

APPLICATIONS OF MANAGEMENT AND COST ACCOUNTING IN REPUBLIC HISTORY OF TURKEY

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ABSTRACT

In the Republic history of Turkey, with the developments in the area of economy, change in tax systems brought about the birth of a new occupation equipped especially with information about tax laws.

The German professor Sachsenberg, who was brought to Turkey to analyze the Sümerbank's (established in 1933) subjects of cost in respect to operation, manufacturing and sales, founded the first modern cost accounting in Turkey. When we look through the cost accounting system of Sümerbank, we acknowledge that the vapor used in the hosiery, textile finishing and painting cost center is obtained through the production of soft water before brackish water; and the costs of vapor are calculated through this approach with the use of the cost allocation method, which is also known as the step-down allocation method.

During that period, it is acknowledged that the costs were monitored on the basis of cost center and the cost of every cost center was calculated distinctly as material, direct labor and factory overheads. The cost item approach is also seen at the cost allocation table of Sümerbank. Furthermore, the studies concerning the establishment of the modern cost accounting and reporting system was inaugurated by the Commission of Reorganizing State Economic Enterprise, Finance and Accounting Group in 1964.

Key words: Cost Accounting, Management Accounting

1. INTRODUCTION

As in developed countries, the development and the implementation of accounting, together with cost and management accounting occurred in Turkey in the modern way during the 19th and 20th centuries when the industrial revolution took place. In that era, the Tax Procedure Law, Turkish Commercial Code, Associations of Banks, State Economic Enterprise and the Code of Capital Markets Board tried to execute the regulations regarding the accounting operations distinctly.

In our study, after reporting the developments in cost and management accounting in a historical order, cost accounting system is intended to be explained with examples in Sümerbank, which is of great importance in Turkey's economic development and known to be one of the biggest state economic enterprise of the period

2. STRUCTURAL DEVELOPMENTS IN ACCOUNTING PROFESSION BETWEEN THE YEARS 1923 AND 1960

Accounting education and application in Turkey started in the nineteenth century in modern meaning. At this period, Turkish Commercial Code, Tax Procedure Law, Ministry of Finance, Union of Banks, Economic Government Enterprises and Capital Markets Board set out to arrange the regulations about accounting independent from each other. However; arrangements done independently caused a really big problem for our country's accounting in the republic period (Pur, 1995; 101).

It is accepted that there was a German influence at accounting theory and application in our country between the years of 1926 and 1960. As 865 numbered Turkish Trade Law was taken from German Trade Law, it is said that there is a dominant German effect on Turkish accounting (Bilginoğlu, 1988:15). Thanks to Turkish Commercial Code ,the way of gaining a corporate characteristic is determined for enterprises ,each organization acquired a separate organizational structure and accounting system; in other words;system of cost and management accounting. It is again determined by this law how the revenue and costs resulting from debt and credit relations effect an organization's structure of cost.

In addition to this, German professor Sachsenberg who was invited to Turkey to solve the cost issues on business, production and sales in Sümerbank, founded the first modern business accounting (cost accounting) of the time via a solemn study. From the concepts laid by the uniform accounting system to the concepts like; cost types and cost center... etc were all established by this professor. By the application of system, method, principles and rules required by cost accounting in Sümerbank, which was established as an Economic Government Enterprises 60 years ago, made it possible to solve the first step cost problems required especially in the area of industry (Uragun, 1993: 6-7).

The 3460 numbered law which was put into practice in the year 1938 provided the government owned enterprises and related companies to manage these companies according to "operating budget" and to make a comparison between the companies, it adjudicated the preparation of budget, balance sheet, statement of profit and loss, 3 month annual reports. However; they couldn't reach the desired aim because they were limited to shape (Akdoğan ve Aydın, 1987; 85).

It is quite possible to state that, Tax Procedure Law and Income Tax Law and some related statements which were resulted from tax reform made in 1950, laid the foundation of today's accounting applications. The effects of the pointed tax laws were in two ways. With the help of Tax Procedure Law the issue of book keeping, documentation, valuation were sorted out and on the other hand as both the private sector and the public sector are included in the law a comprehensive arrangement is made in accounting applications. At the same time, as the main aim of Tax Law is to determine the tax base it can not be said that balance sheet, statement of profit and loss would affect the investment decisions in the capital market (Akdoğan ve Aydın, 1987; 85-86).

The Tax Procedure Law provided the arise of items which can be defined as cost element or instead can be accepted as period cost. The taxes to be accepted as cost element and the taxes not to be accepted as cost elements are especially stated. the depreciation system which enables tangible and intangible fixed assets to be accepted as cost elements in the accounting system was also determined by this law. The valuation criteria, the determination of balance sheet items to be used in these valuation criteria made the issue of taking cost element into consideration clearer for manufacturing businesses (product or service). In the light of this information, personel costs in the businesses are taken as a cost element or not.

The ministry of Finance only made arrangements about cost elements related to tax base but postponed the cost and management accounting applications to a great extent. In the arrangements made by The Ministry of Finance especially absorbing costing system was taken into consideration and moved accordingly. The arrangements on management accounting such as; variable costing system, standard cost system and other cost calculation systems were minimum. Variable costing system and standard cost system are stated in the studies and arrangements of Capital Markets Board.

Even though the second biggest step on the area of financial accounting and cost accounting was completed by 3460 numbered law, the studies on cost accounting and the studies on the establishment of reporting system in modern meaning started by the Commission of Reorganizing State Economic Enterprise, Finance and Accounting Group founded in compatible with the ninth subclause of number 440 law's first temporary section in 1964 (Uragun, 1993; 6-7). One of the functions of this group is stated as determining bases to

uniform and refine the accounting methods. The Commission suggested the Uniform Accounting System to be compulsory for Economic Government Enterprises and optional for private sector. This system leans on American Accounting theory and applications to a great extent (Yalkın, 1994; 11-12).

Uniform chart of accounts which results from the studies of this group is an important development in the area of cost and management accounting. At this period, the size of the enterprises reached the level of requiring this chart of accounts system. With the help of this study the concept of cost center and the cost types is clarified. Opening an account in accordance with cost element is also realized during these studies. For instance, three different accounts (direct material costs, direct labor costs, factory overheads) about three important cost elements are also opened in the chart of accounts.

In the chart of accounts prepared by the Ministry of Finance in the first of January in 1994, three different accounts were opened according to these cost elements. We have to underline this fact. Because in the West the concepts of direct raw material costs and direct labor costs were joined and named as prime cost or direct labor costs and factory overheads were joined and named as conversion costs concepts. The prime cost and conversion cost have never taken place in chart of accounts in Turkey (Yükçü, 2007a ; 6).

3. MEMBERS RELATED TO ACCOUNTING BETWEEN THE YEARS OF 1923 AND 1950

Even though there wasn't an institutional structure members related to accounting are divided into two groups as executives and expert accountants. Executive accountants are the people who are responsible for carrying out accounting issues within the business and they have undertaken responsibilities though there are many changes in the applications. However; with the development of businesses and in the businesses which are formed as a result of the increase government's economic, financial and social functions executive accountants became a member belonging accounting which evaluates accounting records for many reasons (Erol, 2007; 13).

Executive accountants are named as accountants and vice accountants according to their responsibilities. Accountants are the people who have the necessary knowledge, education and practice to carry out accounting issues, forwarding and managing them. Vice accountants are responsible for keeping specific books, accounts and arranging files. They are asked for having the limited knowledge and experience for their jobs. Besides executive accountants are given titles as Corporation Accounting, Cost Accounting, Insurance Accounting, Bank Accounting, Construction Accounting, Agriculture Accounting, Hotel Accounting, Depository Accounting... etc according to their specialization areas which are shaped trade and industry accounts which are the two general types of accounting. (Erol, 2007; 13-14).

Expert accountants can also be classified according to sector they work, the statute they are subject to and their responsibilities. These can be explained as below (Erol, 2007; 14):

- **Senior Public Accountants:** They work self-employed to supply of private sector.
- **Financial Advisors:** They have a specialization on financial issues. They both give information on tax laws. Together with fulfilling the responsibilities of the tax - payers in the areas of taxation and accounting, they also arrange the financial balance sheets and they guide in the issues of tax penalty.
- **Auditors:** With the development of Economic Government Enterprises related to corporations they fulfill the duty to evaluate the issues of revision, supervision and accounting which are obligatory.
- **Business Auditors:** They were formed to supply the auditing via accounting issues in businesses.
- **Public Accountant and Auditors:** They are placed in the government's financial staff. Their duty is to inquire whether the declared taxes are in accordance with the laws, they are correct or not and detect them.

4. EMERGENCE OF THE NEED OF COST AND MANAGEMENT ACCOUNTING IN THE REPUBLIC HISTORY OF TURKEY

The diversity in the applications of cost and management accounting increased in a direct proportion of the development in industry and service sector in Turkey. The issues of cost and management loomed large with the increase in the competition and trade in national and international area.

When the Turkish republic was founded there weren't any workshops or any important factories so, noone needed management accounting systems or comments related to cost accounting techniques. At that time, the main need of the public which was 'bread' not even baked in factories or bakeries instead; they made their own bread at home. That's why, the need of cost and management accounting was in a minimum extent.

Mustafa Kemal Atatürk; the founder of the Turkish Republic, established many industrial complexes by state capital because the public might have the difficulty of doing so, Sümerbank about which we would like to mention later, was founded in this way. After these factories were established the need for cost and management accounting arose.

With the foundation of pointed factories the use of cost accounting techniques and the techniques of management accounting analysis and comment methods hadn't started to be used. Consequently, the managers of that time focused on

the production of fabric, sugar, flour ...etc which were the main needs of public. Later on, the increase in the number of industrial complexes brought about the need for cost and management accounting.

5. THE APPLICATION OF MANUFACTURE BOOK IN THE FIRST COST AND MANAGEMENT STUDIES IN THE REPUBLIC HISTORY OF TURKEY

The first step in cost and management accounting was taken by the Ministry of Finance in reaction to the needs. While the Ministry of Finance was doing the arrangements on accounting they always took the tax issue in consideration. The manufacture book (took place in Tax Procedure Law in 1949) was also a product of this implementation. Tax procedure law asks the traders and institutions to keep a manufacture book besides the book they have to keep if they are in a constant production. The manufacture book is a book which has been known and implemented as a cost accounting application for many years.

In the west literature the aim of cost accounting is explained as calculating unit cost. However, the aim of keeping a manufacture book is not calculating the unit cost and total cost of the good or service. In this book, instead of writing the total, calculations are made according to the amount (Yükçü, 2007b; 759).

With the Tax Procedure Law it became obligatory to keep a manufacture book for industrial enterprises. However; in the year 1994 when The Communiqués introduced by Ministry Of Finance came into practice, the usage of the manufacture book decreased. As the enterprises using the 7/A option stated in this communiqué, can escape from the obligation of keeping a manufacture book if they are able to watch their amount movements in their accounting systems. On the other hand the users of 7/A and 7/B the obligation of keeping a manufacture book is still going on. However, there is a decrease in its importance because of the accounting systems and developments of computer programs.

The manufacture book is arranged to make the tax auditing for tax administration easy. In the west literature, the manufacture book takes the function of "Flow of Production" which is mentioned in the "Process Costing System" parts in the cost accounting books. These actions are written in this book:

- a) The raw materials bought to a company in type and amount.
- b) The types and amount of raw materials given back or sold as commercial good.
- c) The types and amount of raw materials directed to production.
- d) The types and amount of produced good.
- e) The types and amount of sold goods (Appendix A and B).

If carefully looked the ones taken as raw material and the sell offs are always followed as an amount. The very aim of the tax department in keeping books of manufacture as to quantity is to ensure the balance between the output accounts and the quantity. Hence, the department aims to preclude tax losses and evasions. However, if the enterprise-owners or the accountants are evaluating the quantities registered in these books, they can calculate the cost of raw material consumption, and moreover, by adding the total of the labor costs and factory overheads, they can even figure the total cost. Such practice was being implemented during the years of 1950, 1960 and 1970.

6. THE SYSTEM OF COST ACCOUNTING IN SÜMERBANK

In 1933, the State for Industries and the Turkish Industrial Bank are assigned to the responsibility of Sümerbank, a state-owned corporation established according to the law no: 2262 on 3.6.1933. Thereby, the very first example of State Economic Enterprises was introduced. The objectives of Sümerbank were to (Güvemli, 2001; 458):

- Run the factories under its auspices and manage the interest shares of the State in the private sector.
- Prepare appropriate projects in regard to State-owned industrial enterprises and establish such enterprises.
- Participate in profitable industrial enterprises.
- Maintain students both here and abroad in order to educate the future training instructors of the foremans and workers.
- Grand loans to the industry, execute banking bussiness.

When Sümerbank was assigned the duty, it owned the below subjects as their first capital (Sümerbank Kitapçığı, 1973; 3-4):

- All the rights and reserve fund taken over from State for Industries Office and Industrial Bank.
- Stable and working capital and accumulated depreciation of the factories taken over from State for Industries Office.
- Participation stocks taken over from State for Industries Office.

In addition to those subjects mentioned above, Sümerbank was also assigned the duty of accomplishing the industrial enterprises which took place in the 1st National Five-Yeared Development Plan. Sümerbank succesfully achieved most projects in textile, mining, wood-pulp industry, ceramics and chemical industries (Güvemli, 2001; 458).

Sümerbank's accounting system and chart of accounts were good examples and moving point for many public enterprises. In Sümerbank's cost accounting system, the production of soft water from raw water was critically important. The production of soft water from raw, vapor from soft water, electricity from

vapor were important too. This step by step production proposes the use of step down allocation method of factory overheads in modern literature. At that time ,step down technique was used in Sümerbank as directing raw water expenses to soft water and soft water costs to evaporation costs.The information about the cost accounting applications in Sümerbank was taken from Prof. Dr.Nurettin Yelken's lesson notes who worked as a controller in 1950s and 1960s. Following the delineation of the cost types, cost centers and the data regarding cost allocation in Sümerbank, an example of practice is evaluated.

6.1. Cost Types in Sümerbank

Below are respectively explained the circumstantial information and data in regard to the groups which constitute the account of cost types in Sümerbank:

6.1.1. Raw Material and Starting Material Consumption Account (Direct Material Costs)

This account is a main account in which the values concerning the raw and starting materials consumed for the aim of production are being registered. The subdivided accounts of this account are grouped into three as stated below:

- Primary Production Raw Material Consumption Account
- Primary Production Starting Material Consumption Account
- Secondary Production Raw Material Consumption Account

The materials which comprise the main structure of the products are called the raw and the starting materials. Raw materials are physical elements which preserve their original shape right from the sources they are provided, and are yet to be processed technically. These items are also called basic materials. Starting material, as well as being one of the main elements constituting the structure of the product, is a term used at the combined production factories in order to make the term distinguishable from raw material consumption.

6.1.2. Secondary Material Consumption Account

Materials which are used or consumed in order to give the product the desired quality during the manufacturing process; which are also included and do directly affect the structure of the product are called secondary materials. Chemical substances, paints, materials preventing creasing can be given as examples regarding this kind of materials.

6.1.3. Material Consumption Account

'Materials' are the items that are used or consumed in the production process, yet not included in the structure of the product. Material Consumption Account can be subdivided into three groups:

- Primary Material Consumption Account
- Secondary Consumption Account
- Miscellaneous Material Account

6.1.4. Personnel Costs Account

Personnel costs account displays the payments made to employees in an enterprise regardless of the wage basis. It can be subdivided under these divisions:

- Salaries
- Supplemental wages/fringe benefits
- Compensations
- Social benefits
- Transportation and travel expenses
- Workforce wages
- Supplemental workforce wages
- Social benefits for workforce
- Transportation allowances and travel expenses for workforce

6.1.5. Insurance Costs Account

It is the account which the costs and the premiums concerning the insurances which are made on all the economic values comprising the factory assets against the risks such as conflagration, earthquake, and flood, are being kept recorded. This account can be grouped as regards the type of the values insured:

- Raw material, starting material and secondary material insurances
- Material insurances
- Semi-product insurances
- Product insurances
- Fixed asset insurances
- Motor-vehicle insurances

6.1.6. Miscellaneous Costs Account

In this kind of account, several varied costs which have not been referred under the previous titles of production accounts are recorded into. Its subdivided accounts are as follows:

- Communication costs
- Research and development, Publishing and Advertising Costs
- Leasing costs
- Common fund costs

- Shipping and portorage costs
- Illumination and cleaning costs
- Heating costs

6.1.7. Taxes, Dues and Fees

This is the account in which the taxes, dues and fees and the contributions an enterprise is obliged to pay at government and private agencies are registered. This account can be subdivided into groups such as:

- Real estate taxes
- Note of fees and notarial charges
- Motor-vehicle taxes
- Contributions to the Union of Chambers and Stock Exchanges, professional organizations

6.1.8. Fixed Values Depreciation Costs Account

Specified as the fixed values depreciation costs, this account helps keep records of depreciation shares which are appropriated for all constant values. Considering its subdivided accounts, these must be opened in conformity with the fixed values account. This account can be grouped as follows;

- Depreciation of Forest and Nursery
- Depreciation of arrangements on-land
- Depreciation of buildings
- Depreciation of machinery
- Depreciation of facilities
- Depreciation of equipment
- Depreciation of Furniture and fixtures
- Depreciation of claims
- Depreciation of continued production and new enterprises

6.1.9. Outsourcing Utilities and Services

This account is used to register the costs of the operations which cannot be handled within the power of the enterprise due to its organizational type; and which, hence, require external procurement. This type of account also includes the costs of externally procured needs such as water and electricity. The subdivisions are as follows:

- Primary Production Costs
- Secondary Production Costs
- Maintenance and Repair Costs
- Water and Electricity External Costs

6.2. Cost Centers in Sümerbank

The main cost centers in Sunerbank are chiefly subdivided as follows:

1. Primary enterprise cost centers
2. Secondary enterprise cost centers
3. Allocated cost centers
4. Retained cost centers

The sub-divisions of aforementioned cost centers are explained resrectively below:

6.2.1. Primary Enterprise Cost Centers

In industrial enterprises “primary enterprise cost centers” or in other words “production department” ought to be arranged congruously with the chief objective and the peculiarities of the enterprise. Consequently, it is prominent that those items be left in blanks “.....” with out being itemized in order to achieve a certain compatibility with every type of industrial enterprise.

1.production cost center
2.production cost center
3.

In Sümerbank, cost centers such as hosiery, textile finishing, painting and pleat are used as primary enterprise cost centers. Furthermore, differently sized warp threads are manufactured at the thread center; drapery is manufactured at hosiery then finished single, two or three coloured at the textile-finishing and painting center.

6.2.2 Secondary Enterprise Cost Centers

In industrial enterprises, the items which provide the recycling of miscellaneous cloth leftovers or defective articles spared during the manufacturing process, and help indirectly the manufacturing of main articles, are called ‘secondary enterprise cost senter’ or ‘secondary production cost center’. As it is understood from the title, subsidiary articles are being manufactured here.

1.production cost center

6.2.3 Allocated Cost Centers

Allocated cost center is the place where the costs which serve for the auxiliary and managerial services, and hence, ought to be allocated to primary and

secondary production cost centers are being collected. This center also serves for the workshops which manufacture articles that constitute the primary product.

To illustrate, a number of costs can be given:

1. Secondary Enterprise Cost Centers
 - A) Water and Energy
 - (1) Water Consumption
 - (A) Raw Water
 - (B) Soft Water
 - (2) Vapor Production
 - (3) Electricity
 - B) Maintenance and Repair
 - (1) Machinery Maintenance
 - (2) Electricity Maintenance
 - (3) Factory Plant/Workshop Maintenance
 - (4) Construction Maintenance
2. Auxiliary Services Cost Centers
 - A) Social Costs
 - (1) Restaurant
 - (2) Housing
 - (3) Infirmary
 - (4) Baby Nursery
 - (5) Other
 - B) General Administration Costs
 - (1) Administrative Offices
 - (Manager's Office)
 - (Accounting)
 - (Commerce)
 - (Personnel)
 - (Communication)
 - (Law)
 - (2) Raw Material and Operating Supplies Depository
 - (3) Product Depository
 - (4) Other
 - C) General Operating Costs
 - (1) Offices at the Place of Production
 - (2) Laboratory
 - (3) Sewers, Air-Conditioning, Fire-Fighting
 - (4) Other

6.2.4 Retained Cost Center

'Retained cost center' is the place in which the costs, even though they are included in cost accounts, yet since they are not pertaining to direct

merchandising, and which do not require allocation to primary or secondary production places, are collected. It can be subdivided as follows:

- Purchasing cost center
- Selling cost center
- Deficit cost center
- Activities on progress and new enterprises cost center

6.3 Allocation of Water and Vapor Production Cost Center

The establishment can not process the externally-procured water directly to produce vapor due to its high level of hardness. The chalk in the water calcifies in the steam boiler, which both diminishes the efficiency and shortens the longevity of the boiler. Consequently, the water hardness of which is not removed is merely called as 'raw water', and the water which is softened can be called as 'soft water'.

6.3.1 Allocation of Raw Water Costs

There is a diminutive discrepancy between the essential principle of the raw water costs allocation and the afore-mentioned principle of water costs allocation. The differentiation lies on the matter that hard water is processed in order to achieve a softness which is adequate for enabling vapor production. Thus, the unit cost of the soft water production can be calculated and a share of cost is appropriated into water cost center according to the amount of raw water.

Assume that there are two primary and one secondary enterprises of a company. The total of monthly cost at the raw water cost center is 15.000 TL, annual amount of water procured externally is 25.000 m³, and the table that raw material enterprise presents to the cost accounting is as follows:

Raw Water Consumption Table	
Consuming Cost Center	Amount of consumption
Primary enterprises:	
Enterprise 'A'	6.000 m ³
Enterprise 'B'	4.000 m ³
Secondary Enterprises:	
Enterprise 'C'	2.000 m ³
Enterprise costs based on allocation:	
Soft water Enterprise	8.000 m ³
Electricity maintenance workshop	200 m ³
Machinery maintenance workshop	150 m ³
Restaurant	1.900 m ³
Administration offices	850 m ³
Laboratories	700 m ³
Parking building	<u>1.200 m³</u>
Total	25.000 m ³

20.000

The total of the monthly costs in the raw water cost center is calculated as one unit, dividing it by the total of water consumption amount which soft water enterprise uses up.

$$\text{Formula: } \frac{\text{Total Cost at Raw Water Enterprise}}{\text{Total Water Consumption at Primary, Secondary and Soft Water Enterprises}} = \text{Unit}$$

$$\text{Formula: } \frac{15.000 \text{ TL}}{20.000 \text{ m}^3} = 0.75 \text{ TL/ m}^3$$

The water consumption of primary and secondary enterprises are separately multiplied with the unit calculated, and the result is noted aside so as to combine the cost shares of primary and secondary enterprises with the shares gained from the allocation of soft water costs. However, the share of costs which fall to soft water enterprise's lot is marked as '-' in the raw water cost center in order to be subtracted from the raw water costs in the indirect costs section on the second page of the cost aggregation and allocation sheet ; and marked as '+' in the soft water cost center so as to be added to soft water costs.

The water consumption of primary, secondary and soft water enterprises are separately multiplied with this unit with raw water amount of the soft water establishment, the cost, therefore, is allocated; and the shares of the cost, thus, are calculated.

Share of Enterprise A' =	$6.000 \text{ m}^3 \times 0.75 = 4.500 \text{.-TL.}$
Share of Enterprise 'B' =	$4.000 \text{ m}^3 \times 0.75 = 3.000 \text{.-TL.}$
Share of Enterprise 'C' =	$2.000 \text{ m}^3 \times 0.75 = 1.500 \text{.-TL.}$
Share of Soft Water Enterprise =	$8.000 \text{ m}^3 \times 0.75 = 6.000 \text{.-TL.}$
	<u>15.000.-TL.</u>

Consequently, the shares of raw water costs which are attributed to the primary and secondary enterprises are noted aside so as to be combined with the shares of soft water costs. However; the share of cost of the soft water enterprise is marked with "+" at the raw water cost center as one of the indirect water costs written on the second page of the costs aggregation sheet.

<u>Cost Types</u>	<u>Cost Centers Based on Allocation</u>	
	<u>Soft Water</u>	<u>Raw Water</u>
.....
.....
.....
.....
<u>Total of Direct costs</u>	<u>4.000</u>	<u>15.000</u>
Water costs	+6.000	-6.000

6.3.2. Allocation of Soft Water Costs

The company has two primary and one secondary enterprises. It is assumed that the total of costs at the soft water cost center is 4.000 TL, the share incurred in the allocation of raw water costs is 6.000 TL, amount of water purchased from raw water enterprise in order to decalcify the water is 8.000 m³, and consumption table given to cost accounting by the soft water enterprise is listed below. According to these variables, water bought from raw water enterprise is 8.000 m³.

<u>Table of Soft Water Consumption</u>	
<u>Consuming Cost Center</u>	<u>Amount of Consumption</u>
Primary enterprises:	
Enterprise "A"	1.000 m ³
Enterprise "B"	800 m ³
Secondary Enterprise	
Enterprise "C"	200 m ³
Allocated-Based Enterprise costs	
Vapor enterprise	<u>6.000 m³</u>
	8.000 m ³

The total of all direct production costs accrued in a month at the soft water cost center is added to the share in the costs of raw water enterprise. Therefore, the total of direct and indirect costs is acquired as a unit by dividing it by the total of soft water consumption in primary, secondary and vapour enterprises.

Charging Limiting Value: $\frac{\text{Soft Water Direct costs} + \text{Share in Raw Water}}{\text{Total of Raw Water Consumption in Primary, Secondary and Vapor Enterprises}}$

$$\text{Charging Limiting value: } \frac{4.000 + 6.000}{8.000} = 1,25 \text{ TL/ m}^3$$

The water consumption of primary, secondary and vapour enterprises are separately multiplied with this unit, and allocated.

Share of Enterprise "A":	1.000 m ³ X 1.25 TL/m ³ =	1.250 TL
Share of Enterprise "B":	800 m ³ X 1,25 TL/ m ³ =	1.000 TL
Share of Enterprise t: "C"	200 m ³ X 1.25 TL/ m ³ =	250 TL
Share of Vapor Enterprise:	6.000 m ³ X 1,25 TL/ m ³ =	<u>7.500 TL</u>
		10.000 TL

The interest in soft water costs allocated to primary, secondary and vapor enterprises is combined with the shares in the penultimate allocation of raw water costs, and the costs are entered into the water costs section in respect to cost centers under the indirect costs center on the first page of the cost aggregation and allocation sheet.

	<u>Raw Water Cost Interest</u>		<u>Soft Water Cost Interest</u>	<u>Total</u>
Enterprise "A"	4.500	+	1.250	= 5.750 TL
Enterprise "B"	3.000	+	1.000	= 4.000 TL
Enterprise "C"	1.500	+	250	= 1.750 TL

7500 TL, the cost interest in soft water consumed by vapor enterprise, is marked as "-" at the indirect cost center on the second page of the cost aggregation and allocation sheet in order to be subtracted from soft water cost center in the distributed cost centres; and is also marked as "+" in the vapor cost center so as to be added to the vapor enterprise's expenses.

<u>Cost Types</u>	<u>Allocated Cost Centers</u>	
	<u>Vapor</u>	<u>Soft Water</u>
.....
.....
.....
.....
.....
<u>Total of Direct Costs</u>	<u>4.000</u>
Water Costs (Raw Water)		+ 6.000
Vapor Costs	+7.500	-7.500

6.3.3. Allocation of Vapor Production Cost Centers

Two types of industrial enterprises ought to be considered in the allocation of a vapor enterprise's expenses.

- 1- Enterprise producing its own electricity by utilizing from vapor energy
- 2- Enterprise procuring electricity externally

In those enterprises which produce electricity domestically by making use of vapor energy, according to the principles explained in the allocation of soft water costs, the total direct costs of vapor enterprise are added to the indirect cost interest at the soft water cost center. This total cost is calculated as a unit by dividing the value by the amount of vapor consumption in primary, secondary and electricity enterprises. The calculated unit is multiplied separately with the amount of vapor consumption in primary and secondary enterprises along with the electricity enterprise; and therefore, the cost is allocated. Consequently, the electricity enterprise's cost interest in the allocation is marked as "-" so as to be subtracted from the vapor enterprise's expenses; and as "+" so as to be added to the electricity costs at the electricity cost center.

In those enterprises which procure electricity externally, the monthly total of indirect costs at the vapor enterprise's cost center is divided by the total amount of vapor consumption in primary and secondary enterprises.

Vapor Enterprise Cost Centers + Soft Water' Share

Formula:
$$\frac{\text{Vapor Enterprise Cost Centers + Soft Water' Share}}{\text{Total Vapor Consumption of Primary and Secondary Enterprises}}$$

This unit is multiplied separately with the amount of vapor consumption in primary and secondary enterprises; hence, every enterprise's share in the costs of vapor enterprise is calculated.

To illustrate the explanation above, the aforementioned example is being continued as:

1. The company has two primary and one subsidiary enterprises,
2. Total direct costs of vapour enterprise cost center is 3.000 TL, and a share of 7.500 TL is incurred in the allocation of soft water costs,
3. 8.000 tons of vapor is produced in an month,
4. Consumption table given to cost accounting by the vapor enterprise is listed below:

Amount of Vapor Production is 8.000 tons

Consumption Table

<u>Enterprises Consuming Vapor</u>	<u>Amount Of Consumption</u>	
Primary Enterprises:		
Enterprise "A"	4.000 Tons	}
Enterprise "B"	2.000 Tons	
Secondary Enterprise: Tons		
Enterprise "C"	1.000 Tons	} 7.000

Enterprise costs based on allocation:

Water Enterprise	200 Tons
Machinery maintenance workshop	100 Tons
Restaurant	400 Tons
Administrative offices	220 Tons
Depositories	50 Tons
Offices	<u>30 Tons</u>
Total	8.000 Tons

Let's apply the allocation formula above according to the data given:

$$\text{Formula: } \frac{3.000 \text{ TL} + 7.500 \text{ TL}}{7.000 \text{ Tons}} = 1,5 \text{ Unit}$$

Given that this unit is going to be multiplied separately with the amount of vapor consumption in every primary and secondary enterprise, and hence, cost shares are to be calculated accordingly;

Share of Enterprise "A"	4.000 Ton x 1,5 = 6.000 TL
Share of Enterprise "B"	2.000 Tons x 1,5 = 3.000 TL
Share of Enterprise "C"	1.000 Tons x 1,5 = <u>1.500 TL</u>
	10.500 TL

Afterwards, these shares are registered as vapor costs into the primary and secondary enterprise cost centers on the second page of the cost aggregation and allocation table.

Accordingly, Cost Allocation Sheet is shown as:

Table1: Cost Allocation Sheet

Cost Types / Cost Centers	Service Department			Production Department and Secondary Enterprises Cost Center			Total
	Row Water	Soft Water	Vapor	A	B	C	
Total Direct Costs	15.000	4.000	3.000				
Cost Allocation of Raw Water	- 6.000	+6.000		4.500	3.000	1.500	9.000
Cost Allocation of Soft Water		-7.500	+7.500	1.250	1.000	250	2.500
Cost Allocation Of Vapor				6.000	3.000	1.500	10.500
Total	9.000	2.500	10.500	

7. CONCLUSION

Between 1926-1960, many important improvements occurred in our country in the accounting business. Especially, the first State Economic Enterprise was founded by Germans, and the accounting system was organized by them. In the meantime, the accounting system prepared for Sümerbank by German professor Sachensberg was very well adopted by economic government enterprises and this system brought in brand-new terms not used in the industry ever before. The system also gained a huge acclaim in the private sector. Cost types, cost centers, cost allocation sheets were implemented in the Sümerbank's accounting organization, which is also analyzed at the practice section of our study. The chart of accounts which was included in the accounting system designed for Sümerbank was carried out in a good number of State Economic Enterprises established afterward.

As a result of these economic developments, first accounting applications took place in Economic Government Enterprises, and the accounting principles and applications entered into our laws and Economic Government Enterprises. During this period, the gradually growing private enterprises also used the accounting system and applications which they had adopted from Economic Government Enterprises. The principles and the norms of accounting, which made their way into the Turkish Commercial Code in 1937 and into our Tax Laws thanks to sweeping tax reforms occurred in 1950s, prominently influenced the new accounting practices.

In Turkey, the first studies regarding cost accounting were executed by State Economic Enterprises. Sümerbank pioneered the studies too. The allocation of Factory Overheads put into practise in an environment void of computers. For the first time, step- down method (in the allocation of raw water, soft water and vapor costs) was used in the secondary allocation process. In the secondary allocation process, direct method (in the allocation of electricity maintenance, machinery maintenance and dining service cost centers to the production cost centers) was being used as well together with the step-down method. The table of cost allocation was also prepared by Sümerbank. Along with the improvements in the private sector, the cost and management accounting studies which were initially started by the State Economic Enterprises also spreaded amongst the private sector enterprises. The implementation of the most contemporary methods, technics and reporting systems of cost and management accounting took place in our country particularly after the 1950s.

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Seçkin GÖNEN ve Süleyman YÜKÇÜ

Appendix A.: The Manufacture Book

TABLE NO.1			INPUT					OUTPUT				TABLE NO.2			
INPUT OF RAW MATERIAL												THE SALES OF RAW MATERIALS			
Sequence No	Date of Input	Purchase Invoice	Provider	Date of Production and Service of the materials manufactured and serviced in the enterprise	AMOUNT PER TYPE AND SORT				Date of Output	Sales Invoice	Amount per Type and Sort				
		Date	No	Name Surname	Address					Date	No				

Appendix B: The Manufacture Book

TABLE NO.3					TABLE NO.4					TABLE NO.5				
ISSUED RAW MATERIAL AS TYPE AND SORT					FINISH GOODS OF PRODUCTION					SOLD AMOUNT OF FINISH GOODS				
Date					Date of Output					Date of Allocation	of Invoice No			