

# Inventory Management of a Store Using ABC-XYZ -FSN Analysis

Dr. Babu Krishnaraj R\*1, Meenakshi P. K<sup>2</sup>

<sup>1</sup>Associate Professor, PG and Research, Department of Mathematics, Hindusthan College of Arts and Science, Tamil Nadu, India

<sup>2</sup>M.Phil. Scholar, PG and Research Department of Mathematics, Hindusthan College of Arts and Science, Tamil Nadu, India

## ABSTRACT

Inventory is a necessary evil that every organization would have to maintain for various purposes. Optimum inventory management is the goal of every inventory planner. For maintaining the supply of material, spares and stock material etc in the organization, inventory control play an important role. Many healthcare organizations have group-buying contracts with distributors and manufacturers allowing them to purchase goods at reduced prices. To make these contracts, hospitals rely on effective inventory control systems. In pharmacy, Drug store management is based on the principle of inventory control. Here we have tried to study the inventory control system of a pharmacy store using ABC – XYZ- FSN analysis method.

**Keywords :** Stock, Stock Planning, ABC/XYZ Analysis

## I. INTRODUCTION

Inventory control is important in any commercial environment, but even more so when it comes to maintaining inventory in a pharmaceutical setting because public health is involved. Every pharmacist can appreciate the importance of having enough medical stock in both retail and hospital pharmacies at all times in order to be able to successfully fill the prescriptions that customers may need immediately. Successfully dispensing prescriptions may seem like a simple task, but if observed the operation of a hospital or community pharmacy, we will understand the need for an efficient inventory control structure by [1]. The inventory control techniques in medical store of a tertiary care neuropsychiatry hospital in Delhi were analysed in [4].

The main goal of an effective inventory control system is to successfully fulfill customer demand at the lowest cost, while keeping a lot of factors in mind, including seasonal variation, changing patterns in usage as well as theft prevention. Various techniques are available when controlling inventory in a pharmacy such as ABC, VED, XYZ, HML, FSN and so on. Each of these methods are useful in controlling inventory on their own, however when implementing an efficient inventory management system it is preferable to use a combination of all available methods to establish a customized system that

best meets the needs of a specific pharmaceutical environment.

## II. METHODS AND MATERIAL

In this paper, we discuss the inventory analysis of a pharmacy store of a leading Child Care Hospital in Coimbatore (Tamil Nadu) for the financial year 2016 to identify ABC-XYZ- FSN sub-categories, in order to determine the corrective interventions in the pharmacy store. The present study was planned to analyze the annual consumption of items in pharmacy under ABC analysis and investment incurred on them under XYZ analysis for the year 2016. Moreover to find moving items under FSN analysis. Separate statistical analysis tests were formed and tabulated.

### A. ABC XYZ Analysis

The ABC-XYZ matrix was formulated by cross tabulating ABC and XYZ analysis. From the resultant combination, three categories (I, II and III) were deduced. Category I is constituted by items belonging to AX as sub category. The BX, CX, AY, BY, CY, AZ and BZ subcategories constituted by category II and remaining items in the CZ subcategory constituted category III. In these subcategory constituted category III. The first alphabet denotes its place in ABC analysis,

while the second alphabet stands for its place in the XYZ analysis.

### B. ABC- XYZ-FSN Analysis

FSN analysis groups them into three categories as fast moving, slow moving and non-moving (dead stock) respectively. Inventory policies and models for the three categories have to be different. From ABC-XYZ analysis table, CZ category items are classified into fast, slow and no moving items using FSN analysis. For FSN analysis, the data of monthly consumption and sales cost incurred on each item of the pharmacy for the month of Dec 2016 were obtained. The data was then transcribed in an MS Excel spreadsheet. The statistical analysis was carried out using statistical functions.

## III. RESULTS AND DISCUSSION

### 1. Results

The drug store inventory of the hospital consisted of total 132 items. The total monthly drug expenditure (MDE) of the pharmacy on items issued in 2016 was Rs.2,26,510.

On ABC analysis, it was found that 40 (30.3%), 33 (25%) and 59 (44.7%) items belonged to A, B and C category respectively, accounting for Rs.1,59,548 (70.44%), Rs.46,438 (20.50%) and Rs.20,524 (9.06%) of MDE. the cut offs were not exactly at 70%,20%,10% and differed marginally, which is permissible. (Table I) On XYZ analysis showed that 23 (17.4%), 46 (34.9%) and 63 (47.7%) were X, Y and Z category items respectively, accounting for Rs 65,893 (29%), Rs 98,118 (43.2%) and Rs 63,009 (27.8% ) of MDE of the pharmacy store. (Table II)

The drugs were allocated to nine different sub categories (AX, AY, AZ, BX, BY, BZ, CX, CY and CZ) using ABC- XYZ matrix analysis. these nine subcategories were further grouped into three main categories, categories I ,II and III .By ABC-XYZ matrix analysis 73 ( 55.3%), 20 ( 15.15%) and 39 (29.54%) items were found to be category I, II and III items respectively. (Table III and IV).From CZ (39) category classified into CZF 5 ( 18%) ,CZS ( 69 %) and CZN ( 13 %) items were found respectively.

**Table 1.** Data Analysis of ABC Analysis

Category	No of items	% of total	Cumulative cost (Rs)	% of Total
A	40	30.3	1,59,548	70.44
B	33	25	46,438	20.508
C	59	44.7	20,524	9.06

**Table 2.** Data Analysis of XYZ Analysis

Category	No of items	% of Total
X	23	17.42
Y	46	34.85
Z	63	47.72

**Table 3. and 4.** Data Analysis of ABC- XYZ Analysis

Category	No of Items	% of Total
I	73	55.3
II	20	15.15
III	39	29.54

Category	A	B	C
X	12	17	11
Y	3	17	13
Z	8	12	39

**Table 5.** Data Analysis of ABC- XYZ - FSN Analysis

CZ(39)	F	S	N
No of items	5	27	7
%	13	69	18

## 2. Discussion

The present study shows that out of total 132 items, 40 belong to category A which consume around 70% of the total budget of the pharmacy. The drugs in this category require stringent monitoring and have to be ordered frequently to prevent locking up of capital in buffer stocks. For inventory management if we consider ABC analysis alone, it may lead to compromise on the availability of drugs of vital nature from B and C categories.

XYZ analysis shows that there are 17.42% items in the category X that constitute 29.02% of the total budget of the pharmacy. As these are most variance items, their stock outs are unacceptably.

The ABC-XYZ matrix shows that category I which includes matrix AX, BX, CX, AY, BY and CY contains 73, category II which includes matrices CX and CY contains 20 and category III which includes matrix CZ contains 39 drugs. AX, BX, CX, AY, BY, CY are suitable for fully automatic computerized processing, whereas AZ, BZ and CZ should be scheduled manually. AX, BX, AY, BY and AZ are in general suitable for Just-In-Time (JIT) deliveries. AZ and BZ products have a large share in revenue. However, they are difficult to control and they need special attention. In the sub category CZ has divided into three sub categories as CZF, CZS and CZN. This analysis gives most specified items among CZ groups. So we satisfy the customer satisfaction and also no one return without purchase.

## IV. CONCLUSION

From present study we may conclude that there is a need for conducting such analysis regularly and applying the inventory management tools for effective and efficient management of the pharmacy stores, along with close supervision on items belonging to important categories. The inventory classification and results of the study have been communicated to the pharmacy store officials and are being incorporated in the decision making on purchases, storage, and investment and monitoring of the pharmacy items. Moreover this study helps that avoiding production disruption, which leads to lower capacity use, increased standby time and disruption to shifts –driving overtime costs up.

## V. REFERENCES

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