How to Mathematically Decide if That Distributor Special is Good for Me

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Knowing the total actual cost of an inventory purchase will empower the practitioner to make sounder financial business decisions in the face of a distributor special. Author's address: Jorge L. Colón, DVM, PLLC, PO Box 11631, Lexington, KY 40576; e-mail: jorgecolondvm@me.com. © 2014 AAEP.

1. Introduction

Specials and promotions by distributors and pharmaceutical companies are frequently placed in front of practitioners, especially at the AAEP trade show during our annual convention. Practitioners wanting to financially maximize the business side of their practice are usually left trying to figure out what specials to take advantage of, without having an exact idea of the actual financial cost of their decision. Whereas the common practice is to look at the per item promotion price multiplied by the potential quantity of the purchase order and compare the obtained number to the number without the special, the true cost of the order is dependent on other factors that will affect the total actual cost of the inventory purchased.

2. Total Actual Inventory Cost

Inventory calculations are usually based on annual figures and the annual cost of inventory is termed the total annual inventory cost; it is calculated utilizing the annual purchase cost, annual holding cost, and annual order cost.

Because we are interested in the numbers associated with purchases that will most likely only cover a few months, we will term the equation “total actual inventory cost” and subtract from the original formula the financial benefit obtained from delayed billing for the special order. The new formula being:

\[
\text{TAIC} = \text{PC} + \text{HC} + \text{OC} - \text{DB}
\]

where:

- Total actual inventory cost
- Annual purchase cost
- Annual holding cost
- Annual order cost
- Delayed billing

This general formula was used to generate a downloadable Excel spreadsheet that allows the practitioner to determine the total actual inventory cost when assessing a special offer in order to compare it to the actual total cost of inventory if the offer is not taken. The break even holding rate for the special offer is calculated based on the input information. The spreadsheet is divided into four parts...
and addresses the four most common types of offers: (1) buy X, get Y free, (2) limited time price reduction, (3) future cash back rebate, and (4) extra purchase to get a future rebate.

3. Break Even Holding Rate
The mathematical computations in the spreadsheet provide the more business knowledgeable practitioner with the break even holding rate, or break even cost of capital point, so they can compare it to their known practice’s potential return on investment. This rate is the rate at which the total actual inventory cost when taking the offer is the same as the total actual inventory cost when not taking the offer. If the known opportunity cost of capital is less than the break even holding rate, the special offer will be the better investment, meaning that it would be cheaper to buy in bulk through the offer and hold the inventory.

4. Demand and Order Quantity
Financial inventory calculations are usually based on annual numbers for demand and quantity; however, we are more interested in the numbers associated with purchases that cover a few months. To do this, the spreadsheet needs an estimation of the product quantity normally consumed per month during the specific time period so that it can calculate how many months it would take to consume the total quantity of the special offer order. In addition, it allows the spreadsheet to calculate the monthly order quantity if the offer is not taken and, hence, the number of orders to be placed to fulfill an equal total demand.

5. Delayed Billing, Future Rebate, and Line of Credit
Delayed billing and future cash back rebate provide a reduction to the total actual inventory cost. Because of the time value of money, any inventory that does not need to be paid until the future will reduce the actual cost of the inventory. Because of the present value of future money, the value of a rebate to be received in the future is less than the face value of the rebate at the time of the offer. Both of these computations reduce inventory cost based on the time difference between the purchase and future transaction. A vendor or distributor should provide an adequate estimation of how many months in the future before the bill is payable or before the rebate is to be received. The line of credit rate provides a framework to estimate the cost of borrowing the money from an institution for this specified time.

6. Special Offers
Buy X, Get Y Free
Distributors prefer to move merchandise by the case and will create specials that promote the sale of full cases (i.e., buy 11, get 1 free).

Limited Time Price Reduction
The vendor is offering a special price that is either lower than the regular price, or it’s a base price before a known price increase.

Cash Back Rebate
The vendor is offering a percentage cash back rebate based on purchase level.

Need Extra Purchase for Cash Back Rebate to Kick in
The vendor is offering a percentage cash back rebate if you reach a certain amount by a certain date. You have made some purchases and need to make an extra purchase to reach the rebate kick-in level.

7. Conclusion
A sound financial inventory purchase decision can only be made if the total actual inventory cost is known. This cost is more than just price times quantity. Calculations generated on the downloadable spreadsheet at https://db.tt/cWnKLLfK will provide for a sound estimate of the actual total cost of inventory from a distributor special based on the information provided. The ability to carry out these calculations on-site through a smart phone or tablet should provide the practitioner with a powerful tool that will empower him/her to make sound financial purchasing decisions.

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Conflict of Interest
The Author declares no conflicts of interest.