0	9	B
%	0.00	0.00	11.10	11.10	0.00	0.00	0.00	22.20	11.10	11.10	33.30	0.00		
312017	3	0	1	2	1	-1	0	1	0	0	6	0	13	B
%	23.10	0.00	7.70	15.40	7.70	-7.70	0.00	7.70	0.00	0.00	46.20	0.00		
313001	0	2	0	0	0	0	0	7	2	0	2	0	13	B
%	0.00	15.40	0.00	0.00	0.0	0.00	0.00	53.80	15.40	0.00	15.40	0.00		
312005	15	7	12	6	4	5	0	0	0	0	7	0	56	B
%	26.80	12.50	21.40	10.70	7.10	8.90	0.00	0.00	0.00	0.00	12.50	0.00		
512831	0	0	23	12	1	2	1	4	6	11	8	0	68	B
%	0.00	0.00	33.80	17.60	1.50	2.90	1.50	5.90	8.80	16.20	11.80	0.00		
700008A	20	0	32	41	15	1	8	63	9	3	6	0	198	B
%	10.10	0.00	16.20	20.70	7.60	0.50	4.00	31.80	4.50	1.50	3.00	0.00		
512114	9	2	1	18	41	-9	28	21	20	17	21	0	169	B
%	5.30	1.20	0.60	10.70	24.30	-5.30	16.60	12.40	11.80	10.10	12.40	0.00		
512068	298	67	208	86	60	20	87	134	124	20	86	0	1190	B
%	25.00	5.60	17.50	7.20	5.00	1.70	7.30	11.30	10.40	1.70	7.20	0.00		
ASA059B	81	49	74	77	24	62	27	102	66	36	60	10	668	C
%	12.10	7.30	11.10	11.50	3.60	9.30	4.00	15.30	9.90	5.40	9.00	1.50		
312229	0	4	2	11	0	0	0	0	0	3	2	0	22	C
%	0.00	18.20	9.10	50.00	0.00	0.00	0.00	0.00	0.00	13.60	9.10	0.00		
512858	0	60	20	0	50	0	6	0	4	60	90	0	290	C
%	0.00	20.70	6.90	0.00	17.20	0.00	2.10	0.00	1.40	20.70	31.00	0.00		
312050	0	0	0	0	0	0	0	0	0	0	4	0	4	C
%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00		
512003	63	46	26	180	15	0	32	100	30	58	0	0	550	C
%	11.50	8.40	4.70	32.70	2.70	0.00	5.80	18.20	5.50	10.50	0.00	0.00		

Item no.	Monthly Demand in Volume & Ratio												Annual Sales	Classification Category
	January	February	March	April	May	June	July	August	September	October	November	December		
512152	250	154	80	2	36	0	30	52	14	0	268	140	1026	C
%	24.40	15.00	7.80	0.20	3.50	0.00	2.90	5.10	1.40	0.00	26.10	13.60		
700506	0	0	55	22	21	6	9	18	32	8	27	0	198	C
%	0.00	0.00	27.80	11.10	10.60	3.00	4.50	9.10	16.20	4.00	13.60	0.00		
312224	0	2	0	6	0	2	0	0	0	0	2	0	12	C
%	0.00	16.70	0.00	50.00	0.00	16.70	0.00	0.00	0.00	0.00	16.70	0.00		

Table3: Monthly Demand in Volume & Ratio

6 Conclusion:

After the study, we can come to a conclusion that, effectiveness of inventory management should improve in all the aspects; hence the industry can still strengthen its position by looking into the following:

- 1.) The inventory should be fast moving so that warehouse cost can be reduced.
- 2.) The finished goods have to be dispatched in feasible time as soon as manufacturing is completed.
- 3.) Optimum order quantity should be maintained, hence cost can be minimized.
- 4.) Proper inventory control techniques are employed by the inventory control organization within the framework of the basic models like ABC.
- 5.) In order to allocate time and money on inventory in rationalization, ABC analysis model has been used to classify various items that are for sale.
- 6.) Periodic review policy is selected to help management to determine when they should place new orders for inventory replenishment.
- 7.) More attention needs to be paid to A items and less review on C items.
- 8.) A items have the first priority to be reviewed as they account for 20% of total amount of items, but with more than 50% of total Rupees value.

Criticism to the Study:

This research is built on comparison between existing activities and estimated activities. Due to the assumptions connected with estimations, the results could be questionable in terms of its credibility.

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