

CONTRIBUTIONS OF EARLY MUSLIM SCHOLARS TO ORIGINALITY OF BOOKKEEPING-SYSTEM

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Abstract

We explored the early Muslim scholars' contributions to the originality of the Bookkeeping system by comparing the contributions of Western academics with those of Muslim scholars. We investigated, also, the knowledge transfer between East and West and how the early Muslims scholars' contributions were part of the fundamentals of the Bookkeeping System. A surveying most of essays that concentrating on developments in the historical bookkeeping literature as well as reviewing historical literature about transfer knowledge between East and West. We found that Muslim scholars' contributions to the originality of the Bookkeeping system could be divided into three stages. Firstly, it began with the foundation of Islam in 610; this sets up the basics of the Bookkeeping System. Secondly, Al-Khwarizmi sets up a comprehensive Bookkeeping System in 976. Thirdly, during the period 1332 to 1418, Al-Nuwayri and Al-Qalqashandi completed the structure of the Bookkeeping System. We found, also, that, from the 8th to the 15th centuries, Muslim scholars represented a knowledge bridge for the West suggesting that Luca Pacioli's work was the outcomes of the Muslim scholars' contributions. It is the first study that links the originality of Bookkeeping system with transfer knowledge between East and West. It is the first research that compare between East and West' contributions towards Bookkeeping' pyramid

Keywords- Islamic Accounting; Bookkeeping; Knowledge Bridge; Luca Pacioli; Al-Nuwayri

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1. INTRODUCTION

History can inform our appreciation of contemporary accounting thought and practice through its power of unifying the past, the present and the future (Gomes et al., 2011). At the same time, the historical perception permits society to evaluate the future of accounting and its artefacts and manifestations. Historical studies in accounting began as long as accounting was an academic discipline and even earlier. Carnegie et al. (1996) debated how history was mobilised by accountants (both academics and practitioners) to support construct "institutional myths" of the ancient roots of accountancy as a human activity. In an influential contribution, Parker (2000) wrote that *"the writing of accounting history is progressively dominated by writers in English discussing private-sector accounting in English speaking countries of the 19th and 20th centuries . . . the scope of accounting history is much wider than this"* (p.66) .

For a long time the invention of double entry bookkeeping was attributed to Luca Pacioli, who,

with a certain accuracy, defined this method in his book which was published in Venice in 1494 (Pacioli, 1494). However, in effect, the learned Tuscan friar had not invented anything; merely, he had explained methodically what, for a long time, had been a well-established practice by traders and bankers in numerous Italian towns. On the other hand, there is a debate about the contributions of the Muslim writers who, before Italian banks, set up the foundations for the Bookkeeping System. However, as the paper discloses, the departing argued that, after the dark ages from the 7th to 14th centuries, the transfer the knowledge from the Muslim to western world came about without any acknowledgements. For Pacioli, without documented books before him, the attribution of bookkeeping was different and conflicted with the debate about Accounting as one of the social sciences which developed through accumulative progress as economics or finance. It is important historiographical that Zaid (2000a) considered it was essential to mention the links between Islamic and Italian accounting. However, it locates the paper as at least suggesting that Islamic

accounting was an influence on the double-entry systems which Pacioli and others considered to be "the Italian method". Nobes (2001) defended the Italian origin of double-entry, suggesting that the matches, which Zaid identified between assured Islamic practices and Italian counterparts, were not evidence of influence. However, what counts actually as "evidence"? In a response to Nobes, Zaid (2001) detected:

"The subject of the "double-entry system" . . . requires additional research and development about "who" was responsible for its development, and "where" and "when" it emerged. At present no conclusive evidence occurs as to "who" developed the "double-entry system". All that we do know is that it was used in the Italian republics. Though I confirm that at present no evidence has been found that the "double-entry system" was settled by Muslim scholars or others outside (or inside) the Italian republics, the possibility of a direct or indirect contribution by Muslim accounting scholars to the development of the "double-entry system" through their accounting books, accounting systems, recording procedures and reports, cannot be ruled out. This possibility exists given the influence of Muslim traders on the practices of their Italian counterparts" (p. 216)

The paper was motivated by three arguments, firstly, the debate about Muslim scholars' contributions towards sciences generally and bookkeeping in particular. Alim (2012) argued that the conventional accounting was a well-established field; however, there is no doubt that a main contribution to the extant body of knowledge on accounting comes from the West rather than the East. In contemporary bodies of knowledge on accounting, utmost theories and frameworks come from the West without any reference or inventions to practices in the East. Also, most Western perspectives on 'accounting' are mainly secular and capitalistic in nature. Such underlying convictions of contemporary accounting theories have resulted in budding incoherence within Eastern societies which are more religious and socialistic. On the other hand, there is much less contribution from the East, mainly from the Muslim world. Secondly, the paper was motivated by little documented individual and small group level work on accounting from the Islamic viewpoint since Chapra (1992), Beekun (1997), Al-Buraey (2003), Ather (2005), Abuznaid (2006) and Ata al-Sid (2007), had explored the field of accounting either directly or indirectly relative to Islamic teachings. Thirdly, the paper was motivated by the importance of the Bookkeeping System. John Lanchester, a successful novelist, described Bookkeeping as *'the most significant business tool ever invented', and it had made probable 'modern accounting techniques, and therefore all of modern business life, and consequently the whole structure of capitalism and the organization of contemporary society . . .'* (Lanchester, 2001).

This study seeks to explore the main value added by Muslim scholars towards bookkeeping system in the West and vice versa. It aimed to build a knowledge pyramid for the bookkeeping system through surveying the Muslim and Western contributions to this system. Furthermore, it targeted whether Pacioli was the original creator of the Bookkeeping System or whether his work was

the outcome of that of the Muslim scholars. The paper aimed, also, to investigate the sequenced contributions for Muslim which began with the start of Islam in 610 through to Al-Qalkashandy in 1418. One of this study's main objectives was to investigate the channels of Influence and the transfer of Knowledge between the East and the West. Exploring the knowledge bridge provided answers for the debate between both sides. Consequently, this paper's main contributions are to develop the building of historical contributions by Muslim scholars and Western academics towards bookkeeping system. The paper tries, also, to fill the gap for debate about the creation of the bookkeeping system through exploring how the knowledge transfer from East to West or what is called the Knowledge Bridge. In order to identify the originality of the Bookkeeping System, the study shows the sequenced contributions by Muslim scholars and Western academics.

Based on the above arguments, the study investigated one of the Muslim world's contributions related to the Bookkeeping System. It explored the Islamic history through 1400 years and followed the developed sequences for the bookkeeping knowledge from its starting point for Islam in 610 until 1494 when Pacioli published the first book about a Bookkeeping System. The study aimed to answer the following questions: What are the Western contributions to the Bookkeeping System? Did Muslims make any contributions to the body knowledge of accounting? Who created the Bookkeeping System - Luca Pacioli or a Muslim writer? And finally, what are the stages of integration for building Bookkeeping knowledge between Muslim and Christian contributions or from 610 to 1494 (integrated pyramid knowledge)? Finally, how did the knowledge transfer from Islamic civilization to the western world?

Through exploring the history of the Bookkeeping System, the paper shows that Pacioli's publication represented only outcomes for all preceding contributions with, especially, core contributions from Muslim scholars who interacted with Greek scholars and who were critical in developing and adding value to the building of Bookkeeping knowledge. The Muslim scholars' contributions represented a cornerstone and a Knowledge Bridge for Western world and were basic, also, to Pacioli's work. The copying and translation of Arab work, such as bookkeeping, for Western world is an example of other works which were translated without acknowledgement. In her work *al-Ghazali: The Mystic*, Margaret Smith exposed undoubted evidences of St. Thomas copying from al-Ghazali's work *Ihya Ulum al-Din*. She matched the works of the two scholars and found that in several cases *"St. Thomas uses the very words of al-Ghazali."* There were similarities between the themes and the arguments of both works (Smith, 1944). It ought to be remembered that al-Ghazali's was the core source of his ideas. This paper is organized as follows; section 2 is an introduction about the debate for the Bookkeeping System's creator (Pacioli or Muslim scholars). Section 3 explores the Pacioli and Western Contributions to the Bookkeeping System. Section 4 identifies the link between Islam and Accounting as well as explores the roots of the bookkeeping

system for Muslim scholars. Section 5 shows the Muslim Scholars' Contributions to the Bookkeeping System. Section 6 investigates the knowledge transferred from the Muslim to the Western world. Section 7 concluded

2. DEBATE ABOUT CONTRIBUTIONS

Comparatively few historical studies covering accounting in Muslim countries have appeared in English-language journals. Consequently, it should be no surprise that the writers of common histories of accounting have little if anything to say about accounting in these locations. However, he noted that as well as Zaid (2000a) advanced the claim subsequently) there was no evidential support for this hypothesis. Chatfield (1977) mentioned only passing references to accounting in ancient India and ignored altogether Arab accounting. While this review was limited almost completely to English-language material, it is imperative to remember that historical research appropriate to Islamic accounting is published in other languages. Turkish historians are privileged in that a significant amount of archival material has survived from the Ottoman Empire. One of the key problems for historians of Islamic accounting is the destruction of archives over the centuries: the ransacking of Baghdad by the Mongol invaders in 1258 was rivalled by the destruction of the National Library of Iraq in 2003 (Burkeman, 2003). Even when destruction is not considered, the climate in Islamic regions tends to be less encouraging to the preservation of documents. Scorgie and Nandy (1992) described how the way in 18th century Indian account books were constructed provided "*easy access for white ants and other insects*" (p.91).

Scorgie (1994b) was able to consider accounting in 11th and 12th century Cairo because of the serendipitous survival of documents and fragments in the storeroom (geniza) of a synagogue; it was retained due to an aversion to destroying writing which could comprise the name of God. Turkish scholars (for instance, Çizakça, 1995; Orbay, 2005; Toraman et al., 2007; Yayla, 2007a) studied the records of waqfs (charitable foundations); these survived since these entities were established with perpetual endowments and, consequently, were taken over by the state. Also, Ottoman archives preserved estate accounts of deceased persons and Toraman et al. (2006b) inspected the form and content of these documents. Toraman et al. (2006a) studied the accounts of a huge Ottoman business, the Eregli Coal Company, during the 1840s. They found that the corporation's internal financial records were kept by using the traditional Ottoman accounting system; this was fairly different from the contemporary western single double-entry systems.

Oppositely, it is tempting for scholars to enquire whether bookkeeping was developed completely in Italy, or whether the Italian manifestations of double-entry, in the form both of surviving business and public records and of books such as Pacioli's *Summa*, reflected the inspiration of earlier, Eastern, accounting developments. The wholesalers of Italy and other European countries obtained their first education in the use of cultured business methods from their counterparts on the

opposite side of the Mediterranean, most of whom were Muslims, though a few were Jews or Christians (Lieber, 1968). The possible role of Jewish sellers, trading in the Middle East and in transferring accounting methods were debated by Parker (1989) and Scorgie (1994a). Scorgie (1994b) used fragments of documents dating from the end of the 11th and the beginning of the 12th centuries which were found originally in a storeroom of a Cairo synagogue. These were recognized as documents which could be read as initial versions of a journal and a list of debits and credits. In the historical literature of Islamic accounting, this was one of the very few references to original accounting documents.

3. PACIOLI AND WESTERN CONTRIBUTIONS TO THE BOOKKEEPING SYSTEM

Pacioli's book appeared in Venice in 1494 with a ten-year copyright. At the expiration of that period in 1504, the same printers published a particular duplicate of this book under a different title. Pacioli did not claim that he invented double-entry bookkeeping, but, on the other hand, his book included references which showed the existence of ancient customs and numerous methods named after the places where they were used. Therefore he called his described method of bookkeeping as the method of Venice, as well-known as those in use in other cities, the names of which appear in the translation. Twenty-one years after the last date in 1525, there appeared in Venice a very unsatisfactory and imperfect work on bookkeeping by Giovanni Antonio Tagliente; the historians do not say much about it. Forty years after Pacioli's book in the year 1534, Domenico Manzoni published, in Venice, his book on bookkeeping; this became very popular since over a 40 year period it went through six or seven editions. Considering the conditions of those times, this may be termed a wonderful success Manzoni gave complete illustrations of the journal and ledger, with its entries, which, Pacioli did not consider necessary.

Passchier Goessens, a Dutchman from Brussels, was the first writer who was able to leave an impression which lasts to this day was. In 1594, whilst living in Hamburg, he wrote a book on bookkeeping. In his preface, Goessens stated very basically where he had learned the art and the title specified that he had followed the Italian system. He attained his information from some of the earlier Dutch writings. Therefore, German bookkeepers benefited more by the knowledge which the Dutch communicated to them than by what their own countrymen brought directly from Italy. Table 1 shows the development of the historical stage for western contributions. It started exactly 283 years before Pacioli exactly in 1211 when the simple way of bookkeeping was used in Bologna. It shows the progress of Western contributions towards bookkeeping system from 1211 until 1494 when Pacioli issued his book. Furthermore, Table 1 shows the main contributions of western researches from German, Holland and UK; which added to the Bookkeeping System

Table 1. Contributions of Western world towards bookkeeping system development. The period before and after Luca (From 1211:1494)

Year	Name/ Country	Contribution
The Period Before Luca (1211:1460)		
1211	Bologna	In the initial surviving business account book of the second millennium in Europe - the fragments of a ledger kept in Bologna in 1211 by a firm of Florentine merchants or bankers (Yamey, 2005)
1299-1300	Giovanni Farolfi	The idea of double-entry was invented by banks; the oldest surviving record, which incorporates double-entry principles, is the Giovanni Farolfi branch ledger (Salon, France) for the year 1299-1300 (M. Com, 2004)
1340	Genoa	The books of the massari and magistri rationali of the Community of Genoa are evidence that double entry bookkeeping was a well-established technique in 1340
1335-1410	Datini	Datini conducted a large-scale international business which, today, would be called a multi-national corporation; he used a complete double-entry system of accounts for the control of foreign and domestic operations. The ledgers of Francesco di Marco Datini, the 'merchant of Prato', from Italy are fine examples of initial bookkeeping as practised in Tuscany. He died in 1410 (Gurevich, 1990: pp. 272-273).
1460	Donado Soranzo & Brothers	The oldest Venetian mercantile ledger is that of the firm of Donado Soranzo & Brothers. This ledger has a profit & loss and a capital account.
Luca Period (1494)		
1494	Lucas Pacioli (Italia)	In 1494, Lucas Pacioli's book appeared in Venice with a ten-year copyright. At the expiration of that period in 1504, the same printers published an exact duplicate of this book, under a different title. Both ancient and modern. The title was: Summa de Arithmetica Geometria Proportioni e Proportionalita." Bookkeeping is treated in Part One, Section 9, and Treatise 11. Under the chapter title of "Particularis Computis et Scripturis," translation would mean: "Particulars of Reckonings and Their Recording.
Pacioli's work is the real foundation of all books published in Germany, Holland, Prance and England within the first hundred years after it was written.		

The oldest surviving double entry Genoese ledgers are well-known cartularies of the Community of Genoa. One set of ledgers (1340-1466) belonged to the massari or stewards of the city, and was called "*cartularium massariomm sapientum*". The other set of ledgers (1340-1437) was kept by the magistri rationali and was called "*cartularium magistrorum racionalium*". The two massari were in charge of the massaria, a holistic term which specified the finances of the Commune, whereas the two magistri rationali completed the duty of controlling the work of the massari and their workforces. In the books of the Commune's administration, which we have from 1340, the double entry bookkeeping system existed already existing and was not in its infancy but wholly grown; therefore, we may infer that such a method had been in use for a long time. The books of the Community of Genoa's massari and magistri rationali were evidence that double entry bookkeeping was a well-established technique in 1340. All the essential characteristics of the system were already in place. These were, namely: accounts with alongside divided sections; constant application of the same monetary unit and continuous reference for each entry to its cross-entry; and consistent use of two complete sets of antithetical accounts. Similarly, there is reason to believe that the characteristic instrument of medieval accountancy were found in the massari's ledger, namely, the account with laterally separated sections which followed the outline of the double accounts used in the tabulae rationum cited by classical writings (Martinelli, 1977). Certainly, in the Genoese ledgers, the account had been completed. It was shaped by the requirements of the firm and translated fully into the accounting system. It had been simplified and made more structurally efficient in its mathematical function; and it had been embodied confidently in the system which was controlled by the method.

Accusations with often far-reaching effects were directed merely against Jews. However, even here there were extraordinary exceptions as in

Venice which '*resigned herself to acknowledging the first condotta (Association) of Jewish usurers (1382-7) who borrowed money to small borrowers and even on occasion to patricians*' (Braudel 1982). Around 1500, Venice was the scene of the strictest struggle of the Franciscan bankers against Jewish competitors with the founding of the Venetian ghetto as direct significance (Derks 2004). Numerous voices in the 13th and 14th centuries, such as Thomas of Aquinas or Nicolas Oresme, were critical of particular commercial activities but, then again, in the end supported trade and profitmaking as an essential incentive for people who transported goods from places with a supply to places with a demand (see De Roover's stance in Kirshner 1976). The Franciscan monk, Lucas Pacioli who was the author of one of the first treatises on bookkeeping, specified: '*The purpose of every wholesaler is to make a lawful and reasonable profit so as to keep up his business*' (Geijsbeek 1914, 33).

4. ISLAM AND ACCOUNTING

The religion of Islam was founded in Makah in the year 610 A.D. (Abu Addahab, 2002, p. 649) with the disclosure of the Quran to the Prophet Mohammad (PBUH). The Quran presented guidance on social and commercial teachings. Examples of commercial teachings were the instructions of contract (Debit and Credit), finance, business, zakat and ethical rules for guiding business and writing contracts (Al-Baqarah, 2: 282-283). Commerce protracted beyond the Arabian peninsula to parts of Europe, Africa and the Far East. According to Ekelund et al (1983): "*For five centuries, from 700 to 1200 Islam commanded the world in power, organization, and extent of government; in social enhancements and standards of living; in literature, scholarship, medicine, science and philosophy. . . . It was Muslim science that preserved and developed Greek mathematics, physics, chemistry, astronomy, finance or business and medicine during this half millennium, although the West was sinking into what historians generally call the Dark Ages*" (p.26).

Table 2. Contributions of Western world towards bookkeeping system development. From 1518:1639

Year	Name/ Country	Contribution
The Period After Luca (1518:1639)		
1518	Henricus Grammateus (German)	He wrote a book entitled "Rechenbüchlin, Kiinstlich, behend nnd gewiss auf alle, Kauffmanschafft gerichtet" comprising mostly a text on arithmetic but devoting some pages to the description of a very poor system of bookkeeping; by a stretch of the imagination, this might be identified as possibly covering double-entry bookkeeping. This work was printed in Erfurt in 1523 and in Frankfurt in 1572.
1525	Giovanni Antonio Tagliente	Twenty-one years after the last date for Pacioli's book in 1525, there appeared in Venice a very unsatisfactory and imperfect work on bookkeeping about which the historians do not say much.
1531	Johann Gotlieb (German)	The first work on bookkeeping published in the German language. The book was published in Nuremberg, three years before Manzoni, the second Italian writer, published his book. The author stated honestly that he had translated his work from the "Welsh," meaning by this term "Italian." His book is considered a brief and very poor copy of Pacioli's.
1534	Domenico Manzoni (German)	He published his book about bookkeeping in Venice; this proved very popular since, over a 40 year period, it went through six or seven editions. Considering the conditions of those times, this may be termed a tremendous success.
1543	Jan Ympyn Christoffels (Dutch)	He was one of the Dutch wholesalers who visited Venice and the northern part of Italy and he stayed there for twelve years. He returned evidently wise in the knowledge of bookkeeping according to the Italian manner and wrote a book on that subject. , he did not live to see his book published; however, during 1543, his widow, Anna Swinters, published his manuscripts in the Dutch and French languages.
1549	Wolfgang Schweicker (German)	This book entitled "Zwifach Buchhalten," was published in Nuremberg. This work cannot be called brilliant, nor is it as exhaustive or as good as that of either Pacioli or Manzoni. However, there is no doubt that he had both of these books at his command and, especially, followed Manzoni.
1581	-----	The first professional organization of accountants was founded in Venice in 1581.
1586	Don Angelo Pietra	Nearly 100 years after Pacioli's book, we find that Don Angelo Pietra published a work on bookkeeping which was fully illustrated with numerous examples.
1588	John Mellis (England)	He was a school teacher and he wrote a book on bookkeeping in London; in his introduction, he stated that it was a reprint of a book by Hugh Oldcastle, which appeared in London in 1543 under the title "A profitable treatyce called the Instrument or Boke to learne to know the good order of the keeping of the famous reconyngge called in Latyn Dare and Habere and in English Debtor and Creditor."
1594	Passchier Goessens (Holland)	Passchier Goessens, a Dutchman from Brussels, was the first writer, who was able to leave an impression which lasts to this day. He wrote a book on bookkeeping in Hamburg. in his preface, Goessens stated very simply where he had learned the art and the title indicated that he followed the Italian system. He acquired his information from some of the earlier Dutch writings. Therefore, German bookkeepers benefited more from the knowledge which the Dutch informed them than by that which their own countrymen brought directly from Italy.
1604	Simon Stevin (Holland)	As apparent from the argument in Simon Stevin's book, Bookkeeping made far greater progress in Holland than in Italy.
1608	Simon Stevin (Dutch)	He wrote in Latin a book on mathematics which was published in Leijden. It contains numerous chapters on bookkeeping. These were a reproduction of a book published in the Dutch language on "bookkeeping for merchants and for princely governments", this appeared in Amsterdam
1632	Matteo Mainardi	This book appeared in Bologna. It was of a far later date than the ones stated above. However, it is somewhat remarkable in that it attempts to describe, besides the system for the wholesalers, one for the keeping of executor's and trustee's accounts.
1639	Richard Dafforne (England)	He wrote the book entitled "The Merchants ' Mirror, ". He declared that, there existed in Germany, Italy and Holland a great many able writers on bookkeeping, and he gave a large list of authors. He attributed the existence of these books to the demand for them. He wrote his book in the same order as Stevin, namely, in dialogue style, or questions and answers. Dafforne 's book was published in London

The growth in trade promoted the development of a mechanism for ensuring adequate accountability for cash, merchandise received and disbursed. The introduction and organization of zakat in 624 A.D. encouraged accounting for the purpose of zakat calculation and payment. This development was improved with the formal introduction of accounting books, models and procedures during the time of the second Caliph, Omar bin Al-Kattab, who ruled between 13 and 23 Hijri'iah (634-644) (Zaid, 2000a). "Islamic accounting" would cover North Africa and a large part of sub-Saharan Africa, the Middle East and the territories of the Ottoman Empire, the Indian sub-continent, much of South-East Asia and Indonesia, and great parts of the former Soviet Union. Geographically, "Islamic accounting" would have to contain much of Spain between the 8th and 15th centuries and areas of the Balkans. During the golden age of Islam, Muslim commerce stretched beyond the Arabian Peninsula. The expansion of trade encouraged the development of a mechanism for ensuring accountability for wholly business transactions and similarly for compliance with

Sharia which standardizes all aspects of life. It involves, also, criminal as well as civil jurisdiction. Every act of the believer must obey Islamic law and observe ethical standards based on Islamic values. Islamic accountants must accomplish their duties in accordance with the regulations of Islam and base their actions on Islamic ethical norms (Afifuddin and Nabiha, 2010).

Therefore, the progress and practice of accounting in Muslim society mirrored Islam as a holistic code of spiritual and material life. These developments and practices were documented in several printed and handwritten books by a number of primary Muslim scholars from 150 H (768 A.D.). Initial Muslim scholars (²⁴) approached the practice

²⁴ These early Muslim scholars included Imam Ash-Shafi, 150-204 H (767-820 A.D.); Abu'Obaid 156-224 H (773-839 A.D.); Kudamah bin Ja-far, whose book was written in 306 H (919 A.D.); Al-Khawarizimi, the author of Mafatih Al-Uloom (Keys of Sciences) 365 H (976 A.D.); Ibn Rushd Al-Hafied 520-595 H (1126-1199 A.D.); Al-Mazendarany, who wrote his unpublished book in 765 H (1363 AD); Ibn Khaldoon, the author of the renowned book Mokaddamat Ibn Khaldoon (Introduction of Ibn Khaldoon) in 779 H (1378 A.D.); and many other scholars such as An-Nuwairi and Al-Kalkashandy.

of accounting in the Islamic state from a diversity of viewpoints. However, it should be declared that *"the terms accounting and accountant were not used in the early and middle phases of the Islamic state. The particular date on which these terms came into use is not identified but, perhaps could be outlined to the influence of colonization and the introduction of Western culture in the 19th century. The terms Al-Amel, Mubasher, Al-Kateb, or Kateb Al-Mal were the public titles for accountant/bookkeeper and accounts clerk. These titles were used interchangeably in dissimilar parts of the Islamic state. The title Al-Kateb became the main title and was used to contain any person assigned the responsibility of writing and recording information whether financial or non-financial nature"* (Zaid, 2000b). These terms were associated to "accountant" and, as early as 365 H (976 A.D.). Al-Khwarizmy (1984) used the term "Muhasabah" for the meaning of accounting which specified that the person responsible for this function was "Muhaseb" (Accountant). Religion drove the growth of accounting in the Islamic state and was associated with the obligation of zakat in the year 2 H (624 A.D.). Accounting seems to have commenced with the establishment of the Dewans for the recording of Baitul Mai (public treasury) revenues and expenses. The particular date of the first application of accounting systems in the Islamic state remains unidentified but it appears that these systems were recognised first by Al-Khwarizmi in 365 H (976 A.D.). Accounting systems deliberated and analysed here were mentioned briefly by Al-Khwarizmi and were completed by Al-Mazendarany. These accounting systems were income-statement orientated and designed to assist the immediate requirements of the Islamic state.

5. MUSLIM SCHOLARS' CONTRIBUTIONS TO THE BOOKKEEPING SYSTEM

Islam organizes the full life aspects by indorsing legislation about wholly walks of life, social, commerce, laws ... etc. Rizk (2008); the Holy Quran declares in Al Baqarah verses (2.282) *"Believers! When you contract a debt for a fixed period, put it in writing. Let a scribe write it down between you with fairness; no scribe shall refuse to write as Allah has taught him. Therefore, let him write; and let the debtor dictate, fearing Allah his Lord, and do not decrease anything of it. But if the debtor is of poor understanding, or weak, or is unable himself to dictate, then let his guardian dictate in fairness...."* If we analyse these words intensely, these come from the longest verses in the Quran. We will discern that the Quran structured this type of transaction and it mentioned the criteria and requirements which should be followed by both parties (Debtor & Creditor). According to terms, the contract should be written by a professional and unbiased one who should write the particular value with fixed period in a known document deed which must be written in law. Likewise, if a debtor has a poor understanding or weakness or is incapable himself of dictating the terms, he has to suggest a qualified person to do the agreement process instead of him; this is called "Wakalla" agency.

The obligation of zakat and, hence, the diverse and great amounts of revenues, expenses and associated activities of the Islamic state demanded the establishment of control procedures. These control procedures permitted officials to monitor activities adequately and to discover any deficit or surplus in the state treasury arising from unbalanced books. It is worthwhile noting here two cases which replicate the efficiency of these internal controls. The first was the discovery of a deficit of one Derham in the Baitul Mai. This was the discovery of the Sahaby (Prophet's Companion) Amer Bin Al-Jarrah who wrote to the second Caliph, Omar bin Al-Khattab, informing him about the deficit (Lasheen, 1973). Likewise, Al-Mazendarany (765 H, 1363 A.D.) outlined the significance of internal controls applied in all Dewans. The second case was the discovery of an unrecorded expense which caused a deficit. This deficit caused the accountant to pay 1,300 Dinars for not recording the transaction. This lost expense was uncovered subsequently when, at the end of the financial year, the book balance was matched with corresponding schedules and other balances in the key Dewan (Lasheen, 1973).

5.1. Al-Mazendarany and Al-Khwarizmi

Al-Mazendarany (1363) was one of the initial Muslim scholars who documented the practice of accounting and bookkeeping in Muslim society. Although Solas and Otar (1994); Zaid (2000a, 2000b, 2001) stated Al-Mazendarany's writings in their study of governmental accounting practice in the Near East through the II Khan Dynasty (1120-1350), the broader implications Al-Mazendarany's contribution to the history of accounting deserve investigation. Al-Mazendarany's book was written in 765 H (1363A.D.) .The book was entitled *"Risalah Falakiyyah Kitabus Siyakat"* and it was the source used by Otari (1994) and recognized by them as "Risale-I Felekiyya"; this is the Turkish translation of the similar title. Al-Mazendarany declared that other books on accounting had been written before his own. He indicated that these books clarified accounting practices in Muslim society generally and in the Middle East in particular. One work, which pre-existed Al-Mazendarany, was Mafatih Al-Uloom (Keys of Sciences). This appeared in 365 H (976 A.D.) and was approved by Al-Khwarizmi (976) who argued that the types of records were continued in the Dewans and the book used to record accounts. In one chapter committed to "Secretaryship", Al-Khwarizmi defined the technical terms that were common in Muslim society concerning the duties of the secretary and he described, also, the accounting systems which were applied during the 4th century Hijri'iah (10th century A.D.). It has been recommended, also, that Al-Khwarizmi's book be considered as the most significant work of its time (Macve, 1996). However, compared to Al Khwarizmi, Al-Mazendarany described in greater detail the accounting systems used in the Islamic state than. As documented by Al-Khwarizmi and Al-Mazendarany (Al-Khwarizmi, 1984), Table 3 shows the seven specific accounting systems which were developed and practiced in the Islamic state.

Table 3. Seven specific accounting systems which were documented by Al-Mazendarany (976) and Al-Khwarizmi (1363)

Type of Accounting System	Objectives
Stable Accounting (Accounting for Livestock)	This system was under the regulation of a stable manager and required that applicable transactions and events be recorded as they happened. Under this system, transactions comprised, for example, food for camels, horses and mules; caretaker wages; animals purchased, sold, donated and slaughtered or dead.
Construction Accounting	This system was used to account for construction projects undertaken by government. The construction accounting system required the maintenance of a separate journal for every construction site and required the recording of all appropriate transactions and events from the beginning of the project to its completion. The construction accounting system required that the conditions of individual projects be listed at the front of the journal, followed by the terms of construction. Then, there followed the record of transactions and events.
Rice Farm Accounting (Agricultural Accounting)	This appears to have been a non-monetary system since it required the recording of quantities of rice received and disbursed and the specification of the fields which produced the rice. The system, clarified by Al-Mazendarany and Al-Khwarizmi, did not specify a segregation of duties between recording and managing the inventory. It appears that the bookkeeper had sole responsibility for both recording and keeping custody of the inventory. The non-monetary rice farm accounting system was comparable to the grain accounts of Zenon's or Appianus Egyptian estates as stated by Macve (1994, p. 59). This required, also, the recording of receipts and issues of grain in physical terms and without mention of money measurement.
Warehouse Accounting	It appears to have been aimed to account for the state's purchase of supplies. The system was positioned under the direct supervision of a person known to be trustworthy. This system required the detailed recording of the type of goods received and the source of delivery in books organized for the purpose.
Mint Accounting (Currency Accounting)	It was designed and applied in the Islamic state before the 14th century A.D. It required the fast conversion of gold and silver received by the mint authority into bullion or coins. Furthermore, it required the immediate delivery of bullion and coins to the person in charge. This advises that the system did not allow either raw material (gold and silver) or finished products (bullion and coins) to be held at locations for any length of time. The revenue of the mint authority was calculated at either 5% of the cost of gold or silver or in accordance with a determined amount.
Sheep Grazing Accounting	This form of farm accounting was originated and applied by government authorities in the Islamic state and its likely use by private businesspersons to measure the 'profit' or 'losses' for the purpose of zakat. Sheep grazing accounting was diverse to Greek and Roman farm accounting "where the accounts did not significance to show any more than movements of cash and kind, any requirement or fixation on the accounting figures in forming ideas about profitability appears much less likely" (Macve, 1994, p. 78). Under this system, wholly animals given to the grazier or shepherd were recorded in a book designed for the purpose. Also, revenue received either in cash or kind was to be recorded. Revenue in kind received by the grazier included animals and sheep products.
Treasury Accounting	This was used by government and required the regular recording of all treasury receipts and payments. It seems that monetary and non-monetary measurements were used since recording treasury receipts and disbursements were in cash and kind. This system would have encompassed the inventory, such as gold, silver, medicines etc., needed by the government and/or Sultan.

5.2. Roots of Double-Entry

Did the "Italian method" of double-entry, in the form both of surviving business and public records and books, such as Pacioli's *Summa*, replicate the effect of earlier, Eastern, accounting developments? Parker (1989); Scorgie (1994a) debated the prospective role of Jewish merchants, trading in the Middle East, in communicating accounting methods. Using wastes of documents dating from the end of the 11th and the beginning of the 12th centuries, which had been found in a storeroom of a Cairo synagogue, Scorgie (1994b) recognized documents which could be read as initial versions of a journal and a list of debits and credits. Economic and legal historians (for example, Goitein, 1966; Ray, 1997) used many of the "Geniza" documents as the foundation stones of their investigations into medieval Islamic commerce, credit and banking. Scorgie (1994b) argued that the documents were written in Arabic but were produced classically by Jews rather than Muslims. This raises an aspect of some important questions such as - do these documents really count as examples of "Islamic accounting" at all? If the term is taken as referring to accounting accepted solely by Muslims, the Geniza documents would not qualify. However, if the term is taken to refer furthermore to a spatial and temporal location, they fall under the description of "Islamic accounting". In several events, Jews, Christians and supporters of other religions constituted important minorities and,

in some cases, the majority of the population in many Muslim countries until well into the 20th century (Karabell, 2007). Consequently, their accounting practices cannot be ignored.

Although Scorgie (1994b) was careful not to make claims that the Geniza documents, which he copied, were precursors of double-entry, Zaid (2000a) enquired whether or not Islamic accounting methods influenced the "Italian" method of double-entry. Zaid pointed out that matches, between practices and terminology found in Islamic accounting, were as significant as the journal and those seen in late-medieval Italian accounting. However his recommendations that Islamic accounting influenced Italian accounting are hypothetical. Nobes (2001) protected the Italian origin of double-entry by proposing that the parallels, which Zaid classified between definite Islamic practices and Italian counterparts (the Centrality of the journal, the use of "pious inscriptions" at the beginning of account books and statements), were not evidence of inspiration. Following Lieber (1968), the extensive trade contacts between Italy and the Middle East could have led to diffusion of business methods not only from sellers, located in Muslim states to their Italian counterparts, but, also, vice versa.

Replying to Nobes, Zaid (2001) acknowledged the lack of archival evidence demonstrating Muslim influence on Italian bookkeeping practice. However, he proposed that such an influence "cannot be ruled

out". Zaid rose the question of what counted really as "double-entry", putting the expression "double-entry system" in quotation marks to indicate the variability of the term. Do we need full duality of entries, use of nominal accounts and periodic balancing, or would something more partial be accepted? Even if a suitable "double-entry system" were found in an Islamic setting which predated such systems in Italy, essentially this is not evidence of Muslim influence on Italy. Also, accounting historians must be careful about claims made by non-specialists. For example, the economic historian, Labib (1969) asserted: *"The double entry method was a significant part of a merchant's skill. It permitted him to watch not only the flow of single values but moreover the circulation of the capital, and it allowed him to register quantitatively its change and transformation and to regulator the success and the development of the business"* (p.92)

In 2004, Zaid returned to a study of Islamic accounting history whereby he debated the role of conquest and colonization as significant factors in the spread of accounting. Also, he recommended that this process could provide a clarification for the Bahi-Khata accounting systems found in India (Lall Nigam, 1986). Zaid (2004) permitted the suggestion of Scorgie (1990) that, before British colonization, accounting in India was expected to reflect the effect of Islamic accounting through the Muslim Mughal invaders. It would be worthwhile studying the issue of how accounting methods were spread by Muslim traders, soldiers and administrators to South and South-East Asia. Subrahmanyam (1992) noted how Iranian wholesalers, operating in south India in the 17th century, took occasionally roles in government because of their commercial knowledge comprising of accounting. Sukoharsono (1998) debated the impact of Islam in Indonesia and measured fiscal administration in the Islamic states that emerged from the 14th century.

5.3. The Islamic Pyramid of Bookkeeping's Knowledge

Most of the contributions to accounting history journals in the Islamic accounting field are grounded on a range of manuscript manuals of accounting, or references to accounting in supplementary general works. For instance, in his introduction to history, known as the Muqaddimah, the historian, Ibn Khaldun (1332-1406), debated the origins of state accounting in the early Islamic state under the second successor to Muhammad, the caliph Umar. Ibn Khaldun noted how Umar established a diwan a term whose meaning developed from referring to a written record of receipts and payments (particularly those due to soldiers) to the office where those accountable for maintaining the records were located. Khaldun (2005) described how, in lands occupied by the Arabs in the years after the Prophet's death, the diwan used initially local languages - Persian in the former territories of the Sassanid Persian empire and Greek in lands previously under the control of the Byzantine empire. Around 700, Arabic was introduced as the language in which records were reserved by the Ummayyad caliph Abd al-Malik. Ibn Khaldun (2005)

summarized *"The diwan establishes a large part of royal authority. In fact, it is the third of its basic pillars. Royal authority requires soldiers, money, and the means to communicate with those who are absent. The ruler, consequently, needs persons to aid him in the matters concerned with "the sword", "the pen", and finances. Thus, the person who holds the office (of tax collections) has (a good) part of the royal authority for himself"* (p.199)

Consequent Arab and Persian writers provided direction on accounting comprise. Abu Abdallah Muhammad Al-Khwarizmi, whose Mafatih al-ulum (*"Keys of the Sciences"*), was written around 977, included a chapter describing *"the techniques and documents of central administration in the eastern Iranian world at that time"* (Bosworth, 1963). This was the core source upon which Hamid et al. (1993) based their debate of how the 10th century Islamic state controlled important amounts of revenue and expenditure. For information on accounting practice, we studied two encyclopaedias, written for administrators of the Mamluk rulers of Egypt and Syria. Albraiki (1994) made use of the broad manual Nihayat al-arab fi funun al-adab (*"Objectives in classes of good conduct"*), written by Shihab Al-Din Ahmad Al-Nuwayri. Al-Nuwayri was a financial official and, it was highly probable that later he was writing about the actual accounting systems of the Mamluk rulers. Albraiki recommended that the described system was double-entry in form, although it might not have given such an appearance since the numerous transactions which Albraiki described, comprised of taxpayers discharging their liabilities by making payments ordered by the state to settle the state's obligations to third parties. Hence, there were several transactions with an understandable "dual" nature.

The Egyptian writer, Abu'l-Abbas Ahmad Al-Qalqashandi, a secretary in the chancery of the Mamluk rulers, was the author of the "monumental" (Bosworth, 1964) encyclopaedia of "secretaryship Subh al-a'sha fi sina'at al-insha" (*"Dawn for the blind concerning the techniques of correspondence"*, completed around 1418). In this work, Al-Qalqashandi considered the requirements for alkatib, literally the person of the book. As Bosworth (1964) noted, a slightly earlier Arab writer, Al-Hariri (1054-1122), differentiated between al-katib al-insha (the correspondence secretary, dealing with matters of state) and al-katib al-hisab (the accounting secretary, dealing with issues of finance). Zaid (2000b) summarized Al-Qalqashandi's list of qualifications estimated of those who aspired to take up the role of al-katib; this guaranteed that al-katib would be technically knowledgeable; well-versed in the Islamic Sharia law (particularly the law of commercial transactions); and reputable and truthful. Although Zaid speculated that the Islamic al-katib was comparable to the western accountant by attributing this to trade associates between the European and Muslim worlds, the qualifications which he listed, would appear more applicable to the "senior civil servant" that, probably, Al-Qalqashandi was discussing²⁵.

²⁵ Numerous books, written in Persian and setting out governmental accounting systems, are known from the period of the Ilkhans (during which time the Ottomans started to emerge as their vassals). Remler (1985)

The sequences of Muslim writers' Islamic contributions begin in 610 with the foundation of Islam, followed by the contributions of schoolers, such as Al-Khwarizmi, Al-Hariri, Sa'adetname, Al-Nuwayri, Ibn Khaldun, Al-Mazandarani, and, in 1418, Al-Qalqashandi's was the final contribution for this building. Table 3 shows sequentially the integration stages of the Muslim contributions are from the beginning of Islam in 610 until Al-Qalqashandi in 1418. It reflects a natural progression for the body of knowledge for the building of bookkeeping. On the other hand, for the western view, figure (1) shows three stages for the development of bookkeeping which starts with the practices of banks and some simple corporations for this system followed by the second stage in 1494 when Pacioli published his book which contained a comprehensive approach for bookkeeping without any organized or systematic progress contributions in the area. The third stage included extensive works after Pacioli through the issue of more than 10 books about bookkeeping. Some of these works only copied from Pacioli and others added value through organising and developing his work. The evolution of accounting in Islamic jurisprudence had presumed already that most of the writings agreed with the Italian, Luca Pachilio, who was the basis of the double-entry system in 1494. The recording system, introduced by Luka, was preceded by Islamic and Arabian development and contributions which could not be ignored and Table 4 shows these sequences. Based on the investigation of both contributions (Muslim and Western), the next section investigates and explores the European dark ages which was between the 4th to 14th centuries and how the knowledge transferred from the East or Muslim side to West or Christian side. This section is novel by contributing to the literature for bookkeeping system through investigating the channels of influence between the East and West sides.

5.4. Evidence of the Muslims' Contributions for the Bookkeeping System

Hamid et al, 1993; Scorgie, 1990; Solas and Otar, 1994; and Zaid, 2000a and 2000b documented the Muslim contributions to the bookkeeping system. Few western and modern Muslim accountants sought to certificate and explore early Muslim accounting. Lai Nigam (1986) emphasized the role

played by Muslim Indian accountants in the progression of accounting prior to Pacioli's Summa of 1494. The author argued that the development of "A system of bookkeeping which predates and was far ahead in complexity of its European counterpart. Scorgie (1990) surveyed the evidence, which supports a contention that the Muslim Indians imitated and adopted the bookkeeping systems conveyed by the Moguls who conquered India in the mid-sixteenth century and concluded that "the similarity of words in Arabic and core languages of India recommends that the system used by Indian traders and families was consequent from their Arab conquerors". The Indians were followers rather than inventors and that the transport of double-entry accounting was from the West to the East rather than vice versa as asserted by Lall Nigam (1986). Scorgie (1990) recommended that accounting development "was resulting from their Arab conquerors". This view was strengthened by Solas and Otar (1994) whose focus was on "the governmental accounting practice in the Near East during the II Khan Dynasty period (1120-1350). Their study focused on the Ottoman Empire, a Muslim empire. They concluded that the fundamentals of double-entry. Accounting were practiced in the Near East and were developed independently from the accounting practices used in the West" (p. 117).

Hamid et al (1993) carried out an additional study which referred to the Muslim scholars' contributions to the development of accounting. They advocated that, "Islam has the potential for influencing the structure, underlying concepts and the mechanisms of accounting in the Islamic world". The authors concluded that "the prospective influence of Islam on accounting policies and practices could add analyses of national accounting difference with a cultural dimension more profound than that emanating from the impact of original secular law, general custom and commercial habit". This conclusion was based on earlier developments evidenced by Zaid (2000a, 2000b). Lieber (1968) recommended that Italian traders acquired their knowledge of sophisticated business methods from their Muslim counterparts. Additionally, Heaps (1895) indicated that "the first European who translated algebra from the writings of the Arabians is also thought to have written the first treatise on bookkeeping ... bookkeeping would first be practiced by the first significant merchants, and as these were the Arabians, he accredits to them the invention". Writers as Heaps (1895); Have (1976), expected the Muslim scholars' contributions to be identical to that of Arabs. Certainly, Arabs and non-Arabs contributed to developments in the Muslim world. Commonly speaking, it appears that these authors were referring to Muslims as Arabs, possibly due to the language spoken or that early Muslims originated from Arabia. Examples of Arab Muslim scholars were Al-Qalkashandy, Al- Bucasis, Jabir ibn Hayyan, Ar-Razy and Al-Kindy. Examples of non-Arab Muslim scholars involved Al-Khwarizmi, Abu-Bacer, Abicenne and Al- Mazendarany. Although Roman numbers were in use in the Italian republics during the 15th century, a feature of Pacioli's Summa was the use of Arabic numbers. Furthermore, it was suggested that the introduction

reviewed these and some were revised by scholars working in the West. Among the most significant of these manuals are the Sa'adetname (1307) of Felek Ala-yi Tebrizi (Nabipour, 1973; Erkan et al., 2006), and the Risale-i Felekiyye (1363) of Abdullah bin Muhammad bin Kiya Al-Mazandarani (Hinz, 1952; Hinz, 1950; Erkan et al., 2006). The Risale is a main source of information about the Merdiban method of accounting (Erkan et al., 2006; Güvemli & Güvemli, 2007), and it has formed the basis of many published contributions to the history of Islamic accounting literature. In their innovative contribution, Solas and Otar (1994) summarized Al-Mazandarani's accounting-related material. Although they described the system, set out in the Risale, as "fundamental double-entry" (Solas & Otar, 1994, p.134), it is more like a set of interlocking main and subsidiary records, with detailed entries in the subsidiary books being carried over (maybe in summarized or total form) into the major records. Political and economic historians used Al-Mazandarani's treatise widely broadly as a source of information on government, tax policy, prices and other matters in the Middle East in the 14th century. Consequently, accounting researchers might take carefully the Risale's descriptions of accounting methods and documents as being fairly representative of contemporary practice.

of Arabic numerals in the West was associated with the work of Al-Khwarizmi in the early 9th century (Macve, 1994). Using the Arabic numbers in Pacioli's Summa proved the originality of Islamic Bookkeeping or, at least, Pacioli was affected either by the Muslim or Arab work or culture.

Table 4. Historical Sequences of Muslim Scholars' Contributions to the Bookkeeping System From 610:1307

Year	Name	Book's Name	Contributions
610	Islam	Qur'an and Sunnah	Qur'an set all general rules and basics for Accounting and Bookkeeping and charted all life transactions as instructions of contract (Credit and Debit), finance, business, zakat and ethical rules for guiding business and writing contracts. The following verses from Quran explain some of them "Allah takes careful account of all things", "everyone is accountable to God on the Day of Judgement for their actions during their lives" (Al-nisa 4:86). The Judgement is described in terms of weighing one's noble and evil deeds in a balance (al-qari'ah 101: 6-8), with the noble and evil deeds being documented in books or registers (al-mutaffifin 83: 7-21). Quran declares in Al Baqarah verses (2.282) "Believers! When you contract a debt for a fixed period, put it in writing. Let a scribe write it down between you with fairness; no scribe shall refuse to write as Allah has taught him. Therefore, let him write; and let the debtor dictate, fearing Allah his Lord, and do not decrease anything of it. But if the debtor is of poor understanding, or weak, or is unable himself to dictate, then let his guardian dictate in fairness....."
634:644	Omar bin Al-Kattab	-----	Omar bin Al-Kattab establishment of the Dewans for the recording of Baitul Mai (public treasury) revenues and expenses
919	Qudama ibn Ja'far	Al-kharaj wa-sina'at al-kitaba	As well as the earlier administrative encyclopaedia of Qudama ibn Ja'far Kitab al-kharaj wa-sina'at al-kitaba ("Book on the land tax and methods of record-keeping", written before 948; see also Heck, 2002). These encyclopaedias, written for officials of the Mamluk rulers of Egypt and Syria, were studied for information on accounting practice
976	Al-Khwarizmi	Mafatih Al-Uloom (Keys of Sciences).	Subsequent Arab and Persian writers, who provided guidance on accounting, included Abu Abdallah Muhammad Al-Khwarizmi, whose Mafatih al-ulum ("Keys of the Sciences"), written around 977, included a chapter describing "the techniques and documents of central administration in the eastern Iranian world at [that] time" (Bosworth, 1963, p.104)
1054-1122	Al-Hariri	-----	Arab writer, Al-Hariri (1054-1122), distinguished between al-katib al-insha (the correspondence secretary, dealing with matters of state) and al-katib al-hisab (the accounting secretary, dealing with matters of finance). These encyclopaedias, written for officials of the Mamluk rulers of Egypt and Syria, were studied for information on accounting practice
1307	Sa'adetname	-----	Sa'adetname (1307) of Felek Ala-yi Tebrizi (edited by Nabipour, 1973; see also Erkan et al., 2006, pp.5-6).
Before 1332 1355	Al-Nuwayri	Nihayat al-arab fi funun al-adab	Albraiki (1994) made use of the extensive manual Nihayat al-arab fi funun al-adab ("Objectives in classes of good conduct"), written by Shihab Al-Din Ahmad Al-Nuwayri (died c. 1332). Al-Nuwayri was a financial official and, hence, was highly likely to be writing about the actual accounting systems of the Mamluk rulers
1332-1406	Ibn Khaldun	Muqaddimah	, In his introduction to history, known as the Muqaddimah, the historian, Ibn Khaldun, discusses the origins of state accounting in the early Islamic state under the second successor to Muhammad, the caliph Umar. Ibn Khaldun noted how Umar established a diwan (the Turkish equivalent is divan), a term whose meaning evolved from referring to a written record of receipts and payments (especially those due to soldiers), to the office where those responsible for maintaining the records were located
1363	Al-Mazandarani	Risalah Falakiyyah Kitabus Siyakat	Risale-i Felekiyye (1363) of Abdullah bin Muhammad bin Kiya Al-Mazandarani (edited by Hinz, 1952; see also Hinz, 1950; Erkan et al., 2006, pp.7-8). The Risale is a major source of information about the Merdiban method of accounting (Erkan et al., 2006; Güvemli & Güvemli, 2007), and it formed the basis of several published contributions to the Islamic accounting history literature. In their pioneering contribution, Solas and Otar (1994) summarized Al-Mazandarani's accounting-related material. Although they described the system, set out in the Risale, as "rudimentary double-entry" (Solas & Otar, 1994, p.134), it was more like a set of interlocking primary and subsidiary records, with detailed entries in the subsidiary books being carried over (perhaps in summarized or total form) into the primary records. Political and economic historians used Al-Mazandarani's treatise widely as a source of information on government, tax policy, prices and other matters in the Middle East in the 14 th century. Consequently, accounting researchers might take safely the Risale's descriptions of accounting methods and documents as fairly representative of contemporary practice.
1418	Al-Qalqashandi	Subh al-a'sha fi sina'at al-insha	The Egyptian writer Abu'l-Abbas Ahmad Al-Qalqashandi, a secretary in the chancery of the Mamluk rulers, was the author of the "monumental" (Bosworth, 1964, p.292) encyclopaedia of secretaryship Subh al-a'sha fi sina'at al-insha ("Dawn for the blind concerning the techniques of correspondence", completed around 1418). In this work, Al-Qalqashandi considers the requirements for alkatib, literally the person of the book (kitab).

Table 5. Summarizes Muslim and Western Contributions

<i>The Stage</i>	<i>Period</i>	<i>Added Value</i>	<i>Description</i>
Islamic Stages			
The First Stage	610:644	Basic and General Rules	Foundation of Basic Islamic Accounting and Bookkeeping Rules by Quran and Sunna (General/Comprehensive Perspective)
The Second Stage	948:1307	Exploring new transactions	Discovering/Exploring the Differences in practices with new transactions
The Third Stage	1355:1418	Completion of the building of Bookkeeping Knowledge	Complete understanding and organised the details book for bookkeeping process as we know them
Western Stages			
The First Stage	1211:1460	Discovering and professional Practices	Applications and practice of some of the basics for double entry bookkeeping through banks, international business and small business
The Second Stage	1494	Setting writing foundation by Luca book	Through Pacioli's book, the bookkeeping become authorised to be adopted by corporations
The Third Stage	1518:1639	Completion of Pacioli's work	Complete the bookkeeping building with more details and types for all books

Table 6. The historical progress for Islamic accounting and Bookkeeping for Muslims Scholars

Stage of Census and counting		The emergence of the Islamic call and invitation to the Messenger of Allah to count and census
	622 A/1 H	Aware of the role of inheritance and astronomy and geography to learn inheritance and prayer and destination Kaaba and months to find out the month of fasting, Hajj and squint to calculate zakat
Blogging stage (Recording)	644 A/23 H	Succession Omar ibn Al-Khattab may Allah be pleased with him
Localization stage (Translation for Arabic)		Umayyad Caliphate at the hands of the writer Saleh bin Abdul Rahman
	750 A/132 M	Khwarizmi development of the first book in the calculation of Gabr
	767 A/150 M	Abu Hanifa
	775 A/158 M	Anas bin Malik
	785 A/168 M	Ismail bin Sabih writer Bureau abscess time Rasheed
	798 A/182 M	Abu Yousef
	819 A/203 M	Qurashi
	820 A/204 M	Shafie
	839 A/224 M	Abu Obeid bin Peace
	920 A/307 M	Ali Issa
933 A/321 M	Abu Jaafar al-Tahawi	
939 A/327 M	Abu Jafar Damascene	
940 A/328 M	Ibn Qudamah	
Acceptance Europe stage	1050 A/441 M	Europe to accept Arabic numerals after 3 centuries by Maklish
Rooting stage	1024 A/415 M	Judge Abdul-Jabbar
	1058 A/450 M	Mawardi
	1111 A/504 M	Hariri
	1112 A/505 M	Ghazali
	1262 A/660 M	Ezz Bin Abdulsalam
	1328 A/728 M	Ibn Taymiyyah
Dating the world stage, including accounting	1332 A/733 M	Noueiri development of the first integrated accounting scientific reference in the world
	1377 A/779 M	Ibn Khaldun
	1388 A/790 M	Shatibi
	1393 A/795 M	Ibn Rajab al-Hanbali
	1418 A/821 M	Qalqashandi
	1494 A/889 M	Luka Pacilio and Book of Double-Entry

The dates in the schedule is the death date for those scientists

Source: Samer, 2012

6. TRANSFER STAGES OF KNOWLEDGE BETWEEN EAST AND WEST "KNOWLEDGE BRIDGE"

The history of Islamic economics, finance and accounting goes back to the Qur'an and Sunna. The Qur'an, as the Word of God revealed to the Prophet Muhammad (PBUH) and Sunna as his practical demonstration and explanations, comprises a number of economic teachings and philosophies applicable to several conditions. Thought is a product of human mind, whilst the Quran teachings and prophetic explanations are divine in character. Consequently, it is the human interpretations and implications and their applications in many changing times, spaces and conditions which form

the body of business 'thought' of the people of Islam. Muslim scholars acknowledged and accepted the economic and accounting or finance teachings of the Qur'an and Sunna as the source and starting point. Then, they used their own reasons and practiced the principles derived from the basic sources of Islam to explain the emerging problems in the changing historical and economic conditions. They never hesitated to benefit from the experience of other nations. More or less this process is sustained throughout Islamic history. We can separate this process into the following three broad classifications. In the following sections, the paper focuses on second and third phase since the first one was explored in the previous section

Table 7. Main phases for Islamic history' stages to accounting building

Phase	Kind of stage	Objectives	Period
First stage	Construction period	This covers the period just after cessation of the revelation to the end of the companions' 2 eras	11-100 A.H. /632-718 A.D
Second stage	Translation period	When foreign ideas were translated into Arabic and Muslim scholars had a chance to benefits from the intellectual and applied works of other nations	2 nd -5 th /8 th - 11 th century
Third stage	Re-translation and communications period	When Greco-Arabic Islamic ideas reached Europe through translation and other contacts	6 th - 9 th /12 th - 15 th century

6.1. The Translation Period

By the translation period, we mean the age when foreign classical works and master pieces, particularly those embodying Greek ideas, were translated into Arabic and Muslim scholars came to study and benefit from them. The translation activity started in the first century Hijrah itself whilst it took two more centuries to make its effect felt amongst Muslim scholars. The first incidence of translation was reported during the Caliphate of `Umar. Khalid b. al-Walid advised the use of the diwan (office or register). He said to `Umar that he had seen the rulers of Syria was keeping a diwan. Umar accepted the idea from Khalid. It was said, also that al-Hurmuzan was the person who advised `Umar to introduce the diwan. Since the term 'diwan' is a Persian word, the last story seems to be more acceptable. However, the diwans of land tax collections remained in Iraq and Syria in Persian and Byzantine Greek correspondingly until the caliphate of Abd al-Malik b. Marwan who ordered their translation into Arabic. Later, Khalid b. Yazid made a systematic start to translation. He sent for scholars from India, Persia, Rome and Greece and organized the translation of their classical works.

Following the death of the Prophet Muhammad in 632, Islam feasted rapidly, slicing through the Middle East into Africa, and as far west as France. This rapid expansion led to the growth of three fundamental dynastic caliphates: the Abbasids (750-1258) arose in Persian Baghdad; in the Spanish West, mainly at Cordova, the Umayyads (756-1031); and the Fatimids in Egyptian Cairo (909-1171). The Abbasid Dynasty heralded Islam's Golden Age and it was during this period that the translation of writings, from other civilizations, past and modern, blossomed. The Abbasid Caliph Al-Ma'mun (786-833) was ascribed frequently with institutionalizing the translation of the early sciences, and setting these out systematically, with his Bayt al-Hikmah or The House of Wisdom situated in Baghdad. This institution, which became the intellectual hub of Islamic scholarship, had, as its principal activity, the translation of numerous critical works from other civilizations into Arabic and, therefore, preserved countless valuable manuscripts. By the time this had started in the early 9th century, Islam had spread already to such an extent that contact with the West was widespread, and, hence, the Bayt al-Hikmah had the advantage of employing a very cosmopolitan blend of scholars of many different creeds and languages.

6.2. The Re-translation and Transmission Period

The third phase was the re-translation and transmission period when Greco-Arab Islamic ideas

reached Europe by translation and other contacts (6th-9th/12th-15th century). The third phase of Islamic economic thought marked the translation of Islamic sciences generally and Greco-Arab sciences' (Muslim scholars' additions and commentaries over Greek philosophy) in particular from Arabic to Latin and other European languages. We have reports concerning translation activities from Arabic to Greek by the end of 4th century Hijrah in the Byzantine capital Constantinople (Sezgin, 1984). With the passage of time, the volume of re-translation work increased significantly. Hence, the period before Western renaissance is termed as the 'translation age' (Myers, 1964). Translation of the works of hukama (Muslim philosophers), physicians, finance, scientists, and social thinkers dominated the scene. The works of Ibn Sina, al-Farabi, Ibn Bajjah, Ibn Rushd, etc. were translated into the Latin, French, Spanish, Hebrew and German languages. Grice-Hutchinson (1978) wrote: "About the beginning of the 12th century the Christian West began to awaken to the superiority of Islamic culture of Islamic technology, since the aspiration of Western Christian was not so much to enrich their intellectual culture as to develop their performance in such practical activities as medicine, mathematics, arithmetic, accounting, astronomy, astrology, botany, torture and magic, in all of which the Arabs were known to be exceptionally talented" (p.71). Baeck (1994) classified three periods of translation from Arabic. Firstly, from the early 12th century to the beginning of the 13th century 'in which most vital texts written by Arab and Greek scholars were translated into Castilian Catalan and Langue d'Oc'. In the second period 'from these vernacular languages, they were rendered into Latin'. The third period, which started from the middle of 13th century, 'returned to the double pass: Arabic - Langue d'Oc - Latin'. "In this process of translation the most significant Arabic texts on astronomy, mathematics, accounting, medicine, kalam and philosophy were transferred to the West" (Baeck, 1994).

6.3. Channels of Influence

The Muslim scholars' effect on Medieval Europe with respect to philosophy, science, mathematics, Finance, geography, history, art and culture is well-documented and recognized in the circle of concerned subjects. However, as yet, their influence on economic and Finance thinking and institutions has to be explored completely and recognized. The very fact that Medieval Europe borrowed from Muslim scholars in several such diverse fields is enough to believe that they could not have avoided the economic and financial thoughts of Muslim scholars since there was no reason to ignore their knowledgeable contribution in this dynamic and

practical aspect of life. The Muslim scholars' influence reached Medieval Europe by translation activities; education and oral transmission;

explorers' travel accounts; trade crusades; and diplomatic missions and pilgrimages. The following table is a brief description of these channels.

Table 8. The Channels of Influence from East to West

<i>Transferred method</i>	<i>Discretion</i>
Translation	Translation of Muslim scholars' contributions to European languages was the most imperative channel through which their ideas were communicated to the West. It was a continuous process spread over several centuries (starting from 11th century A.D. up to 15th century). Baeck (1994, p. 119) recognized the five essential centres of translation of religious, philosophical and scientific texts. The first organized translation centre was Trazona in Aragon; in Castile, the translation centre of Toledo was created by Archbishop Raimundo; the Court of Emperor Fredrick II in Sicily played a prominent role; Barcelona was the centre of high culture in Catalonia's maritime economy; and, finally, cultural centres, like Perpignan, Narbonne, Nimes and Toulouse, were transmission belts of text translated in old French. Several economists recognized the significance of Arabic translations to European languages and their role in the progression of scholastic thought (Schumpeter, 1997; Gordon, 1975). However, the impression was given that their role was only the transmitter of Greek ideas. The fact is that with each translation they contributed, also, their commentary, exposition, criticism and additions and the West benefited from all of these. Karl Pribram is possibly amongst the few Western economists who accepted it openly. He declared: "All applicable writings of the Greek philosopher Aristotle (384-322 B.C.) were gradually made obtainable in Latin translation along with several treatises in which Arabian philosophers had interpreted Aristotle's work in light of their own reasoning. Of particular significance for subsequent development of Western thought was a translation into Latin of the commentaries of Aristotle's Ethics by the Cordoban philosopher Ibn-Rushd, called Averroes (1126-1198)" (Pribram, 1983). He mentioned two streams that affected the medieval society "far more vital stream started within the body of Scholastic theologians who resulting their intellectual armoury from the works of Arabian philosophers" (Pribram, 1983).
Oral transmission	Another main channel of transmission of Muslim thought had been through the European students who attended the learning centres in Spain, Egypt and other parts of the Muslim world. On return, they were involved in teaching, preaching or developing those disciplines in their own societies. Clearly, the oral transmissions could not be recorded. However, in the history, we found several important names, like Constantine, the African and Adelard of Bath (England) who travelled to Muslim countries, learned Arabic, studied there and transported back the newly acquired knowledge to Europe. Even Pope Silvester II was educated amongst the Arabs of Toledo (Lopez-Baralt, 1994).
Trade and Commerce	As illustrated earlier, the change in Medieval Christianity's outlook towards trade was a manifestation of Muslim scholars' impact. Active participation of the East and West in trading activities was one of the channels through which that inspiration took root. According to Cook (1974, p. 238), "The beginnings of commend as an accepted legal category in the Italian commercial cities may have ascended from an acquaintance with the commercial practice of the Arabs". Sufficient evidences are available that trade was accompanied from the Arab world through Russia to Poland, the shores of Baltic seas to Scandinavia, and to north central Europe. 'Series of hoards, comprising several thousands of Muslim silver dirhams that have been found in the countries around the Baltic' (Lewis, 1970) are proof of massive trading network with Muslim countries. According to Bernard Lewis 'Italian and Spanish archives enclose various documents relating commerce, counting a number in Arabic' (ibid., 1970, p. 81). Geniza papers of Egyptian Jewish provenance replicated the commercial and social relationships which were by no means limited to Egypt and which stretched to the Mediterranean lands, eastwards to India (ibid., p.84). In words of Heaton, "Muhammad anism regarded trade as worthy occupation, ties of rule and religion facilitated long-distance trade and travel and since the Asiatic and the Moslem world controlled several industrial or agricultural skills and products which were superior to those of the European end, the West promoted by the lessons it learned from its new masters" (Heaton, 1948, p. 76). In fact, 'economic and business motive' led to a large number of European merchants having an increased knowledge of the Muslim world (Rodinson, 1974).
Diplomatic Channel	Likewise, the diplomatic relationships provided an opportunity to learn from the advanced nation. 'Charlemagne was in diplomatic relations with the caliph of Baghdad, Harun al-Rashid as well as with the latter's enemy, the Umayyad emir of Spain; and by this channel particular knowledge of the vastness and power of the Islamic world might have reached Europe' (Watt, 1972, p.13). Most of the European kings had respectable relationships with the Mamluk sultans of Egypt. In a letter to Sultan Nasir bin Qalawun in 1327, Pope John XXII referred to asking him to treat the Christians of the East with benevolence and care. Nasir approved his request (Muir, 1896). In the same year, Charles IV (1322-28), the King of France, sent a comparable letter to Sultan Nasir around the welfare of the Christians residing in his sultanate (Lane-Poole, 1925, p. 310). We can argue that there were plentiful channels of communication available between East and West and there were far superior reasons for Medieval Europe to be influenced by the Muslim scholars' economic, finance and accounting ideas.

6.4. No Acknowledgement and Changing Scenario

Despite undoubted circumstantial evidences, the least recognized fact is a scholastic philosopher's borrowing from Muslim scholars in economic and accounting, especially the bookkeeping field of. One of the core reasons may be the fact that, in their discourses on economic issues, scholastic scholars never mentioned Islamic sources. Therefore, the question arises: why did scholastic scholars not acknowledge their borrowing from Muslims? A few modern writers have tried to answer this (Sezgin 1984, Mirakhor 1987, Ghazanfar 1995). The first and primary reason is that the scholars held a denigrating view of Islam and Muslims (Sezgin, 1984). Without naming him, he quoted a scholar who

recommended that, in denigrating Islam and Muslims, Medieval Europe found a way to formulate a new image of it. Ibid indicates that 'Because Europe was responding against Islam, it belittled the influence of the Saracens and exaggerated its dependence on its Greek and Roman heritage'. In the 14th century, a great number of European scholars studied translation of Arabic books and prepared their own volumes or summaries in which they released not only the names of Muslim authors but attributed the whole thing, also, to those Greek scholars who were referred to infrequently in those works (Sezgin, 1984). Ball (1960) indicated "we can barely suppose that the Italian traders were ignorant of the methods of keeping accounts used by their best

customers” and important amongst these were Muslim businesspersons.

Figure 2 shows how Muslims interacted with the Greeks and how, at the same time, the western world benefitted from interacting with Muslims without showing their appreciation. The Figure shows that, what Pacioli published represented only the outcomes of all these contributions with, especially, core contributions from Muslim scholars who interacted critically with the Greeks in developing and adding value to the building of bookkeeping knowledge. The Muslim stage represents a cornerstone and knowledge bridge for the western world. Raymundus Lullus (1315) spent his full life in opposition of everything that was Arabic. He wrote several books on Chemistry. Later, it was discovered that the greatest of them were originally Arabic works. Furthermore, numerous such writers gave the slogan: *‘Emancipate knowledge from the clutches of Arabs’* (Sezgin, 1984). No doubt few scholars tried to be fair and to acknowledge Muslim scholars’ contributions to various sciences. However discrediting forces dominated the scene (Sezgin, 1984). Elimination of Muslim scholars’ names and the discarding of their citations were encouraged, also, by the intention of its adoption in one’s own name. There are numerous examples of medieval scholars who removed the name of the original Muslim author and presented the book in their own name (Sezgin, 1984). Langholm argued that after war, famine and the 14th century Black Death which left a gap in main sources, ‘threads were picked up again in the 15th century and specific of the late scholastics have become famous as economists and financial, but contemporary research has shown that they were often photocopying verbatim from earlier forgotten pre-plague sources’ (Langholm, 1987). In the age of slow communication and the absence of print media, occurrences of such incidences were imaginable. However, it was not confined only to that period only.

According to Mirakhor, an additional reason for not finding acknowledgement is that *‘borrowing without acknowledgement appears to have been an accepted and a common practice among the scholastics’* (Mirakhor, 1987) ⁽²⁶⁾. He cited several examples of such copying without acknowledgement within the scholastics themselves. It was very common whilst plagiarizing from Muslim scholars. In the 13th century, Bar Heraeus, a Minister of the Syriac Jacobite Church copied several chapters of al-Ghazali’s *Ihya Ulum al-Din* were copied by (Mirakhor, 1987). In her work *al-Ghazali: The Mystic, Margaret Smith exposed undoubted evidences of St. Thomas’ copying from al-Ghazali’s work Ihya Ulum al-Din. She matched the works of the two scholars and found that, in several cases, “St. Thomas uses the very words of al-Ghazali.”* There were similarities between themes and arguments of the two works (Smith, 1944). It may be remembered that al-Ghazali’s *Ihya* is the core source of his ideas.

²⁶ It was found, also, amongst Muslim scholars. For example. Both Abu Yala al-Farra and al-Mawardi had a work entitled *al-Ahkam al-Sultaniyyah*, the contents were almost the same. They were contemporaries. It is not known who wrote first and who borrowed it. Another example. Ibn al-Qayyim (1953) incorporated the whole treatise of his teacher Ibn Taymiyyah (1976) on *al-hisbah* in his book *al-Turuq al-Hukmiyyah*. No doubt, on certain occasions he referred to his shaykh Ibn Taymiyyah.

6.5. The Changing Scenario

We noted previously Schumpeter’s statement that Medieval Europe had to begin in social sciences ‘from little or nothing’ (Islahi, 2001). Watt restated: *“When about 1100 Europeans became extremely interested in the science, accounting and philosophy of their Saracen enemies, these disciplines were at their zenith; and the Europeans had to acquire all they could from the Arabs, before they themselves could make supplementary advances”* (Watt, 1972). Admittedly, another scholar admits argued that *“What we call science arose in Europe as a result of a new spirit of inquiry, of novel methods of investigation, of the methods of experiment, observation, and measurement, of the development of mathematics, in a form unidentified to the Greeks”*. The spirit and those methods were presented into the European world by the Arabs” (Briffant, 1929) Seen in this way, pre-scholastic Muslim scholars’ contributions related very powerfully to mainstream Western accounting. Figure 2 shows that the cycle for transferring knowledge has changed. The Muslim side is learning now and copying from the western world with acknowledgements but with a little adding value. Figure 2 asks a vital question, namely what is the expected contributions of Muslim scholars in the accounting body knowledge and when? How can Muslim scholars come back again to be exporters of knowledge to the western side?

7. CONCLUSION AND RECOMMENDATIONS

The paper explored the history of bookkeeping by investigating the historical subsequent development of the bookkeeping framework which began in 610 (the date of Islam foundation) until 1418 with the last Muslim scholar’s contributions (El-Qalakshandy). The paper argued that the bookkeeping history from both sides which were the western and Islamic sides. The paper investigated the transfer of knowledge and focused on bookkeeping from the Muslim world to Christian and especially from the 8th to 15th centuries which were called the Dark Ages. Without acknowledgments of the Muslim writers, the Muslim works were translated from Arabic to Latin and to other languages. The paper concluded that Pacioli’s book in 1494 was only the final outcomes of the Muslim scholars’ contributions through the integration cycle which took around 800 years (610:1418). It could be concluded that the bookkeeping pyramid was integration stages or sequences of many different writers who added to this building with priorities given to the Muslim scholars’ contributions as a cornerstone of this building. The paper showed the different ways to channels influence between East and West and, for instance, this contained for instance translation; oral transmission; and trade and commerce. The paper concluded that these channels were the bridge for transferring the knowledge of the bookkeeping system from East to West. The study outlined the changing knowledge transfer scenario and asked what the expected Muslim scholars’ contributions were and how could the Muslim scholars add value to the building of the accounting system?

Figure 1. Bookkeeping pyramid knowledge

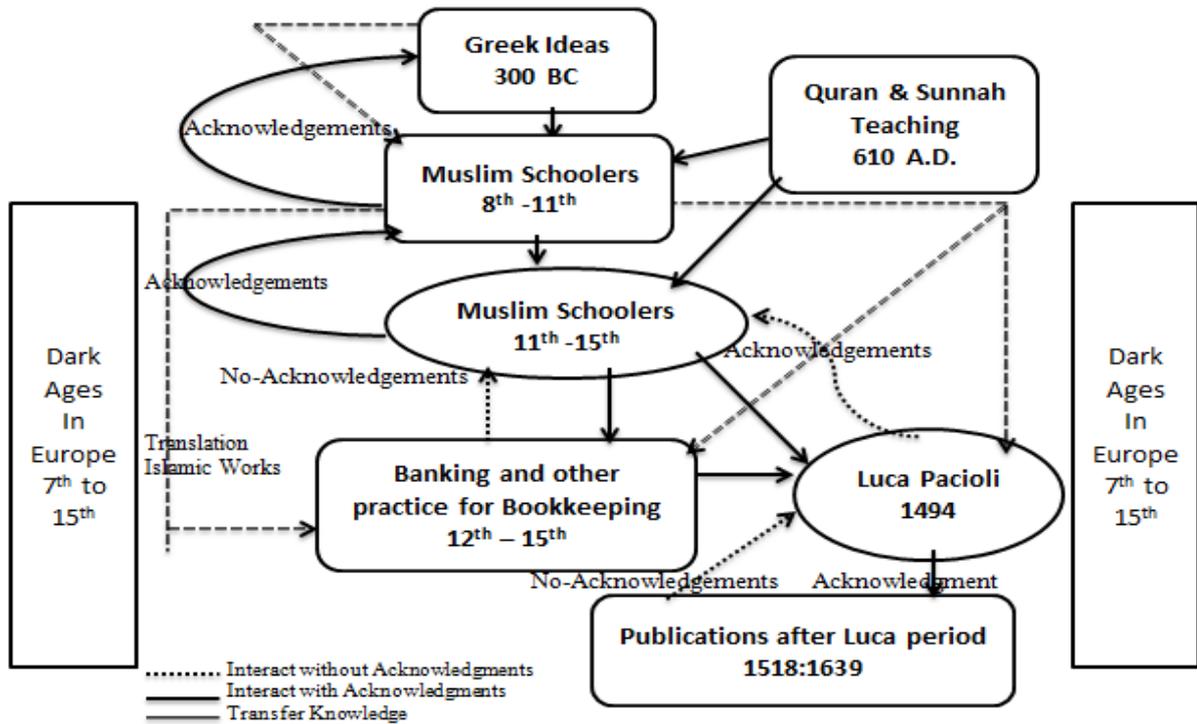
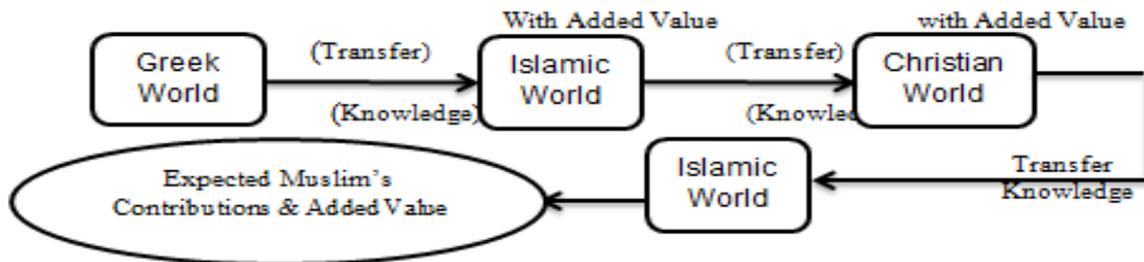


Figure 2. The Changing Scenario



The study encouraged the Muslim and Non-Muslim researchers to investigate the other knowledge, works and sciences which were copying or transferring from the East or Muslim world to the West or Christian world in order to correct the history and record acknowledgements for authorized writers. Furthermore, the paper suggested that there ought to be additional investigations about the Muslim scholars' contributions to accounting knowledge in the modern period of the 19th and 20th centuries. The paper recommended that there ought to be exploration of what was needed in the Muslim scholars' world to be pioneers and to add value again to the universal knowledge building as had been made over 1000 years. The significance of theory and difficult method for historical accounting research should be argued. Furthermore, accounting history was not only the history of accounting

techniques and philosophies, alongside the history of accountants but, also, ought to comprise of a study of the influence of accounting on individuals, organisations and society. In addition, there ought to be an explanatory understanding of the meanings attributed to accounting at different times. We require researchers to examine the "dark" as well as the "bright" sides of accounting; to challenge conventional narratives of accounting development; and to accept that accounting is more than simple counting and calculation.

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