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**THE ADVENT OF DOUBLE-ENTRY BOOKKEEPING AND ACCOUNTING REFORMS IN THE OTTOMAN EMPIRE IN THE 19<sup>th</sup> CENTURY****Cengiz Güney**

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**Abstract:** There was a significant shift in the accounting methodology of the Ottoman Empire in the 19th century, transitioning from traditional state accounting methods to Western double-entry bookkeeping (DEB). This paper focuses on the 1884 General Accounting Directive of the Sanitary (Health) Organization to examine the interplay of internal reforms and external influences that drove this transition. The introduction of DEB, a leap towards modernization, encountered challenges, including the need for extensive training for accountants accustomed to traditional methods and the integration of Western practices within the Ottoman administrative framework. Using the metaphor of legal transplants, the paper argues that the Empire's adoption of these accounting changes. This research contributes to understanding the interaction between local traditions and foreign influences in shaping accounting practices.

**Keywords:** *Sanitary (Health) Organization, 19<sup>th</sup> Century, Accounting History, Ottoman Empire, Corporate Regulation, merdiban method, double-entry bookkeeping.*

## LA LLEGADA DE LA CONTABILIDAD POR PARTIDA DOBLE Y LAS REFORMAS CONTABLES EN EL IMPERIO OTOMANO EN EL SIGLO XIX

**Resumen:** Hubo un cambio significativo en la metodología contable del Imperio Otomano en el siglo XIX, pasando de los métodos contables estatales tradicionales a la contabilidad por partida doble occidental (DEB). Este documento se centra en la Directiva General Contable de 1884 de la Organización Sanitaria (*Saúde*) para examinar la interacción de las reformas internas merdiban las influencias externas que impulsaron esta transición. La introducción de DEB, un salto hacia la modernización, encontró desafíos que incluyeron la necesidad de una amplia formación para los contables acostumbrados a los métodos tradicionales merdiban la integración de las prácticas occidentales en el marco administrativo otomano. El estudio también subraya la influencia de los actores extranjeros, evidente en el establecimiento de instituciones financieras clave. Utilizando la metáfora de los trasplantes legales, el artículo argumenta que la adopción de estos cambios contables por parte del Imperio.

Esta investigación contribuye a la comprensión de la interacción entre las tradiciones locales merdiban las influencias extranjeras en la configuración de las prácticas contables, ofreciendo perspectivas pertinentes tanto para los sistemas financieros históricos como contemporáneos.

**Palabras clave:** *Organización Sanitaria (Saúde), Siglo XIX, Historia de la Contabilidad, Imperio Otomano, Regulación Corporativa, método merdiban, contabilidad por partida doble.*

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### INTRODUCTION

The historical development of accounting practices is closely linked to the broader social, economic, and political context in which they emerge (Napier, 1989; Akinyemi, Okoye, and Izedonmi, 2015). In the 19<sup>th</sup> century, the economic and social structures of the Ottoman Empire underwent a rapid transformation, significantly impacting accounting thought. The accounting system and mindset, which the Ottoman Empire had benefited from for 500 years, began to change (Elitaş et al., 2008). The education of accountants, bookkeeping systems, accounting organizations, titles of accounting personnel, the forms and names of journals used in accounting, and accounting terminology started to evolve. This was a period of Westernization and modernization, and it forms the focal point of this research.

This research extends the extensive literature on the Ottoman Empire's accounting history, which includes its comprehensive impact (Güvemli, Toraman, and Güvemli, 2015), the mechanics of the merdiban method (Aydemir and Erkan, 2011), and the function of accounting in specific Ottoman entities (Yayla, 2011; Orbay, 2013). It also delves into the significant yet underexplored domain of auditing during this era (Çabuk, Saygılı, and Oğuz, 2018). Notably, there is a gap in comparative analyses between the merdiban method and DEB, especially in terms of their journal systems, during the Empire's period of transition. This study explores the conditions and driving forces behind the Ottoman Empire's transition from centuries-old state accounting practices to double-entry bookkeeping (DEB) in 1880. The paper includes an analysis of an archival document (General Accounting Directive of the Sanitary Organization

dated 1884) that outlines the accounting directives implemented during the Ottoman Empire's shift to DEB (Appendix 3).

The introduction of DEB, a leap towards modernization, encountered challenges, including the need for extensive training for accountants accustomed to traditional methods and the integration of Western practices within the Ottoman administrative framework. Utilizing the metaphor of legal transplants, the paper argues that the Empire's adoption of DEB. This research contributes to understanding the interaction between local traditions and foreign influences in shaping accounting practices, offering insights pertinent to historical and contemporary financial systems.

Our analysis provides a case study of an accounting regulation enacted during this transition period. A thorough examination of the existing academic literature on the history of accounting in the Ottoman Empire will lay the foundation for this analysis, allowing us to situate our findings within a broader academic discussion.

The paper proceeds with the methodology and literature review sections. Section four outlines our theoretical framework. In section five, we provide an overview of the accounting methodology and the journal system of the Ottoman Empire. In section six, we analyze the important aspects of the 1884 General Accounting Directive. Section seven serves as a discussion where we synthesize our findings and reflect on the implications for historical and modern accounting systems.

## LITERATURE REVIEW

### Transition to Double-Entry Bookkeeping – Global Experiences and The Ottoman Experience

Sangster (2016, 302) identifies the earliest documented instance of dual-entry bookkeeping in two parchment folios from a Florentine bank dating back to 1211 AD. This marks the precursor to the broader adoption of DEB systems. Gomes (2007) provides a comprehensive analysis of DEB's initial adoptions by European states, as summarized in Table 1.

**Table 1:** First-Time Adoption of DEB in European Central Government

| Country         | 1st Introduction | Organization                   | Interruption | Re-Introduction |
|-----------------|------------------|--------------------------------|--------------|-----------------|
| Spain           | 1592             | Real Hacienda [Royal Treasury] | 1621         |                 |
| The Netherlands | 1604             | Royal Finances                 |              |                 |
| Sweden          | 1623             | General Ledger of the Kingdom  | 1654         | 1659            |
| Germany/Austria | 1703             | Imperial Treasury              | 1715         | 1760            |
| France          | 1716             | Royal Treasury                 | 1726         | 1808            |
| Portugal        | 1761             | Royal Treasury                 |              |                 |
| England         | 1831-1832        | Royal Treasury                 |              |                 |

Source: Gomes, 2007:130.

Hernandez Esteve (1993) notes that Spain led Europe by incorporating DEB into public finance in 1592. This pioneering move set a precedent for the rest of the continent. Lemarchand (1999, p. 225) observes that France's shift to DEB in 1716 aimed at regulating the activities of tax collectors, but the broader grasp of the method among accountants evolved through

merchant experiences. According to Littleton (1927), factors such as the adoption of Hindu-Arabic numerals for calculations, the expansion of Italian banking, and the conducive commercial and capital environment were instrumental in the emergence of DEB in Europe.

However, the adoption of DEB in Japan shares similarities with the Ottoman experience, notably as both nations underwent periods of intense modernization in the 19th century. Like the Ottoman Empire, Japan fully integrated DEB in the latter half of the century, a transformation influenced by opening its economy to Western traders (Mckinnon, 1994: 181). The National Bank Act of 1872 and the Japanese Commercial Code of 1890 signified Japan's formal reception of Western commercial practices, including DEB. These legislative milestones coincided with a broader global trend toward economic integration and adopting sophisticated financial systems. While both the Japanese and Ottoman cases reflect the global diffusion of Western accounting practices during this era, the subsequent section of this paper will focus exclusively on the Ottoman Empire's unique journey in embracing DEB and the associated regulatory changes.

The late 19th century signified a pivotal transformation era for the Ottoman Empire, marked by profound social, economic, and political upheavals. The economy faced adverse effects from several crises, including the Crimean War, the Russo-Turkish War, and the growing influence of European powers, all of which contributed to its decline (Pamuk, 1984; Reid, 2000). This period saw significant changes in trade patterns and the integration of its economy into the global market, resulting in increased dependence on European loans and escalating external debt (Kasaba, 1988). In tandem with these economic changes, the Empire initiated a series of social and political reforms aimed at centralizing power, modernizing the administration, and strengthening ties with European nations (Faroqhi, 2004).

A significant shift in state accounting practices began with the acceptance of the first Turkish Commercial Code, known as “Kanunname-i Ticaret” in 1850. This legislation, partly inspired by the first three books of Napoleon's “Code de Commerce” translated into Turkish in 1807, contained provisions related to accounting within its first and third volumes. The law focused on DEB and Western corporate law, marking 1850 as a breakpoint year for Turkish accounting thought.

Ruznamçe journal held significant importance in the Ottoman bookkeeping system, with its roots tracing back to the Ilkhanate State. With the enactment of the “Kanunname-i Ticaret” in 1850, the Ruznamçe was replaced by the “Yevmiye Defteri” (Daily Journal), and the use of the “Envanter Defteri” (Inventory Journal) became mandatory. These journals were indicative of the double-entry bookkeeping method, and their usage was emphasized as tools of this system (Güvemli, 2000: 78). However, by 1850, no known book in the Ottoman Empire explained how the DEB worked, nor were state accountants familiar with the method.

The enforcement of accounting-related provisions was confined mainly to foreign establishments operating within Ottoman territories, as commercial law was still governed by Islamic legal principles, limiting the application of the law's trade-related provisions. The Ottoman Bank itself was established in 1856 under this legal framework.

Another significant change during this period was transitioning from the long-standing state accounting organization “Hazine-i Amire” to the newly established Ministry of Finance. With the decline of the “Hazine-i Amire” as an institutional model, the new organization struggled to maintain the same level of skilled accountants. To engage in state accounting, the “Muhasebat-ı Umumiye Departman” (General Accounting Department) was formed, initiating budgetary studies and the maintenance of income and expenditure journals within each ministry.

Attempts at Western-style budget preparation began in the 1840s (Şener, 1990: 61), and the first trials of accountants employing double-entry bookkeeping in state accounting were witnessed during these years. An example of a state journal dated 1849, which does not conform to the merdiban method or DEB, is recorded in the Prime Ministry Ottoman Archives. A photograph and transcription of an entry from this journal, related to the collection of certain taxes, can be found in Appendix 1. This record, detailing taxes collected and listed vertically with explanatory notes on tax calculations on the side, does not resemble the merdiban method nor does it adopt the double-entry approach (Çabuk and Saygılı, 2013: 180). The accounting records in Appendix 1 serve as a historical testament to the bookkeeping experiments conducted by state accountants of that era.

The official shift to DEB in state accounting was decreed by an Imperial Edict in the year 1297 in the Islamic calendar (1880 AD), as found in Appendix 2. Excerpts from the Ministry of Finance report suggest the necessity of educating the public about the DEB: *"...firstly, it is imperative for the Ministry to teach everyone the double-entry method... it will take time to implement... for this reason, the accounting organization can be divided into old and new... while the old system continues for a while... the new accounting departments will start operating according to the double-entry method... accountants will be held responsible for any delays... A comparison between the accounting records of the Ottoman Bank, established on European principles, and those of the Ministry of Finance underscores the need for harmonizing practices... Considering the need for immediate adoption of the new principles, it has been decided that from the upcoming March (1880), the double-entry bookkeeping method will commence as a mark of innovation..."*

The transition to accounting practices in the Ottoman Empire entailed substantial challenges. It necessitated investments in the education and training of accountants and the development of new systems and procedures for recording and reporting financial transactions (Erkan, 2011; Yazan, 2018). Concurrently, the establishment of the Istanbul Chamber of Commerce in 1882 aimed at organizing the private sector, and the Hamidiye Commerce School, founded in 1883, was noteworthy as the first institution dedicated to training personnel for the private sector.

The process of the Ottoman Empire's transition from the merdiban method to DEB is presented in a more comprehensive manner in a tabular form in Appendix 5.

Can, Bağdat, and Aliusta (2021) explored the socio-cultural reasons behind the Ottoman Empire's delayed adoption of DEB. They identified several key factors contributing to this delay: Underdeveloped private land ownership, delayed introduction of educational texts, slow spread of the printing press, the impact of cultural proximity and distance, and the absence of non-state accounting records. These elements were highlighted as the primary causes for the postponement in embracing DEB. In the Ottoman Empire's economy, strict government policies slowed the growth of the private sector and blocked the use of DEB in the 19th century. While the West welcomed private sector advancements, the Ottoman authorities kept tight control over merchants to prevent trade monopolies. The extensive military service that the Muslim Turkish population had to endure greatly limited trading opportunities. Entrepreneurs faced significant challenges, including a heavy bureaucratic burden, the constant threat of asset seizure, and frequent state intervention, making capital accumulation particularly risky. Unlike other countries, the Ottoman Empire did not pursue protective trade policies but instead focused on ensuring the local availability of goods. However, this approach, combined with the state's obstruction of capital accumulation, pervasive bureaucracy, fears of expropriation, and a preference for large enterprises to dominate production, hindered the adoption of DEB (Yasar, 2016: 203-2004).



## THEORETICAL FRAMEWORK

"Legal transplants" relate to how change occurs in legal systems as well as implementing practices across a region or culture. This idea is especially useful in realizing how the Ottoman Empire adopted practices from the Western world, including the Kanunname-i Ticaret of 1850 and the General Accounting Directive of 1884. These examples symbolize a profound transformation in the Empire's method of accounting and governance. Teubner (1998) sees law as a dynamic system that can adapt and change. It is also flexible. This flexibility has become important in explaining how the Ottomans took and adopted DEB.

Likely, building on this, another layer is where Tocqueville (1998) differentiates between the mere passage of laws and their dissemination in society. He also says that authorities often fail to note that legal reforms cannot be implemented in a vacuum and that they require social and cultural preparedness, administrative structures, and a proper attitude from society. Using Tocqueville's framework, it is possible to offer an explanation for the failure of the Ottoman Empire in achieving certain aims when it started to adopt Westernization and bring DEB-like notions into practice. Such an approach highlights the fact that one needs to consider a legal transplant not just as an isolated phenomenon but as part of the socio-political context that determines its effectiveness.

Watson (1995) proposed a useful approach for legal transplants by examining the pre-existing legal culture, the discursive effect of regulations that are newly imposed, and society's reaction to these shifts. Picking up concepts from both Tocqueville and Teubner, Watson's framework focuses on the fact that the context at the time of transplant is very influential in either the success or failure of these legal innovations.

Merryman (1981) and Sacco (1991) identify two primary motivations for adopting foreign laws: a process of enforced acceptance, as when a victorious power overruns a territory, and imitation, where a society voluntarily adopts foreign norms. The Ottoman Empire is composed of both these reasons for the provisions of the commercial code and the later accounting reforms.

Miller (2003) categorizes legal transplants into four types: cost-saving, entrepreneurial, legitimacy-creating, and externally imposed. Thus, by examining the Ottomans' DEB experience and the accounting directives of 1884 through this lens, we can gain a better sense of the economic and administrative logic behind the Ottoman reforms.

The research looks at the success of the Ottoman Empire in importing Western systems of accounting and how DEB was adopted into the existing Ottoman legal and governmental systems. This work will also seek to draw an understanding of the dynamics of the Ottoman case in relation to the general theories and practices of legal transplants.

## METHODOLOGY

We conducted an extensive search of the archival catalog to identify relevant documents that will support our line of investigation on how double-entry bookkeeping was adapted by the Ottoman Empire at the latter part of the 19th century. We located the "General Accounting Directive of the Sanitary Organization" dated Hicri 8 Cemaziyelevvel, 1301 (March 6, 1884), and it was then requested from the T.C. Presidency State Archives Administration. When available, digital copies were obtained, and hard copies were consulted in the reading room of the archive to check for completeness and accuracy. This archival document, consisting of 13

folios, is cataloged under reference BOA, "Sihhiye Teşkilatı'nın Genel Muhasebe Talimatı"- Y. PRK.SH... 1/47: H-08-05-1301. Given the difficulties of understanding archival manuscripts prepared in Ottoman Turkish, professional support was indispensable. Dr. Canan Çetinkaya was of immense support with the valuable experience of transcription, her support in the transcription, and her contribution to checking the accuracy of the text in Latin script. The accuracy of the transcription was subsequently checked with additional consultation with experts in this field.

We then conducted a content analysis based on the transcribed text, which helped in extracting and assessing general accounting instructions, accounting regulations, and control procedures as key themes in the directive. This brought about a thorough understanding of the impact of the directive on the accounting practices in the Ottoman Empire. The document is very comprehensive and has eight chapters, but only three chapters are part of the focus of this study. These chapters have detailed instructions on the general instructions of the accounting affairs, accounting regulations for the main sanitary administrations, and general regulations of the control room. Our in-depth review within each of these chapters highlights the ground level changes within the accounting practices. Information related to all the chapters is found in Appendix 3.

This is the approach to achieve a proper, thorough examination of the 1884 directive, with proper and precious information provided regarding the adoption of double-entry bookkeeping in the Ottoman Empire.

## OVERVIEW OF THE ACCOUNTING METHODOLOGY AND THE BOOKKEEPING SYSTEM OF THE OTTOMAN EMPIRE

The following subsections provide an overview of the traditional accounting methodology and the bookkeeping system of the Ottoman Empire to understand the change in the accounting thought during the 19<sup>th</sup> century (see Appendix 5 for a chronological overview of the Ottoman Empire's transition to Double Entry Bookkeeping).

### *The Merdiban Method*

The Merdiban method, an accounting technique that reached the end of its life span, was employed in the Ottoman Empire's state accounting for 500 years and originated in countries like the Abbasids, Ilkhanates, and Ottomans. It was in use from 770 to 1879, spanning over a millennium. The term "Merdiban-ı Paye" translates to "Stair-like Steps" named after the method of listing subtotals below a principal amount in a stair-step fashion. As a single-entry system, it meticulously recorded state and charitable endowment transactions. The Merdiban method, while primarily concerned with the state's income and expenditures—particularly tax revenues and their allocation—did not account for cash, assets, capital, or profit. It represented a system facilitating the straightforward documentation of the state's annual revenues and expenditures in a single entry, combining quantities and monetary amounts (Güvemli, 2000).

The method utilized the "siyakat" script, an official writing style unique to the Ottoman accounting system, which was readable only by specialists. In 1880 (Appendix 2), this method was abandoned in favor of DEB, which will be examined along with an analysis of the Sanitary Organization's 1884 General Accounting Directive.

To fully grasp the Ottoman Empire's accounting philosophy, discussing the journals and journal system in which this method was recorded is essential. The following section will provide a general perspective on the bookkeeping system of the Empire.

### *The Bookkeeping System*

The accounting infrastructure of the Empire was characterized by a tripartite journal system, each serving distinct functions within the state's financial apparatus.

The first group of journals constituted the core of the state's financial records, encompassing departments that tracked the empire's revenues and expenditures. Among these were specialized income departments like “Mukataa” accounting, which dealt with income from leased properties, and “Cizye” accounting, responsible for collecting the poll tax from non-Muslim subjects. These departments and others dedicated to various state revenues showcased a range of income journals. On the expenditure side, there were journals for “Büyük kaleler” (Great Fortresses) for recording soldiers' pay, “Sipahi” (Cavalry) departments, and “Yeniçeri Ocağı” (Janissary Corps) payrolls. The number of these income and expenditure departments fluctuated between 20 to 25 over the centuries, and each was akin to a grand journal in its own right. At the year's end, these departments' tallies would form the line items in the annual revenue and expenditure account.

The second group of journals was crucial for immediately recording transactions related to income and expenses. The “Ruznamçe” (journal) was stationed at the heart of the “Hazine-i Amire” (accounting organization of the Ottoman Empire), ensuring that all financial transactions were recorded daily before being distributed to the grand journals for formal entry. The “Başdefterdar,” as the head of the financial organization, would utilize reports from the “Ruznamçe” department to oversee the empire's financial affairs every week.

The third group of journals served as the treasury books of the empire, similar to a cash journal; it was maintained by an accountant bearing the title “Sergi Halifesi” (Treasury Deputy). This department, integral to safeguarding the state's treasury, also fell under the “Baş Defterdar” purview. In addition to these main journals, there were “mukabele” (audit departments) and auxiliary departments responsible for managing correspondence.

The state's definitive annual revenue and expense accounts were prepared at the end of each year, which was a significant function of the accounting department. This meticulous compilation of accounts enabled a clear representation of the fiscal balance for the year and facilitated the projection of tax assessments for the forthcoming year.

The annual rental amounts stipulated in the contracts for state-rented properties like mines and lands were entered at the beginning of the year in the “mukataa” department's journals and updated as collections were made throughout the year. Any changes during the year were monitored by adjusting the accrual amount accordingly.

The details discussed thus far provide a comprehensive overview of the Ottoman Empire's accounting thought and system. The following section will delve into the global transition to DEB and position the Ottoman shift within this extensive narrative.

## **THE ANALYSIS OF THE SANITARY ORGANIZATION'S GENERAL ACCOUNTING DIRECTIVE (1884)**

General Accounting Directive of the Sanitary Organization is an ordinance dated 8 Cemaziyelevvel, 1301 in the Islamic calendar (March 6, 1884), which governed the practices



intended to be implemented across the territories managed by the Ottoman State. This ordinance comprises 13 folios and has been procured from the Presidency of the Republic of Turkey, the State Archives, and the Ottoman Period State Archives section via the e-Government platform<sup>1</sup>. The original document, written in Ottoman Turkish using Arabic and Persian script, has been transcribed into Latin script to facilitate analysis and make it accessible to researchers in accounting, economics, and organizational history. Content analysis method was applied to both the archival document and its transcript.

The first three chapters in the ordinance is presented in Table 2<sup>2</sup>. The document promotes changes in many areas related to accounting. But we will delve into a detailed analysis of the first three chapter's contents to better understand the evolving nature of the accounting thought of the empire.

**Table 2:** The First Three Chapters of the General Accounting Directive

| Chapter | Title   | Brief Explanation   |
|---------|---|---|
| 1       | General Instructions for Accounting Affairs             | Outlines general information, accountants' duties, general accounting, cashier duties, and finance commissions. |
| 2       | Accounting Regulation for Main Sanitary Administrations | Specifies books for recording transactions, assets, expenses, salaries, and accounting office requirements.     |
| 3       | General Regulation of the Control Room                  | Establishes the control and statistics center, functions, and inspection reporting procedures.                  |

Source: Ottoman Archives (BOA, "General Accounting Directive of the Sanitary Organization" - MERDIBAN. PRK.SH... 1/47; MERDIBAN-08-05-1301).

### Chapter 1: The Opening Section of The Regulation

The opening section of the regulation is composed of 41 articles. The initial 14 articles provide general information. The duties of accountants attached to the organization are outlined in articles 15 and 16. Articles 17 through 28 delve into the available accounting item, elucidating its obligations. Articles 29 to 35 address the general ballot box or the role of the general cashier, articulating the responsibilities of the cashier and the chief cashier and documenting the standard procedures. The content of articles 36 to 39 of the regulation concerns the finance commission, detailing its formation and designated responsibilities. Lastly, articles 40 and 41 of the regulation reveal the expense manager's role and duties. Having outlined the general structure and content of Chapter 1, we now proceed into a comprehensive analysis of each component.

#### *General Information (Articles 1-14)*

The first article highlights a centralization of activities in the capital, setting a clear administrative hub for sanitary services.

The second article denotes a shift in accounting methodologies, with the central accounting books employing double-entry accounting and quarantine stations utilizing single-entry accounting. The historical record lacks specifics on the quarantine stations' single-entry method.

<sup>1</sup> Ottoman Archives (BOA, "General Accounting Directive of the Sanitary Organization" - MERDIBAN. PRK.SH... 1/47; MERDIBAN-08-05-1301)

<sup>2</sup> All chapters in the Sanitary Organization's 1884 General Accounting Directive are presented in Appendix 3.

As authors, we searched the Ottoman Archives for more on this but found nothing. Finally, the third article reinforces a critical tenet of accounting - the segregation of duties - stipulating a clear distinction between the roles of the accountant and treasurer and outlining their respective responsibilities.

The language of record-keeping is addressed in the fourth and fifth articles, with a mandate for maintaining the accounting books in Turkish for both major quarantine stations and subsidiary administrations. In addition, however, provision is made for French clerks to keep a cash book and a current account book in French, with the stipulation of translation into Turkish for central review.

The sixth article emphasizes the doctor's and the clerk's approval of all accounting-related documentation sent to the central administration. Finally, the seventh article further highlights the use of Turkish for written correspondence related to accounting matters, with a concession for the benefit of French in the absence of a Turkish-speaking clerk.

Revenue management is addressed in the eighth article, detailing direct oversight by the sanitary council. Finally, fiscal responsibility is emphasized in the ninth article, prohibiting the advance payment of wages to employees, and in the tenth article, which restricts quarantine stations from incurring additional expenses beyond regular running costs without central permission.

The eleventh article introduces an early internal control and audit form, mandating quarantine doctors to inspect and monitor cash balances. Finally, article twelve stresses accountability, requiring immediate reporting of cash handling discrepancies to the central administration.

Articles thirteen and fourteen introduce additional layers of security and control, instituting a double-lock system for cash and valuable documents and holding all staff accountable for handling these assets.

Considering the historical period, the blend of modern accounting principles (such as double-entry bookkeeping and segregation of duties), the enforcement of language policy, and the introduction of internal controls, checks, and balances illustrate a structured system. In addition, while aiming for uniformity, the language policy posed challenges due to the multilingual nature of the Empire.

#### *Roles and Responsibilities of Accountants (Articles 15-41)*

The roles and responsibilities of accountants in the Ottoman Empire's healthcare system during 1884 were clearly defined in a series of articles. The accountant was primarily in charge of the general accounting procedures related to the healthcare department. This involved requesting funds for expenditures related to the government and finalizing accounts with the finance department. The accountant was also responsible for liaising with the finance commission to resolve outstanding financial issues.

The director of the general accounting department (Muhâsebe-i Umûmiye Kalemî) was under the healthcare accountant. Therefore, all accounting-related documents and correspondence were to be promptly and orderly submitted to the director. The director's journal contained all financial records and correspondence chronologically, including economic issues and accounting-related matters decided by the health council.

All accounting documents were to be examined and validated by both the accountant and the director. In addition, the director was required to ensure that all accounts and related documents were arranged according to the central department's instructions. The director was

also responsible for notifying quarantine stations of any errors or omissions in their accounts and informing them of any disbursements from the general fund to the quarantine stations.

At the end of each month, the director and the accountant must review the treasurer's journal and verify the amounts with the accounting fund journal. Any outstanding account had to be examined by the general accounting director and confirmed by the accountant before it could be approved and recorded in a particular register by the control department. Money could only be disbursed from the fund once this process was complete.

A separate journal was kept to record all deposits into the fund. In addition, the general accounting department maintained a journal and a significant journal, which recorded all transactions related to the fund and the quarantine stations' current accounts and special reports. At the end of each month, the balance of accounts was prepared by accounting and recorded in the proportion of accounts journal.

The chief treasurer and his deputy were responsible for all cash and shares. They were directly associated with the central administration and were only subject to accounting for inspecting and examining their journals. The chief treasurer maintained a fund journal that recorded the transfer method and shared use daily. The chief treasurer was not allowed to disburse funds on any day without the approval of the second president and without verification by the accounting and control departments.

The finance commission, comprised of individuals chosen from the health council members, including the healthcare department accountant, was renewed annually, and outgoing members could be reelected. The commission was responsible for jointly preparing the budget to be presented to the government each year with the accountant and the accounting director. In addition, it inspected the operations of the accounting, treasury, and control departments, examined expenditures, and decided on the necessity and relevance of extraordinary spending.

The health department's expenditure office was managed according to a special regulation by a health council member. All invoices and documents related to these expenditures were to be examined and signed by the expenditure director according to procedures.

While the structure seems bureaucratic, it provides checks and balances, ensuring transparency and accountability in financial management. However, the technology and communication methods might have limited the system's effectiveness. Furthermore, there might have been a disconnect between the central departments and the quarantine stations, which could have led to inefficiencies or discrepancies in accounting practices.

## Chapter 2: Accounting Regulation for Main Sanitary Administrations

Chapter 2 details the accounting regulations for health administrations, particularly concerning major quarantine stations. It outlines the types of journals to be maintained, presented in Table 3 with brief explanations.

**Table 3:** Journals

| No. | Title  | Brief Explanation  |
|-----|--|--|
| 1   | Sandık Defteri (Cash Journal)  | Records all cash inflows and outflows, such as funds received from the central administration or other quarantine stations and expenditures made.  |
| 2   | Vâridat Defteri (Revenue Journal)  | All forms of revenue are recorded in this journal. This includes fees for quarantine certificates, services, and other miscellaneous income. The total revenue for each day is to be transferred to the Cash Journal |
| 3   | Masârifat Defteri (Expenditure Journal)  | Logs all expenses, including quarantine costs, penalties, reimbursements, and other fees. The total daily expenditures are also transferred to the Cash Journal.   |
| 4   | Maâşatın Koçanlı Defteri (Salary Journal)  | Records employees' salaries, the 5% deduction from wages, amounts paid to the central administration or any quarantine station, and the net amount paid to the employee.   |
| 5   | Idare-i Merkeziye file Olan Hesab-ı Cârî Defteri (Ongoing Account with the Central Administration Journal) | Summarizes the quarantine station's account with the central administration.   |
| 6   | Mülhakat ile Olan Hesab-ı Cârî Defteri (Ongoing Account with Affiliated Administrations Journal)           | Documents the account of the affiliated administrations with the central quarantine station.   |

Source: Ottoman Archives (BOA, "General Accounting Directive of the Sanitary Organization" - MERDIBAN. PRK.SH... 1/47; MERDIBAN-08-05-1301).

The system mentioned in the regulation ensures that a complete record of all financial transactions is available at the end of each month. In addition, the text describes the process of recording, transferring, and verifying the information in these journals in detail. Based on the text, the recording, transferring, and verifying the information in these journals follows an exact procedure. Therefore, instead of translating the articles one by one, we analyzed the context in three subsections: recording, transferring, and verifying.

### *Recording*

All financial transactions are to be recorded in their respective journals daily. The specific details for recording these transactions are laid out for each type of journal. For instance, the Salary Journal details how gross salaries will be recorded with a 5% deduction. The same level of detail is expected for all other journals. There is also a chain of responsibility, with specific roles such as the health officer or accounting clerk given the duty of maintaining these records.

### *Transferring*

The Cash Journal records the daily totals from both the revenue and expenditure journals, ensuring that data from these journals is transferred daily to maintain an accurate record of net cash inflows and outflows at the quarantine station. The Salary Journal, on the other hand, tracks payments made to the central administration or other quarantine stations, thereby linking the financial records across various administrative units. At the end of each month, each quarantine station is required to send a copy of its journal to the central administration. The central administration then consolidates these records into its own journal, which includes both its transactions and those of the quarantine stations. The document also details the procedures for closing the accounts at the end of the month, with any remaining cash being carried forward to the next month.

### *Verifying*

Verification is defined in terms of reconciling and confirming balances across the journals to ensure data integrity. The Salary Journal's records and the amounts paid need to tally. The records in the Ongoing Account with the Central Administration Journal and the Ongoing Account with Affiliated Administrations Journal should reconcile with the records of those administrations.

The potential criticisms would be that the document details how transactions should be recorded but do not specify who is responsible for verifying these entries' accuracy. This could potentially leave the system open to fraud or errors. As much as it offers guidance on what to do when an employee is absent or dismissed, other potential scenarios are not discussed. What if some of the data in the journals are altered? All these critiques, therefore, must be appreciated within the historical context. The document provides a glance into the administrative and financial practices of the era.

## **Chapter 3: General Regulation of the Control Room**

Chapter 3 elaborates on the 1884 provisions that established the Control Room of the Sanitary Organization. This administrative office operated under the direction of the General Inspector of the Central Administration, focusing on quarantine stations, ship traffic control, and fee collection. The hierarchy of the Control Room was structured from accountants up to a Chief Inspector, reflecting a highly systemized approach. The regulations emphasized extensive record-keeping, underscoring the Control Room's accountability and the Ottoman Empire's focus on bureaucratic efficiency. These records documented everything from the number of ships and their tonnage to passenger arrangements and funeral services, highlighting the Empire's reliance on maritime trade and the significant movement of pilgrims.

A key responsibility of the Control Room was fee collection and the enforcement of penalties for non-compliance, making it an audited body to which all groups had to conform. The inclusion of the ship's logbook as a reference in disputes allowed shipowners to contest assessed duties, promoting fairness and transparency. The Control Room also played a crucial role in ensuring accountability within the Central Administration, with accounts reviewed by multiple layers, including the accountant, accounting manager, and Control Director. This multi-layered oversight extended to the inspection of quarantine stations in the provinces, emphasizing the Control Room's importance in public health administration during a period of increased movement of people and goods.



The General Regulations governing the Control Room reflect a centralized power structure within the Ottoman Empire, with substantial authority vested in the General Inspector. This central authority extended across various domains, including ship movement regulations, permits, financial reporting, and fee accounting, signaling a consolidation of information and power. However, while this clear hierarchy had advantages, it also risked creating inefficiencies, particularly in decision-making. The elaborate process of document scrutiny and approval, as detailed in Article 3, could slow down operations. Additionally, this rigid structure might limit lower-level officials' ability to respond quickly to unforeseen events or adapt to local conditions.

The General Inspector's role was particularly significant, holding supreme authority in many respects. For instance, paper could not be released from the Control Bureau without the Inspector's express permission (Article 12), and all approvals related to accounting and transactions had to be processed by both the Inspector and the accountant (Articles 6 and 7).

## DISCUSSION

### Transformation in Accounting Practices

The transition from the Merdiban method to the DEB system, as illustrated in the Sanitary Organization's General Accounting Directive of 1884, can be considered one of the main steps in the development of the financial system of the Ottoman Empire. Under the lens of Goldbach's (2019) legal transplant theory, this reform was not just an imitation but an intentional shift towards modernization and meeting the emerging challenges faced by the Empire. The Merdiban system had been sufficient to meet most of the state's functional needs for centuries, though it gradually proved inadequate as the economic structure of the Empire expanded; foreign firms began to venture into Anatolia in the course of the nineteenth century; and the establishment of commercial institutions like the first commercial chamber in Tarsus in 1879 (Çavuşoğlu, 2011). Teubner (1998) would suggest that this example illustrates the urgency with which legal systems have to adapt to a new environment in order to endure and proliferate. Hence, DEB was not a simple change to a new accounting method but necessary adaptation to the Empire's expanding fiscal responsibilities.

The typology of legal transplants proposed by Miller (2003) proves useful in explaining this transition in the context of the Ottoman Empire as a process that was at the same time legitimacy-creating and externally imposed. An externally imposed transplant was evident due to the considerable recent pressures on adopting DEB and other legal systems from a global economic and commercial standpoint. It was also associated with another process undertaken by the Empire with the aim of improving the quality and efficiency of its rule – the rationalization of public finances and improvement of the quality of financial management and practices. These reforms, which included the segregation of duties and the introduction of some roles within the DEB, represented major changes compared to previous practices and demonstrated the Empire's readiness to conform to more developed similar economies.

The application of DEB is also in accordance with Watson's (1995) assertion on the cultural and legal framework of legal transplants. In the Ottoman Empire, the legal culture inherited was robust and had a considerable basis in Sharia law and was both a strength and a weakness in terms of reform. Although DEB offers improved financial oversight, its implementation had to navigate and accommodate these longstanding cultural practices.

## Implementation Challenges and Historical Context of Accounting Reforms

The concerns regarding the applicability of DEB in the Ottoman Empire can be easily understood if the long historical narrative is taken into consideration. Tocqueville's (1998) observation of the gap between theory and practice is perfectly captured in this example because the Empire could not effectively implement the reforms primarily due to internal conflict and the and significant external pressures. One of the early examples can be seen in the 1850 Turkish Commercial Code, which was based largely on the French Commercial Code of 1807. The code demanded the adoption of the DEB system by all the firms operating in the Ottoman Empire. However, this was a remote possibility given that very few understood what DEB was. Such a departure is problematic and highlights the difficulty of implementing a very complicated accounting system in the absence of preparation and training.

Nevertheless, it was not until 1880 that an official decree was promulgated to convert to DEB from the Merdiban system, there being a wide gap between the declaration of the law and its application. In his comparative study of legal systems in different countries, Merryman (1981) and Sacco (1991) also analyze and stress many factors associated with and inherent to legal transplants, especially when accompanied by imposition and imitation. The Ottoman Empire's adoption of DEB, driven by the need to align with Western economic powers and to modernize its internal structures, embodies this dual nature.

In addition, the institutional culture, legal system, and presence of a strong guild culture only made the integration of DEB even more challenging. Watson (1995) points out that one has to take into account the local legal and social environment, and in the case of the Ottoman Empire, these conditions hindered the easy transition to Western accounting culture. When DEB was introduced in 1880, it became clear that there was a need to restructure the training and education of accountants. This led to the foundation of schools such as the Hamidiye Commerce School in 1883 and the translation of the French accounting texts, as illustrated by Güvemli (2005), Güvemli and Kaya (2015), and Güvemli, Demirdöğen, and Bolcal (2016). This educational initiative proves the fact that the Empire realized that change had to be affected at a structural level; changes that went beyond policies and policies that demanded civil and institutional alterations.

One of the important stories regarding the implementation of DEB was observed in the functioning of Düyün-u Umumiye (Public Debt Administration), which was created after the Empire claimed it could not pay its external debts in 1881. DEB was successfully implemented in this organization, which managed state revenues and employed thousands under Western administrators. (see Güvemli et al., 2016). But this success was not universal. Challenges and delays in implementing DEB across the Ottoman Empire may have been due to the impact of broader historical events, such as the Russo-Turkish War (1877–1878), the First Balkan War (1912–1913), World War I (1914–1918), and the Turkish War of Independence (1919–1923).

## CONCLUSION

Following the enactment of the first Turkish Commercial Code in 1850, the gradual adoption of DEB signaled a new era in Turkish accounting practices. The shift from the long-standing Merdiban method to DEB in 1880 reflected a broader aim to align with profit-oriented business models. The sequence of events illustrates that the introduction of the 1850 Commercial Code and subsequent financial reforms were intertwined elements of a larger narrative, significantly shaped by international influences and global economic dynamics. The Ottoman Empire's move

to DEB suggests that a fundamental infrastructure issue was resolved, paving the way for the development of modern business practices within the framework of capitalism.

While this study provides a comprehensive overview of the legal and institutional transitions, it acknowledges limitations in scope, particularly in the granularity of operational challenges and societal impacts. Future research could explore how these foreign-influenced changes were perceived within the Empire.

The journey towards modernizing Ottoman accounting faced several obstacles. With the founding of the young Republic in 1923, efforts were launched to revolutionize industry, culture, and education. Yet, a significant setback occurred in 1926 with the introduction of the second Turkish Commercial Code and the Income Tax Law, which inadvertently placed accounting under the strict oversight of the Ministry of Finance. Future studies might investigate the Ministry of Finance's early dominance over accounting practices, offering insights into the delayed legislation of professional accounting until 1989. Such research could also elucidate why the transition from the Ottoman accounting body, the “Hazine-i Amire”, to a more contemporary framework did not foster accounting proficiency as witnessed in Western contexts.

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Prime Ministry Ottoman Archives (BOA), “Sıhhiye Teşkilatı'nın Genel Muhasebe Talimatı”, MERDIBAN. PRK.SH... 1/47; MERDIBAN-08-05-1301. Varak No:4.

Prime Ministry Ottoman Archives (BOA), DUİT 37-2/7-2/6; DUİT 37-2/7-2/2, 37- 2/7-2/4.

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## APPENDIX 1 (Transcription)

Prime Ministry Ottoman Archives (MERDIBAN 932), MERDIBAN-02-01-1266. (November 18, 1849)  
(One Page of the Original Text) –Journal Record

**Journal.....**  
**MERDIBAN. 2 Muharrem 1266 Saturday**  
**(18.11.1849)**  
**Revenue.....**  
**Description**

| <b>Date</b> |                                 |         | <b>Description</b>  | <b>Guruş</b>       |
|-------------|---------------------------------|---------|---|--------------------|
| "           | September installment           | 25.000  | Aşar (agricultural tax) from Izmir region for June 1265   | 100.000            |
| "           | Outstanding from last December: | 100.000 | installment collection for the Treasury of the Ministry of Finance, March 1265 debt             |                    |
| "           | Total                           | 125.000 |   |                    |
| "           | June installment:               | 15.898  | Agnam (livestock tax) from Siroz Island for July 1265   | 150.000            |
| "           | Outstanding from last September | 134.105 | installment, Treasury of the Ministry of Finance, March 1265 debt                               |                    |
| "           | Total                           | 150.000 |   |                    |
| "           | August installment              | 177.284 | Denizli Aşar (agricultural tax), specified year debt settlement                                 | 125.389            |
| "           | Outstanding from last September | 183.471 | Tatarpazarı Aşar (agricultural tax), September 1265 installment, specified year debt settlement | 81.427,5           |
| "           | Total                           | 360.755 |   |                    |
| "           | August installment              | 28.060  | Bursa rusum (municipal tax), September 1265 installment, debt settlement                        | 65.000             |
| "           | Outstanding from last September | 28.060  | Çatalca Aşar (agricultural tax), 1265 annual tax settlement                                     | 150.000            |
| "           | Total                           | 56.120  |   |                    |
| "           | September installment           | 243.713 | Tekfurdağı rusum (municipal tax), August tax settlement   | 1.925              |
| "           | Outstanding from last October   | 200.655 | Ohri agnam (livestock tax), September 1265 tax settlement                                       | 233.350            |
| "           | Total                           | 444.368 | Dırama agnam (livestock tax), September 1265 tax settlement                                     | 282.717            |
| "           |                                 |         | Manastır rusum (municipal tax), specified year tax settlement                                   | 360.755            |
| "           |                                 |         | Konya rusum (municipal tax), specified year tax settlement                                      | 70.000             |
| "           |                                 |         | Manastır agnam (livestock tax), specified year tax settlement                                   | 56.120             |
| "           |                                 |         | Bursa rusum (municipal tax), September 1265 tax settlement                                      | 60.000             |
| "           |                                 |         | Üsküp customs tax, specified year tax settlement  | 89.468,5           |
| "           |                                 |         | Manastır agnam (livestock tax), specified year tax settlement                                   | 444.368            |
| "           |                                 |         | Berat district Aşar (agricultural tax), October 1265 tax settlement                             | 54.339,5           |
| "           |                                 |         | Travnik Aşar (agricultural tax), specified year September tax settlement                        | 45.714             |
| "           |                                 |         | Sofya rusum (municipal tax), specified year tax settlement                                      | 33.183             |
| "           |                                 |         | Uzuncaabad rusum (municipal tax), specified year tax settlement                                 | 28.333             |
| "           |                                 |         | <b>Total</b>  | <b>2.432.089,5</b> |



**APPENDIX 2 (Transcription)**

Prime Ministry Ottoman Archives (BOA), SUİT 37 2/7 – 2/4, Imperial Edict – Transition to Double Entry, MERDIBAN. 9 Sefer 1297 (1879/1880)

His Excellency,

Regarding the previously presented report to the honorable presence about the organization of the Ministry of Finance, the commission for the reform of financial affairs has deliberated on the matter. In accordance with the divine command and imperial edict of His Majesty the Sultan, the matter was referred to the aforementioned commission.

As per the noble decree, the report containing the amendments and modifications made in this respect has been prepared, outlining the central and provincial organization of the Ministry of Finance, and the essential duties. It also includes the projected salaries and three parts of the instructions necessary for implementation.

Furthermore, it is noted that without a complete and decisive reform, the current state of the Ministry of Finance cannot fulfill the command. The necessity to implement the reforms and to start keeping records based on a solid foundation from the coming March is emphasized. This includes the implementation of the double-entry bookkeeping system.

It is also mentioned that the increase in the salaries of the financial officers and the implementation of a ten percent distribution for other departments will be carried out. The provincial organization's records are to be prepared twice, starting from the beginning of September, and the Treasury will also implement a ten percent salary increase at that time. The new organization will be put into action starting from the month of Kanun-i Sani and will be completed gradually.

Although the execution of the aforesaid instructions has been described as temporarily impractical, the divine will of His Majesty the Emperor will be awaited for further instructions.

Dated 6th Safer, year 97

(Signature)

...

The report of your humble servant states that,

With utmost respect, this report along with the enclosed documents has been submitted to His Majesty the Sultan. Following the divine will of His Majesty, the necessary actions regarding the implementation of the reforms will be carried out.

Dated 9th Safer, year 97

(Imperial Seal)"



## APPENDIX 3

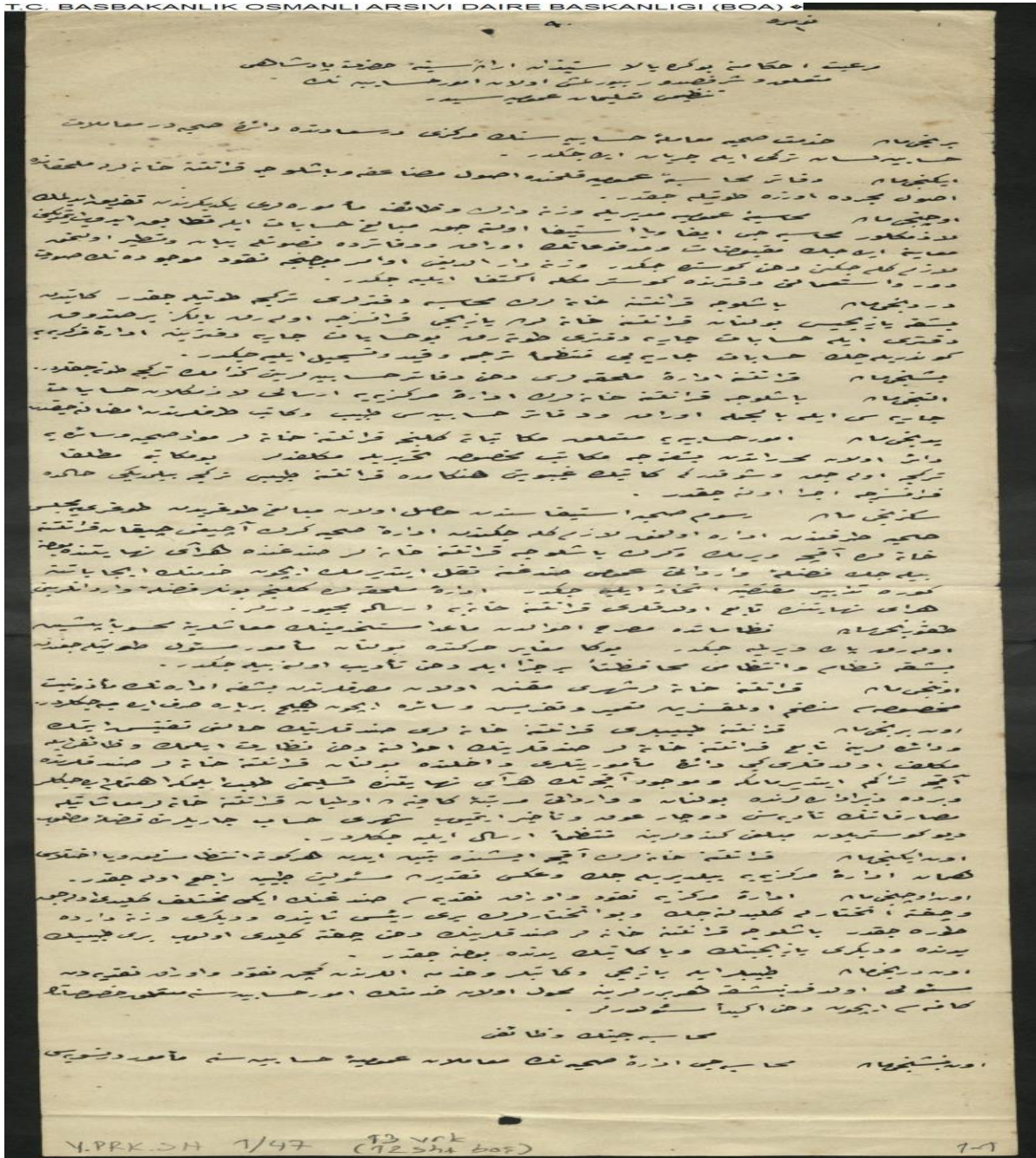
## The All Chapters of the 1884 Sanitary Organization's General Accounting Directive

| Chapter | Title   | Brief Explanation   |
|---------|---|---|
| 1       | General Instructions for Accounting Affairs             | Outlines general information, accountants' duties, general accounting, cashier duties, and finance commissions.   |
| 2       | Accounting Regulation for Main Sanitary Administrations | Specifies books for recording transactions, assets, expenses, salaries, and accounting office requirements.   |
| 3       | General Regulation of the Control Room                  | Establishes the control and statistics center, functions, and inspection reporting procedures.  |
| 4       | Regulation for the Commission of Officers and Employees | Covers the formation and duties of commissions, retirement provisions, and employment conditions for civil servants.  |
| 5       | Regulation for Employment Eligibility                   | The procedures for evaluating employment applications, determining personnel rights and salaries, and guidelines for newly appointed health officers regarding leaves and other similar situations. |
| 6       | Regulation on Per Diems for Sanitary Officers           | Defines travel expenses, return allowances, and special case allowances for civil servants in the sanitary organization.  |
| 7       | Expenditure Management                                  | Covers expenses, inventory, equipment purchases, responsibilities, and warehouse management for health services.  |
| 8       | Retirement Regulations                                  | Regulates retirement age, committee, pension calculations, benefits, and the Health Benefit Fund.   |

Source: Compiled by the authors by benefiting from the Prime Ministry Ottoman Archives (BOA), "Sıhhiye Teşkilatı'nın Genel Muhasebe Talimatı", MERDIBAN. PRK.SH... 1/47; MERDIBAN-08-05-1301.

APPENDIX 4

Prime Ministry Ottoman Archives (BOA), "Sıhhiye Teşkilatı'nın Genel Muhasebe Talimatı", MERDIBAN. PRK.SH... 1/47; MERDIBAN-08-05-1301. (First Page of the Original Text) Varak No: 1



## APPENDIX 5

## Chronological Overview of the Ottoman Empire's Transition to Double-Entry Bookkeeping

| Date              | Important Events   | Description   |
|-------------------|--|---|
| July 1775         | Establishment of "Muhendishane-i Bahri Hümayun"                            | Established by Mustafa III to advance the shipyard and navy, influenced by French expertise.  |
| September 1795    | Establishment of "Muhendishane-i Berr-i Hümayun"                           | Created to develop the land armies, "Nizamı Cedit", during Selim III's reign, with French influence.  |
| 1807              | Translating Napoleon's "Code De Commerce"                                  | Napoleon's commercial code was translated by students sent to France, marking its first translation.  |
| 1826              | Establishment of the "Ministry of Evkaf-ı Hümayun"                         | Formed for the financial and administrative oversight of endowments.  |
| 1830              | Move of "Muhendishane-i Bahri Hümayun" to Heybeli Island                   | Relocated to Heybeli Island as part of military reforms initiated by Mahmud II.   |
| 1838              | Establishment of the "Ministry of Finance"                                 | Formed from the merger of the Chief Treasury and the Mansûre Treasury under Mahmud II's decree.   |
| November 3, 1839  | Proclamation of the "Tanzimat Edict"                                       | Announced various westernizing reforms to ensure equality among Ottoman subjects.   |
| 1840              | Establishment of the Parliament of Financial Accounting                    | Set up to oversee, decide, and conclude financial matters, supporting the Tanzimat reforms.   |
| 1840's            | Establishment of State Factories (Approx. 140)                             | Initiated to catch up with the Industrial Revolution, utilizing public capital due to private capital scarcity. Sent students abroad for factory management training. |
| 1840's            | Sending ~200 Turkish Students to Europe                                    | Aimed to address factory operational deficiencies by studying Business Administration in Europe.  |
| 1850              | Adoption of Napoleon's "Code De Commerce" as "Kanunname-i Ticaret"         | Adopted to streamline commercial activities, building on the initial 1807 translation.  |
| February 18, 1856 | Proclamation of the "Reform Edict"   | Extended the Tanzimat Edict reforms, emphasizing tax equality and establishing commercial courts.   |
| 1858              | Establishment of the "Parliament of Accounting and the Council of Finance" | Replaced the abolished Parliament of Accounting with two new institutions.  |
| 1863              | Establishment of the "Ottoman Bank"  | Founded with British and French capital as "Bank-ı Osmanî-i Şahane".  |
| December 23, 1876 | Proclamation of the "Basic Law"  | The Ottoman Empire's first constitution under II. Abdulhamid, leading to the creation of financial and administrative bodies.   |
| 1879-1880         | Decree on Transition to DEB  | Grand Vizier Küçük Sait Pasha announced the shift to the Double Entry Recording System in accounting.   |
| 1879-1900         | Publication of ~25 Accounting Textbooks                                    | Published to promote and teach the double-entry recording method in various schools.  |
| 1882              | Establishment of "Dersaadet (Istanbul) Chamber of Commerce"                | Regulated and recorded commercial transactions for businesses and individuals in Istanbul.  |
| 1882              | Establishment of the "Chamber of Industry and Agriculture"                 | Managed and documented transactions for industrial and agricultural entities in Istanbul.   |
| 1883              | Establishment of "Hamidiye Trade School"                                   | The first commercial school in the Ottoman Empire, offering commerce and accounting training.   |
| 1884              | Sanitary (Health) Organization's General Accounting Directive              | Referenced archive document.  |

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