

12th INAUGURAL LECTURE

ACCOUNTING IN THE DIGITAL AGE: CREATING VALUES WITH PAPERLESS DECISION SUPPORT SYSTEMS

Lecturer

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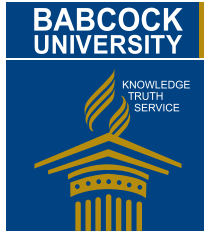
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Thursday, September 8, 2016



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**BABCOCK UNIVERSITY
ILISHAN-REMO, OGUN STATE
NIGERIA**

**THE TWELFTH UNIVERSITY
INAUGURAL LECTURE**

**ACCOUNTING IN THE DIGITAL AGE:
CREATING VALUES WITH PAPERLESS
DECISION SUPPORT SYSTEMS**

by

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Introduction

The Chairman of the Babcock University Governing Council, The President/Vice Chancellor Professor Ademola Tayo, The Senior Vice President/Deputy Vice Chancellor Professor Iheanyichukwu Okoro, Your Excellencies here present, Your Royal Highnesses here present, Erudite Scholars, Learned Colleagues and Friends, distinguished Ladies and Gentlemen, all other protocols duly observed, permit me first to say Thank You Jesus who by his saving grace made this occasion a possibility.

I will also crave your indulgence in permitting me to appreciate the choice of my person as the 1st professor from the School of Management Sciences and the 2nd professor from the old Babcock Business School to deliver an inaugural lecture. I feel highly honoured and privileged to accept the call fully aware of the importance of inaugural lecture series on the development of institutional legacies and the advancement of the accounting and other disciplines and professions globally.

Preamble

I will like to commence this lecture by quoting the statement made by Professor Eno L. Inanga in his 1991 inaugural lecture at the University of Ibadan that “public lectures from the chair of accounting and business finance do not come up too frequently” (Inanga, 1991). This is obvious because though, there is water everywhere but there is very little to drink. Every organization (profit and non-profit) on planet earth needs the services of an accountant because every business success is determined, defined and measured in monetary figurative terms. But it is a common knowledge that the number of organizations worldwide far exceeds the number of properly qualified accountants. The combined membership strength of the Institute of Chartered Accountants of Nigeria

(ICAN) and the Association of National Accountants of Nigeria (ANAN) in Nigeria is still less than 200,000 professionally certified accountants despite the fact that incorporated and registered businesses far exceed 500,000 in a country with over 170million people. The situation is even worse in the academia. Though, there are no ready statistics but I am sure that there are less than 50 professors of accounting in Nigeria as at today.

I am aware that public lectures of this nature are intended to defend or give insight into the subject matter of one's specialization, I will go beyond this because the accounting of today has gone beyond the comprehension of debit and credit record keeping profession to become a versatile decision support and decision making cum strategic advisory profession. However, my intention should not be seen as an attempt at the abjuration of the known realm of accounting as a noble and conservative profession rather it should be taken as an apophasis of an academic discipline which true essence was long obscured in history due to the passive nature of its application by practitioners. Of truth, accounting or accountancy is neither new nor unpublicized in the business world, public or private, but it is important to further unearth hitherto unknown facts and contemporary developments brought about by the ever changing world of technology especially for the purpose of full exploitation of the potentials of the discipline in today's global village and e-commerce scenario which I choose to call the digital age. This, in specific terms is overtly important because modern day accounting has overgrown the level of traditional journals, ledger sheets and debit and credit entries in memorandum books.

As opined by the respected Professor Inanga (op. cit.), public lectures from scholars have traditionally tended to serve as opportunities to use one's discipline to reflect on matters that are both of academic interest and sufficient importance and concern to the wider

Nigerian/global society. During the build-up to the preparation for this inaugural lecture, our amiable Senior Vice President (Academics), Professor Iheanyichukwu Okoro jokingly opined that accountants are only good at one thing, and that is to “count ants”. One wonders how the erudite professor of anatomy and surgery would have felt if everyone else were to refer to surgeons as certified human butchers; after all, he referred to himself as the “hand that holds the knife” (when translated directly from the Igbo narration where the original coinage came from). This apparently harmless joke jolted my thought and I quickly realized how, in practical terms, the society misinterprets the meaning and the role of the accountant and the accounting profession. More shocking is the painful fact that accounting as an academic discipline became only recognized in universities worldwide long after most of its peers and close relations such as mathematics, economics and law have been fully entrenched and offered as degree courses in universities' curricula, with accounting studied only as an appendage to management or business administration. This treatment obviously came from the wrong notion that, though, accounting is an important aspect of managerial feedback system, the earlier method of its knowledge acquisition through apprenticeship or articled-clerkship renders it incapable of academic or intellectual fecundity. Even the legal profession, which historically is the twin brother of the accounting profession, has at one time or the other tried to usurp and/or super-impose its vociferous and overbearing edge on the functions of the accountant simply because its members are charged with drafting the legal framework of regulatory legislative instruments that control business and economic transactions, but without realizing their apparent deficiency for figures and mathematical manipulations. To clarify the assertion on the close relationship between law and accounting, Brown

(1905) in a book titled 'A History of Accounting and Accountants' cited in Alexander (2002) stated that prior to July 1854 when a former petition for a separate Royal Charter was made to Queen Victoria of England, accountants often belong to the same associations as solicitors due to their common training as both record keepers and scribes from the cradle of literacy, commerce, religion, communal and market development as well as in the development of global civilization. It is on this premise that the title of this inaugural lecture “AccOunting In The Digital Age: Creating Values with Paperless Decision Support Systems”, was coined.

Accounting and Management of Resources

Robson (1992) suggested from his studies that the development of accounting came along with that of money and numbers, which probably were related to the taxation and trading activities of temples in ancient Mesopotamia. The work also explained that the numerical metaphor employed in accounting came as a result of the interrelationship between money, numbers and accounting which became inseparable in their origins and which inadvertently emerged in the context of controlling goods, stocks and transactions in the temple economy of the ancient world. This work, no doubt, shed a very bright light on the relationship between economics and accounting because while accounting is instructive on the development of economic theories of wealth creation through historical records and reports, economics on the other hand influences how accounting takes stock of the wealth created and how they were applied in solving societal problems and creating more wealth.

It would have been impossible to manage any organization effectively without the use of some foresight and the process of feedback, which are

contained in accounting records and reports. These are two basic important elements which must be present for there to be any meaningful decision making and managerial control function (Hao, 2006; Jensen, 2001; Horngren, Forster & Datar, 1997).



Figure 1: Accounting is all about business, industries, economy, exchange and money

Source: www.crystalgraphics.com/powerpictures/images.photos.asp?ss=accounting

Managerial foresight comes by way of financial and operational plans while the process of feedback is made possible through meticulous recording and analysis of transactions and operational activities of the firm. This latter process is what we came to regard as accounting. Accounting is not only a managerial vision guide, it is also the major catalyst in wealth creation. Turner (2015) reported that a new International Federation of Accountants (IFAC) study has indicated that accountants contribute more than half a trillion dollars to the global economy. The IFAC study was said to have linked a strong accountancy profession to improved living standards for citizens. The IFAC study entitled Nexus 2: The Accountancy

Profession A Global Value Add also showed that global regions which employ a higher share of accountants have a higher per capita gross domestic product (GDP) and that there is a very strong correlation between the share of accountants in total employment and the United Nations Human Development Index (HDI) which measures life expectancy, years of schooling and income. The probable reason given for this by Fayeze Choudhuri, IFAC CEO, is that when nations have a robust system to track the flow of money in government, within business, and between organizations, transparency and accountability are improved, organizations are strengthened, and economies are enhanced.

In one of the speeches delivered at a public function at Ota, Ogun State, a past president of the Institute of Chartered Accountants of Nigeria (ICAN), Maj. General Sebastian Owuama (Rtd) humorously posited that accounting is the first profession created by God when He asked Adam and Eve to explain (account for) the reason why they were hiding from Him (Gen. 3:8-13) and also that accounting will be the last profession to perform its duties at the close of this age when all men are required to give account of their lives while on earth (judgment) before God. As rhetorically as this may sound, it is indeed a truism that accounting is a foremost professional discipline. To buttress the assertion of the past ICAN president, the book of Exodus 38:21 recorded the first official and biblical recognition of accounting and the appointment of an accountant when Moses commanded that Ithamar, son of Aaron, be in charge of counting the sum all items used to construct the tabernacle of testimony (Holy Bible, KJV). The connection of accounting and spirituality is as old as the beginning of civilization itself. Robson (1992) asserted that the development of accounting, along with that of

money and numbers, may be related to the taxation and trading activities of temples. He stated further that another part of the explanation as to why accounting employs the numerical metaphor is that money, numbers and accounting are interrelated and, perhaps, inseparable in their origins: all emerged in the process of controlling goods, stocks and transactions in the temple economy of Mesopotamia more than 7,000 years ago.

Accounting is the greatest aspect of an organization's financial management function which in itself is a greater aspect of the overall management function. One management scientist (Robert Appleby) refers to management as getting things done through others. But we are all aware that management though centers on the effective utilization of human resources towards achieving organizational goals goes far beyond that. It includes to a greater extent the judicious and economic allocation and use of other non-human resources in the face of stiff trade competitions and internal competitive needs for these usually scarce material and financial resources.



Figure 2: Money enables the world to flow; accounting guides the actions and direction of money.

Source: www.crystalgraphics.com/powerpictures/images.photos.asp?ss=accounting

To this effect, we view financial management as a decision making process for the prudent utilization of capital resources of a business enterprise (Okeke, 2000). In other words, financial management can equally be said to cover the core subject of management since it is the main objective of management to utilize capital resources prudently in the achievement of the organizational goal. The distinguishing factor however, remains that financial management requires specialization and expertise and may be concerned with mainly advises on the prudent allocation and/or re-allocation of the resources of the organization as converted into financial format. Another important aspect of financial management is that it provides the basis for business planning, investment diversification and cash flow statements. Thus, it can be rightly assumed that the objective of financial management in any organization is pinned on the prudent management / utilization of the capital resources towards the attainment of its primary goals in business.

Modern Accounting A Historical Perspective

The foundation of modern accounting comes from a simple recordkeeping function represented in artifacts known as “receipts,” “vouchers,” and the “journal entry.” When in the course of a society's development does recordkeeping surface? It is difficult to imagine families and small hunter-gatherer groups bound by kinship using even basic accounting for their internal dealings. Indeed, formal recording of transactions will likely be repugnant to family members or close friends (Silk, 2004). At the

other extreme are modern civilizations that are characterized by frequent long-term cooperative interactions between strangers. It is equally hard to imagine that these economies could function without well-developed recordkeeping and accounting systems. The receipt, for example, is ubiquitous to even mundane economic exchange in developed economies. It can be argued that accounting records play a critical role in facilitating societal expansion from small kin-based groups such as clans and tribes to modern civilizations.

Two opposite perspectives on the emergence of accounting were made possible first by the work of Basu, Kirk and Waymire (2007) which hypothesize that recordkeeping appears early in an economy's development as a device to sustain agents' reputation for trustworthy behavior. They posited that recordkeeping enables scale expansion and division of labor in an exchange economy, which implies that recordkeeping emerged before markets, organizations, and supporting institutions. However, the second and standard academic perspective is that accounting emerges in response to stewardship and valuation demands for accounting information from hierarchical organizations and capital markets (Watts and Zimmerman 1986:196-8).

Under this view causality runs from extant economic arrangements to accounting, which suggests that while accounting may emerge early, it will do so after the appearance of markets, organizations and supporting institutions such as money. Which of these perspectives better explains the origins of basic accounting functions is an open question. Viewed from another dimension, the need

for accounting actually arose when mankind began to produce above subsistence level. The surplus harvested crops stored required attention and proper record keeping using stones, woods, papers/papyrus and machines. While archeological evidence revealed acts of record keeping since Babylonian civilization (see figure 3), modern accounting could be unquestionably attributed to the outcome of the industrial revolution in the seventeenth to nineteenth century Europe. Demand for accountability was necessitated by the emergence of joint stock companies whose owners demand full accountability of the resources entrusted to the managers (Mark, 2001; Moore & Reichert, 1983; Moyer, James & William, 2003).

In addition to the demand of the owners, managers also need financial information to appraise past performance and to plan future operations. Glautier and Underdown (1997) posited that accounting has become the wheel on which capitalist economic development, wealth creation and distribution vehicle revolves. This is even more pronounced in this our digital age now than ever. Also, Eliot (1998) opined that without accounting infrastructure the witnessed economic transformation from primary to secondary level wouldn't have been possible. The postindustrial United States has drastically reduced the imperfection in the country's capital market thereby reducing information asymmetry. This implies that an average investor in the United States is readily equipped with up-to-date information on risks and future returns on his investment thereby making him a more proactive investor/entrepreneur than his African counterpart.



Figure 3: Ancient Accounting Records Globular envelope with a cluster of accountancy tokens, Uruk period, Susa (Louvre Museum).

Source: www.en.m.wikipedia.org/wiki/History_of_accounting

Fallacies of Accounting

There are two controversies that have not been fully resolved in accounting. These controversies bordered on the two fallacious beliefs in accounting:

- That accounting was borne out of the dictates and demands for accountability and control resulting from the developments associated with growing communities, advent of market economy and associated institution (in this case money); recent research findings as revealed above have shown to the contrary that accounting, numbers and money came pari-



Figure 4: Portrait of Fria Luca Pacioli by Jacopo de' Barbari.

Source: Museo di Capodimonte in www.en.m.wikipedia.org/wiki/History_of_accounting

passu at the very thresh hold of history (Watts & Zimmerman, 1986; Basu, Kirk & Waymire, 2007).

- That double entry accounting was invented by Friar Luca Pacioli at least that is the popular notion in most accounting textbooks; again, the works of Heffer & Albrecht (2009), cited in Turner (2015) revealed that the earliest extant evidence of double-entry bookkeeping appears in the ledger of Giovanni Farolfi & Company, a firm of Florentine merchants between 1299 and 1300, two hundred years before Pacioli published his treatise on double-entry bookkeeping in 1494. Baxter (1980) posited that the Account Charge and Discharge system was operating alongside the double-entry bookkeeping long before Luca Pacioli published his work. The consensus is, therefore, that Luca Pacioli did not invent the double-entry system of bookkeeping rather he modernized and made it more popular above its Charge and Discharge competitor.

Accounting The Modern Tool of Business

We have talked much on the historical perspective of the subject of accounting without knowing exactly what it is. There are several definitions of the term accounting by various authors but the ones that appeal most to this speaker are those given by Professor Anao of the University of Benin, and the American Institute of Certified Public Accountants (AICPA). According to Anao (1989) accounting is a process of handling information of economic and financial nature which is highly useful and adaptive to varying situations. The AICPA on the other hand defines it as the process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by users of the information (ARB, 1940). The two definitions were able to convey the desired information unveiling what accounting is. They were able to broadly describe the sub-activities of accounting which include:

- a. Identifying;
- b. Measuring; and
- c. Communicating

The ARB definition went further to highlight the rationale (i.e. the major reason why these three sub-activities must be carried out) for accounting. In other words, accounting exists to improve judgments and decisions made by the management of organizations on economic resources entrusted to them.

Accounting A Managerial Information System

The measurement of organizational efficiency underscores in real terms the viability and feasibility expectancy of that organization. How profitable and effective an organization becomes is a matter of how competent the overall management is. In other words, organizational competency is heavily anchored on its

efficiency while efficiency itself is a function of effectiveness which are both jointly used to appraise the consequential outcome of the operational activities of an organization. Efficiency is less precise and more definite than effectiveness because it denotes the relationship existing between inputs and resultant outputs. In a comparative analysis of corporate efficiency, Kax and Kahn (1987) as cited in Okeke (2000) states that more efficient organizations produce more outputs, for the same amount of given inputs; and, therefore, performs financially better. Therefore, efficiency and effectiveness are the basic properties upon which Business or Management Information System such as accounting must be propelled.

Business Information system or better still Management Information System (MIS) exists to provide managers with tactical, strategic and operational information that they require in the day-to-day running of their various organizations. The objectives of a good management information system are to provide cutting-edge decision making information to the organization's management at:

1. The shortest possible term;
2. The lowest possible cost; and with
3. The least ambiguous terms

Where information used in decision making is inaccurate, surely the outcome of the decision would be failure. In the same vein, if the data used in processing the information employed in the decision process is already stale, then the same measure of failure in the decision outcome is expected. In this contemporary corporate world of fast business and competitive opportunities, a good management information system (MIS) embedded in cutting edge

information technology is deployed to gain competitive edge and fast-forward the progress and economic development of a firm or industry. If we are to view accounting as an instrument of attaining accountability, then accountability itself plays the most important role towards the growth and sustenance of any entity by:

- Ensuring proper application of the organization's assets and other resources;
- Protecting the entity's assets;
- Preventing the misappropriation of the entity's liquid assets;
- Protecting the organization from unnecessary liabilities and litigations;
- Ensuring the accuracy and dependability of all financial records and operating information;
- Analyzing and comparing operating efficiency and ensuring adherence to the organization's established policies. Etcetera.

For accounting to play its roles in an organization successfully, the accountants must recognize their full expectations which are outlined as follows:

1. Preparing and communicating financial and managerial accounting information to the various users;
2. Assisting management with relevant information to curb or eliminate wastages;
3. Setting up and running an efficient system of internal controls;
4. Preventing and investigating frauds;
5. Treasury management;
6. Tax planning and inventory management;
7. Securing the assets of the organization, etcetera.

The above list is not in any way exhaustive as modernity has tended to perpetually expand the

responsibility of the contemporary accountant. However, the quality, accuracy and timeliness of the managerial information generated will determine the success and the effectiveness of the decision to be taken with them. This is the main area of concern to the accountant. It is also the reason why most of the author's scholarly works centered majorly on producing efficient and effective foundational platforms upon which managerial decision variables and reports are based. For instance, the development and introduction of the Operational Breakeven Points, operational mark-up rate, the Relative Solvency Ratio (RSR) with its detective and predictive properties, Adequate Working Capital ratio, the Enyi's modified Internal Rate of Return (IRR) formula, and the Multi-Products Breakeven formula, by the author, are all geared and have indeed helped to improve the quality of accounting information (Enyi, 2008; Enyi, 2010; Enyi, 2011; Enyi, 2012). The basis for the measure of performance using capital employed was also improved upon by the author through the introduction of the Enhanced Return On Capital Employed (EROCE) with a study which proved that the most effective Return On Capital Employed (ROCE) can only be achieved by measuring the Profit Before Tax (PBT) against the actual amount spent on generating the profit the total operating cost, rather than the capital employed at the end of the financial year (Enyi, 2006). These claims are boldly supported by evidences of global applicability of the new innovations through confirmatory and comparative research findings from jurisdictions such as India, Malaysia, Philippines, Iran, Turkey, Kenya, UK and even by local researchers here in Nigeria (Ghodraty & Ghanbari, 2014; Adeleh, Hamidreza & Enyi, 2014; Edy-Ewoh, 2013; Singh & Asress, 2010).

Users of accounting information can be broadly classified into two internal and external. Whereas internal users are those persons who take decisions on the kind, type, and quantity of resources available and the way the resources can be applied to achieve the organization's objectives, etcetera; external users consist of shareholders, potential investors, suppliers, creditors, state agencies and the public.

More than before, Nigerians are becoming increasingly interested in investing in the organized business environment. This is evidenced in the quantum of trading that takes place on the floor of the Nigerian Stock Exchange (NSE) especially between the years 2003 and 2009. To be a successful investor you need the financial information of the companies which shares are traded in the market. Making this information available to all at the right time is the primary responsibility of the directors through their accountants.

Accounting The Digital Age

The introduction of the first commercial computer named ENIAC (Electronic Number Integrator And Computer) by the International Business Machines (IBM) in 1945 gradually changed the modus operandi of accounting as this noble discipline was one of the foremost application to which the new number crunching monster was initially deployed. ENIAC was followed in 1951 by UNIVAC (Universal Automatic Computer) by John Presper Eckert and John Mauchly. It was noted that these were indeed gigantic machines used traditionally for scientific applications compared to what we now see as computers today. Thereafter, many others of more power, speed, smaller sizes and more defined applications were developed. This was then followed, of course, by more user friendly operating systems and not too long ago, the Internet.

US Dollar 1, 10, 20	USA	30.21000	30.78000	41.43000
US Dollar 1, 2	USA	39.21000	40.20000	47.82000
Euro	Euro	45.38000	46.28000	32.14000
Pound sterling	England	29.95000	30.75000	29.55000
日本円:100	Japan	27.48000	28.25000	25.39000
Australian Dollar	Australia	24.09000	-	33.35000
New Zealand Dollar	New Zealand	32.00000	32.32000	5.34000
Swiss Franc	Switzerland	4.62000	-	
人民币	China			

Figure 5: Automated Digital Exchange Board Real time accounting information is the key to efficient currency exchange in world markets.

Source:

www.crystalgraphics.com/powerpictures/images.photos.asp?ss=accounting

These more powerful computers, software, graphics, networking capability including the internet, have helped organizations worldwide to become more flexible and highly responsive to the needs of the business world giving power to both shop floor operatives/workers and their management. In the opinion of Alter (1996), Information and Communications Systems enable new forms of organization, new ways to work and new ways to compete. They give new meaning to everyday things such as money (as we now have electronic currency like bitcoin), books (books and journals are now

published both in hard and soft electronic copies which can be carried and read with laptops and smart phones), offices (it is now easy for someone to work from the comfort of his home through virtual office facilities and also have meetings with dispersed correspondents through e-classrooms and teleconferencing), advertisements (web adverts have shattered political boundaries as advert postings in one remote location can be viewed globally) and entertainment through webtv, YouTube and other internet based social networking.

Awoyelu (2001), noted that Nigerian banks improved their effectiveness and competitiveness through the use of Information and Communications Technology, which resulted into fewer and shorter queue lines, customer satisfaction, elimination of the need to carry bulky amount of money to do business in distant locations as it is now possible for a customer whose account is in a Sokoto branch to withdraw from or pay-in money into his account at another branch of the same bank at Aba. Due to the immense benefits of the computer already being enjoyed and the fast rate at which ICT is evolving, Professor S. Moore of Cambridge University argued in 2004 that by the year 2010 the world would be immersed in a sea of miniature computers. With the influx of Smart phones, iPads and palmtops; needless to say that his prophesy has come to fulfillment even before that time. To stress more on the contributions of digital accounting, a new wave of online businesses recently sprang up among urban dwellers in Nigeria; this is called online marketing with chains of virtually connected stores. With this development, one does not need to physically visit a shopping complex to get his/her shopping done. So

also with banking. All that one has to do to shop or bank is simply to own a smart phone. The author can proudly say that he makes most of his banking and shopping transactions at the very comfort of his bedroom. Needless to say that such new forms of online businesses have quadrupled the economic benefits of productive activities in Nigeria and has opened up new employment opportunities for the youths. Ovia (2005) also agreed that e-payment has greatly enhanced the efficiency of transactions and payment system in Nigeria.

Accounting and The Accountant: The Loved and the Hated

Perhaps the most misunderstood professional in the corporate world today is the accountant. This is primarily because his role is all encompassing and intricately interwoven within every human professed economic activity be it medicine, law/legal practice, engineering, agriculture, service or general commerce. It is also as result of the feed-forward, feed-backward and real-time control nature of the duties of an accountant. For instance, he is seen as the chief security officer of an organization when he is engaged in the day-to-day function of scrutinizing, recording and approving of financial transactions and supervising the inflow and outflow of resources to ensure smooth and unhindered operations; he becomes a bloodhound or witch hunter to his peers and other managers of resources when he is acting as an auditor especially when the targets of his scrutiny have skeletons in their operational cupboards; he is seen as a scientist when he performs activity forecasting function for his organization; he is seen as the hatchet man when he interprets the tax laws to his

clients and undertakes back-duty investigations on behalf of the government while he becomes a savior when he helps his clients out of tax-related problems; he becomes a policeman when he performs investigative functions as a forensic accountant and he is seen as an arbitrator when he helps to clarify or unravel knotty transactions in disputed business relationships.

The never-ending conflicting roles of the accountant can also see him as an undertaker in receivership and trusteeship engagements when the unfortunate but sometimes inevitable issue of corporate failure occurs; even in the death of humans, he is there as the unpaid agent of the government to compute capital transfer tax and to oversee the appropriateness in the devolution of the deceased estate to the beneficiaries. He is a common place professional who must be seen to possess the magical mind of a philosopher and the analytical ability of a first rate computing machine. The accountant is the only professional who polices his own work. Perhaps, it is these seemingly conflicting roles associated with the accounting profession that made the accountant the professional that most other stakeholders in the organizational environment love to hate, respect or feared as the case may be.

The Computer and the Accountant

As posited earlier, accounting was one of the earliest beneficiaries of the introduction of the digital computer and accountants have equally risen to embrace the benefits offered by the digital machine. As early as 1979 the duo of Dan Bricklin and Bob Frankston invented the electronic spreadsheet which in their explanation is intended to replace the accountants' pencil and columnar analyses sheets and pads. A spreadsheet is a popular program used to analyze numeric information

which helps to make meaningful business decisions possible. However, before the advent of the electronic computers, businessmen and their accountants were known to have relied on accounting aids or instruments to help manipulate large numbers, manage their cash and credit resources and balance their books. The ancient scribes (accountants) and their employers (kings, emperors and businessmen) made extensive use of the Abacus and Napier bones in their day to day analysis of their business transactions, tax collections and management of entrusted resources and fortunes. It is noteworthy that the principles underlying the computational operations of the Abacus which origin is still the subject of some debate and Napier bones developed by John Napier (a Scot) in the 17th century helped in the eventual development of the modern day electronic computer.

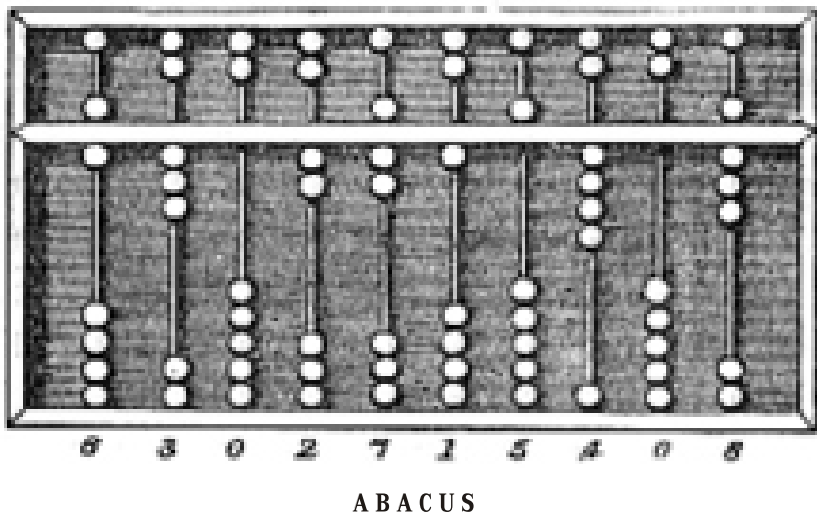


Figure 6: Abacus The earliest known accounting/computational tool.

Source: www.en.m.wikipedia.org/wiki/History_of_accounting



Figure 7: Napier Bones 18th Century Version

Source: Stephencdickson, www.en.m.wikipedia.org/wiki/History_of_accounting

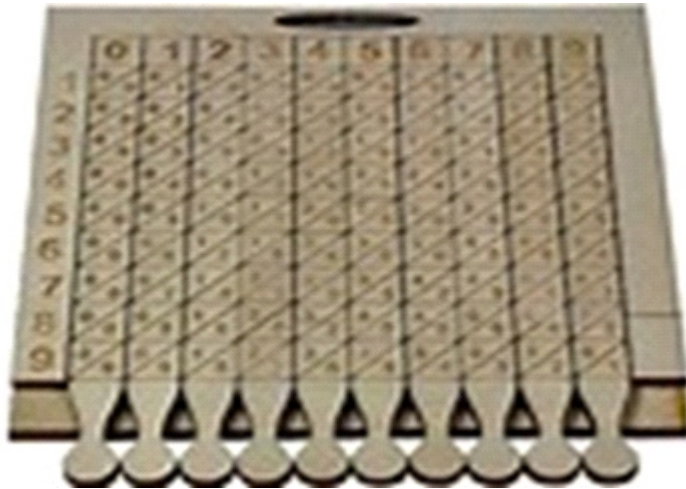


Figure 8: Napier Bones 19th Century version (*One of earliest accounting instruments used for multiplying and manipulating large sums*).

Source: Stephencdickson, www.en.m.wikipedia.org/wiki/History_of_accounting

Electronic Spreadsheets

The electronic spreadsheet application is an automated version of the traditional accountant's columnar ledger sheet or pad. Spreadsheets are used by accountants (now extended to non-accountants) for a variety of applications ranging from share price analysis, sales,

inventory, and expense analyses, production planning and monitoring, budgeting and budgetary control, cost estimation to simple household record keeping. In the words of Haag and Perry (2002), “Spreadsheet software has been one of the most popular pieces of software of all times”. The following statement clarifies their position:

Prior to the advent of electronic spreadsheets, accountants use paper ledgers and make entries with pencils so that they could easily modify various entries after recalculating new values using a calculator. This could be somewhat laborious; however, all these have changed with the introduction of electronic spreadsheets. This is buttressed by the fact that VisiCalc helped some workers to reduce 20 hours per week work to 15 minutes only (Haag & Perry, 2002:17).

Under the manual method, changes made to a hard copy worksheet can take a lot of time to be effective for even the simplest alteration because many values that are dependent on the change must be recalculated afresh. However, with electronic spreadsheet changes made automatically triggers the recalculation of the values in all dependent cells. This is achieved by the use of formulas and cell address references. VisiCalc is probably the first commercially available spreadsheet; there are many others in use today. These include:

1. Multiplan;
2. Lotus 123;
3. Quattro;
4. Microsoft Excel, etcetera.

Of those mentioned Microsoft Excel remains the most popular and is fully integrated with other members of Microsoft Office business suites.

Other Accounting Software

Following on the heels of the success of the electronic spreadsheet is the development of fully computerized accounting functions group of software which came with paperless electronic documentation innovations with the advantage of minimized costs, cleaner environment and tremendous improvement in the speed of transaction processing. Some modern Enterprise Resource Planning (ERP) packages are made to function through the internet or private wide area networks (WAN) from where the central business server can be accessed for data entry and information update. All these, just for the ease of making information more available at the required place and time. The author also made a mark in this aspect by becoming the first Nigerian to codify and computerize a fully integrated system based commercial accounting package with automated ledger processing for general ledger, cash/bank, expense, revenue, real/nominal accounts, payroll and personnel system, stock inventory system and point of sales in 1998 and full micro-finance banking software in 2003. These are still in use by some individuals and organizations in the south east.

Today, with a plethora of other system based accounting packages in use all over the world, it can be rightly argued that the digital age has helped to break the managerial information barrier. This is because all the three major requirements of a good management information system have been met. Information processing is now being done at [economically affordable costs], [when required] and [as required]. We buttress our argument here by making reference to some of the contributions of the digital age to accounting and general information processing:

1. Reduction in routine clerical activity through automated documentation e.g. placement orders online, acknowledgement of correspondences, etcetera.
2. Provision of accurate and up-to-date essential for routine decision making;
3. Improvements in managerial exception reporting;
4. Automated budgetary control and variance analysis;
5. Coping with heavy and fluctuating workload;
6. Reduction in order and transaction processing time;
7. Rapid calculation of economic order quantities (EOQ), re-order levels and variation in price from standards and budgets;
8. Savings from improved stores recording and inventory control;
9. Rapid and instantaneous provision of control reports at defined intervals e.g. daily, weekly, monthly or even hourly thereby enabling more informed decision making process; etcetera.
- 10 Saves workers time and improves productivity by allowing workers to engage the saved time on other productive uses.
11. Standardizes report generation with more beautiful outlook;
12. Encourages and enables on the job learning through carefully prepared help tips embedded in each package; etcetera.
13. Flexible payment options using e-payment solutions such as debit and credit cards, online payment portals (PayPal, Cashu, etcetera).

The list is endless as there seems to be more and more electronic payment and receipt accounting solutions being churned out on daily basis. Parker (2011)

reporting on the result of a study carried out by McKinsey in partnership with Bill & Melinda Gates Foundation entitled Inclusive growth and financial security: The benefits of e-payments to Indian society estimates that automating all government payment flows could save the Indian government up to \$22.4 billion annually. The savings will result from eliminating three (3) manual payment inefficiencies listed as:

1. Leakages; which account for 75-80% of the total losses due to the diversion of benefits to unintended individuals and misrepresentation of man-hours in the public works programs;

2. Transaction costs; which account for 15-20% of total losses due to the higher cost of making payments manually compared to electronic processing; and

3. Administrative and overhead costs; which account for 5-10% of total losses due to the manual processes used for auditing and payment reconciliations.

Still on the benefits of e-payment, Okwuoke (2013) quoting the then Central Bank of Nigeria (CBN) Governor, Mallam Lamido Sanusi indicated that electronic payment in Nigeria surpassed the N1trillion mark in the first half of 2012. This he stated resulted from the increased use of e-payment channels for transactions. In the same period, CBN reported that the value of electronic payment transactions rose by 32.8% to N1.01471trillion up from N764.14billion of the same period in the previous year.

To clarify the terminologies used in electronic finances, Ayo (2009:411) stated that there are two types

of payment systems in electronic payment e-payment, which is used mostly in conjunction with e-Commerce and m-payment which is used in m-commerce.

Problems of the Digital Age

Just as the Sovereign Lord created everything male and female, positive and negative; there is also the other side of the digital age despite the overabundance of its positive benefits on accounting. The oversimplification of the accounting information generation and retrieval system gave rise to a number of hitherto unforeseen problems. These include:

1. Increase in fraudulent activities as criminals tend to take advantage of less human control and over-exposure of important private information on the web or other public networks to hack into business financial databases and falsify or steal valuable information (remember the 419 or yahoo-yahoo boys);
2. There are instances where information processed with the computer was based on faulty operating software thereby producing information with spurious accuracy; and if that is the case, of what use would that information be to the decision maker?
3. Not all activities requiring financial analysis can be computerized; some of these activities may be so complicated and algorithmically distorted that only the complexity of human thinking can handle such;
4. Computerized transactions leave less audit trails than manual transactions; and these may be

required in certain circumstances and at certain periods to help in internal managerial analysis;

5. In a society where basic infrastructure like electricity is at short supply, using computers to process accounting transactions could lead to problems worse than the manual method;

6. What about education? The fact that about 60% of Nigerians are illiterates is already a natural barrier; and even among the so called educated persons, how many are computer literate?

7. Information stored on computer media can easily be lost without hope of replacement; and

8. The rapid development associated with the computer industry could lead to infrequent changes in computer hardware and consequently making the changeover from one system to another unpalatable.

The list of the disadvantages of the digital age is equally long but it can be safely assumed that the benefits far outweigh these disadvantages.

Scholarly and Professional Contributions of the Author

Accounting is one of those few disciplines which scholars in other fields consider to be of limited scope in research capabilities. But this author states with all boldness and assured affirmation that the accounting field is like an endless ocean which importance and usage evolves as technology advances and trade expands. The author has made significant input into the development and practice of modern accounting in following dimensions:

1. Accounting Foundation and Fundamentals: It is on record and noteworthy that the author is one of the few African accounting academics who made significant inroad into original accounting thoughts normally associated with western scholars through the development of the following accounting and financial management formulas and models:

- a. Improved Internal Rate of Return (IRR) formula which revolutionized and simplifies the way IRR is computed (Enyi, 2014);
- b. Effective Corporate Solvency Measurement Formula called Relative Solvency Ratio (RSR) which can be used to predict and easily detect impending corporate failure. Only one other model called Z-score by an American named Edward Altman has the near efficacy of this model in predicting the fiscal health of corporate organizations (Enyi, 2011);
- c. Operational Breakeven Theory This theory was developed as an almighty formula for the purpose of assessing the operational needs of an organization given its capacity for income generation and cost recovery. It is the basic foundation for determining capital adequacy and the required solvency level. Though relatively new, it is nevertheless gaining acceptability in academic circles (Enyi, 2011);
- d. Joint Products Breakeven model Under the extant products breakeven analysis, there is no provision for joint products in the underlying assumptions mainly because of the inability of the developers of the theory to formulate an all-inclusive model. The author successfully

developed and published this model in a paper titled Another Look at the Assumptions of the Breakeven Analysis the Case for Joint Products, which was published in the year 2013 (Enyi, 2012).

- e. **Enhanced Return on Capital Employed (EROCE) model** This model made a solid attempt at remedying the flaws of the existing Return on Capital Employed (ROCE) model which utilizes profit-after-tax and capital at year end as computation variables by modifying the variables to include profit-before-tax and the actual cost used in making that profit to arrive at a more reliable corporate performance indicator (Enyi, 2006).

2. Automation of Accounting and Finance

Functions: Applying his wealth of practice and industrial experience, the author utilized his knowledge of computer programming to automate and develop vital accounting functions into the following computer based application packages:

- a. **ElBank:** Micro Finance banking software currently in deployment in 4 micro finance banks in eastern Nigeria;
- b. **Gledger:** Complete Accounting Package featuring General Ledger application, payroll, inventory management, point of sales, budgeting and financial transactions control modules;
- c. **BabStat:** Statistical package for social science researchers developed in-house at Babcock University, Ilishan-Remo.

The literary contributions of the author also include the following books:

- i) Enyi, E. P. (1986). Validata Financial Computation Book, Aba: Elfinco Ltd.
- ii) Enyi, E. P. (2010). Modified Transportation Model Algorithm, Saarbrücken, Germany: Lambert Academic Publishing AG.
- iii) Enyi, E. P. (2010). Detecting, Predicting and Preventing Corporate Failure (An Effective Approach to Business Solvency Management), Saarbrücken, Germany: Lambert Academic Publishing AG.
- iv) Enyi, E. P. (2016). Financial Management & Religious Activities, (In print).
- v) Enyi, E. P. (2016). Practical Application to Operations Research in Nigeria, (In print)

Contributions to the nation

I have made notable contribution to society in many diverse ways, chief amongst them are:

- I. I was elected first chairman of Ota & District Society of the Institute of Chartered Accountants of Nigeria (ICAN) and I served for two years;
- II. I have served 3 tenures as a member of ICAN Student Education & Training Committee;
- III. I was a member of the ICAN team that developed the Accounting Curriculum for Pan Atlantic University in 2013;
- IV. I have led several ICAN teams to many

universities and polytechnics for curricula review and accreditation;

V. I was a Financial Secretary of my town union Uburu Peoples Assembly 1995-1997;

VI. I was Chairman Uburu Peoples Assembly Onitsha Branch 1999-2005;

VII. I am a serving Member, Governing Council, Ebonyi State College of Education, Ikwo, Abakaliki, from June 2015.

Contributions to Academics

My general contributions to academics included the following:

- a. I successfully reproduced myself many times over, by supervising either as a main supervisor or as a co-supervisor 25 Ph.D graduates, in Accounting and accounting related fields in two universities, one of them now is a full Professor and a Deputy Vice Chancellor and there are five others in the rank of Associate Professor;
- b. I have also successfully supervised 2 MPhil and 23 M.Sc graduates in Accounting, these cut across 3 universities;
- c. I have examined 3 Ph.D theses, two in Nigeria and one in an Indian university, and 5 M.Sc dissertations;
- d. I have assessed 3 Professorial candidates and 3 Readership candidates for 4 top Nigerian universities;

- e. I have served as Head of Department in 3 other Nigerian universities spanning, over ten years.

Contributions to Babcock University

My coming to Babcock University was divinely designed as I had a revelation of that in a dream two years earlier. Here in Babcock University, I have served in various capacities as follows:

- A. I was a member of the Ways and Means Technical Committee on financial controls in Babcock University whose brilliant recommendations never went beyond the top of the table of the university management between 2012 and 2014;
- B. I served as the Head of Department of Accounting during a critical period of transition from regular degree programme to ICAN MoU backed programme and multiple accreditation exercises for both professional, institutional, undergraduate and postgraduate programmes;
- C. I was the Vice Dean of the old Babcock Business School, a position I held until September 30, 2015;
- D. I became the Dean of the School of Management Sciences officially on October 1, 2015 and have been serving in that capacity till date;
- E. I was a member of the PG Abstract Review Committee of the old BBS and now the Chairman of the PG Abstract Review Committee for School of Management Sciences;
- F. At the departmental level I held and still hold the position of the PG research review committee

and undergraduate examinations review committee chairman.

- G. I have presented papers on more than two occasions at the in-house training workshops for accountants and auditors of the university.

Awards and Recognitions

During my eventful career as academic, I have been privileged to receive the following awards:

- 1. Fellowship Award 2005** awarded by the American Academy of Financial Management (for contributions to accounting and financial management);
- 2. PhD Honoris Causa Award 2005** awarded by Atlas University, Philadelphia USA (for contributions to research in accounting and financial management);
- 3. Fellowship Award 2008** awarded by the Institute of Industrial Administrators of Nigeria (for contributions to leadership and administration in Nigeria);
- 4. Academic Noble International Award 2008** awarded by the Institute of Industrial Administrators of Nigeria (for academic excellence);
- 5. Fellowship Award 2013** awarded by the British Institute of Certified Public Administrators (for outstanding contributions to public administration);
- 6. Fellowship Award 2015** awarded by the International Institute of Certified Forensic Investigations Professionals (IICFIP), USA (for outstanding intellectual contribution to forensic accounting) see figure 9;
- 7. Award of Excellence, 2016** awarded by the

Association of Certified Fraud Examiners, USA (Lagos Chapter) For outstanding contributions to training of fraud examiners and innovative research in fraud detection/prevention in Nigeria; - see figure 10.

8. Nomination for the Award of Honorary Fellowship of Certified Business Management Professionals (FCBMP) of the Unicaribbean



Figure 9: Prof. Enyi receiving the IICFIP Award from the country director Chief Godwin Oyedokun.

Conclusion

Mr. Vice Chancellor, Sir, permit me to opine that by observation it will be evident that the world of accounting has embraced the digital age. This is visible from every aspect of modern business transactions. The banking sector in Nigeria has fully integrated the ICT in its operations. Ranging from on-line and real time systems for transactions processing to the entrenchment of the compulsory use of the Automated Teller Machines (ATMs) that enables a

round-the-clock banking from any terminal and those that enables currency conversion, e-banking has been of great benefits to Nigerians and the Nigerian economy. Most other organizations have followed suit as no entity want to be left behind in the digital race. To truly remain in contention, every discerning business entity must endeavor to embrace a responsive financial information processing system that can take advantage of favourable global economic events and ward off unfavourable ones. Accounting in the digital age has helped to leapfrog the benefits of doing business by creating values for corporate and non-corporate stakeholders far in excess of its costs. The digital age through the application of the internet or world wide web (www) has made the world a global village in which the next shopping complex is there at the click of a mouse no matter how remotely located the customer is. From all the aforesaid, it is, therefore, overly incontrovertible that Accounting is the giant among all professions because it is the most ancient and the most divinely pronounced according to research and scriptural findings, and being so, it encompasses every aspect of human endeavor which involves the use of money. Finally, whether the accountant is using the clay tokens as with the ancient Mesopotamians; the stone tablets and papyrus as with the ancient Egyptians; the loose leaf ledger and analysis sheets as with pre-electronic data processing accounting; the tape, disk, flash-drive, ERP, electro-magnetic cards, chips, palmtops, laptops, super-computers, handheld wireless devices and electronic spreadsheets as with modern day accounting to record and analyze transaction data and documents; the objective remains the same and that is, to generate, analyze, interpret and transmit economic based managerial control data for useful and timely decision making as required by

business owners and managers or as needed by other economic resources controllers thereby adding values that multiplies existing wealth and creates opportunities for generating further wealth. This being the case, the digital age has come to make the importance of accounting in our lives ever so overwhelming.



Figure 10: Prof. Enyi with the ACFE award plaque.

Acknowledgment

To conclude this lecture, I will like to appreciate the senate and management of Babcock University, especially our amiable, indefatigable and Go-By-the-Rules President/Vice Chancellor, Professor Ademola S. Tayo; his predecessor Professor James Kayode Makinde for bringing me to Babcock and making me to realize my full academic potentials. I say more transforming power to your pens, Sir. I also appreciate our frank and ever supportive Senior Vice President (Academic), Professor Iheanyichukwu Okoro; the Vice President (Management Services), Professor Sunday Owolabi; and surely it will be mischievous of me not to remember my former provost and boss, Professor Ayandiji Aina (now the Vice-Chancellor of Caleb University, Imota, Lagos) and his predecessor as Dean of old BBS Professor S. A. Adebola as well as a complete gentleman per excellence Professor Dayo Alao all of whom are colleagues, friends and mentors combined to me. I also appreciate my very caring neighbor and Dean of Veronica Adeleke School of Social Sciences (VASS), Prof. Femi Ajayi and a host of other fellow deans for their support and scholarly cooperation; may the good Lord bless and protect all of you in Jesus name. Without mincing words, my conscience will not forgive me if I fail to appreciate two great mentors in my life Professor Benjamin Chuka Osioma of Nnamdi Azikiwe University, Awka, my Ph.D thesis supervisor, an accounting colossus and a professor with a great difference, on one hand and my erstwhile colleague who was responsible for my professional development Professor Desmond Nworji on the other hand. In the same vein, I remember the unquantifiable contributions of my late parents (Ogbuefi Bertrand Enyi Nwaodabe and Madam Lydia Enyi both of blessed memory) towards my being and upbringing and I owe

them eternal gratitude. I will also not fail to acknowledge the loving kindness and priceless contributions of my charming and indefatigable wife, Mrs. Chocolate Chukwudi Enyi, the encouragement and support of my first son Francisco Ugochukwu Enyi (a graduate of law and a budding legal luminary) as well as the hope of tomorrow that I have through my other lovely children namely; Tochukwu, Chuka, Blessing, Gloria, Chikere, and Chisom. Equally worthy of mention here for their tremendous influence and support are my colleagues in the old Babcock Business School, especially Prof. Ishola Akintoye (my HoD), Dr. F. F. Adegbe, Dr. S. A. Dada, Dr. V. Unegbu, Dr. John Enahoro (a friend, whose health condition continues to give me concern), Dr. A. N. Nwaobia among others. More worthy of thanks are all the members of the Inaugural Lecture Committee, specifically, Professors Grace Tayo, Dora Akinboye and G. A. Alegbeleye whose guidance and suggestions helped in no small way to facilitate the production of this literature. Lastly, I wish to profoundly acknowledge the management and Council of the Institute of Chartered Accountants of Nigeria (ICAN) for supporting the cause of this lecture morally, ethically, professionally and financially. Above all, I am much more grateful to the Almighty God for giving me life and for making this day a reality.

Thank you for listening.

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PREVIOUS INAUGURAL LECTURES

1. “Seventh-day Adventist Church in Nigeria since 1914: An Impact Analysis.”
Lecturer: Prof. David O. Babalola
Date: Thursday, December 2, 2010
2. “The Truth about Truth: Postmodernism and Its Epistemological Implications for Christian Education.”
Lecturer: Prof. Ademola Stephen Tayo
Date: Thursday, February 5, 2015
3. “Food for Thought in Thoughts for Food: Conceptual Genius of Local Ingredients in Global Diets and Food Habit of African Population.”
Lecturer: Prof. Yetunde Olawumi Makinde
Date: Thursday, April 2, 2015
4. “One Kingdom, Many Kings: The Fungi-once Sidelined and Maligned, now Irrepressible and Irresistible.”
Lecturer: Prof. Stephen Dele Fapohunda
Date: Thursday, May 2, 2015
5. “The Hand that Handles the Scalpel.”
Lecturer: Prof. Iheanyichukwu Okoro
Date: Wednesday 10th June, 2015
6. “Parasitic Infections: Challenges of Control and Eradication in Public Health.”
Lecturer: Prof. Dora Oluwafunmilola Akinboye
Date: Thursday, 15th October, 2015

7. “The Oracle, Intellectual Property and Allied Rights, the Knowledge Economy and the Development Agenda.”
Lecturer: Prof. Bankole Sodipo
Date: Tuesday, 17th November, 2015
8. “Challenges of University Education Quality in Nigeria: Placing the Emphasis where it Belongs.”
Lecture: Prof. James Ahamefule Ogunji
Date: Thursday, 4th February, 2016
9. “Factionalism, Rampaging Economic Vampires, and the Fragile State.”
Lecturer: Prof. Ayandiji Daniel Aina
Date: Wednesday, March 9, 2016
10. “Footprints: Livestock Nutrient Management and the Environment.”
Lecturer: Prof. Grace Oluwatoyin Tayo
Date: Thursday, April 87, 2016
11. “Nursing on the move: Consolidating and Harnessing the Gains for Clinical Excellence”
Lecturer: Prof. Ezekiel Olasunkanmi Ajao
Date: Thursday, May 5, 2016