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A STUDY ON THE ACCOUNTING PRACTICES AND INVENTORY CONTROL OF PHARMACIES

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INTRODUCTION

It can be said that the reason for the existence of economic organizations is to enjoy profits and thus to continue their operations while contributing to the needs of the society. This might be done either by providing physical products such as machinery and sonsumer goods, or by providing services such as communication, transportation, and utilities, or by supplying the public with both physical products and services. No matter which type of activity an economic organization is engaged in, for survival it must operate efficiently and profitably.

Reliable and adequate records are a primary prerequisite for successful operations. To keep accurate and reliable records, there should be established procedures for collecting the necessary data, orderly record-keeping, valid analysis and evaluation of performance and tight control. An inventory policy which does not allow for shortage and at the same time prevents tying up of excess sums of capital in inventories can be set up through accurate records and contributes to the profitability of a business.

A pharmacy being a business organization has to be run efficiently and successfully. Its activities are mainly merchandising operations which consist of stocking and selling branded drugs. The preparation of

the so-called "magistral" drugs, i.e., those drugs whose recipes are specified by a prescription, are comparable to manufacturing operations. In either case accurate and systematic records must be maintained both for income determination and control purposes. However, the accounting activities in a great majority of drugstores are for tax purposes and only a minority use and devise their accounting system for control purposes.

The objective of this paper is to study the current accounting practices and inventory policies of pharmacies. The accounting practices will be studied within the context of both merchandising and manufacturing activities of drugstores. The deficient aspects of the current accounting practices for appropriate income determination, decision making and inventory control will be pointed out.

The steady increase in the number of pharmacies has been made possible with the change of the previous law which had authorized the establishment of only one pharmacy for each 10,000 of population. The new law which annulled this restriction was law No. 984 and was passed in 1950. The increase in the number of drugstores (the terms drugstores and pharmacies are being used interchangeably throughout the paper) has made competition among them more severe. With the enormous assortment of drugs and with numerous wholesalers and firms supplying drugs to pharmacies, the need arises for stocking an appropriate number of

each kind of drug. The drugstores have distinct characteristics that differ from most other organizations. Although the objective of any drugstore is to maximize the profits to its owner like any other economic organization, there are certain restraints that are imposed upon drugstores. While they try to maximize the profits, they have a social requirement also. The drugstore has to keep inventories even if they are not profitable or have high costs, and this necessitates too much capital. However, the obligation to keep inventories of each kind whether it is profitable or not does not mean that a system cannot be developed to lead to efficient operations.

It must be pointed out that this paper does not describe the current accounting and inventory methods that are practiced by all pharmacies. During the interviews it was observed that most of the pharmacists do not have sufficient knowledge of accounting theory and they are not aware of the practical uses it may provide them with. Therefore, although some sections are a description of the accounting that is practiced, most sections represent the writer's views on how the application of accounting might prove helpful to pharmacies. These applications are based on information gained through the interviews.

The writer believes that the paper is a guide for operations for those pharmacies which are newly established and also a guide for those which are already in business but have limited knowledge of accounting and inventory techniques.

CHAPTER II

ACCOUNTING PROCEDURES OF PHARMACIES

Business Income versus Taxable Income

The purpose of income determination is twofold. Firstly, it is used to measure the performance of the business operations and it is called business income. Business income is based on the general principles of accounting. Secondly, it is used to determine the taxable income for income tax purposes but it does not give adequate information about the business operations and for decision making purposes. It is based on the regulations and restrictions imposed by the Ministry of Finance.

The income determined for the tax purposes and for business operations result in different income figures. The income that is determined in the pharmacies is solely for the purpose of tax determination. Thus the income found departs from the real income in some aspects.

The computation of taxable income excludes certain expense items; it permits as expense only those items that are verified by the presentation of receipts, i.e., expense items such as rent paid to the leased building, telephone expense and natural gas. But expenses such as

business trips, money paid to porters, etc. are not deducted from the revenues in determining the income figure.

The income determined under the current practice does not give a correct picture in the sense that no consideration is given to losses that will arise if some of the accounts receivable cannot be collected. Experience has shown that a business can rarely collect all of its accounts receivable. The average Turkish family income is quite low so that most people do not purchase on cash basis. Since the income of a period should be computed by taking into consideration all losses and expenses applicable to the period, losses from uncollectible accounts should also be included by the pharmacists if they are to arrive at a more representative income figure.

Average Gross Profit Percentages

(Ortalama Kâr Hadleri)

The Ministry of Finance and the Professional groups of the Chamber of Commerce (Ticaret Odası Meslek Grupları) sets profit levels for various occupations. The gross profit on sales as recognised and set jointly by the Ministry of Finance and the Professional groups of the Chamber of Commerce is 18 percent for pharmacies. This figure is actually recognized to be 20 percent but because of certain necessary allowances it is reduced to 18 percent. This 2 percent allowance is to take

into account normal unavoidable losses such as bottles that get broken, drugs that are spilled and items which are defective or spoiled.

Both of the two profit percentages have their use. The 20 percent is used to calculate cost of goods purchased from wholesalers or from the pharmaceutical firms. The following example illustrates the use of the 20 percent gross profit figure assuming the purchases during the month are as presented below.

Kind of Drug	Price (T.L.)	No. of Items	Total Amount (T.L.)
Calcium D. Redoxon	7.25	10	72.50
Gastro gtt.	3.70	30	111.--
T.A.O. Capsül (16)	31.--	5	155.--
Negram	72.50	2	145.--
Gamakuil	8.30	15	124.50
Diabinese	7.--	20	140.--
Ultralon pom.	11.10	20	222.--
Festal	5.75	20	115.--
Total			1,085.--
Deduct 20%			217.--
Cost of goods purchased			868.--

The prices entered on the receipt are the sales price of the indivi-

dual drug. Since the pharmacies are allowed a 20 percent gross profit on sales, the cost of purchases is calculated by deducting 20 percent from the total sales price. T.L. 868 is the cost and thus the amount to be paid for the purchase of the above listed items.

The same figure can also be determined by figuring out the cost of each item separately and then summing them up.

Kind of Drug	Price T.L.	No. of Items	At Retail	Gross Profit	At Cost
Calcium D. Redoxon	7.25	10	72.50	14.50	58.--
Gastro gtt.	3.70	30	111.--	22.20	88.80
T.A.O. Capsül (16)	31.--	5	155.--	31.--	124.--
Negram	72.50	2	145.--	29.--	126.--
Gamakuil	8.30	15	124.--	24.90	99.60
Diabinese	7.--	20	140.--	28.--	112.--
Ultralon Pom.	11.10	20	222.--	44.40	177.60
Festal	5.75	20	115.--	23.--	92.--
			1,085.--	217.--	868.--

The 18 percent gross profit figure is established, as noted previously, by taking into account the possible waste and spoilage. Thus the gross profit of any pharmacy is expected not to be less than this established percentage under normal conditions. Otherwise, the records

of the business is subjected to the control of the government finance officials.

If the yearly sales of a pharmacy is T.L.450,000 then the gross profit on sales in the financial statements should not be less than T.L. 81,000.

450,000 T.L.	Value of total sales
90,000 T.L.	Gross profit margin (20 %)
360,000 T.L.	Cost of goods sold

Even though the gross profit should be T.L. 90,000 the Turkish Income Tax regulations permit the figure to be as low as T.L. 81,000. The T.L. 9,000 difference between the two figures may be due to such factors as the spoilage of some drugs, damage due to inappropriate packaging, pilfrage, etc.

Magistral Drugs

This class of drugs are those that are produced by the pharmacies themselves.

In general, produced goods are usually reported on standard costs which are predetermined costs based upon representative or normal conditions of activity. The accounting of the magistral drugs is based on standard costs set by item No. 39 of the Law No. 6197 which is named

"The Law of Pharmacists and Pharmacies" (Eczacılar ve Eczaneler Kanunu) and which was enacted on December 18, 1953.

The actual costing of product is not practical or operational because of two reasons. First of all, from the point of view of social welfare, it is not just to have different prices for the same drug. If actual cost basis were to be followed, because of different cost figures for the raw materials purchased in different places and at different time periods, the price of the magistral drug would be different at each pharmacy. Secondly, computations of actual cost would require an enormous labor and this is not possible with a very few usually two sales clerks in a normal size pharmacy. Each magistral drug has to be produced according to specified amounts and these amounts are usually small quantities such as 10 grams or 50 miligrams of a substance. Thus actual costing would require the exact value of each ingredient and necessitate on the average four or five computations for a single drug and this would be laborious.

Cost Elements of Produced Drugs

There are three major elements in the cost of a produced good:

1. Direct Material - All raw material which is an integral part of the finished product and which may be conveniently assigned to specific physical units is direct material.
2. Direct Labor - All labor which is obviously related and is

traceable to specific products is called direct labor.

3. Manufacturing Overhead - It includes all costs incurred in production that cannot be classified as material or direct labor.

Rent, insurance, depreciation and most indirect labor are examples of factory overhead.[1]

Material standards: Material costs are affected by two factors: price and quantity. Material prices are beyond the control of pharmacists because they are due to outside influences such as general economic conditions, scarce supplies, import restrictions, etc. Therefore, in order not to have variations in the prices of drugs, the Chamber of Druggists has specified the prices to be charged for given quantities of different substances.

The quantity of material to be used in the preparation of a drug is set by a specific prescription or recipe. That is quantity standards are set by each prescription. Therefore the drugs have to be prepared only with the specified amounts of quantities.

Examples of material price standards are given below:

	Gram	Cost (krş)
Aceton	10	10
Acid Nicotinique	1	20
Acid Folique	.001	10

[1]Charles T. Horngren, Cost Accounting, A Managerial Emphasis, (2nd ed., Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967), p. 22.

	Gram	Cost (krş)
Argent Colloidal	1	100
Digitaline crist.	.10	1000

Examples of a material usage standard as specified by a prescription may be presented as follows:

Pyramidon	0.15
Phemacétin	0.10
Chlorhydrate de quinine pour 1 cachet No. 21	0.15

Labor Standards: The cost and the price of a recipe prepared in the drugstore is the sum of the total cost of chemical and pharmaceutical ingredients, professional right, and the cost of containers such as bottles, boxes and envelopes.

The charging of a certain amount under the name of professional right (meslekf haklar) is designed to serve as labor rate standards. The Chamber of Druggists (Eczacılar Odası) estimates the cost of professional right to be charged to different groups of pharmaceuticals. The rates are authorized by the Ministry of Health. The computation of the value of professional rights is based on both the time spent and the knowhow which the preparation of that specific drug necessitates. Examples for the labor rate standards are the following:

Powders:

For preparations which contain up to a total of 200 grams of raw materials, the cost of labor (professional right) is 40 krş. For preparations that contain a total of raw materials above 200 grams, 15 krş. is added for each additional 100 grams of material.

Ampuls:

The labor cost for the use of ampuls in the preparation of a drug has been determined as follows:

amount (cc)	1-10	11-251	251-500	501-1000
cost (krş)	25	50	75	100

Overhead Standards: They are also computed by taking into account items such as the rent of the store, insurance expense, electricity, natural gas, and other overhead expenses and allocating them to different groups of pharmaceuticals according to the time spent in preparing them.

In the computation of the total cost of manufacturing, apart from the cost of labor, material and overhead, two more items are included. For preparations that contain narcotic ingredients, a surcharge of 30 percent of the total price of the recipe is added. Another 30 percent of surcharge is added to the price of drugs that are prepared when a pharmacy is on duty at nights, week-ends and holidays.

Each year the Chamber of Druggists reviews the standards and

makes the necessary changes in order to keep them up to date. So the standards established are valid for a current year.

In case the prices of raw materials fluctuate within 10 percent of standard prices the pharmacists bear the burden or enjoy the advantage, depending on whether the prices have increased or decreased. Thus two cases may be thought of as unfavorable or favorable variance, respectively.

If the fluctuation is more than 10 percent, the individual pharmacist applies to the Chamber of Druggists for permission to change, within the same year, the prevailing price.

As far as the pharmacists themselves are concerned, they calculate their profit margin on the magistral drugs by dividing the cost of labor allocation by the sum of the cost of ingredients, cost of overhead allowed, and the cost of packaging.

The following will illustrate the pharmacists' way of viewing the concept of profit margin. Assuming two different drugs are prepared by using different ingredients but by making use of the same procedures in their preparation, the same amount of labor cost will be charged to either drug. But if the cost of ingredients are different the two profit margin figures may be very different from one another.

Numerical example of these ideas will help to illustrate the point.

1. Sous Nitrate de Bismuth

5 gr.

Pour 1 pd. No. 20.

The costs associated with the preparation are:

Cost of ingredient	18.00
Cost of overhead	2.00
Cost of labor	3.00
Cost of container	.20
	23.20

T.L. 23.20 is the cost and the price to be charged to the above preparation.

Profit margin on the drug is 14.85 percent.

$$\frac{3}{20.20} \times 100 = 14.85$$

2. Permanganate de potasse

0.50 gr.

Pour 1 pd. No. 20.

The costs associated with the preparation are:

Cost of ingredient	.20
Cost of overhead	2.00
Cost of labor	3.00
Cost of container	.20
	5.40

T.L. 5.40 is the cost and the price to be charged to the above preparation.

Profit margin on the drug is 125%

$$\frac{3}{2.40} \times 100 = 125$$

Profit margin calculations for this class of drugs can be thought of as computations of proceeds from investments. The investment consists of the raw materials stocked, containers kept on hand, and the overhead incurred. Raw materials and containers are charged to the magistral drugs at their purchase price, and the overhead is charged as explained in a previous section. The profits on these drugs are realized through the "sale of know-how." For preparing certain types of drugs, i.e., liquid, powder, or pomade form, by applying certain procedures, a fixed and approved amount of know-how is charged no matter what the value of the raw materials involved are. Since the margin on magistral drugs is the know-how charged, and it is dependent on the procedures and not on the materials used, a greater profit margin is realised when investments are made on low-cost materials. According to this analysis, pharmacists should prefer preparing drugs containing low-cost materials because of greater profits and smaller amounts of capital tied up in raw material inventories. This situation is already illustrated in the foregoing examples.

In the income determination, the sale of magistral drugs is treated like the sale of merchandise drugs. That is, even though records are being kept for the raw materials bought and used, no separate records are maintained for the sale of magistral drugs. Since for each sale a calculation of

the profit is required and this is impractical, the sale of magistral drugs is recorded like the sale of a merchandise drug.. So the sale of a magistral drug is considered of as earning a 20 percent gross profit. But as was shown in the previous examples, there is not a set percentage of gross profit or magistral drugs. On one drug 125 percent of profit is earned while on the other only 14.85 percent profit is earned. Therefore the standard costs used in pharmacies are primarily for bookkeeping economies and for uniformity of prices.

In order to arrive at a more correct income figure, the writer recommends the following procedures for the calculation of gross profit on the sale of magistral drugs. As it was pointed out above, the gross profit which is earned on the sale of magistral drug is the "know-how" that is charged. Since for each drug that is produced, recording is necessary as to the price charged, an additional column named "labor" or "know-how" would make the actual process more representative. When a drug is produced, according to the above recommendation, it will be necessary to record the price charged for the magistral drug on one column and the know-how charged on an adjacent column. At the end of the period, the sum of the "know-how" column will be computed and subtracted from the sum of the proceeds from the magistral drugs. The difference between the totals of the two columns is the cost of goods produced. To find the exact value of the "cost of goods purchased" it would be necessary to subtract

the value of the total sales of magistral drugs from the total sales figure recorded on the cash register so that the remaining sales figure will include only the sales of merchandise drugs. The "cost of goods purchased" can then be easily computed by deducting 20 percent from the sales of merchandise. The procedure to be followed can be illustrated with the following example.

Sales during the period:

A magistral drug-selling price	20.20 T.L.
"Know-how" charged	2.00 "
A merchandise drug-selling price	10.00 "

The recommended recording will be:

magistral drug	"know-how"
20.20	2.00

The sales figure on the cash register is:

T.L. 30.20

Computations for the "cost of goods produced" and "cost of goods purchased" are the following:

TL. 20.20 price of magistral drug
" 2.00 labor cost
TL. 18.20 "cost of goods produced"

T.L. 30.20 total sales figure
" 20.20 sales figure of magistral drug

T.L. 10.00	sales figure of merchandise drug	
" 2.00	20% deduction	
T.L. 8.00	"cost of goods purchased"	
Cost of goods produced and purchased		T.L. 26.20
Gross profit on sales		T.L. 4.00

Income Determination

The financial performance of any business can be seen in its income statement. The income statement summarizes the revenues and the expenses for a given period and reports the profit or the loss from the operations. Revenue in an inflow of asset in the form of cash or receivable from customers and is related to the rendering of services and disposal of goods. Expense is the expired cost, directly or indirectly related to a given fiscal period, of the flow of goods or services into the market and of related operations. Revenue is earned when goods are transferred or when services are rendered.

For drugstores, sales of a drug should be regarded as the point when revenue is earned because a conversion of one asset for another takes place at that point - namely, an exchange of a drug against cash or receivable occurs. It is also the point at which the amount of revenue is determined from the sales price. A useful service rendered by the

drugstores is administering some of the drugs by injections.

In the course of numerous activities that generate income certain expenditures for articles and services are incurred by a business. Expenditure is a payment for a benefit received. The expenditures of drugstores are mainly the rent paid to the lessor of the place, the wages of apprentices and other expenses such as electricity, natural gas, water, telephone, packaging paper, etc.

Pharmacies With Yearly Sales Below T.L. 440,000

The Ministry of Finance and the Professional Groups of Chamber of Commerce decides on the kinds of books of entry that pharmacies should keep. Pharmacies with a yearly total sales up to T.L. 420-440,000 are required to keep only a journal and those pharmacies that have yearly sales above T.L. 440,000 are to keep a journal, a ledger, and a book of cash.

In the pharmacies cash is received over the counter. All cash received is recorded on a cash register. Since it is impractical to make an entry for each drug sold the total value of daily sales is recorded as a single entry at the end of the day. If the sales during the day adds up to T.L. 970 then it is recorded in the journal as:

Cash 970

Sales 970

Sales includes the proceeds from both the merchandise drugs and the magistral drugs.

It can be said that pharmacies derive their earnings from merchandise operations. It has already been explained how magistral drugs are treated like merchandise items.

The income determination for a pharmacy which derives its entire income from merchandise operations is illustrated below:

Beginning inventory	T.L. 50,000
Purchases (at cost)	" 350,000
Cost of goods available for sale	" 400,000
Cost of goods sold	" 350,000

Since 20 percent gross profit is allowed on drugs sold, the total sales figure in the journal will be T.L. 437,500.

Sales	T.L. 437,500
Cost of goods sold	" 350,000
Gross profit on sales	" 87,500

There may be variations between the records in the journal and the sales actually realized. It was said earlier that not all drugs purchased are available for sale. The reason for the discrepency is spoilage, pilfrage, and unreturnable drugs due to expiration. Pilfrage is very common in drugstores because of the greatness of the number of drugs and difficulty of effective control of the customers and also the apprentices working in the pharmacy. So in the above example the gross profit figure can be as low as T.L. 76.829. Two percent loss on gross profit percent-

age is allowed due to mentioned discrepencies. The cost of purchases becomes 82 percent of the total sales which is equal to T.L. 426,829. A difference of T.L. 10,671 (437,500 - 426,829) in the gross profit figure is allowed.

The hypothetical income statement presented on the next page shows the operation of a pharmacy with yearly sales below T.L. 440,000.

The income statement showing the net income for the year appears as follows:

XYZ Pharmacy

Income Statement

For the year ended December 31, 1968

Sales		437,500
Cost of goods sold:		
Inventory Dec. 31, 1967	50,000	
Purchases	350,000	
Cost of goods available for sale	400,000	
Deduct inventory Dec. 31, 1968	50,000	350,000
Gross profit on sales		87,500
Expenses:		
Heat and light	3,140	
Depr. of furniture and fixtures	500	
Insurance expense	600	
Salaries	22,000	
Telephone	2,000	
Store rent	10,800	
Stamp fee*	1,400	
Packaging paper	1,700	42,140
Net income before income taxes		45,360
Income tax		
Net income		

*Stamp fee is calculated as 4/1000th of the total value of purchases on account and is deductable as an expense.

The foregoing illustration of an income statement can be viewed as a theoretical presentation. The following illustrates the income determination as actually presented to the Revenue and Income Tax Department:

Expenditures		Revenues	
The inventory at the beginning of the year, if any	50,000	Retail sales during the period	437,500
The cost of inventory purchased and/or produced	350,000	Revenues other than from the sale of drugs	
Operating Expenses	42,140	Wholesales during the year	
		The ending inventory, if any	50,000
Total	442,140	Total	487,500
Difference (income)	45,360	Difference (loss)	

Drugs with Expiration Dates - When the date of expiration is reached, the drugs should no longer be sold. The drugs are returned to the pharmaceutical firm from which it was purchased. There are two procedures in dealing with such drugs:

1. New drugs at an amount equal to the value of the returned drugs are given by the pharmaceutical firm. No entry is needed or recorded in this case because the value of inventory is decreased and increased by the same amount simultaneously. Although no recording is made the actual transaction that occurs is:

Merchandise	600	
	Merchandise	600

2. Cash may be received for the returned merchandise. An entry is required because otherwise inventory would be overstated by the amount equal to the returned merchandise. The entry for the returned merchandise would be:

Cash	600	
	Merchandise	600

There are two other ways of dealing with the drugs with expired dates. The pharmacists can donate such drugs to the Red Crescent and get a receipt in return. With the receipt in hand, the inventory can be reduced to the proper level. Another way of accounting for the expired drugs

but which is rarely practiced because of the red tape involved in the procedure is to destroy such drugs. In this procedure, officials from the Revenue and Tax department should verify with "Maliye İmha mazbatası"[2] that inventory at a value of so much is no longer available due to expired date of use.

Sales Discount - The Chamber of Druggists has established the percentage of discount that pharmacists can give. The applied rate of sales discount is 6 percent; it cannot be lower or higher than this amount because if the discount rate were left to the judgement of the pharmacists it would lead to competition among the drugstores which might be detrimental to public health.

If competition were free the rate of discount offered by the druggists would tend to increase in order to attract customers and to compensate for this sacrifice, pharmacists might be tempted to resort to undesirable practices. This in turn might cause the public to lose confidence in these institutions. But for the benefit of the people circumstances pertaining to public health should not raise any question in the minds of people.

Why would pharmacies give sales discounts, since when a 6 percent

[2]An official document of the Ministry of Finance which certifies that the indicated amount and type of drugs have been destroyed.

sales discount is given, they are giving away about one third of their 20 percent gross profit on sales.

If the drugstore is situated in a district where most of the inhabitants are workers or belong to certain institution such as the army, schools, charity organizations, and banks then in order to attract customers and to increase sales, the pharmacist offers a sales discount. And the practice is usually that a receivable account is opened to the members of the particular institution. At the end of the period, which is usually a month, the total value of accounts receivable is reduced by 6 percent and cash is received for the remaining portion.

Total accounts receivable from İş Bankası	1200
6 percent discount	72
	1128

Cash	1128	
Accounts Receivable		1128

Pharmacies with Yearly Sales above T.L. 440,000

The pharmacies that have a total sales figure above T.L. 440,000 are required to keep three books of entry. These are a journal, a ledger, and a book of cash. All the discounts that are received and all the discounts that are given have to be recorded in the book of cash. At the end of the year if the discounts received exceeds the discounts given then the

difference is added to the net income before income taxes and this increases the amount to be taxed. Of course, the reverse is true if the discounts given exceeds those received.

Pharmacies receive discounts from pharmaceutical firms and wholesalers when they make their purchases in cash. The common practice in Turkey is that pharmacies purchase drugs on payables (bono). But if cash is paid then the gross profit margin increases from 20 percent to 25 percent. That is the pharmaceutical firms and/or the wholesalers give a 5 percent discount on the merchandise they sell if merchandise is paid in cash. Such a transaction may be illustrated by means of the following data:

	At retail	At cost
Merchandise	T.L. 1000	
Merchandise		T.L. 800
5 percent discount on retail price		T.L. 750

Merchandise	800	
Cash		750
Discount		50

Assuming that half of the merchandise is sold at a discount and the other half is sold without a discount, we have

Cash	970	
Discount	30	
Merchandise		1000

Cash	Discount
50	30

The difference of 20 should be added to the net operating income and then the amount of tax to be paid is calculated.

The requirement imposed by the Ministry of Finance on the pharmacies with yearly sales above T.L. 440,000 to record all cash discounts received and given does not mean that pharmacies with yearly sales below this figure cannot record the discounts; they have the option of recording if they prefer to. But while interviewing, the writer has found out that most the pharmacies with yearly sales below T.L. 440,000 do not keep such records because they are not required to. The Ministry of Finance requires such recordings from pharmacies of larger volume of sales believing that the discounts received will usually be greater than discounts given. Thus, if such is the case, this will be an addition to the income of the pharmacies and the Ministry of Finance will have the benefit of receiving greater amounts of revenue from taxes.

It is recommended that all pharmacies with sales below T.L. 440,000 keep records for discounts since nearly all of them purchase on payables and do not receive discounts but usually do give dis-

counts to certain institutions that were discussed at the appropriate section of the paper. If such records are kept pharmacies will benefit from being taxed less since they will be able to deduct the discounts given from the taxable income figure.

Illustrations of hypothetical income and position statements for a pharmacy with yearly sales above T.L. 440,000 are presented on the following pages.

The income statement of a pharmacy with a yearly sales above T.L. 440,000 is like the following:

ABC Pharmacy
Income Statement
For the year ended December 31, 1968

Sales		680,000
Cost of Goods sold:		
Inventory Dec. 31, 1967	91,000	
Purchases	550,000	
Cost of goods available for sale	641,000	
Deduct inventory Dec. 31, 1968	97,000	544,000
Gross Profit on sales		136,000
Expenses:		
Store rent	24,000	
Salaries	25,600	
Insurance expense	750	
Depr. of furniture and fixtures	350	
Heat and light	2,000	
Telephone	2,300	
Packaging paper	2,000	57,000
Net Operating Income		79,000
Other revenue*		20
Net income before income tax		79,020
Income tax		
Net Income		

*Other revenue is the difference between the discounts received and the discounts given.

The Income determination of a pharmacy with a yearly sales above T.L.440,000 is like the following as specified by the tax regulations:

1	2	3	4	5	6	7	8	9
Kind of Inventory	Cost of begin. Inven.	Cost of the purchases of drugs or of raw materials during the period	Gross profit (revenue)	Total	Sales during the period	Cost of ending Inventory	Loss	Total
Pharmaceuticals	91,000	550,000	136,000	777,000	680,000	97,000	--	777,000

The following statement has to be filled out by the pharmacies with yearly sales above T.L.440,000 according to one of the requirements of Revenue and Income Tax regulations:

Statement of Average Gross Profit Percentage

1. Cost of Beginning Inventory	91,000
2. Cost of purchases of the merchandise drugs and the cost of raw materials of produced goods	550,000
3. Cost of Ending Inventory	97,000
4. Cost of wholesales during the period	-,--
5. Cost of retail sales during the period	544,000
6. Wholesales during the period	-,--
7. Retail sales during the period	680,000
8. Gross profit on Retail sales	136,000
9. Gross profit on wholesales	-,--
10. Other Revenue	20
11. Gross profit on retail and wholesales (Add 8, 9, 10)	136,020
12. Expenses during the period	57,000
13. Net Income before Income Taxes	79,020

The following example illustrates how the items of ending inventory and income determined in the income statement are treated in the position statement:

ABC Pharmacy

Position Statement

December 31, 1968

Assets

Cash	21,000.00
Cash in Bank	2,000.00
Accounts Receivable	9,000.00
Merchandise Inventory	97,000.00
Fixed Assets	16,000.00
Owners' Account	126,000.00
	271,000.00

Liabilities and Propreitor's Equity

Liabilities:	
Accounts Payable	48,000.00
Notes Payable	136,000.00
Payables to Banks	1,000.00
Propreitor's Equity:	
Ahmet Zorlu - capital	30,000.00
Income*	56,000.00
	271,000.00

*It is assumed that T.L.23,00 has been paid as tax.

Cost of Trade Credit - When pharmacies buy merchandise on cash basis, they can pay the amount within a month. When the drugs are purchased on payables, the wholesalers and the pharmaceutical firms require that the account be paid within four months. This means that the trade credit is extended for three months and the cost of trade credit for three months is 6.66 percent as will be illustrated below.

If merchandise is bought on cash basis, with the example illustrated before the pharmacist would pay T.L. 750. But because it is bought on payables, the amount to be paid at the end of fourth month is T.L. 800. This means that for three months, T.L. 50 of interest is paid on a loan of T.L. 750. The interest rate for three months is calculated as follows:

$$750 = 100\%$$

$$50 = x\%$$

$$x = \frac{50 \times 100}{750}$$

$$x = 6.66\%$$

Since 6.66 percent is the cost of trade credit for three months, the cost of capital is 26.64 percent for a year. Therefore, it shows that most of the pharmacies are operating with a very high cost of capital.

There are other means of getting credit which is less costly. For example, pharmacies can get credit from the banks at an interest of 18 percent. They can even get the credit with lower interest charge by pledging some of their inventory.

The interest charges that are calculated are for a year. To find the amount of interest paid for a year, it is necessary to know the average inventory investment level during the year. Since no records are available for the inventory levels of each month, the average cannot be found but the writer, for purposes of illustration, considers the beginning inventory as the average inventory investment for a year. Since orders can be made each day, it will be assumed that orders are not made in great amounts so that the value of orders does not change the value of inventory level significantly. To illustrate the amount of interest paid when pharmacists operate with trade credit and the amount that would be saved if they were to obtain credit from the bank, the following example will be given.

Average inventory investment during the year – T.L. 50,000.

Cost of trade capital is 26.64 percent; approximately 27 percent.

Cost of capital if credit is obtained from banks – 18 percent.

50,000 x .27 = 13,500 T.L.

13,500 T.L. – interest paid if credit is obtained from wholesalers.

50,000 x .18 = T.L. 9,000

T.L. 9,000 - interest paid if the credit is obtained from banks.

T.L. 350,000 cost of goods purchased with trade credit.

* 13,500

T.L. 336,500 cost of goods purchased if paid in cash.

T.L. 336,500

* 9,000

T.L. 345,500 cost of goods purchased if credit is obtained from banks.

350,000 - 345,500 = T.L. 4,500 would be the amount saved if credit was obtained from banks instead of obtaining it from the wholesalers.

Inventory Accounting

The practiced accounting for inventories in the drugstores is periodical inventory accounting. The incoming drugs or the raw materials of magistral drugs are recorded in the merchandise account. An adjusting entry is made at the end of each accounting period to accumulate the cost of goods sold in a separate account. The inventory on hand is determined by making a physical count of the inventory at the end of the period.

If the following facts are assumed for a drugstore, the entries in accordance with the periodical inventory method and the appropriate adjustments will be as follows:

Beginning inventory	
10 units of Decadurobolin	T.L. 216
10 units of Aligastrin	72
Purchases during the period	
30 units of Decadurobolin	646
30 units of Aligastrin	216
Sales during the period	
20 units of Decadurobolin	540
20 units of Aligastrin	180

	Deca. T.L. 27	Alig. T.L. 9
Selling price		
Cost of unit sold	21.60	7.20

Ending inventory

20 units of Decadurobolin	432
20 units of Aligastrin	144

Inventory

288

Purchase:

Merchandise	864	
Acc. Payable		864

Sale:

Cash	720	
Sales		720

Adjusting entry - ending inventory determined by physical count.

Inventory	576	
Cost of Sales	576	
Inventory		288
Merchandise		864

Partial Income Statement	
Sales	720
Cost of goods sold	576
Gross profit	144

Because of the difficulty of making a physical count of inventory each year due to a great variety of drugs, the law of Pharmacists and the Pharmacies has allowed the pharmacists the option of making the physical count once every three years. Thus, for a period of 3 years, the beginning inventory of year 1 has to be the real value of inventory on hand. But the ending inventory of year 1, the beginning and the ending inventory of year 2 and the beginning inventory of year 3 must all be the same figure and equal to the actual counted amount of the beginning inventory of year 1. But the value of the ending inventory of year 3 must also be determined by a physical count.

Since the ending inventory of year 1 of the three year period is not the actual amount it will be either overstated or understated. If the ending inventory will be overstated in the first year, the net income for the period will be overstated and vice versa. But the discrepency will be balanced in the third year when the net income will be understated.

Valuation of Inventories

Specific Identification is appropriate according to the Turkish Code to account for the goods in the inventory at the end of the period. The costs identified with the drugs at hand and the raw material of magistral drugs

are reported as the ending inventory. Thus, revenue is charged for goods sold on the basis of identified costs of the specific items sold. However, for selling purposes first-in first-out method is applied to the drugs with expiration dates. Therefore, drugs with the earliest expiration date will be sold first and a check or control of these drugs is simplified. By this procedure, the chance of having drugs with expired dates left on shelves and which are not suitable for sale is minimized.

CHAPTER III

INVENTORY CONTROL

Determinants of Inventory Level

Inventories are the goods that are held for sale in the normal course of business. It is the sale of inventories that provides a drugstore with its chief source of revenue. Thus inventories can be considered to be the sole assets of drugstores. In this sense they are both the short term and the long term assets of drugstores. The only way to maximize income which is the purpose of any business is to optimize inventory balances, i.e., to maximize profitability by balancing inventory investment against what is needed to maintain smooth operations.

Businessmen face many decision-making situations in the process of running the operations of their business concern. Experience and judgement are important factors but record-keeping is one of the most important phases of inventory control. To be effective, the system need not be elaborate but it is enough to be workable and orderly. The degree of elaboration necessary for a system should be determined by evaluating the benefits of that system against its costs.

The existing practice with the pharmacists is to base decisions on inventory on judgement and experience. There is nearly no system as to

the way they make decisions about their inventory. A control over the inventory is necessary to maximize profits, to avoid running out of stock and to keep stock from getting too high.

The objectives of a pharmacy should be minimum inventory investment and good customer service. Inventories are necessary to give good customer service but although some inventory investment is necessary too much of it may be harmful. In most pharmacies capital is limited; they operate on credit basis that bears an interest rate of 27 percent. So excess inventory serves no purpose and ties up capital.

There are several factors which influence an inventory policy to be followed. Seasons of the year have an impact on the type and amount of inventory to be kept. Winter months require that drugs used as remedy for colds, fever and coughs be abundant. For example, in Istanbul lotions, drugs for diarrea, creams for burns are needed most during summer.

The districts in which the pharmacies are located also have an impact on the kind of inventory to be kept. For example, in poor districts mostly rheumatism drugs are sold while in rich districts drugs for diabetes, tranquilizers, and other drugs used for nervous disorders are sold.

The effectiveness of the sales promotion of the pharmaceutical firms through their representatives affect the drugs demanded. If promotions are carried out effectively, then doctors tend to use mostly those drugs in their prescriptions.

Availability of the drugs is another factor that affect the inventory level. If the drugs are made in Turkey then there is no problem in getting inventory when desired. But if the ingredients of the drug are imported, then the availability of drugs is dependent on the import restrictions. The drugs are available in the market only during those periods in which the ingredients are being imported.

The proximity to the hospitals also influence the sales and the inventory level. If the drugstore is close to a hospital, an abundant amount of serum and lavage equipment is needed, but if there is no hospital near the drugstore usually one or two of these items are sufficient.

Price of the drug is one of the most important factors in the sales of drugs. The general trend is that drugs with high prices are purchased the least. The fee paid to the doctors is quite a high amount compared to the incomes of families. So instead of going to the doctor people usually buy drugs directly from the pharmacies according to the advice of the pharmacists. So the pharmacists in most cases do the job of the doctors. The high priced drugs are not bought unless they are urgently needed. The doctors also try to avoid giving high priced drugs to patients knowing that they most likely will not be bought.

With all these factors influencing inventory levels, still inventory of each kind of drug should be maintained so that the customer is served immediately or quickly enough so that he does not patronize another drugstore.

There is an agreement among the drugstores such that they can obtain a drug from the neighboring drugstores if they are short of a drug. This agreement makes possible that a customer is serviced quickly enough but the other objective which is to maximize profits is not accomplished. Since the drug is not available and has to be purchased from the neighboring pharmacy at its retail price, for each such drug the normal profit is lost.

Therefore, the goal of inventory control is to find out the optimum level of inventory investment. There are two points that must be avoided in inventory investment policy. The first point is that of inadequate inventories, which lose sales and thus profit and the second point is that of keeping excessive inventories which lead to capital tied up.

The current situation in the pharmaceutical industry is such that the cost of ordering is zero for the individual drugstore owner. The wholesalers or the pharmaceutical firms receive the orders of the pharmacies each morning and they deliver the drugs through their own means of transportation. No charge is made to the pharmacies for the transportation of drugs. Drugstores benefit from this service due to the intense competition among the producing and wholesaling firms. This is a form of non-price competition whereby these firms try to attract customers. Each morning the drugstores are asked for their orders through telephone calls and delivery takes place in the afternoon.

Theoretically, an effective inventory control system would require that all the items in the inventory get the same treatment of control. However, in practice, this can seldomly be achieved. It is very laborious and expensive to keep close control over all the items especially if there are a large number of them. Drugstores, being business units that have to deal with literally thousands of different items and usually having very restricted amount of labor force, which is usually not educated, cannot afford to exercise tight control on all of its merchandise through detailed records, and regular and frequent physical checks. Therefore, in order to develop a practical and efficient system, the pharmacies can utilise the annual usage figures and values of individual drugs. A system with such characteristics that can suitably be applied to pharmacies is the ABC method.[3]

ABC Classification

For purposes of this method the inventory can be separated into three different groups.

1. "A" items - items with high value. They are relatively few items usually about 15-20 percent of items but their value

[3]G. W. Plossl and O. W. Wight, Production and Inventory Control (Englewood Cliffs, N.J., Prentice-Hall, 1967), p. 56.

accounts for three fourths of the total value of the inventory.

2. "B" items - items with medium value. A greater percentage of all items are in this group and their value is usually about one sixth to one fifth the total value of inventory.
3. "C" items - items with low value. These comprise the bulk of of the items about 50 percent and their value account for less than 10 percent of the total.

There are about 2800 different items available in the drugstore that is surveyed. It is impossible within the context of this paper to classify all the 2800 drugs according to their annual usage which is the first step in an ABC control method. Although no records are available on the annual usage of the drugs, for illustration purposes, the writer has found out the representative annual usage figures for 149 items by making use of the purchase receipts. The sample is taken to show how a drugstore, apart from using intuition and judgement, can make use of the ABC method in its inventory decisions. The sample is stratified according to price and usage. There are drugs with high price, medium price and low price. Also drugs with high, medium and low volume of sales are included.

In the ABC method the items are first listed with their annual usage and then the annual usage figures are multiplied by the unit costs and ranked in decreasing order starting with the highest lira value of annual usage as shown in Appendix A.

Next, these items are listed in ranking order and the cumulative annual usage plus the cumulative percentage is calculated. Step two of analysis is shown in Appendix B.

The ABC analysis is summarized in Table 1.

TABLE 1

THE CLASSIFICATION OF ABC ITEMS BY PERCENTAGE OF TOTAL QUANTITY AND COST

Classification	% of Items	T.L. Per Group	% of T.L.
A (1-35)	23.5	120,582.60	70.6
B (36-84)	32.9	34,505.00	20.3
C (85-149)	43.6	15,611.60	9.1
	100.0	170,699.20	100.0

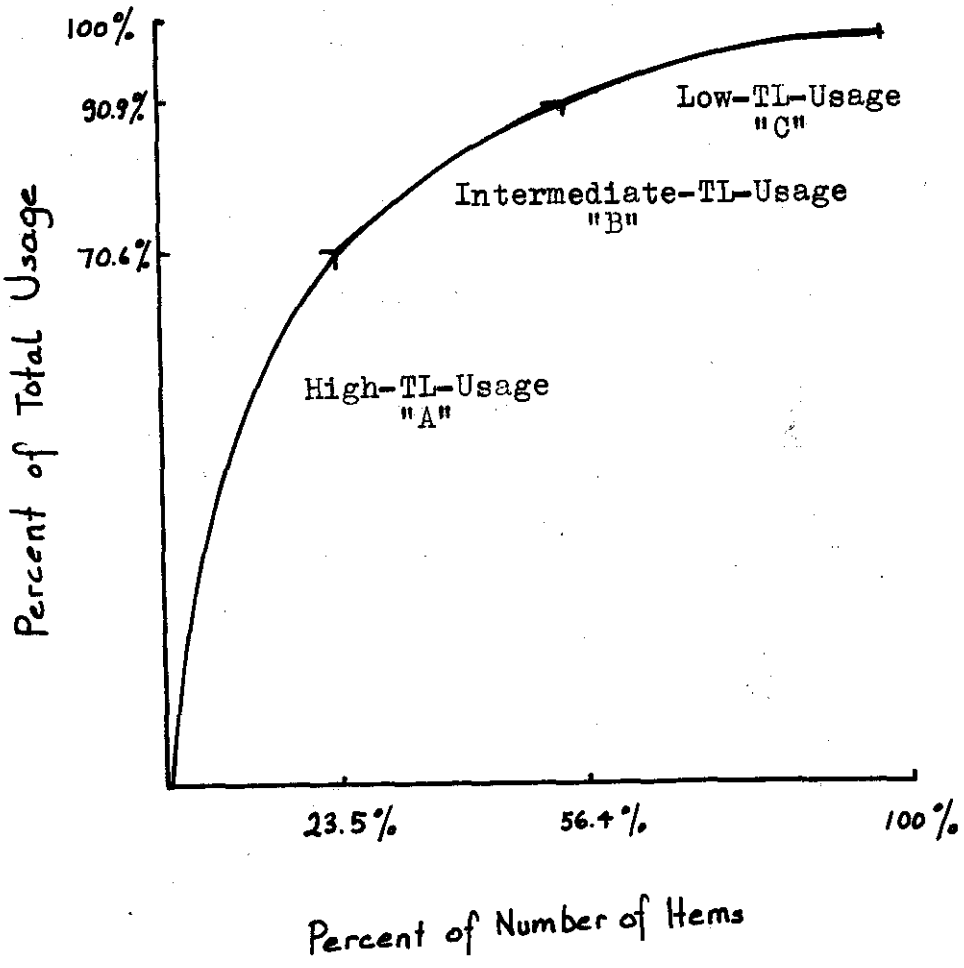
The value of "A" items accounts for 70.6 percent of the total value of the inventory. These are from 23.5 percent of the items. The "B" items constitute a larger number in the middle of the list and are 32.9 percent of the items and the total value accounts for 20.3 percent of the total. "C" items constitute the majority of the items, about 43.6 percent, and the total inventory value is almost negligible. It accounts for 9.1 percent

of the value.

Fig. 1 shows the distribution for the 149 group of items. The horizontal scale represents the percentage of total items and the vertical scale represents the percentage of total volume.

FIGURE 1

Distribution of Inventory Capital



The value of this ABC method lies in the way it illustrates that the greatest benefits may be possible if inventory analysis and control are directed toward the top items. Different control mechanisms are useful for each category.

The ABC method can be used to deal with problems of determining the degree of control, types of inventory records to be kept and ordering procedures.

"A" items: Need the most accurate control with complete records pertaining to yearly usage, seasonal fluctuations in sales, careful and accurate determination of order quantities. "A" items must receive priority in all activities. Perpetual inventory records might be necessary in dealing with drugs in this group.

"B" items: Need normal control with regular attention and adequate records. Physical inventory may be taken several times during the year.

"C" items: No records are needed. The only control necessary may be a periodic review of physical inventory at the end of the year. It does not pay to keep track of these items closely.

By referring to Table 1, it can be shown that if efforts are concentrated on class "A" drugs by very close control of their sales volume and

the purchases, their inventories can thus be reduced by 10 percent which amounts to about T.L. 12,058.

Annual T.L. usage of class "A" items 120,582.60

10% of T.L. 120,582 = T.L. 12,058

By concentrating the efforts of control on drug "A" items, class "C" drugs will be neglected. It will pay to neglect the class "C" drugs and incur a 33 percent increase in their inventories which amounts to only T.L. 5,151.

Annual T.L. usage of class "C" items 15,611.60

33% of T.L. 15,611 = T.L. 5,151.

This means that the capital freed from being tied up in "A" items exceeds the extra capital tied up in "C" items, so that the overall capital requirement for the business is reduced and this sum can be used more efficiently for another purpose.

OPTIMIZATION OF INVENTORY LEVELS

The ABC classification identifies the group of items that would receive different kinds of control mechanisms. Group "A" items receive the first attention. Further divisions such as breaking down the "A" group into AAA, AA and A items is also possible. This means that the "A" group of items has an ABC distribution within the group.

The objective of an inventory control system is to minimize the sum

of the costs associated with inventory or, in other words, to maximize the profits associated with inventory. Withe the aid of ABC classification, pharmacies can make decisions concerning inventory levels. Decisions concerning inventory levels will be directed toward "A" items because it is impractical and costly to make the decisions on all of the drugs and an important portion of the capital of pharmacies is being tied up in this group of items.

The problem faced by the pharmacies is to find out the maximum amount of inventory to be stocked in order to maximize profits. Since the time at which orders placed for goods is fixed and orders are placed each morning, the thing that pharmacists need to do, after finding the maximum inventory level, will be to order only that amount which will bring the inventory on hand up to the optimum level.

To illustrate a way of finding an optimum inventory level, the following example will be given. The optimum inventory level will be found for the drug Calcium Sandoz, Vitamin C which is the first item on the ABC classification; this means that it contributes the largest amount of profit to this particular pharmacy. There are two variables to the decision of inventory level. One variable is the revenue and the other variable is the cost associated with keeping inventory. The price of calcium sandoz is 725 kuruş. Therefore, for each drug sold the revenue earned is 145 kuruş. The carrying cost per unit of goods for each day is 0.43 kuruş. (The cost of Calcium Sandoz is 580 kuruş. The cost of capital is

27 percent for a year. The cost of keeping an inventory each day is $\frac{580 \times .27}{365} = 0.43$) Since the optimization problem includes both revenue and cost, an optimal policy is sought which minimizes costs minus revenue. This is equivalent to maximizing profits (revenue minus costs). The probability distribution given are the subjective probabilities for the prospective sales of calcium sandoz for the month of March as assumed by a pharmacist. To find the optimum level of inventory, the expected value (profit) of stocking various levels of inventory should be found and the stock that has the highest expected value will be chosen. The payoffs are calculated by multiplying revenue with sales and subtracting from this value the amount of inventory stocked times the carrying cost. If we use the symbols S for stock, D for sales (sales will equal demand), C for carrying cost, and R for revenue, the value of payoff would be calculated in the following way:

$$DjR - SiC = \text{payoff of element } ij$$

where

i represents the number of row

j represents the number of column..

If the demand and so the sales is 2 and there are only 2 inventories stocked, the payoff will be

$$2(145) - 2(.43) = 289.14 \text{ kuruş}$$

Since the pharmacy cannot sell more than what it has stocked, the

payoffs where the demand is greater than the amount stocked is equal to the payoff where demand is the same as the inventory stocked. For each additional item that is stocked in excess of demand, an inventory carrying cost of 0.43 kuruş is incurred. Thus, any element of any column differs by this amount from the elements preceding or following itself. Since a revenue of 145 kuruş is realised for each item sold, the adjacent elements of any row differ from one another by the same amount of 145 kuruş up to the point where the demand is equal to the number of units stocked. The complete payoff matrix is illustrated in Table 2. The inventory level that has the highest expected value is 15. Therefore, to maximize profits, the optimum inventory level of calcium sandoz should be 15 units and each day the pharmacist should check the number of calcium sandoz on hand and order that amount which would bring the inventory level up to 15 units. If the pharmacist thinks that March is a representative month for the sales during spring, then 15 units of calcium sandoz should be in the inventory every day during spring. Similar findings should be made for other drugs in class "A".

The optimization of the inventory level of calcium sandoz was based on the subjective feelings of a pharmacist about the sales during a month. Apart from a subjective probability distribution of sales, additional information is necessary for better and more accurate use of such decision making tools. The most important data that will be needed are

the monthly sales figures of the drugs. The writer believes that this task would be very simple if the pharmacists would keep a sales journal for group "A" items. At the end of the month, information on sales would then be very easily obtained. A sales journal would also be of great help for the checking of drugs that should be available at any time period. Because in this way the amount on hand each day would be known and the amount sold can be determined from the sales journal. Therefore, a sales journal would facilitate both decision making process and physical checking of units in the inventory.

In the optimization model it is assumed that sales was equal to quantity demanded but it is not always true. The situation holds true when there is only one pharmacy in a district so that the pharmacy is the only supplier of drugs for the inhabitants of that particular district. But in districts where a customer can get the drug from another pharmacy if it is not available in the first one, sales is not equal to demand. An inventory decision based on the sales will not give the optimum level of inventory. Therefore, in cases where the customer can satisfy his demand from a pharmacy nearby, the inventory decision must be based on demand rather than sales, So additional data must be kept for the item demanded in order to provide adequate information for decision making.

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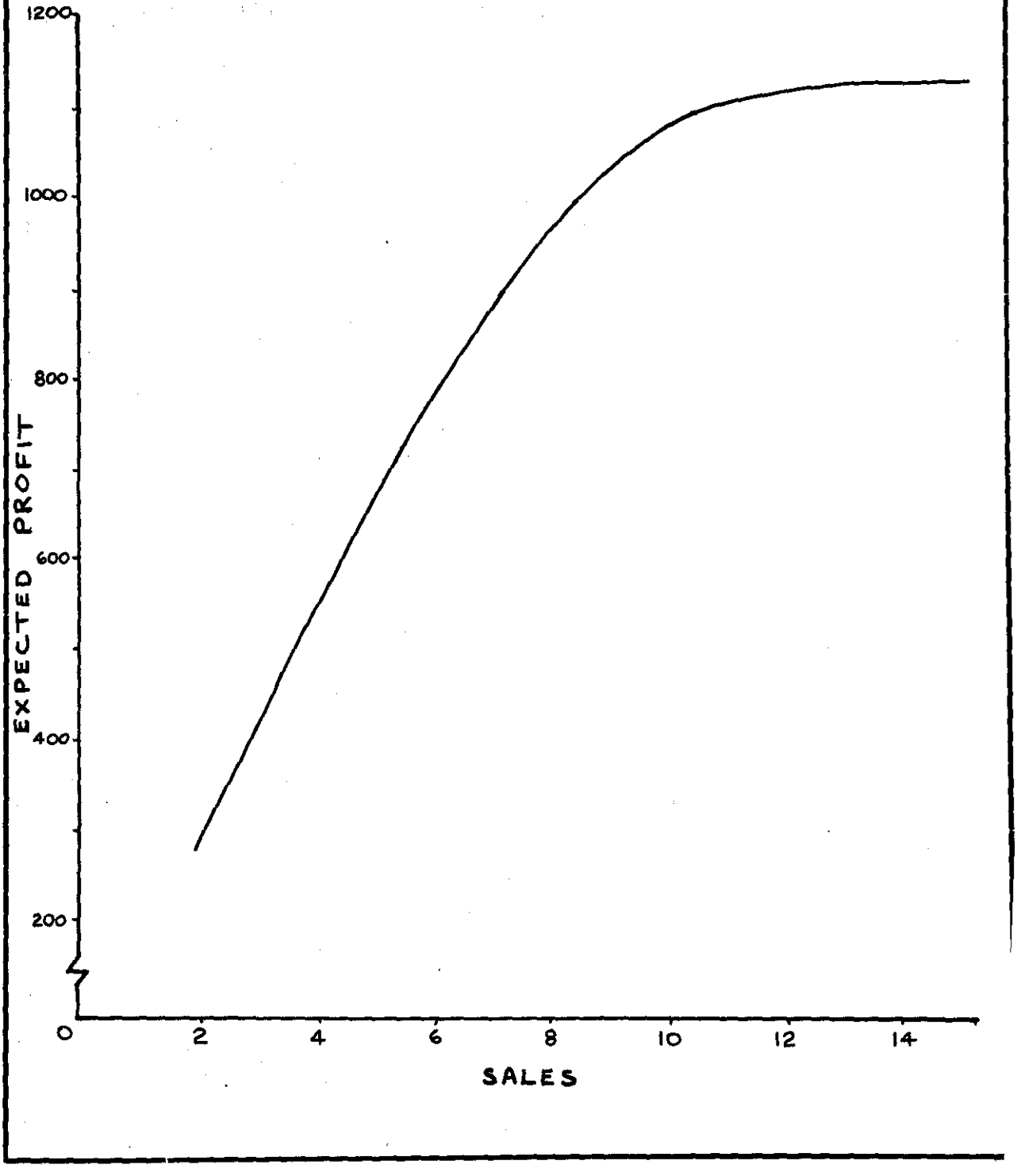
TABLE 2

PAYOFF MATRIX FOR DIFFERENT STOCK AND SALES LEVELS

Prob. Distri. of Sales		.02	.03	.04	.07	.07	.15	.26	.17	.09	.06	.03	.01	
Sales		2	3	4	5	6	7	8	9	10	11	12	15	Expected Profit
Stock	2	289.14	289.14	289.14	289.14	289.14	289.14	289.14	289.14	289.14	289.14	289.14	289.14	289.14
	3	288.71	433.71	433.71	433.71	433.71	433.71	433.71	433.71	433.71	433.71	433.71	433.71	430.81
	4	288.28	433.28	578.28	578.28	578.28	578.28	578.28	578.28	578.28	578.28	578.28	578.28	568.13
	5	287.85	432.85	577.85	722.85	722.85	722.85	722.85	722.85	722.85	722.85	722.85	722.85	699.65
	6	287.42	432.42	577.42	722.42	867.42	867.42	867.42	867.42	867.42	867.42	867.42	867.42	821.02
	7	286.99	431.99	576.99	721.99	866.99	1011.99	1011.99	1011.99	1011.99	1011.99	1011.99	1011.99	932.24
	8	286.56	431.56	576.56	721.56	866.56	1011.56	1156.66	1156.66	1156.66	1156.66	1156.66	1156.66	1021.77
	9	286.13	431.13	576.13	721.13	866.13	1011.13	1156.13	1301.13	1301.13	1301.13	1301.13	1301.13	1073.48
	10	285.70	430.70	575.70	720.70	865.70	1010.70	1155.70	1300.70	1445.70	1445.70	1445.70	1445.70	1100.60
	11	285.27	430.27	575.27	720.27	865.27	1010.27	1155.27	1300.27	1445.27	1590.27	1590.27	1590.27	1108.67
	12	284.84	429.84	574.84	719.84	864.84	1009.84	1154.84	1299.84	1444.84	1589.84	1734.84	1734.84	1114.04
	15	283.55	428.55	573.55	718.55	863.55	1008.55	1153.55	1298.55	1443.55	1588.55	1733.55	2168.55	1123.10

FIGURE 2

A Graphical Illustration of the Expected Profit Resulting from Different Sales and Stock Levels



CHAPTER IV

CONCLUSION

With the ever increasing competition among the drugstores the need for accounting data is an essential prerequisite for successful performance of business activities. Accurate and orderly record keeping is of vital importance. The decision-making process which involves the use of accounting data also necessitates well-kept records.

As has been pointed throughout the paper, nearly all pharmacies keep the minimum number of records and these records are kept only because they are a requirement of the Ministry of Finance. Most pharmacists have nearly no formal knowledge of accounting and have their records kept by professional accountants. This shows that they have little insight as to the profitability of their business until the financial statements are prepared at the end of the year.

When speaking of record keeping, it must be said that elaborate records covering all the numerous items are not necessary. The emphasis should be placed on the selected group of drugs where more strict control will result in substantial returns. The records should be practical and sufficient enough to permit better control and provide adequate data for decision making.

Majority of the pharmacies do not exercise any control over their inventory. Inventory is the main source of revenue of the pharmacies. Ways of minimizing the costs associated with inventory should be the objective of the pharmacists. The means of obtaining capital may be considered as the first step toward inventory control. Pharmacists should first analyze the cost of trade credit and try to find better ways of obtaining funds. As was indicated in the text, the yearly cost of trade credit that pharmacies currently obtain is 27 percent and is very high. Secondly, the kind of inventory that ties up a considerable amount of the capital must be avoided and efforts should be concentrated to have close control over these items. Records for monthly sales must be kept, perpetual inventory records must be maintained, order quantities must carefully be analyzed and the records must be kept accurately. The ABC control classification has been proposed by the writer to identify the kinds of drugs that require different degrees of attention and control.

Records are only a means for adequate control mechanism; records provide the data on which decisions must be made. The pharmacists must get familiar with analysis and use of accounting data if they are to improve their performance and want to maximize profits. With the help of records, decisions must be made for investments in inventories. Determining optimal order quantities is one of such decisions. Intuition and judgement are still needed but are not adequate for the

APPENDIX A

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Calcium Sandoz Vit. C	2500	7.25	14,500	1
Calcium D-Redoxon	600	7.25	3,480	9
Supradyn	1500	9.10	10,920	3
Calcibronat tabl.	500	7.00	2,800	12
Neurinase Sirop	250	6.50	1,300	31
Gastrogtt.	225	3.70	666	59
Neutralon	150	5.00	600	66
Purinol	150	6.85	822	46
Fosfogenol Vitamine	50	7.50	300	100
Vidaylin-M	35	6.85	191.80	125
Mazon Meyve Tuzu	120	6.00	576	71
T.A.O. Homofen Şurup	25	13.75	275	106
T.A.O. Capsul (16)	30	31.00	744	51
Randomycin Caps. (8)	200	28.40	4,544	7
Randomycin Şurup	15	16.55	198.40	124
Terramycin Şurup	40	6.25	200	122
Terramycin SF caps. (16)	150	12.50	1,500	23
Sigmamycin caps. (16)	75	19.25	1,155	35

(carried over)

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Sigmamycin Sirop	30	7.50	180	128
Tetra Vitamine (16)	1500	8.40	10,080	5
Tetra V. Suspansion	35	6.45	180.60	127
Gamanit capsul (16)	75	19.25	1,155	36
Gamanit Suspansion	5	9.45	37.80	148
Streptomagma Susp.	60	7.20	345.60	98
Granocol	100	5.65	452	87
Sokol	50	5.50	220	116
Thiophenicol	40	31.65	1,012.80	41
Negram	10	72.90	583.20	68
Orbenin (16)	15	55.00	660	61
Amplital	5	39.35	154.40	135
Kantrex 0.5 gr.	50	11.40	456	86
Bristacin A. 350 mg.	200	9.10	1,456	25
Pentrexyl caps.	50	39.35	1,574	22
Priazolina	8	34.35	219.84	117
Isobenzacyl P_4 100 tabl.	20	31.50	504	80
Adelphan	150	6.00	720	53
Adelphan Esidrex	100	5.00	400	93
Redoxon tabl.	500	3.65	1,460	24
Redoxon eff. tabl.	2500	5.55	11,100	2
			(carried over)	

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Pyramidon	50	2.95	118	142
Encephabol 100 lük	20	80.35	1,285.60	32
Ilvico	1500	4.65	5,580	6
Kina C	250	2.50	500	81
Novalgin Chinin	1000	2.50	2,000	16
Becozym	250	5.35	1,070	38
Bemiks T.	200	8.25	1,320	29
Rovigon	150	9.90	1,188	34
Bepanthene pastil	150	6.50	780	49
Sulfaquanil	80	2.50	160	134
Ovulen	80	7.50	480	84
Incidal	100	7.75	620	63
Allercur	30	3.35	80.40	145
Indocid	30	16.35	392.40	95
Endol	40	16.35	523.20	78
Kodis sirop	150	6.40	768	50
Corex sirop	100	7.20	576	72
Perebrom	300	9.45	2,268	15
Tonik Bayer	40	5.80	185.60	126
Decaduroblin 50 mg.	90	27.00	1,944	17
Sustanon 250 mg.	50	17.25	690	55

(carried over)

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Anteron	20	25.50	408	92
Dipro	30	3.35	80.40	146
Endoxon-Asta	5	41.00	164	133
Neurobion amp.	200	4.30	688	56
Pregnyl 1500 Un	15	33.15	397.80	94
Novakom amp.	40	7.90	252.80	111
Fosfostimol amp.	150	8.20	484	42
Vide 3	50	2.85	114	143
Rubramin 1000 mg.	70	3.80	212.80	119
Neosterin	200	4.95	792	48
Dank	250	8.65	1,730	20
Alugastrin	50	9.00	360	97
Siligel	70	10.25	574	73
Simeco	150	5.70	684	57
Bismomagnesi	250	6.25	1,250	33
Crotonal	60	12.65	607.20	64
Finalgon	100	5.90	472	85
Tofranil	35	21.25	595	67
Adumbran	50	6.05	242	114
Dermojen pom.	60	2.20	105.60	144

(carried over)

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Vitonal pom.	60	3.00	144	137
Betnovate pom.	100	18.10	1,448	26
Ultralon pom.	100	11.10	888	45
Teramycin pom.	80	4.00	256	110
Locacortene sol.	20	15.70	251.20	112
Locacortene krem	80	6.60	420.40	91
Kenacort A Losyon	30	11.25	270	107
Kenacort A pomad	60	10.00	480	83
Lasonil	100	6.40	512	79
Supolaxin supp.	70	2.50	140	138
Laksafenol	1200	1.50	1,440	27
Madribon	150	4.50	540	77
Mellenil 100 mg.	5	41.30	165.20	132
Pursenid	500	4.45	1,780	19
Sulfacol	60	3.45	165.60	131
Litrison	150	10.90	1,308	30
Neolion	100	7.90	632	62
Lasix	70	10.75	602	65
Geriplex	30	10.25	246	113
Quinacardive	20	18.25	292	102

(carried over)

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Ronicol Retard	50	14.55	582	69
Coramine	50	3.25	130	140
Cedilanide	150	6.65	789	47
Isoptin	70	12.00	672	58
Isoptin S	30	18.10	434.40	88
Pivanol	250	2.75	550	76
Grenoidin	200	4.15	664	60
Atromide S	120	20.00	1,920	18
Nostil	100	3.60	288	104
Babypirine	75	1.15	69	147
Pyramidon	50	2.95	118	141
Tegretol	20	31.00	496	82
Terbolan	25	18.00	360	96
Salipresinol	10	33.50	268	108
Serpasil	150	3.60	432	89
Controphyn Z. 120 g.	10	35.65	292.40	101
Equanil	80	2.65	169.60	130
Vicks	200	4.50	720	52
Optalidon	4000	3.35	10,720	4
Aspirin	2500	1.30	2,600	13

(carried over)

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Gripin	1200	.30	288	103
Opon	750	.35	210	121
Hydrotricin pastil	1100	3.30	2,904	11
Bellargal	300	5.50	1.320	28
Panalgine	1500	3.00	3,600	8
Buscopan	400	9.20	2,944	10
Deseril	15	17.95	215.40	118
Kompensan	450	6.90	2,484	14
Onoton	150	9.00	1,080	37
Niamid	40	29.45	941.40	43
Sucaryl	250	4.55	910	44
Dover	500	1.45	580	70
Gamakuil	40	8.30	265.60	109
Diabinese	300	7.00	1,680	21
Festal	150	5.75	690	54
Visine	50	3.40	136	139
Surparl tabl.	100	3.50	280	105
Noral	120	2.20	211.20	120
Thiocilline oft.	15	1.65	19.80	149
Ludicodine tabl.	100	4.00	320	99

(carried over)

Drug	Annual Usage	Unit Price	Annual T.L. Usage	Rank
Kodis tabl.	60	4.15	199.20	123
Serapax 15 mg.	100	6.90	552	75
Mogadon	240	5.40	1,015.20	40
Romilar tabl.	40	5.50	176	129
Novalgin tabl.	400	3.30	1,056	39
Refegan	75	4.00	240	115
Baralgin tabl.	60	8.90	427.20	90
Saridon	70	2.75	154	136
Homogerobion	100	7.15	572	74

APPENDIX B

Drugs in Ranking Order	Annual T.L. Usage	Cumulative Annual T.L. Usage	Cumulative Percentage	Class
1	14,500	14,500		A
2	11,100	25,600		A
3	10,920	36,520		A
4	10,720	47,240		A
5	10,080	57,320		A
6	5,580	62,900		A
7	4,544	67,444		A
8	3,600	71,044		A
9	3,480	74,524		A
10	2,944	77,468		A
11	2,904	80,372		A
12	2,800	83,172		A
13	2,600	85,772		A
14	2,484	88,256		A
15	2,268	90,524		A
16	2,000	92,524		A
17	1,944	94,468		A

(carried over)

Drugs in Ranking Order	Annual T.L. Usage	Cumulative Annual T.L. Usage	Cumulative Percentage	Class
18	1,920	96,388		A
19	1,780	98,168		A
20	1,730	99,898		A
21	1,680	101,578		A
22	1,574	103,152		A
23	1,500	104,652		A
24	1,460	106,112		A
25	1,456	107,568		A
26	1,448	109,016		A
27	1,440	110,456		A
28	1,320	111,776		A
29	1,320	113,096		A
30	1,308	114,404		A
31	1,300	115,704		A
32	1,285.60	116,989.60		A
33	1,250	118,239.60		A
34	1,188	119,427.60		A
35	1,155	120,582.60	70.64%	A
36	1,155	121,737.60		B

(carried over)

Drugs in Ranking Order	Annual T.L. Usage	Cumulative Annual T.L. Usage	Cumulative Percentage	Class
37	1,080	122,817.60		B
38	1,070	123,887.60		B
39	1,056	124,943.60		B
40	1,015.20	125,958.80		B
41	1012.80	126,971.60		B
42	984	127,955.60		B
43	941.40	128,897		B
44	910	129,807		B
45	888	130,695		B
46	822	131,517		B
47	798	132,315		B
48	792	133,107		B
49	780	133,887		B
50	768	134,655		B
51	744	135,399		B
52	720	136,119		B
53	720	136,839		B
54	690	137,529		B
55	690	138,219		B

(carried over)

Drugs in Ranking Order	Annual T.L. Usage	Cumulative Annual T.L. Usage	Cumulative Percentage	Class
56	688	138,907		B
57	684	139,591		B
58	672	140,263		B
59	666	140,929		B
60	664	141,593		B
61	660	142,253		B
62	632	142,885		B
63	620	143,505		B
64	607.20	144,112.20		B
65	602	144,712.20		B
66	600	145,312.20		B
67	595	145,907.20		B
68	583.20	146,490.40		B
69	582	147,072.40		B
70	580	147,652.40		B
71	576	148,228.40		B
72	576	148,804.40		B
73	574	149,378.40		B
74	572	149,950.40		B

(carried over)

Drugs in Ranking Order	Annual T. L. Usage	Cumulative Annual T. L. Usage	Cumulative Percentage	Class
75	552	150,502.40		B
76	550	151,052.40		B
77	540	151,592.40		B
78	523.20	152,115.60		B
79	512	152,627.60		B
80	504	153,131.60		B
81	500	153,631.60		B
82	496	154,127.60		B
83	480	154,607.60		B
84	480	155,087.60	90.85%	B
85	472	155,559.60		C
86	456	156,015.60		C
87	452	156,467.60		C
88	434.40	156,902.00		C
89	432	157,334.00		C
90	427.20	157,761.20		C
91	420.40	158,181.80		C
92	408	158,589.80		C
93	400	158,989.80		C
94	397.80	159,387.60		C

(carried over)

Drugs in Ranking Order	Annual T. L. Usage	Cumulative Annual T. L. Usage	Cumulative Percentage	Class
95	392.40	159,780.00		C
96	360	160,140.00		C
97	360	160,500.00		C
98	345.60	160,845.60		C
99	320	161,165.60		C
100	300	161,465.60		C
101	292.40	161,758.00		C
102	292	162,050.00		C
103	288	162,338.00		C
104	288	162,626.00		C
105	280	162,906.00		C
106	275	163,181.00		C
107	270	163,451.00		C
108	268	163,719.00		C
109	265.60	163,984.60		C
110	256	164,240.60		C
111	252.80	164,493.40		C
112	251.20	164,744.60		C
113	246	164,990.60		C

(carried over)

Drugs in Ranking Order	Annual T.L. Usage	Cumulative Annual T.L. Usage	Cumulative Percentage	Class
114	242	165,232.60		C
115	240	165,472.60		C
116	220	165,692.60		C
117	219.80	165,912.40		C
118	215.40	166,127.80		C
119	212.80	166,340.60		C
120	211.20	166,551.80		C
121	210	166,761.80		C
122	200	166,961.80		C
123	199.20	167,161.00		C
124	198.40	167,359.40		C
125	191.80	167,551.20		C
126	185.60	167,736.80		C
127	180.60	167,917.40		C
128	180	168,097.40		C
129	176	168,273.40		C
130	169.60	168,443.00		C
131	165.60	168,608.60		C
132	165.20	168,773.80		C

(carried over)

Drugs in Ranking Order	Annual T. L. Usage	Cumulative Annual T. L. Usage	Cumulative Percentage	Class
133	164	168,937.80		C
134	160	169,097.80		C
135	154.40	169,252.20		C
136	154	169,406.20		C
137	144	169,550.20		C
138	140	169,690.20		C
139	136	169,826.20		C
140	130	169,956.20		C
141	118	170,074.20		C
142	118	170,192.20		C
143	114	170,306.20		C
144	105.60	170,411.80		C
145	80.40	170,492.20		C
146	80.40	170,572.60		C
147	69	170,641.60		C
148	37.80	170,679.40		C
149	19.80	170,699.20		C

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