

HISTORICAL DEVELOPMENT OF AGRICULTURAL ACCOUNTING AND DIFFICULTIES ENCOUNTERED IN THE IMPLEMENTATION OF AGRICULTURAL ACCOUNTING*

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Abstract

Agricultural sector, from past to present, had assumed very important duties on economic and social development of societies. It became a globally indispensable and strategic sector due to its various attributes such as: direct/indirect contributions to population nourishment, national income, employment, capital transfers, raw material supply for industry, exportation, biological diversity and ecological balance. Since the dawn of humankind, agricultural sector had gone through a variety of phases in terms of production activities and land proprietorship. Agricultural activities that emerged in the period of hunter-gatherer societies have been superseded by today's specialized and planned agricultural enterprises utilizing information and technology. Agricultural accounting has also experienced a significant change in parallel with those improvements. This study aims to investigate historical development of agricultural accounting and difficulties encountered during its implementation. Research studies indicate that agricultural assets were initially recorded and inventory controls were performed by Sumerians. Until the Middle Ages, agricultural accounting did not experience any development, whereas it still encounters various difficulties even today. In this context, agricultural accounting practices could not be realized as intended.

Key Words: Accounting, Agricultural Accounting, History of Agricultural Accounting

1. Introduction

Accounting is an information system that communicates information regarding resource formation and usage of an enterprise, increase or decrease in those resources resulting from financial transactions and financial situation of the enterprise to related individuals and institutions. Accounting has four basic functions: recording, classifying, reporting and interpreting. Within this framework, accounting is defined as a science and art of recording,

* This study is based on the PhD thesis titled "Calculation of Costs Within The Framework of Accounting Standards and Tax Legislation at Fisheries Enterprises: A Case Study", The Institute of Social Science, Niğde University.

classifying, summarizing, reporting and interpreting financial and monetary transactions (Sevilengül, 2008).

Field of activity and branch of activity of enterprises may differ. These differences are liable for the existence of different accounting types. Within that framework, accounting is comprised of three main parts. Those are financial, cost and managerial accounting. However, there exist some other specialty accounting types apart from the scope of the main parts listed above. Construction accounting, bank accounting, insurance accounting, tax accounting, hotel accounting and agricultural accounting are examples of such types (Özulucan, 2009).

In this context the aim of this study is to investigate historical development of agricultural accounting and to put forth the difficulties encountered during its implementation. Besides the definition, objectives, significance and historical development of agricultural accounting are studied prior to implementation difficulties. The remainder of this study is as follows: While section 2 gives a brief explanation on definitions and objectives of agricultural accounting section 3 deals with the significance of agricultural accounting. Section 4 gives the historical timeline of agricultural development and section 5 describes the difficulties while implementing agricultural accounting. Final section concludes the rest of the study.

2. Definition and Objectives of Agricultural Accounting

Agricultural accounting, as noted earlier, is among the specialty accounting types since enterprises in agricultural activities tend to acquire specific branches and objectives of activity. They all utilize the data provided by financial, cost and managerial accounting. Within this framework, while recording of financial transactions in agricultural production process necessitates the use of financial accounting; estimation of production costs incurred during the cultivation of agricultural goods necessitates the use of cost accounting and provision of new data, either obtained from financial or cost accounting, for decision-making practices of enterprise managers necessitates the use of managerial accounting.

Agricultural accounting can be explained as a specialty accounting which primarily records financial and monetary transactions throughout agricultural activities, classifies financial transaction in respect of types, estimates production costs incurred during the cultivation of agricultural goods and then reports those financial according to their purposes.

The objectives of agricultural accounting can be listed as follows (Doğan, 1975; Aras, 1988; Beneke, 1966; Talim, 1973).

- Estimation of actual costs pertaining to agricultural goods,
- Determination of sale prices of goods obtained from agricultural activities,
- Fair and well-balanced allocation of dividends among enterprise partners following profit-loss estimation,
- Assistance to farmers and enterprises in estimation of tax base,
- Monitoring intertemporal financial and physical aspects of agricultural enterprises,
- Monitoring the movements in quantity and value pertaining to agricultural goods,
- Performance of cost analysis, followed by rational precautionary measures,
- Assistance to agricultural enterprises in budget planning for the future,
- Provision of information in order to facilitate parties for the transactions of rent (leasing) sharecropping, purchase or sale,
- Provision of related information to top executives on determination of agriculture, revenue and price policies,
- Assistance to agricultural enterprises in monitoring the performances of their own employees and managers,

- Determination of support prices for agricultural goods which would be subject to subsidy,
- Provision of information on agricultural enterprises to agricultural credit institutions,
- Determination of employee wages and,
- Assistance in education, training and research services.

3. Significance of Agricultural Accounting

Enterprise managers are bound by today's constantly changing and developing nature of market conditions to involve planning in important decisions on enterprise activities. Rational decision-making practices of enterprise managers in the presence of developing situations would only be possible by the existence of true and actual information. Therefore, as in all enterprises, formation of an accounting information system in agricultural enterprises would have a special importance in terms of enterprises' future.

Accounting information system, being a broad concept which includes conventional accounting as financial, cost and management accounting, is also considered as the best information system ever developed by enterprises (Sürmeli et al., 2006). Accounting information system systematically combines the data on all types of activities pertaining to goods, services and environment of the enterprise, classifies obtained data, collects them in an order and then summarizes them. The data is also saved and preserved within this system. Consequently, documents and reports are prepared with the instrument of accounting information system (Yereli, 2007). Within this framework, formation of an efficient accounting information system in agricultural enterprises would help to obtain beneficial information and thus necessary plans are made and appropriate budgets are prepared (Tetik, 2002).

By utilizing accounting information system, enterprises would be able to attain actual agricultural production cost and to measure their productivity easily. In case of an enterprise without an efficient accounting information system, enterprise managers would have difficulties in acquiring true and actual information. For that reason, managers might not make strategic and rational decisions related to future, perform production planning, in turn enterprise might encounter great risks. However, enterprises have the option of estimating revenue from sales and incurred costs of production process with the instrument of accounting information system. Furthermore, problems encountered by enterprises throughout agricultural production process would be avoided and solved by utilization of accounting information system. Besides beneficial applications of agricultural accounting mentioned above, there is also a variety of regulations on collection of accounting data on agricultural enterprise revenues and activities (Nazlı, 2006). For instance, a regulation, namely, "*Farm Accountancy Data Network*" (FADN) applied among 10 member countries of European Economic Community (EEC) in 1965 is also being performed among 28 member countries of today's European Union (EU) (Karaca, 1995). Nevertheless FADN, "*International Accounting Standard 41*" (IAS-41) is implemented in 2003 also reflects the explicit significance of agricultural accounting practices.

4. Historical Development of Agricultural Accounting

This part of the study features the historical development process of accounting in general prior to agricultural accounting. The periods in this process during which agricultural accounting gained significance are also emphasized.

Findings from research studies indicate that accounting methods are initially utilized in Babylonian Empire and Ancient Egypt around 3500 B.C. Account draftings and account statements are found on clay tablets in Babylonian Empire and on papyrus paper in Ancient Egypt. It is detected that accounts of temples and banks are recorded in Ancient Greek civilization. During Ancient Rome era, accounting system became more functional; so that, asset accounts for money, grain and livestock were recorded in separate books (Sevilengül, 2008).

Although the opinion of by whom and when double-entry bookkeeping method which formed a basis for contemporary accounting was initially used remains disputable, according to some records while it had been used in Italy as of the 13th century. Double-entry bookkeeping method is elaborated in Luca Pacioli's work "*Summa Arithmetica*" (1494).

Furthermore, today's accounting rudiments are found in the book named "*Risale-i Felekiyye/Kitab-us Siyagar*" (1363) written by Abdullah Ibn Muhammed Ibn Kiya Al Mazandarani (Sevilengül, 2008).

As an artifact from Sumerian Era (4000 B.C. - 2000 B.C.), a clay tablet on which records of goods cultivated from agricultural activities was written is discovered as an evidence for inventory control and recording. Development of agricultural accounting practices is found to be rather stagnant until the medieval period (Deran, 2005).

In this study, historical development process of agricultural accounting is investigated under three subheadings, namely, European, the U.S. and Turkish States.

4.1. Historical Development of Agricultural Accounting in Europe

In the 18th century, addition to financial accounting techniques utilized by various countries around the World, agricultural accounting with enterprise planning where production branches are considered separately was also prominent. Within that framework; in order to facilitate enterprise management and to reveal annual profit-loss position, initially implemented by Arthur Young between the years of 1773-1779 in Britain. Young utilized double-entry bookkeeping system in his own enterprise. By the end of the 18th century, Albrecht D. Thaer, W. Herman Howard and Friedlich Aerobe, being impressed with Young's work, had made consequential contributions to development of agricultural accounting by implementing it in Germany. After Germany, in time, agricultural accounting with a rapid improvement began to spread throughout Europe. For instance, Sinclair, Trotter and Orwin (1817-1821) from Britain; Ernest Ferdinand Laur (1871-1964) from Switzerland; Schönfeld (1931) from Austria and Marengi from Italy had important contributions to development of agricultural accounting in their own countries (Aras, 1988).

Food shortages of post-WWII era, income differences among agricultural employees and inequality in applied agriculture policies created a conducive environment for European Common Agricultural Policy to be implemented in 1962. In 1965, "*Farm Accountancy Data Network*" (FADN) was launched among 10 member countries of EEC. By courtesy of that network, financial information on agricultural enterprises are obtained and analyzed. Today, FADN is being utilized by over 80,000 agricultural enterprises located in 28 countries (Nazlı, 2008).

4.2. Historical Development of Agricultural Accounting in the United States

Agriculture accounting also began to be applied in the United States shortly after European countries. Andrew Boss and his colleagues highly contributed to the application of agricultural accounting in US agricultural enterprises. In 1890, an agricultural cost accounting method known as "Minnesota System" is initiated in the State of Minnesota. Development process of agricultural accounting in the United States is also contributed by

Thomas Nixon Carver, Carl E. Ladd, F.W. Peck, H.C. Taylor, Roth and G.F. Warren (Aras, 1988).

4.3. Historical Development of Agricultural Accounting in Turkish States

As one of the masterpieces from the age of Karakhanids, the book named “*Kutadgu Bilig*” (1072) contains several opinions on accounting. During the reign of Ilkhanate dynasty (1256-1353), some principles and concepts similar to contemporary accounting were assumed and some preventive measures against corruption especially in taxation and agricultural activities were taken (Can et al., 2012).

Division of land into parcels, namely *feud tenure*, *manor* and *vassalage*, commensurate with income and herbal / animal productivity of land during the Ottoman Empire era are considered as indication of agricultural accounting practices (Özkan, 2001).

During the final decades of the Ottoman Empire, on the other hand, accounting theory and practices have continued their development process under the influence of French rules and regulations. “*Kanunname-i Ticaret*”, “*Usuli Defteri*”, “*Fenni Usuli Defteri*” and “*Usuli Defteri Cedid*” are some of the books on accounting written in 1850s. Furthermore, some schools included courses related to accounting in their curriculum in 1883 (Avder, 2012).

The first study on agricultural accounting in Ottoman Empire is known as “*Muhasebe-i Ziraiye*” (1885) written by an Agriculture Inspector named Aram Margosyan (Güvemli, 2000).

During the Republican Era in Turkey, even though the development process of accounting accompanied by increased economic development was discernibly effective, it fell short of expectations in comparison with other countries. The book written by İbrahim Fazıl, namely, “*Ameli Usul-i Muhasebe-i Ziraiye ve Çiftlik Muhasebesi*” was the first publication on agricultural accounting in the Republican Era between the years of 1921-1922 (Güvemli, 2001).

In 1926, the enactment of Turkish Commercial Law (TTK) No. 856 which is based on German Commercial Law led to adaption of German accounting practices. Income Tax, Corporate Tax, Tax Procedure Laws (VUK) (enacted in 1950) and TTK (amended in 1954) have had important effects in implementing the formal structure of accounting. During that process, Turkish accounting practices being under the influence of European countries and the United States reflected the characteristics of a mixed accounting concept. Between the years of 1950-1960, accounting training has reached high levels (Güvemli, 2001).

In 1964, the enactment of Law No. 440 on Public Economic Enterprises and Affiliations (İDTİ) has brought new regulations and uniformity of accounting rudiments and procedures in İDTİ became mandatory.

In 1971, “Uniform Accounting System” is established for Public Economic Enterprises. Uniform Accounting System, applied only to Public Economic Enterprises in the beginning, became widespread among the larger and private establishments. This improvement is followed by the implementation of “Uniform Account Plan for Banks” in 1986 and the enactments of laws on Public Accountancy, Certified Public Accountancy and Chartered Accountancy in 1989. Later on, within the framework of the Official Notice on Accounting Practices formed in accordance with Tax Procedure Law, Uniform Accounting System became active in 1994.

Furthermore; in 1994, along with Public Oversight Accounting and Auditing Standards Authority (formerly, *Turkish Accounting Standards Board*), Turkish Accounting Standards for integrating Turkey with other countries in accounting field is published (Sevilengül, 2008).

As a result, while European countries were forming European Common Agricultural Policy and FADN for the sake of objectives such as solving problems regarding agricultural

sector, finding solutions to difficulties encountered in the sector and obtaining accounting data on revenue, cost and activities of agricultural enterprises throughout development process of agriculture accounting, the Turkish States from past to present could not realize necessary, sufficient and unbiased researches on agricultural accounting. Contemporary accounting practices are performed in order to determine tax base rather than provision of useful financial information for decision-making process of enterprises. Prevalence of agricultural accounting practices and awareness in Turkey remained limited up until 1964 due to legal tax-exemption of 90% of domestic farmers (Erdamar, 1985). Simple agricultural accounting practices are performed in agricultural enterprises until 1994 then agricultural accounting practice became only limited to larger agricultural enterprises with the implementation of Uniform Accounting System.

Today's agricultural accounting practices cannot fulfill the expectations. Nonetheless, including as a result of Turkey's application to accede to the EU and publication of International Accounting Standard 41 on agricultural activities, expansion in practices field of agricultural accounting is anticipated.

5. Difficulties Encountered During the Implementation of Agricultural Accounting

Agricultural enterprises possess certain characteristics which separate them from the rest of the enterprises. Those characteristics account for differentiations in accounting organization of agricultural enterprises which, in turn, led to a variety of difficulties throughout accounting process. Those difficulties encountered during the implementation of agricultural accounting are discussed in detail below: (Doğan, 1975).

- i. Different Sizes of Agricultural Enterprises:** Agricultural enterprises in different sizes necessitate different accounting procedures to be followed at each. Article 54 of Law No. 193 on Income Tax defines separate measurements for different sizes of agricultural activities. It is also indicated that those measurements are considered as a basis for taxation procedure in agricultural enterprises. For instance; actual taxation procedure is to be performed for enterprises with a number of livestock (cattle) above 150 or, for internal water fisheries with a production area (pool, lake, pond or reservoir) larger than 900 m².
- ii. Dependence of Agricultural Enterprises on Seasons and Climate:** Each agricultural production process requires certain specific conditions concerning cultivation, maintenance and harvest. During certain periods of the year farm employees of agricultural enterprises work intensely in day and night shifts, while during the rest of the year the enterprise remains idle. Therefore, certain difficulties in estimation of costs appear due to some factors such as excess employment, seasonal uncertainties and off-season. Those factors should be considered in implementation of agricultural accounting system (Ersönmez, 2000).
- iii. Strong Link Among the Farmer Family Members in Agricultural Enterprises:** A great majority of small and middle size agricultural enterprises are operated by farmers and their family member by whom, as much as contribution made to production process, consumption of agricultural goods at a certain level is realized. For that reason, estimation of gain from agricultural production in such enterprises becomes more difficult (Açıl and Köylü, 1971).
- iv. Sustainability of Versatile Agricultural Activities in Agricultural Enterprises:** According to year 2001 data, approximately 67% of agricultural enterprises in Turkey produce both herbal and animal products between which

various value trade-offs emerge. For instance; herbal production process utilizes animal by-product such as manure and animal production process utilizes herbal products and/or by-products such as hay (straw), barley and rye. In other words, in some agricultural enterprises may involve higher internal consumption and value trade-off in comparison with other enterprises. Furthermore, certain agricultural goods throughout production process may yield much higher levels of by-products relative to other enterprises and this leads to difficulties in estimating actual value of costs in agricultural production (DIE, 1991-2001).

- v. **Abundance of Investments for Future Terms in Agricultural Enterprises:** Certain costs incurred by agricultural enterprises belong to next month's or even next year's budget. In other words, sales revenue from production process that incurs certain costs may belong to next terms or years. For instance; certain costs regarding application of fertilizer, crop dusting, installation of irrigation systems on agricultural fields involve next periods and thus, estimation of gains from agricultural production should consider amortization calculations and use of accounts which terminally diversifies.
- vi. **Confusion on the Detection of Current (liquid) and Fixed Assets in Agricultural Enterprises:** For instance; beef cattle as a current (liquid) asset is bred to be sold eventually, whereas, dairy cattle or stud cattle as a fixed asset is bred to be utilized in the enterprise for a long period of time. In such a case, it becomes necessary to determine which one is to be considered as fixed asset and which one is current (liquid) asset, so that accounting transactions should be interpreted. In other words, assets of same kind would be either considered as current (liquid) or fixed assets in balance sheet (Doğan, 1975).
- vii. **Excess Payment in Goods in Agricultural Enterprises:** Agricultural enterprises may make payments for a service they utilize either in cash or in goods. In case of borrowing agricultural machineries from other enterprises or individuals, discharge of debts can be made in exchange of harvested agricultural goods by the enterprises. As a result, estimation of both the gain from agricultural production and the amount of payment made in exchange of services utilized becomes more difficult (Aktuğlu, 1972).
- viii. **Insufficient Significance given to Accounting Information System in Agricultural Enterprises:** Agricultural enterprise managers' weak perception of accounting practices is another difficulty. In other words, enterprise managers are unaware of benefits provided by accounting, whereas accounting procures crucial information for an ultimate decision-making process. Since agricultural enterprises are usually of small-scale family businesses, farmers' reluctance on the implementation of accounting system becomes inevitable.

6. Conclusion

Agricultural sector became an indispensable and strategic sector for all societies. Decision-making practices concerning agricultural activities in such an important sector, comprised of operating enterprises and farmers, necessitate the consideration of data obtained from accounting information system. With the instrument of accounting information system, enterprises and farmers are able to estimate agricultural production costs more accurately, productivity measurements are facilitated and problems encountered in agricultural production process are solved.

This study summarizes the historical development and implementation of agricultural accounting which is found to be utilized initially around 3500 B.C. A clay tablet remained

from the Sumerian Era on which indicated records of goods cultivated from agricultural activities is considered as evidence for inventory control and recording.

Contribution of Britain, Germany, Italy, Switzerland and the United States to development of agricultural accounting during the 18th and 19th centuries was obvious.

The first findings of development of agricultural accounting in Turkish States were found in the Karakhanians era during which the masterpiece named “*Kutadgu Bilig*” (1072) was written. Later on, in parallel with improvements in Europe, agricultural accounting has continued to excel during the Ottoman Empire Era and the Turkish Republican Era.

Unlike other enterprises, agricultural enterprises possess specific characteristics which, in turn, led to certain discrepancies in agricultural accounting practices. Therefore, agricultural accounting practices could not be utilized by enterprises to the extent intended. Nevertheless, efficient use of “*Farm Accountancy Data Network*” and “*Agricultural Activities Standards 41*” and high prevalence of awareness on agricultural accounting practices may provide agricultural enterprises and farmers with more beneficial and realistic agricultural information.

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