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Application of 3d Music Inventory Control Technique forCath Lab Store

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Abstract:-*This paper presents the implementation of an improved inventory management and control system in a Cath lab store. Inventory management system involves the procurement, stocking, and issue of materials to the maintenance department as and when required. Inventory management is the main area in which many process industries are suffering. The aim of this work is to design inventory models for such a system in a process industry. The existing system of inventory control of items reveals that past data cannot be taken as the major decision criteria. The important decision making criterion related to items is criticality, lead time and consumption value which need to be accounted for effective control of inventory management in the organization. Data are collected from various sources like log books, ledgers, annual financial statements and published articles of the company. ABC Analysis, selective ABC and VED analysis, lead time and service level are incorporated in order to obtain 3D models and suggestions were given to improve the inventory management of items. The key performance indicators were also established to give benchmark operations.*

Keywords: *Selective inventory control, ABC, VED, MUSIC-3D.*

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I. Introduction

Materials management is basic part of any organization that produces a product or service of economic value. Supply Chain Management encompasses all elements of sourcing, indenting, procuring, production scheduling, order processing, inventory management, transportation, warehousing and customer service as well as the information and monitoring system. Selective inventory control facilitates where the manager should concentrate his efforts. The fundamental idea behind selective control techniques is to put the efforts where results are and not where work is. All selective controls are based on the principle of management by objectives.

II. Aim of The Study

Application of Multi Unit Selective Inventory Control (MUSIC 3D) technique for the items used in CathLab ofNizam's Institute of Medical Sciences.

III. Objectives

1.To identify the categories of items in Cath lab stores which need stringent inventory control.
2.Application of collective inventory control techniques to manage Cath lab stores.

IV. Methodolgy

The data annual consumption and expenditure incurred on each item in Cath lab store for one year 2012 to 2013 were collected; the data were then transcribed in an MS Excel spreadsheet. The statistical analysis was carried out using MS Excel statistical function. Annual expenditure for each controlled drug used in cath store were calculated for sep 2012 to sep 2013

V. ABC Analysis

ABC analysis of all the items in the Cath stores is calculated. For this the annual expenditure of individual items was arranged in descending order. The cumulative cost of all the items was calculated. The cumulativepercentage of number of items was calculated. The list was then subdivided in to three categories A,B and C based on the cumulative cost percentage of 70,20 and 10% respectively.

5.1VED Analysis

The VED criticality analysis of all the listed items was performed by classifying the items in to Vital, Essential and Desirable (VED).Panel of specialists (Cardiology) were used to decide upon criticality of items. 40,72 and 66 items are categorized in to vital Essential and desirable respectively.

5.2 ABC-VED Matrix

The ABC-VED matrix was made combining the ABC and VED analysis. From the resultant combination, threecategories were classified (A,Band C) category A constituted by items belonging to AV,AE,AD,BV and CV Subcategories. The BE, CE and BD subcategories constituted category B CD subcategory constituted category C.

	V	E	D	TOTAL
A	6 (29814345)	7 (15892285)	5 (10607209)	18 (56313839)
B	13 (8740509)	11 (11620099)	12 (4805245)	36 (25165853)
C	39 (2469891)	26 (4372924)	59 (1176791)	124 (8019606)
TOTAL	58 (41024745)	44 (31885308)	76 (16589245)	178 (89499298)

5.3 Music -3D:

Multi-Unit Selective Inventory Control is a three dimensional view encompassing consumption value lead time and criticality of the materials. It is extremely useful during the materials planningespecially at the start of the purchasing period and can quite easily replace other inventory control techniques.

MUSIC-3D	HCV		LCV	
Critical	LLT	SLT	LLT	SLT
	1	2	3	4
Non-Critical	5	6	7	8

Table 2: MUSIC-3D ValueHCVHigh consumption value, LCV-Low consumption value, LLT-Long lead Time, SLT-short lead time

S.NO	Category	Management
1	1 and 2	a. Service level- 100% to be maintained b. Cannot go for bulk purchase c. Inventory control-top management d. Reorder level is to be maintained
2	3 and 4	a. Stockless purchasing b. Safety stock can be maintained using long lead time. c. Can go for bulk discount during purchasing
3	5	a. Strict inventory control b. Frequent order c. Consult reorder plan
4	6	a. Purchase order
5	7	a. Bulk purchase
6	8	a. Purchase at regular interval b. Bulk purchase c. Avoid expiry

VI. Discussion

ABC analysis of items in Cath store revealed that out of 178 items worth Rs.89499298 considered for the study, 10.1%(18)Rs.56313839, 20.2%(36)Rs.25165853,69.6%(124)Rs.8019606 items were found to be A,B and C category items.VED analysis revealed that Vital items accounted for(32.8%)Rs.41024745,Essential items(24.7%) Rs.31885308and Desirable items(42.6%)Rs.16589245 The total value of each items in each category A,B and C are 75.2%(Rs.67303472),23.5%(Rs.21032335), 1.3%(Rs.1163490).If ABC analysis was alone considered only 6 items (3.3%) of the items would have taken care, this would have completely neglected the vital items from B and C which comprises of 42 items(29.2%). Similarly if only criticality factor(VED)was taken as a basis, ideal control can be exercised only on the identified vital and essential items accounting for (57.2%) 102 items. However,this would have easily missed category A items in the desired group.It is quite evident from the results of the present study that the combination of ABC and VED analysis in terms of the ABC matrix enhances the ability to narrow down our attention on 76 items belonging to category A for strict managerial control. In addition, application of multiunit selective inventory control analysis (MUSIC-3D) method of inventory control can also be applied in the same matrix which enables a better and more stringent management of the inventory to prevent stock out. The control criteria of three dimensions are finance, operations and material. Hence, this approach ensures a simple method of fixing ideal stock level of each item taking in to account of criticality, availability and consumption value.

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