

Effective Inventory Management system through selective inventory control

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Abstract: *Materials management has always remained a perplexing problem to all organizations, especially to a manufacturing unit. Now a day's organizations are facing problems of survival because of acute competition. Only those organizations can meet the competition effectively and can have a hold on the market, which is in a position to keep their cost minimum. Material is the first and most important element of cost. In this context, it is worthwhile to make a comparative study of the theoretical aspect of purchase and inventory control system with practices in a manufacturing undertaking. With this end in view, it was thought desirable to undertake a case study of a Balloon manufacturing company which has been successful throughout its existence. The effectiveness of inventory management of the company is checked and analyzed using ABC, XYZ, HML and FSN analysis. Selective inventory control methods of one dimensional and two dimensional methods are also performed..*

1. Introduction

In the field of working capital, efficient management of inventory poses a challenging problem to the public sector organization particularly in India in the absence of any guiding principles from the government in this regard. The lack of conscious efforts by public units to control the growth of their inventory volume, and the diversity in the field of public industrial activities has added to the complexity of the problem. The relationship between inventory and working capital is very crucial, since inventory constitutes major part of working capital. In Kerala majority of the public and private sector has established their own material management system. Mostly on the lines of well established practices, with a view to control cost of production. Now a day's organizations are facing problems of survival because of acute competition. Only those organizations can meet the competitions effectively and can have a hold on the market, which are in a position to keep their cost minimum. Material is the first and most important element of

cost. In this context, it is worthwhile to make a comparative study of the theoretical aspect of purchase and inventory control system with practices in a manufacturing undertaking. With this end in view, it was thought desirable to undertake a case study of a Balloon manufacturing company which has been successful throughout its existence.

2. Methodology

For getting proper control of materials, selective inventory control techniques are applied: -
ABC analysis of the items is conducted with recent data (from 30th March 2015 to 30th March 2016). XYZ analysis is performed based on the value of inventory undertaken during the closing of annual accounts. HML analysis is done where items are classified according to the unit value as high, medium and low price items. FSN analysis is conducted to identify the obsolescence of items

3. Analysis

3.1 ABC analysis

Analysis has been done for seventy items. The consumption of moved items and weighted average cost per item for two year from 30-03-15 to 30-03-16 have been taken. The analysis is carried out as follows.

- 1) The usage value for each item is computed by Multiplying the weighted average cost / unit by the number of items issued in the mentioned period.
- 2) All the items are arranged in the descending order of their usage.
- 3) The number of items and value of items are tabulated.
- 4) The cumulative percentage of usage value and cumulative percentage of item count are calculated.
- 5) A graph is plotted where cumulative percentage of usage value is taken on Y axis and cumulative percentage of item count along X axis

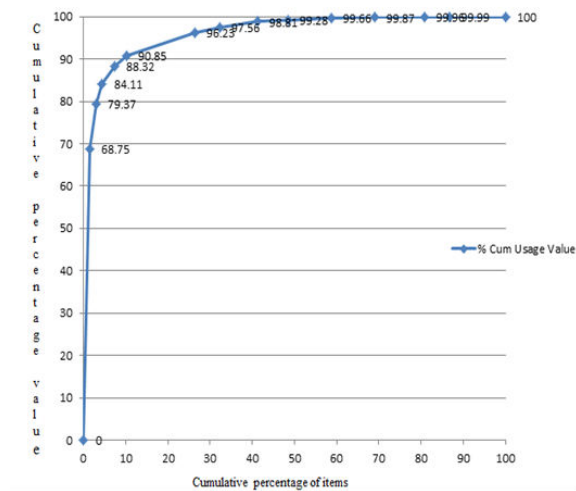


Figure. 1. ABC Analysis

Table 1.Result of ABC analysis (2015-16)

SL. NO	CATEGORY	NUMBER OF ITEMS	PERCENTAGE OF ITEMS	USAGE VALUE (RS)	PERCENTAGE USAGE VALUE
1	A (Above Rs10000)	7	10.29	119814363	90.8
2	B (Rs40000-Rs100000)	15	22.06	8842684	6.7
3	C (Below Rs400000)	46	67.65	3211402	2.5
Total		68	100	131868449	100

From the Fig 1 it has been inferred that 10.29% of items which constitute 90.8% of total cost and 22.06% of items which constitute 6.7% of usage value are classified as A and B class respectively . Remaining 67.65% of items which contribute only 2.5% of total cost are classified as C class items.

3.2 FSN analysis

This type of analysis is more concerned from the point of view of movement of the item or issue of the item under this type of analyses

- 1) F items are those items, which are fast moving i.e. in a given period of time, say a month or a year they have been issued up till number of items. Although fast moving does not necessarily mean that these items are consumed in large quantities.
- 2) S items are those items which are slow moving in the sense that in the given period of time they have been issued in a very limited number of time.

3) N non-moving items are those, which are not at all issued for a considerable period of time. Thus, stores department who is concerned with the moving of items would like to know and classify that the items are storing in the categories F-S-N. So that they can manage operate and plan stores activity accordingly.

4) If the demand is greater than or equal to 5 lakh kg or 1 lakh number in the above period, then it is in F category (Fast moving).

5) If the demand is between 1000 kg to 5 lakh kg or between 10000 numbers to 1 lakh number in the above mentioned period, then the item is in S category (Slow moving).

6) If the item is not at all issued during the period, i.e. demand is equal to or less than 1000kg or 10000 numbers, the item is in N category (Non moving).

Table 2.Result of FSN analysis (2015-16)

SL. NO.	CATEGORY	NO. OF ITEMS	% OF ITEMS	VALUE	% OF VALUE
1	F	12	17.65	107169569.4	81.27
2	S	36	52.94	24276725.57	18.41
3	N	20	29.41	422207.71	0.32
Total		68	100	131868462.7	100

3.3 HML Analysis

This analysis, analysis the material according to their prices and then classifies them as H-items or M-items or L-items

- H stands for high price,
- L stands for low price and
- M stands for medium price.

Since price is more concerned of purchase department mostly purchase department people analyses the material according to HML analysis. HML Analysis results are shown in the Table 3.

- H Items – Items with unit price above Rs.1000,
- M Items - Items with unit price between Rs.1000 and Rs.100,
- L Items - Items with unit price below Rs.100

Table 3.Result of HML analysis (2015-16)

SL. NO	CATEGORY	NO. OF ITEMS	% OF ITEMS	RANGE
1	H ITEMS	5	7.35	ABOVE RS. 1000/KG
2	M ITEMS	17	25	BETWEEN RS.100 AND 1000/KG
3	L ITEMS	46	67.65	BELOW RS. 100/KG

Table 4. H Items (2015-16)

ITEMS	PRICE
BYK 420	1757
Ceramic Grinding Beads	1479
Purple Colour	1185
Sulphynol TG	1034
BYK 192	1019

BYK-420, ceramic grinding beads, Purple, Surphynol TG and BYK -192 are the High Price items. It is better to give due care to High value items coming under “H” while stock verification etc.

3.4 XYZ Analysis

This type of analysis is carried out from the point of view of value of balance stocks lying in the stores from time to time and classifies all the items as given below.

‘X’ items are those items whose value of balance stocks lying in the stock are very high.

Similarly,

‘Y’ items are those items whose value of balance stock is moderate.

‘Z’ items are those items whose value of balance stock lying in the stocks is very low.

After knowing this type of classifications and their items can be taken to control .The graph is plot between Cumulative percentage of stock value and Cumulative percentage of items for the years 2015-16 as shown in figure 2.

The results of ABC and XYZ Analysis will be different, depending upon the nature of obsolete items. From security point of view, high value X

items must be stored and kept under lock and key or they should be kept under supervision. From inventory control point of view, for ‘X’ items, Stock should be maintained to take care of lead-time consumption and also to provide safety stocks.

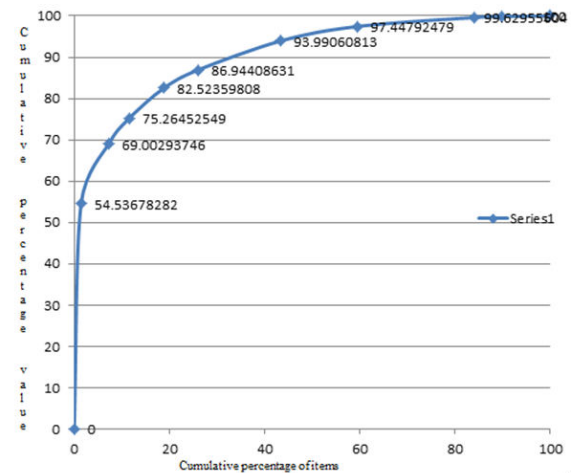


Figure.2. XYZ Analysis

Table 3.Result of XYZ analysis (2015-16)

CATEGORY	NUMBER OF ITEMS	PERCENTAGE OF ITEMS	STOCK VALUE	PERCENTAGE OF STOCK VALUE
X	8	11.59	9129218.8	75.26452
Y	20	28.98	2166388.23	17.86047478
Z	41	59.43	833903.84	6.874999

From the figure 2 it has been inferred that 11.59% of items which constitute 75.264% of stock value and 28.98% of items which constitute 17.86% of stock value are classified as X and Y class items respectively. Remaining 59.43% of items which contribute only 6.87% of total stock value are classified as Z class items.

From security point of view high value items must be stored and kept under lock and key or if not possible they should be kept in such a way that they are always under supervision. Similarly arrangement can be made for Y and Z items accordingly.

From inventory control point of view we must know why there is high inventory for ‘X’ items. We should review inventory control procedure for each and every high item because stock should be maintained to take care of lead-time consumption

and also to provide safety stocks. For high value items lying in stores we should review the reasons for long lead-time as well as demand variations and see whether lead time consumption and safety stocks can be reduced. Thus proper inventory control procedures can be developed on the basis of XYZ analysis. Thus proper selective control methods should be selected to control the materials and prevent from facing loss, taking advantage and knowing what exactly is to be done.

3.5 ABC and XYZ - combined analysis

If an item comes under both A and X categories, then critical analysis and close monitoring of that AX category item should be done. The stock levels of such items must be reduced. Similarly suitable treatments should be given for AY, AZ, BX, BY, BZ, CX, CY, CZ combinations. The number of items that comes under each category is shown in the table 4.

Table 4. ABC – XYZ ANALYSIS (2015-16)

CATEGORY	X	Y	Z	TOTAL
	AX	AY	AZ	
A	3	3	1	7
	BX	BY	BZ	
B	1	10	4	15
	CX	CY	CZ	
C	1	12	32	45
TOTAL	5	25	37	

3.6 FSN -XYZ analysis

If an item is fast moving and it has got high inventory value, for such XF category item, tight control and constant review are required to be done. Similarly suitable treatments should be given for FY, FZ, SX, SY, SZ, NX, NY, NZ combinations. The number of items that comes under each category is shown in the table 5.

Table 5. FSN – XYZ ANALYSIS (2015-16)

CATEGORY	X	Y	Z	TOTAL
	FX	FY	FZ	
F	3	4	4	11
	SX	SY	SZ	
S	2	14	18	34
	NX	NY	NZ	
N	0	5	14	19
TOTAL	5	23	36	

4. Conclusion

The Analysis pinpoints the obsolete stocks and highlights the most important, highly valuable and fast moving items which can help the Top Management to place the effort where the result will be the greatest. Since there are no such Systematic Inventory Classifications available/ established in the Company so far, this Analysis of Inventories can be worthwhile and relevant, if findings and suggestions are considered for implementation.

The Inventories of the Company should be classified and updated periodically, for better Inventory Management and to gain competitive advantage over its Competitors. . New measures should be taken for scientific and calculative approaches for increasing the efficiency of inventory and purchase control and distribution of products for increasing the sales.

5. References

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