

A Study on ABC-XYZ Analysis in a Pharmacy Store

Dr. Babu Krishnaraj R¹, Meenakshi P K²

¹(Associate Professor ,PG and Research Department of Mathematics, Hindusthan College of Arts and Science
Tamil Nadu, India.

²(M.Phil. Scholar ,PG and Research Department of Mathematics, Hindusthan College of Arts and Science,
Tamil Nadu, India.

ABSTRACT: *The goal of a good hospital supply system is to ensure that there is a need of adequate stock of required items. An uninterrupted supply of essential items is maintained taking due care, we do not overstock the supplies which not only locks up the capital, but also gives room to pilferage and obsolescence. Utilization of ABC and XYZ analysis in the process of product stock management in pharmacy store has been studied in this paper. Based on the product report and information connected with the sales level, the goods were grouped into categories and priority levels in the decision problem solving were pointed out in order to achieve better financial results.*

KEYWORDS: *ABC/XYZ analysis, stock, stock management.*

I. INTRODUCTION

Managing the business side of medical operations has become a major obstacle to medical professionals at almost every level. The unfortunate reality is that most pharmacy buyers have been trained as pharmacy technicians and they lack in formal business methods to maintain the stock. They do not consider the purchasing aspect of their job duties as important as the other things that they are doing and as a result, often rely on less than scientific methods when it comes to managing the supply and demand side of hospital inventory management. The most important aspect of any hospital inventory management system is the maximization of technological resources. [2] gives better support for stock planning in enterprise. While many inventory managers might take the use of technology for granted, many facilities are still lagging behind when it comes to converting to a completely electronic based management system. Many designated inventory managers still rely on a pen and paper based system for tracking supply usage and dispersal. Considering that the small storage area in the analyzed store, limits the stock volume needed to assure a high level of customer's service. The rational stock management becomes especially important. The XYZ inventory classification & challenges were discussed and gave advantage and disadvantages of XYZ analysis in [3]. The inventory control techniques in medical stores of a tertiary care neuropsychiatry hospital in Delhi were analysed in [4].

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 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. Separate statistical analysis tests were formed and tabulated.

II. MATERIALS AND METHOD

For ABC (Always Better Control) analysis, the data of monthly consumption and sales cost incurred on each item of the pharmacy for the month of July 2016 were obtained. The data was then transcribed in an MS Excel spreadsheet. The statistical analysis was carried out using statistical functions. The sales of each drug were analysed weekly for the month of August 2016 as per previous study have quoted by [3] under the XYZ analysis.

ABC (Always Better Control) analysis provides a mechanism for identifying items which will have a significant impact on overall inventory cost whilst also providing a mechanism for identifying different categories of stock that will require different management and controls. For ABC analysis, the monthly sales of each drug were calculated by multiplying unit cost of that drug by its monthly consumption. The resulting figures were arranged in descending order of Rupee value. The drugs were then classified into A, B and C categories according to cumulative cost consumed as 70%, 20% and 10% of the total respectively.

The XYZ analysis gives an immediate view of the items that are expensive to hold. Through this analysis, firm can reduce its money locked up by keeping as little as possible of these expensive items. In the XYZ analysis there are three groups of materials that can be described as X material group has a fixed size of demand / need, and it is characterized by small periodic fluctuations, which provides high accuracy of forecasting, Y material group has moderate fluctuations in demand / need, which allows an average accuracy of forecasting, Z material group has irregular demand / need, which allows a low accuracy of forecasting.

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.

III. RESULTS

The drug store inventory of the hospital consists 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 as shown in Table I.

On XYZ analysis, it shows 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 as shown in 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 sub-categories were further grouped into three main categories, such as I ,II and III .By ABC-XYZ matrix analysis items 12 (9.09%), 81 (61.36%) and 39 (29.55%) were found to be category I, II and III respectively, accounting for Rs.91,597 (40.43%), Rs.1,20,012 (52.98%) and Rs.14,901(6.57%) of MDE as shown in Table III.

Table I: 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 II : Data analysis of XYZ Analysis

Category	No of items	% of total	Cumulative cost (Rs)	% of total
X	23	17.42	65,893	29.02
Y	46	34.85	98,118	43.22
Z	63	47.72	63,009	27.75

Table III: Data analysis of ABC- XYZ Analysis

Category	No of items	% of total	Cumulative cost (Rs)	% of total
I	12	9.09	91,596.47	52.98
II	81	61.36	1,20,012.28	40.43
III	39	29.55	14,900.94	6.57

IV. DISCUSSION

The present study shows that out of 132 items, 40 belongs 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 highly variance items, their stock outs are unacceptable.

The ABC-XYZ matrix shows that category I which includes matrix AX contains 12, category II which includes matrices AY,AZ,BX,BY,BZ,CX and CY contains 81and category III which includes matrix CZ contains 39 drugs. A strict vigil should be kept on their consumption and the stock in hand. Appropriate management of category I drugs would help keep a check on budget as well as drug availability, as these are either expensive or vital items.

The items of category II should be ordered according to periodic inspection and category III items can be ordered less frequently, thereby saving on ordering cost and blocking substantial capital.

V. CONCLUSION

From the present study we have concluded that there is a need for conducting such analysis regularly and applying the inventory management tools for effective and efficient management in 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, investment and monitoring of the pharmacy items.

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