The Use Of Stairs Method in Cost Accounting in the Ottoman State in 19th Century

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ABSTRACT[1]: Stairs Method was sufficient for every kind of transaction and was able to meet the accounting needs of the Ottoman Empire until it was abandoned. For this reason, we can easily say that it was used in every kind of transaction related to cost accounting. With this claim, it was necessary to develop our study. In this study, we will present samples of accounting records of sericulture factory in Bursa, kept according to Stairs Method. Some necessary changes have been made on the original copy during translations in order to provide a better understanding. But the original form and changed form, which has been prepared to make the sample understandable, are given together for the use of information seekers. By this way, it is possible to make a comparison. It can be seen that the sericulture process records have a classification of direct raw materials and supplies, direct labor and general production costs. Today, sericulture production, which passed from the Ottoman State, still continues in Bursa. There is also a Sericulture Institute situated in Bursa. But, at this point, it must be mentioned that the raw material of silk, cocoon, is reared from silkworms in special rooms and for this reason it is regarded as natural raw material. So, it is impossible to see a cost born from the expenses of direct raw material and supplies. Instead, indirect materials and supplies will be seen in the sample. It will be useful to give some information about modern cost accounting and some of its basic points to start the subject and prepare a general foundation.

Key Words: Cost, Cost Accounting, Stairs Method, Ottoman Empire.

ÖZET: Osmanlı İmparatorluğu'nda Merdiven Yöntemi terk edilene kadar bu yöntem her tür muhasebe iş ve işleminde kullanılmış olup bahsi geçen yöntem tüm muhasebe kayıtlarında ihtiyaca cevap verebilmiş, gerekli ve yeterli temsil kabiliyetini her zaman göstermiştir. Bu nedenle rahatlıkla bu yöntemin maliyet muhasebesine ilişkin muhasebe iş ve işlemlerinde de kullanıldığını söyleyebiliriz. Bu iddia bu çalışma konusunu geliştirmemizi sağlamıştır. Çalışmada merdiven yöntemine göre kaydedilmiş Bursa'da bulunan bir ipek işleme fabrikası kayıtlarına yer verilecektir. Orijinal kaydın anlaşılabilir bir şekilde çevirisi esnasında orijinal yapı değiştirilmiştir. Ancak bilgi kullanıcılarına hem orijinal kaydın görüntüsü hemde kaydın anlaşılır hale getirilmesi amacıyla düzeltilmiş durumuna ilişkin görüntüsü birlikte verilecektir. Böylece bilgi kullanıcıları kıyaslama yapabileceklerdir. Kayıtlar incelendiğinde de görüleceği üzere İpek işleme esnasında maliyetler günümüzde olduğu üzere direkt ilk madde ve malzeme, direkt işçilik ve genel üretim giderleri şeklinde tasnif edilmiştir. Bursa günümüzde de Osmanlı Devleti'nden kalan ipekçilik çalışmalarını sürdürmektedir. Hatta İpekçilik Enstitüsü (Tohum Mektebi) Bursa'da hizmete girmiştir. Yalnız bu noktada belirtmemiz gereken bir nokta örnekte bahsi geçen ipek dokuma fabrikasında ipeğin hammaddesi olan kozalar özel odalarda bulunan tırtıllardan elde edildiğinden hammadde işletme tarafından doğal hammadde olarak kabul edilmiştir. Bu nedenle direkt ilk madde ve malzeme giderine ait doğrudan bir unsur görülmeyecektir. Ancak örnekte endirekt nitelikte olan madde ve malzemelerden bahsedilecektir. Konuya giriş yapmak ve genel bir alt yapı oluşturmak amacıyla günümüz modern maliyet muhasebesinin ilişkin bazı temel konuların hatırlatılmasına kısaca yer verilmesi uygun görülmüştür.

Anahtar Kelimeler: Maliyet, Maliyet Muhasebesi, Merdiven Yöntemi, Osmanlı İmparatorluğu

1. MODERN COST ACCOUNTING

In this paper, first we will provide some brief information about present-day cost accounting to understand and compare with the cost accounting system used by the Ottoman State better.

Cost accounting is a system which produces information about the production cost of an enterprise. This information is used from the planning to the control level of production by the decision making facilities of the management. This information should be created right and sound in a continuous manner (Karakaya, 2007: 10). As a "managerial instrument", cost accounting is able to provide information which can be used by the directors of the enterprise for decision making for a definite term where general accounting is insufficient. (Uragun, 1993: 26).

The main responsibility of cost accounting is to produce and report information about costs in a firm. The beginning of cost accounting falls with the rise and development of industrial revolution. For this reason, when cost accounting is mentioned, industrial enterprises come to the mind. Today, cost accounting can also be seen in service enterprises, apart from industrial enterprises, as a support tool in decision making (Karakaya, 2007:10).

The definition of cost accounting has been made from different perspectives in accordance to its use by the management. Costs are defined as production cost if they are found out according to the production and as commercial cost if they are found out according to the sales (Peker, 1988: 142).

The definition of cost accounting can be made as "the identification, evaluation and reporting of production costs by focusing on economical events in enterprises where products and services are produced in order to help the users to judge and decide (Civelek and Özkan, 2006: 5).

At the same time, it is also possible to define cost accounting as a system which enables the determination and tracking of cost types in terms of their locations of occurrence and their related product or service types (Kartal, Sevim and Gündüz, 2005: 3).

2. TYPES OF COST

The cost of a product is the financial equivalent of general production costs, direct labor, direct raw materials and supplies used for the realization of production facilities of an enterprise. This cost includes the cost of the product and services born from production (Küçüksavaş, 2002: 18).

The classification of entities and services used in production from different aspects is called types of cost. Defining the types of cost is one of the main functions of cost accounting. In Anglo-Saxon literature, types of cost are generally handled

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as material cost, labor cost and general production cost (Haftacı, 2007: 101). For this reason, we will study types of cost used in cost accounting under three titles.

2.1. Cost of Raw Materials and Supplies

A production activity consists several processes in which raw materials and supplies are used and finally become ready for use. For this reason, when production is mentioned, raw or in other words primary materials and supplies come to the mind (Civelek and Özkan, 2006:122).

The cost of raw materials and supplies make up the basis of production costs and denotes to every kind of material used for the production realization of an enterprise. The use of a material is necessary if we want to talk about the cost of a material (Büyükmirza, 2006: 148).

A raw material which makes up the core of a product and the labor which will turn this material into production is necessary for the realization of production. In other words, two elements which make up the cost are utmost important for the realization of production. For stressing the importance of these two cost factors, cost accounting names them as direct primary raw material and supplies and direct labor costs (Küçüksavaş, 2002: 129-130).

2.2. Direct Labor Costs

It is also necessary to mention about labor cost, another primal factor of cost. Labor cost is a cost which arises with physical and mental contributions of employees during production process (Haftacı, 2007: 145). In other words, labor cost is the financial equivalent of actual efforts of workers used during the production of a product or service (Üstün, 1994: 166).

Production labor costs are divided into two as direct and indirect labor costs in accordance to their relations with the product. Direct labor costs include the wages of workers who work in the main production process, shape the raw material and turn it into product. Indirect labor costs include costs of workers who do not have a direct relation with the production although they have a relation but only with its transportation (Lazol, 2002: 96). Cost of labor covers the hourly, daily, weekly and monthly wages paid to employees working in production line and monthly salaries of administrative staff and managers.

Work duration spent at the workplace must be found out to determine labor cost. For this aim, workers either sign attendance records or use their individual time cards at the beginnings and ends of their shifts. These cards are transacted at the end of the month and total working hour per worker is found out. Total working hours of workers are multiplied by their hourly wage and their wages without deductions are estimated. Tax, insurance and such deductions are made from their gross wages and net monthly wages are found out (Büyükmirza, 2006: 172-173).

2.3. General Production Costs

General production costs are other production costs which are not included into the raw material, supplies and labor costs directly. General production costs cover workmanship, materials and other general production costs which take place indirectly (Gürsoy, 1999: 105). When calculating product costs, it is easy to estimate direct raw material and supplies and direct labor easily. Because, these costs are completely used in the production of a product. But general production costs, in many aspects, are different from direct raw material, supplies and direct labor costs. For this reason, short term cost calculations cannot be made healthily with the use actual amounts of general production costs. General production costs can either be calculated through the year end definite results or by the use of budgeted estimated figures. Practically, budgeted estimated figures are used more for general production costs (Haftacı, 2007: 177).

The portion of general production costs in product costs tend to rise because of the fast developments of technologies used in production. The use of labor is decreasing with the use of developing technologies, but indirect costs such as amortization and maintenance costs are increasing. In other words, while decreasing the direct labor costs, developing technologies increase general production costs (Lazol, 2002: 104).

If one type of product is produced in enterprises then it is not possible to talk about the distribution of general production costs over the product. But, if more than one different product is produced then it is necessary to distribute general production costs among products. There are two main approaches in the distribution of general production costs among products. These are;

-Volume based costing,
-Activity based costing.

In volume based costing, measures such as production amount, direct labor hours and machine hours are used for the distribution of general production costs among products (Karakaya, 2007: 276).

In activity based costing, production activities of an enterprise are defined and the costs of these activities are defined and distributed among products.

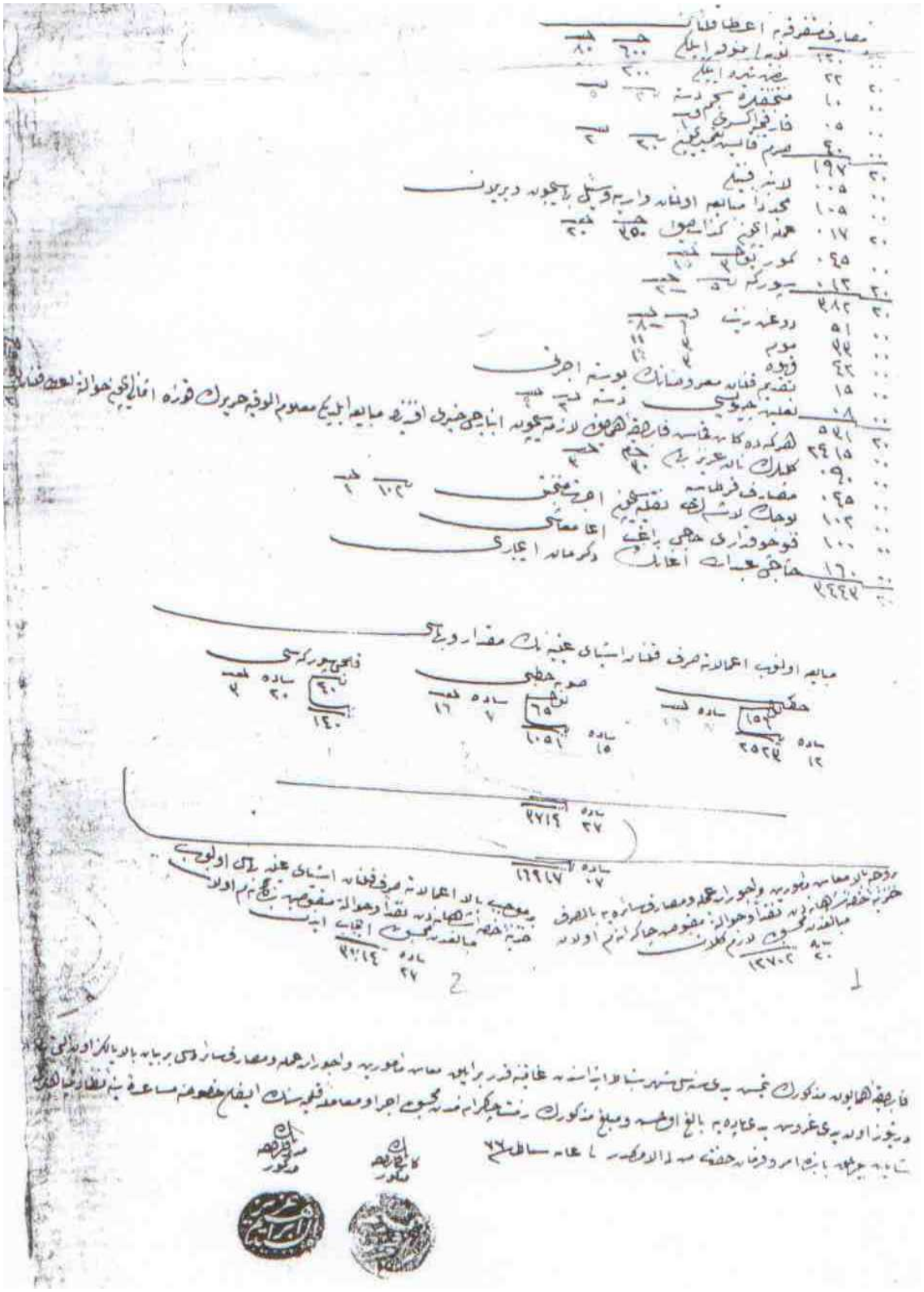
At this point, it should not be misunderstood since we have mentioned about modern cost accounting techniques because Activity Based Costing was used in the Ottoman State[2].

3. COST ACCOUNTING SAMPLE ORGANIZED ACCORDING TO STAIRS METHOD IN THE OTTOMAN STATE

As we have mentioned before, the cost accounting sample given here belongs to a sericulture factory in Bursa. In this record, it is possible to see costs such as direct labor costs, indirect raw materials and supplies; especially auxiliary materials, indirect labor and other several indirect costs. The explanation made before about direct raw materials and supplies is exactly valid here. A special environment is prepared in the factory for the silkworms to produce cocoon and this is accepted as gaining the direct raw material from nature. As a matter of fact, it is understood from another document that expenses of direct raw materials and supplies here are doubtlessly very low when compared to other expenses.

The original form and transcription of the mentioned sample are given below.

[2] Süleyman YÜKÇÜ, Yılmaz İçerli and Canan Yükçü. (2007). **Construction of Süleymaniye Mosque in İstanbul and Cost Accounting (1550-1557),** The Balkan Countries' 1st International Conference on Accounting and Auditing, 8-9 March 2007, Edirne/Türkiye.



English Transcription of the Sample:
BOA, HH(d), 19335

Summary of one month salary and wages of clerks and workers of sericulture factory in Bursa for February 1277 (13 Şubat-16 Mart 1862 AD) and other expenses.

CLERK SALARIES

Monthly Salaries Guruş	
1.250	Salary of Müdir-i Hacı Aziz Ağa
100	Salary of Kâtip Hacı İbrahim Efendi
400	Salary of Vapurcu Panto
250	Salary of his companion, İstamaki
250	Salary of İpekçi Mehmed
250	Salary of Kapucu Halil Ağa
250	Salary of Kilerci Satir
40	Salary of Suyolcu Hacı Mustafa Ağa
3.440	

WAGES OF WORKERS WORKING AT THE SERICULTURIST

A.

Guruş	**Days**	**Daily Wage Kuruş**[3]		**Guruş**	**Days**	**Daily Wage Kuruş**	
117	13	9	Master Susana	32	8	4	Trandafiliçe
104	13	8	Master Anglice	8	2	4	Otman
96	12	8	Master Vasiliki	32	8	4	Panayatı
104	13	8	Silkman Fotniçe	52	13	4	Kanase
96	12	8	Silkman Alenko	52	13	4	Kadenko
517					**176**		
48	12	4	Katarniçe	37	10,5	3,5	Refiziçe
52	13	4	Dominçe	38,5	11	3,5	Eniçe
50	12,5	4	Maryoliçe	45,5	13	3,5	Parayotiçe
50	12,5	4	Hartice	45,5	13	3,5	Zoli
52	13	4	Vasiliki	45,5	13	3,5	Despina
769				**388**			
50	12,5	4	Anasta	45,5	13	3,5	Marya
50	12,5	4	Alenko	21	7	3	Alenko
40	10	4	Kadenko	45,5	13	3,5	Panayotiçe
52	13	4	Kalyopli	48	12	4	Panayotiçe
45,5	13	3,5	Despino	50	12,5	4	Hacı Alsati
1.006,5				**598**			
45,5	13	3,5	Saide	45,5	13	3,5	Panayotiçe
45,5	13	3,5	Adile	43,5	9,5	4,5	Kerekiçe
45,5	13	3,5	Selime	51	11,5	4,5	Orakiçe
45,5	13	3,5	Zihni	60	12	5	Maryoliçe
45,5	13	3,5	Şerife	65	13	5	Nikodosya
1.234				**863**			
16	4	4	Sıdıka	65	13	5	Fotniçe
52	13	4	Zühne	58,5	13	4,5	Sofiçe
45,5	13	3,5	Hadice	52	13	4	Dimitrula
32	8	4	Zihni	52	13	4	Alenko
50	12,5	4	Tomaniçe	32	8	4	Asane
1.429				**1.122**			
31,5	9	3	Hacı Süfice	50	12,5	4	Alsanati
45,5	13	3	Frusa	45,5	13	3,5	Vartemi
14	4	3,5	Tarsice	35	7	5	
1.520				**1.253**			

WAGES OF WORKERS WORKING IN WHIPPING HEARTS

B.

Guruş	**Days**	**Daily Wage Kuruş**		**Guruş**	**Days**	**Daily Wage Kuruş**	
32	8	4		48	12	4	Marya
32	8	4	Angliçe	48	12	4	Hacı Anastasice
45,5	13	3,5	Panayotiçe	34	8,5	4	Polihar Nitiçe
28	8	3,5	Afroniti	50	12,5	4	Saltana
31	9	3,5	Eniçe	51	13	4	Fruso
161				**232**			
28	8	3,5	Marigo	52	13	4	Anastasice
48	12	4	Zihni	52	13	4	Kerekice

[3] Kuruş is a currency unit used by Ottomans.

44	12,5	3,5	Emine	48	12	4	Sofice
44	12,5	3,5	Sıdıka	52	13	4	Panayotiçe
42	12	3,5	Uyanya	48	12	4	Marya
367				**484**			
35	10	3,5	Ayşe	52	13	4	Kereke
14	4	3,5	Safiye	32	8	4	Kereke
45,5	13	3,5	Rahime	48	12	4	
42	12	3,5	Fatıma	36	9	4	Kermiteli
45,5	13	3,5	Zihni	52	13	4	Salatana
				24	6	4	Evyaniki
546				**728**			

WAGES OF SADAK WORKERS

Guruş	**Days**	**Daily Wage Kuruş**		**Kuruş**	**Days**	**Daily Wage Kuruş**	
38	11	3,5	Katarina	30	10	3	Saltana
45,5	13	3,5	Kanarino	36	12	3	Letariçe
40,5	9	4,5	Vasilikice	30	10	3	Yenako
35	7	5	Şerife	39	11	3,5	Perofiliçe
45	9	5	Tomaniçe	36	12	3	böcükci Vartemis
753				27	9	3	Kamçı açan Despino
65	13	5	Kereke	16,5	11	1,5	Çırak Despino
65	13	5	Fartiçe	**214,5**			
65	13	5	Saltaniçe				
78	13	5	Panayotiçe				
78	13	5	Panayotiçe				
1.104,5							
				WAGES PAID TO SOME WORKERS			
65	13	5	Todariçe	156	13	12	Woodsman Yarıcı Yako
65	13	5	Alenko	78	13	6	And his companion Yani
1.234,5				**234**			
				WAGES PAID TO WORKERS SELECTING COCOONS			
				900	Cocoon-Kıyye	Per Para	
					1.200	30	

TOTAL_____

Guruş	**Para**	**Explanation**
6.084	20	
(265)	20	The amount in turn to an amount written in another production book
5.819	**0**	

AMOUNTS PAID TO SEVERAL EXPENDITURES

Guruş	**Para**	**Explanation**
120	-	Dyed cotton thread 600 bunches, per 80 guruş
22	20	White cotton thread 200 bunches, per 45 guruş
10	-	Twine for catapults, 2 bunches, per 5 guruş
5	-	Karfiçe enseri, 1 kıyye
40	-	For the repair of strap 20 bunches, per 2 guruş
197	**20**	**Total**
5	-	Labneh wig
105	-	The price of varya and seil bought for Müceddeden mubaya'a
17	20	Vitriol fabric for workers
45	-	Coal flake
12	20	Broom
382		**Total**
51	-	Revgan-ı zeyt, 6 kıyye, per 8,5 guruş
33	-	Mum, 3 kıyye, per11 guruş
42	-	Kahve, 3 kıyye, per 14 guruş
15	-	Price of the postage presented
8	-	Tin tack, 2 bunches, 4 guruş

531	**20**	**Total**
2.415	-	The amout transferred to cloth factory in Hereke for the costs by mubaya'a of Hayri Efendi
9	-	The amount of Kelplerin nar-ı aziz 30 per 3 guruş
45	-	Stationary expenses
102	-	The price of catapult used for worms' supply transportation
100	-	Salary of Kapu cukadarı Hacı Ragıp Ağa
160	-	Mill rent for Hacı Abdullah Ağa
3.443	**20**	**Total**

THE AMOUNT AND PRICE OF REAL MATERIAL BOUGHT AND USED FOR PRODUCTION

Wood	Para	Per Guruş
156	7	16
Price Guruş	Para	
2.529	12	

Stove wood	Para	Per Guruş
65	7	16
Price Guruş	Para	
1.051	15	

Whig Broom		
Piece	Per Guruş	Para
40	3	20
Price Guruş		

Total_____
Guruş Para
3.719 27

General Total_____
Guruş Para
16.417 7

Ber-mûceb-i bâlâ imâlat sarf kılınan eşya-yı ayniye bahası olup Hazine-i Hâssa-ı şahaneden nakden ve havâleten makbûz-ı bendegânem olan mebaliğden mahsûbu icap eden

Guruş
3.714

Ber-vech-i bâlâ maaş-ı me'murin ve ücûrat-ı amele ve masarıf-ı sâireye bi's-sarf Hazine-i Hâssa-i şahaneden nakden ve havâleten makbûz-ı çâgeranem olan mahsûbu lazım gelen

Para
20

Guruş
12.702

One month salary of the mentioned factory from the beginning of February of 1277 until the end of the same month (13 February -16 March 1862 AD), salaries of clerks, wages of worker and other expenses, as shown above, have reached 16.417 guruş seven paras and I demand from your highness for the necessary transactions that this amount be set off from my account. 28 February 1277 (16 March 1862)

Para
27

Factory Director
Es-Seyyid İbrahim Aziz

Factory Clerk
İbrahim

4. THE ANALYSIS OF COST ACCOUNTING SAMPLE ACCORDING TO STAIRS METHOD

First of all, it is necessary here to go over direct raw materials and supplies again. Cocoon which is the raw material for silk is cultivated from silkworms in a special environment prepared for them in the sericulture factory based in Bursa. For this reason, there is no cost born from the expenses of direct raw material and supplies. The reason for this

supposition of the factory is that it found the raw material free in nature.

Direct labor costs can be seen if continued on the sample. All wages such as wages of workers working on the silk wheel and whipping hearts etc. are counted as direct labor costs. However, salaries of clerks, wages of sadak workers, wages of workers who select cocoons, and wages paid to some workers are not included to direct labor costs.

General production costs include many articles of modern day. The main general production costs are wages of sadak workers, wages of workers who select cocoons, wages paid to some workers, dyed cotton thread, white cotton thread, twine, labneh wick used as auxiliary materials in indirect raw material, wood, whip broom etc. and indirect clerk wages.

If the sample is investigated attentively, it can be seen that the factory has a budget and an estimated production budget. It can be inferred that the factory was using estimated or standard cost accounting method. The main proof for this is the statement of the factory manager at the end of the record *"….… … as shown above, have reached 16.417 guruş seven paras and I demand from your highness for the necessary transactions that this amount be set off from my account"*. The director's demand for setting off an amount from the account is an important clue and shows that a definite budget is prepared for the factory and also gives out that the factory was working on estimated budget. In the light of these data, it is understood that the factory was working on estimated or standard costs but no data about the preferred transaction method was found.

5. CONCLUSION

The aim of this study is to show three main production cost elements in cost accounting; direct raw material and supplies, direct labor cost and general production costs which are necessary for the calculation of production process cost were present in the Stairs Method used by the Ottoman State for nearly 600 years.

Making a budget, fund raising for the enterprise in accordance with the budget and using estimated or standard cost methods in that era show both the point where the Ottoman State came in accounting and how the stairs record method is comprehensive and sufficient.

Thus, when the sample chosen here and its explanation is studied, it can be seen that apart from the supposition about direct raw materials and supplies, other items were recorded in accordance to modern day cost accounting and even their order (direct raw materials and supplies – direct labor – general production costs)[4] have the same flow as today. It was mentioned previously that there was a supposition about direct raw materials and supplies. For this reason, direct labor costs which should take place in the second order is given with the wages of workers working at the silk wheel and wages of workers working at the whipping heart. General production costs which take third place cover many different items. This structure is also the same in the mentioned sample.

[4] The reason for this judgment is the use of Uniform Accounting Plan which has been used in our country since 1994. The order in this directive is direct raw materials and supplies, direct labor and general production costs (It can be shown with 710 – 720 – 730 account codes)

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