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The Emergence of Double Entry Bookkeeping and its Relevance to Modern Society

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Abstract: The purpose of this paper is to ascertain the factors that contributed to the emergence and development of double entry bookkeeping system, who introduce the double entry bookkeeping system, how its application has impacted the accounting profession, we also looked at its benefit to the society and how its application improved the accounting system. The paper is also aimed at showing the relevance of the double entry bookkeeping system to this modern day society. In order to do this, we considered scholarly works done by other scholars and also considered the activities of firms' accounting departments. This paper will also discuss the differences between the complex capitalistic structure we operate in today with that of the days of Luca Pacioli- the inventor of the double entry bookkeeping system, who lived during the Renaissance when this system became pervasive. The paper further looks at how the double entry bookkeeping system invented by Luca Pacioli still has relevance in this modern world of accounting. According to Michael Chatfield, 'the emergence of the Double Entry Bookkeeping in a study of their evolution suggests that accounting processes are reactive, that they develop mainly in response to business needs at any given time, and that their growth is relative to economic progress. In general, the higher the level of civilization, the more elaborate the bookkeeping methods'.

Key words: Double entry, Bookkeeping, Evolution and Development, relevance, Modern Society.

Introduction

There are various factors that have influenced the emergence and development of the accounting discipline, some of these factors are born out of societal needs. Most civilizations developed accounting theories and practices based on the specific needs in their societies. One of those developments was the

double entry bookkeeping system. Some of the factors that contributed to the conception of double entry bookkeeping included techniques applied in mathematics, the introduction of coins and money as a medium of exchange, the introduction of paper, the development of a banking system, and various economic circumstances that required a system of proper recording.

Meaning of Double Entry

Double entry as system of bookkeeping is one of the most important fundamental concepts of accounting. Basically. It means that for every entry into an account, there needs to be a corresponding and opposite entry into a different account. This will result in a debit entry in one or more accounts and a corresponding credit entry in one or more accounts. The main purpose of double entry bookkeeping system is to ensure that an entity's accounts remain balanced and can be used to depict an accurate picture of the entity's current financial position.

Emergence of Double Entry Bookkeeping

Double entry bookkeeping came into being with the rise of Mediterranean commerce during and just after the crusades (1096-1291). Besides requiring ships and provisions, the crusaders brought back silks, spices, and other Eastern products, stimulating demand for such items and for the production of European exchange goods. Genoa and Venice established themselves as middle-men in trade relations between Europe and the Near East. Italians not only became the leading merchants of the Middle Ages, but almost monopolized international banking. They consistently put trade competitors out of business and limited others {such as the English} to a local area of influence. Italians had formed superior business organizations. "Operating on a scale never before known, they found that bookkeeping methods which worked in a small company broke down when a merchant began trading through a network of factors and international partnerships.

Through their North African trade partners. the Italians became the first Europeans to acquire Arabic numerals which, within a generation after their exposition by Leonardo of Pisa (1202), were widely used by Italian Merchants. The existence of a sophisticated money economy and the most stable coinage since Roman times allowed transactions to be reduced to the common denominator necessary for double entry bookkeeping. It is relevant to emphasize here that the introduction of Arabic numerals is a major occurrence in the facilitation of double entry bookkeeping. Leonardo of Pisa, known later by his nickname of Fibonacci, introduced Arabic numerals to Europe after studying with Arabs while living in North Africa. He wrote Liber Abaci, which described Arabic numerals and addressed merchants (not academics) about the superiority of this new system. The Liber Abaci presented some examples from commerce, such as profit calculations and currency conversions. The Italians also relied heavily on credit when conducting business, which required written records of amounts owed and owing. The Italian system of transaction recording was quite different from any system before it. Each transaction was recorded twice, once as a debit and once a credit, so that total debits had to equal total credits. All accounts were kept in the same monetary unit, and the integration of real and nominal accounts allowed profit and equity figures to emerge as remainders.

Real accounts are those accounts that exist from one period to the next, whereas nominal accounts are closed at the end of a specific period. In an event of a transaction, which creates a revenue or expense will impact a real and nominal account. These nominal accounts display profits or losses and are closed at the end of the accounting period to reflect the profit or loss for the individual or entity. Various Italian cities, including Genoa, Venice, and Florence, adopted varying double entry bookkeeping, yet it was from Venice that double entry bookkeeping spread out to the world, and the style adopted in Venice had at least three advantages; (1) Venice was a centre of the book trade, the first books on double entry were published there, and the invention of movable type roughly coincided with the perfecting of bilateral accounts. (2) Teachers of bookkeeping had modified the arrangement and wording of entries in manners

that are conducive to clarity, cross reference, and easy arithmetic calculation. (3) Though designed for the overseas merchant, venture double entry was extremely flexible and could easily be adapted to show annual operating results for a whole business and even to include a manufacturer's cost accounts. In Florence, sophisticated trade had succeeded in creating 80 banks by 1338 and by the end of that century, the number had grown to over a hundred.

There was a need for these banks to keep detailed records of the debts owed to them as their business depended on the accuracy of their records. "Three of the most powerful Florentine merchant-banking houses were the Bardi, the Peruzzi, and the Accianinoli. The Peruzzi, for instance, had ledger entries, yet the debits and credits were not yet placed next to each other. "Instead, debits were entered in the front half of a ledger and credits in the rear half. There is the likelihood that something may have been inherently wrong with this system, as all three banks went out of business in the 1340s due to non-performing on loans and over reliance on credit. The Medici Bank, founded in 1397, was quite powerful even though it never reached the size of the Bardi or Peruzzi. The Medici accounts are interesting because of their use of double entry technique for essentially contemporary purposes-management and control, audit, and even income tax calculation. The double entry bookkeeping system emerged and was developed and functional even before Luca Pacioli's Summa was published in 1494. However, before Luca Pacioli, double entry was not being used to its full potential.

For example, very few merchants placed reliance on their regular accounts, kept with double entry bookkeeping, to keep track of the accuracy of their capital and profits. We can argue here that perhaps double entry bookkeeping was much too sophisticated for its time. Its understanding and its attention on the sources of profits and capital made it the first bookkeeping methodology with theoretical potential. The integration of expense and equity accounts provided a means of quantifying the distinction between capital and income. Double entry bookkeeping also promoted the concept of the business firm as a separate entity whose purpose was profit maximization. Finally, double entry bookkeeping contributed to the doctrine of objectivity by restricting account data to the transactions of the entity and by expressing all transactions in terms of a single monetary unit.

As mentioned earlier, Luca Pacioli did not invent double entry bookkeeping. However, he succeeded in spreading information on the practical use of this system, which was not being fully utilized by the merchants of his time. Luca Pacioli, born around 1445 in Borgo San Sepulcro, Tuscany. At the age of twenty he travelled to Venice and became a teacher to three sons of a wealthy merchant. For six years, while teaching mathematics to them, he gained an understanding and appreciation for commerce and bookkeeping. Perhaps it is this experience that influenced the publication of his fifth book in 1494, *Summa de Arithmetica, Geometria, Proportioni et Proportionalita* meaning "Everything about Arithmetic Geometry, and Proportion". It is not in doubt that Pacioli's belief in disciplines and natural harmony and balance influenced his work. The interests of the commercial man were blended with the talents of a mathematician and a scholar. It is this ability to consider at issues from a number of perspectives that enabled him to write the Summa, a book that could be easily read, understood, and applied by an inexperienced merchant and a beginner to the double entry bookkeeping system. The Summa covers the topics of algebra and arithmetic, their application in business, bookkeeping, money, and exchange, and pure and applied geometry. The bookkeeping section consists of thirty-six short chapters called "De Computis et Scripturis" meaning "Of Reckonings and Writings." The dimension Pacioli brought into bookkeeping is viewing it as a mathematical problem that serves to create order in the mass of data. Pacioli begins "De Computis" by saying that the successful merchant needs three things: sufficient cash or credit, good bookkeepers, and an accounting system which allows him to see his affairs at a glance.

He also stated that before starting up a business, the trader should prepare an inventory comprising all his business and personal assets and debts. Items should be arranged according to their mobility and value, with cash and valuables listed first because they are most easily lost. The inventory must be completed in

one day and assets should be valued at current market prices. In his book, he stressed the importance of proper recording. This system is based on three books, which are the memorandum, journal, and ledger. The memorandum is the book of original entry and as transactions occur they are recorded chronologically with complete details. The memorandum did not need to be kept in a particular form and was simply a source book from which debits and credits of accounts were journalized. While the memorandum is no longer used today, but at the height of the Renaissance merchants relied heavily on it. To some extent it took the place of printed documents which accompany modern purchases and sales. Since a number of Italian city-states issued their own money, merchants received many different types of coins. Transactions could be entered in the memorandum in any monetary unit and converted at leisure to the common denominator necessary for double entry bookkeeping. Later in the day, entries from the memorandum were recorded in the journal. The original entries were then crossed out from the memorandum. Merchants used the journal as their private book. The journal entries consist of a narrative debit (debitore), credit (creditor), and an explanation in one continuous paragraph. The date appears at the center of the page above each entry. A debit is preceded by the word 'per'; then two diagonal lines separating debit and credit; then the credit denoted by the word 'a'. The sum of each transaction is recorded once on the right side of the page. His reason is to the effect that an equilibrium has been created

Luca Pacioli states that, to maintain equilibrium, one must never post an item in the credit unless there is a debit posting in the same amount. While discussing the journalizing process, Pacioli also makes a point to note that the balance of cash should never be negative. The most modern of the three books mentioned by Pacioli is the ledger. The entries in Pacioli's ledger are in the form of concise paragraphs, with account names at the top of each page. After numbering the pages and entering the year date in Roman numerals at the top right, the bookkeeper posts Cash in Hand as a debit on one page, just as it was entered first in the journal. As ledger postings are made, he draws two diagonal lines through each journal entry, one from left to right when the debit is posted, the other from right to left when the credit is posted. Just like the journal, the ledger includes posting references. One major difference between the posting references of the ledger and those of the journal is that the posting references in the journal show the pages of the ledger that the journal entry was posted. The ledger references refer to the other half of the ledger entry, instead of back to the journal. This made it cumbersome to trace a transaction from the ledger back to the journal, leaving the user to only go by the date the transaction occurred.

Luca Pacioli's accounting cycle ends with the trial balance (summa mummariam). The bookkeeper lists all debit amounts from the old ledger on the left side of a sheet of paper and all credits on the right. If their two 'Grand Totals' are equal, the old ledger is finally considered correct. If they fail to balance 'that would indicate an error in the Ledger, which error is to be looked for diligently with the industry and intelligence with the help of what has been learned.

Benefits of the Double Entry Bookkeeping System

One major benefit of the double entry bookkeeping system is its error-catching feature. When incomes are manipulated, it leaves a trace on the financial statements, that will enable an auditor in detecting the fraud by examining whether the entry is credible. For example, if a firm decides to inflate the cash on its books or if there is simply an error, due to the matching principle of accounting that is inherent in double entry bookkeeping, there is another account, such as Accounts Receivable, that needs to be adjusted. Therefore, there exists an enormous chance of detecting the fraud/error, this is because there is more than one account that is impacted by this false/erroneous entry. Another benefit is its focus on income and capital. When the double entry bookkeeping system came about, it was geared toward the merchant who was measuring his financial position by the amount of income and capital he had. This is still the focus of double entry bookkeeping. The system integrates real and nominal accounts, which allows transactions to be expressed as the balance of a single profit or loss account. In addition, while there is still subjectivity

in accounting when it comes to estimation of certain accounts like bad debt expense, double entry bookkeeping provides a systematic calculation for income. Although, the accounting books of firms have become much more complex with new accounts added as well, this aspect of uniformity still applies today. The system is also improved upon when there is a separation of duties. In addition to the advantage of splitting the work, thus allowing more work to be done, different people can also keep different journals, thus allowing for separation of labour and mitigating the possibility of fraud. Another benefit is that the double entry bookkeeping system leaves an audit trail. It is an organized process since first an entry is posted to the journal, which then transfers to the ledger, as well as the use of reference numbers in all books, allows for a tracing function.

Relevance of Double Entry Bookkeeping in Modern Day Society

The modern day society we live in is quite distinct from the days in which Luca Pacioli lived. It is certain that role of the government has changed, taxes on income of businesses have drastically changed the business sphere, depending on whether you are a sole proprietor, partnership, or a corporation, different taxes apply. Books of account have become sophisticated, difficult and time consuming to keep by hand in very large corporations. We deal with a more complicated business environment today. There are now mergers and consolidations which transactions are sophisticated. Another element of the business environment we operate in today is the continuing nature of enterprises. All of these have brought about the need for periodic reporting, which involves periodic closing of accounts and accounting for so many transactions, something Luca Pacioli did not envisage during his time. It also raised the issue of valuing of assets. Assets that the question of valuing at cost, historic value, or market value arises. Because business entities exist for long periods of time, the value of their assets can change over years, thus requiring the need to value at cost, rather than at market value as Pacioli did.

There is also the issue of long-term international investments that requires complicated rules on currency conversion. Since there is widespread ownership of shares in so many corporations, the public is now interested in a firm's performance, this has created a greater need and pressure for firms to account accurately. The users of financial statements today are different from the users of Pacioli's time. Pacioli's theory of double entry bookkeeping was geared towards the merchant's need to measure his own financial position. During his days, it was just for the merchant to understand his own finances through his records. But today, stakeholders need to not only understand financial information presented by companies, but also be able to compare that information with other companies. So, the difference arises from the fact that the merchant is no longer looking at his own finances to know his worth. Instead, in modern corporate environment the public and other stakeholders measure a company's worth.

Advancement in technology that has taken place in recent times has modified the ways of accounting record keeping. As the world became more advanced technologically, other forms of recordkeeping have emerged, such as databases. Computer languages such as XBRL (Extensible Business Reporting Language) are making it quit easier to publish financial information in the XML format and exchange accounting information and financial statements between organisations. It is worthy of note that the use of databases provides organisations with detailed information about the type of transaction, the time it took place, and other specifics that would have been impossible to record by hand with the volume of transactions that occur on a daily basis in those entities.

Now the crux of the matter is, since we are living in a modern society where there is a significant change, does the double entry bookkeeping system still bear relevance today? I believe that the system is still quite useful in our modern day business environment. The manner in which Luca Pacioli explained the form of double entry bookkeeping system is approximately that of its final development today. The theory defining Pacioli's work is even more of a contemporary issue. Even though his purpose was practical, he constantly emphasized the advantages of bilateral accounts, particularly in gathering profit

and loss totals. In making explicit the mathematical logic underlying double entry, he touched the roots of contemporary accounting theory. In addition to the fact that it was a what was needed for later developments in accounting and allowed for much flexibility in terms of valuation and the creation of new non-traditional accounts, such as wages payable and marketable securities.

Most of the modern programs such as Peachtree allow for the journal and ledgers to be kept on the computer and be referenced easily when needed, through simple data queries. Furthermore, algebra which contributed to the creation of double entry bookkeeping does not go out of date and is still the defining basis for why the system works so well. The focus of the system is still on capital and income, especially in major corporations, this is as a result of the ability of the system to derive the income of a firm through the various real and nominal accounts, it is still a useful tool for any organisation. The system also ensures that accounting is complete because of its complete set of accounts and the dual nature of the transactions and entries. Double entry bookkeeping allows the user to understand the relationships between accounts as posting is done. As stated by Yuji Ijiri “under a double entry system an increase in cash cannot be recorded without first identifying a credit account. This search for a proper account leads the accountant, as well as the manager, to a reason for the increase in cash.

Finally, as stated before, double entry bookkeeping is still a useful tool for antifraud in today’s business environment since one account cannot be altered without affecting another. We live in an age where all transactions are supported by paperwork or some form of data support such as invoices, sales orders, purchase orders, and authorizations. Strong internal controls and auditing practices are needed in order to detect and prevent fraudulent entries and financial statements from going out to the public. Thus, placing emphasis on auditing procedures and the testing of internal controls can greatly increase the efficiency and effectiveness of the capital markets and the corporate environment. In fact, this is exactly what the Sarbanes Oxley Act of 2002 has set out to do. The logical recording system and inherent error-checking features of double entry bookkeeping are valuable as part of a strong internal control system. The world that Pacioli lived in was different from the modern society that we live in. However, based on the information obtained and presented in this paper, it is an indisputable fact that the double entry bookkeeping system is still relevant today.

Conclusion

As time evolves and today’s world becomes more complicated and sophisticated, double entry bookkeeping may need some turn-around and developing upon. However, for now the system works quite well in assisting with proper record keeping and auditing functions, the latter being at the centre of keeping the integrity of our capitalistic markets alive.

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