

Research Article

Information Technology and the Performance of Accountants in the Nigerian Oil and Gas Industry

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Abstract: This study investigates the effects of information technology on the performance of duties of Nigerian Accountants in the oil and gas industry. The 2 variables involved in the hypothesis tested are the performance of the duties of Nigerian Accountants which is the dependent variable and information technology which is the independent variable. The performance of the duties of Nigerian Accountants is operationally measured as the level of work performance assigned by primary data provided by 1423 respondents, where 347 accountants do not have any IT knowledge, 542 with minimal knowledge and 534 with sound IT knowledge and Z-test statistical tool was used to test the difference between 2 population means. Each respondent provided a pair of performance level for each group of Nigerian Accountants in oil and gas industry. The result shows that there is significant difference between the performance of duties of the Nigerian Accountants with IT knowledge and those without IT knowledge in the oil and gas industry. That is, those with IT knowledge perform better. It also shows that there is positive relationship between the performance of the duties of the Nigerian Accountants and IT. Based on these findings, the study concludes that IT exerts a great deal of impact on the performance of the duties of Nigerian Accountants and recommends that Nigerian Accountants should intensify their efforts in acquiring IT knowledge and skill, especially by method of on-the-job IT training and re-training. The various oil and gas organizations and government where Nigerian Accountants work should as a matter of policy provide them with latest IT facilities that will improve their performance in the Nigerian oil and gas industry.

Keywords: Accountants, information technology, Nigeria, oil and gas

INTRODUCTION

Information Technology (IT) influences and permeates virtually every aspect of human endeavor including accounting in oil and gas industry in Nigeria. Agbatogun *et al.* (2011) says that technology has been a significant tool in almost all human endeavors. Jaiyeola (2007) argues that ICT is like an engine that could be used in so many ways, the same engine that makes the aircraft to move, could make a conveyor to convey finished product from production line to the storage location, the same could be used for automobile, grinding machine, etc. It is an implement in the hands of the accountant but enhances and improves its performance. Adedoyin (2010) and Appah and Emeh (2011) argues that information technology have affected every profession in the last 20 years. The accounting profession is not left out in these profound changes to business and methods of communications. Technology is providing the tools that are revolutionizing the role of financial professionals

from that of information recorders to business strategists making them much more critical to the success of an enterprise Jaiyeola (2007). According to Uzoka (2002), information technology is the harnessing of electronic technology in its various forms to improve the operations and profitability of the business as a whole. It provides significant improvements with facilities such as word processing, communication facilities in the form of electronic mail, databases in relation to filling and data retrieval. Such advances improve business efficiency, eliminating unnecessary delays in communication between routine filling and correspondence. Also Ofurum and Ogbonna (2012) says information technology is the combination of computing, telecommunication and video techniques for the purpose of acquiring, processing, storing and disseminating vocal, pictorial, textual and numerical information. The computing techniques provide the capacity for processing and storing of information; the telecommunicating techniques provide the capacity for communicating the information to users; and the video

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techniques, the capability for high quality display of images.

The oil and gas industry constitutes the major source of energy and income and shapes the political, socio-cultural, technological and economic destiny of the country (Ogbonna and Appah, 2012). As a source of power in international politics, petroleum influences the extent of recognition usually accorded to Nigeria as a nation. The primary role and performance of accountants as knowledge workers and key players in Nigerian economy is to provide useful, objective and timely information by properly processing financial data into information which serves as a basis and guide for decision making in Nigerian oil and gas organizations. Nigeria as a country that is replete with high rate of corruption in its oil and gas industry desperately needs accountants who can make use of IT to design internal control procedures and use specialized hardware and software to prevent and detect corrupt practices, computer fraud, economic and financial crime. The need for effective and efficient performance of Nigerian Accountants in oil and gas industry is therefore very strategic and crucial to the economic growth in Nigeria (Appah, 2010). The accountant's effective performance will enable the business of oil and gas industry to be carried on safely in an orderly and efficient manner, ensure adherence to management policies, safeguard the assets and secure as far as possible the completeness and accuracy of the records of the firms in the oil and gas industry and Nigeria's economy in general. This study examines whether the Nigerian Accountants are actually using the necessary IT facilities and relevant types of information systems to provide useful information for decision making in the oil and gas industry. The unfolding negative financial reports over the years, especially the high rate of corruption unveiled by the National Assembly Committee in oil and gas industry in Nigeria means that great use of the developments in information technology and its potentialities have not maximally been exploited in the management of oil and gas operations in Nigeria. Hence, this study becomes increasingly necessary.

The objective of this study is to investigate the effects of information technology on the performance of duties of Nigerian Accountants in the oil and gas industry. It also examined whether the method of acquiring IT knowledge and skill and the nature of IT facilities in the internal environment of the organization moderate the impacts of IT on the performance of the duties of Nigerian Accountants. The study aims to determine any other Information Technology intervening factors that may have direct impacts on the performance of the duties of Nigerian Accountants in the oil and gas industry.

LITERATURE REVIEW

Accountant and oil and gas: Accountants perform certain traditional duties. These duties are the recording

of monetary transactions, classifying, summarizing, analyzing, interpreting, preparing and presenting objective and reliable financial statements to the owners of an enterprise and other interested parties for decision making. Accountants' duties also deal with forecasting of income and wealth of business entities to enable Management of oil and gas industry achieves the desired results. Accountants' Duties are usually defined and guided by Companies and Allied Matters Act (CAMA), 1990, Statements of Accounting Standards (SAS), accounting conventions and concepts which are concerned with the preparation of financial statements in accordance with the Generally Accepted Accounting Principles (GAAP). These conventions are materiality, conservatism and consistency with their associated concepts such as matching and entity concepts etc. The latter treats business activities from the point of view of the enterprise rather than from the point of view of individual owners and recognizes the business unit as different from the owners. Matching concept requires that expenditure and revenue are not allocated to the accounting periods on the basis of cash received or paid, but matched or compared within the same period in which they occur in order to ascertain the profit of the period. However, there are other duties usually determined by the management of each organization in order to satisfy their desired information needs and achieve organizational goal. The role of Nigerian Accountant is traditionally concerned with processing of business transactions, preparing accounting source documents, input data, keeping of systematic records of the flow of funds through oil and gas organizations. It also involves coding and posting entries, summarizing, analyzing, producing timely financial information, interpreting and presenting them by using information technology processing applications to enable both the internal and external users of information to make informed decisions (Ogbonna, 2010).

Information technology: Brightman and Dimsdale (1986) traced the root of the high-tech revolution back to 1828 when Charles Babbage produced the first programmable calculating device, the Analytical Engine. We might look to the more recent past, 1944 and mention Howard Aiken's Mark I, the first programmable computer. We might cite the first electronic computer, the slow, gigantic but groundbreaking ENIAC developed in 1946 by John Mauchly and Presper Eckert at the University of Pennsylvania. To be precise, we should also mention, dozens of other major developments in computers and electronic communications- known together as telecommunications. The genesis and notion of management information systems originated during the early 1960s largely through the effort of Kennedy Era, the "Whiz kids". The introduction of new technology to process and transport data and information has proceeded at exceptional rates for more than 3 decades. This innovative introduction has significantly affected employees, managers and their organizations. It was

eighteen-year-old Frenchman, Blaise Pascal by name that first developed a mechanical adding machine in 1642. Later, this was improved upon by Gottfried Beibnitz-a German mathematician who developed a calculating machine that could multiply by a repeated addition and divide by a repeated subtraction in 1694. However, Computer technology has undergone series of changes which reflect big size to miniature size of computers with their increasingly high processing speed of data into information for decision making (Nicholas Bloom *et al.*, 2009).

Information technology according to Oliver *et al.* (1990) is a technology which supports activities involving the creation, storage, manipulation and communication of information (principally computing, electronics and electronic communications) together with their related methods, management and applications. It has also created countless opportunities and challenges for millions of individuals. In particular, the challenges of managers' responsible for introducing this technology have been exceptionally high. In our information and knowledge-based society, management must attempt to capture the advantages offered by information technology, yet they must also avoid the pitfalls along the way toward increasing automation. As information has altered the way many people do their jobs and has changed the nature of work in industrialized nations, the practice of management has been greatly affected. The management of many firms and their managers must therefore understand the implications of this new information technology revolution which require substantial future readjustment and quickly learn how to benefit from it (Frenzel, 1992). The explosion in electronic commerce is just one example of the many ways information technology is influencing how people do business and how they account for business financial and economic events (Moscove *et al.*, 2003).

The blending of internet technologies and traditional business concerns impacting all industries and is really the latest phase in the ongoing evolution of business infrastructure and change the way to respond more immediately to customer needs (Grant *et al.*, 2000). The role of accountant and objective of accounting systems which is to process financial and economic data into information for decision making is still the same. Also, the audit objective which is to render an opinion on the "true and fair view" of a client's financial statement still holds, however, the technical expertise that the auditor must possess to evaluate computer-based accounting systems has undergone considerable changes and the change will ever continue to be more radical and rapid (Ofurum and Ogbonna, 2012).

The effects of information technology and management information systems in petroleum industry: In order to appreciate what Information Technology System does, Akinyelure (1998) states that to understand the management process and the nature of

management information in oil and gas industry, we now turn to what a management information system provides to the users. Such a system:

- Considers the full effect of a decision in advance by supplying complete, accurate and timely data for use in the planning and decision-making process
- Eliminates from the planning and decision-making processes the problem associated with the use of inconsistent and incomplete data by providing a means of preparing and presenting information in a uniform manner
- Uses common data and method in the preparation of long range and short term plans
- Identifies, organizes and measures significant past relationship to forecast future relationships through the use of specialized or sophisticated mathematical techniques in analyzing data
- Merges financial, production and marketing data to produce significant measures of performance in order to facilitate the controlling of present costs and the making of planning decision with the minimum processing or data
- Meets the needs of each organizational unit with minimum duplication while at the same time serving the organization as a whole
- Reduces the time and volume of information required to make decisions by reporting to each level or management only the necessary degrees of detail and usually only the exceptions from the standard or norm
- Uses personnel and data processing equipment effectively so that the optimum in speed and accuracy is achieved at the lowest cost
- Presents the data to those responsible for the decision-making and planning in a form that minimizes the time or effect needed for analysis and interpretation

Ekeigwe (1998) believes that the information superhighway is a reality and it is no longer a mere dream. It is breaking down national borders, uniting nations in a way we never saw before in human history and creating a knowledge economy in which information will be a fundamental form of wealth. He states that it is impossible for financial statement to be true and fair without the information systems that manage and store them being secure. Ekeigwe (1998) however maintains that in an environment characterized by high velocity of change, not only is continuous training is important, but also the speed of training and retraining must be consistent with the speed of change. He also posits that we now live in a society where change is imperative even when we do not wish to change; it is forced on us by our membership of a new global village. Therefore, IT permeates every aspect of

modern business, government organizations and accounting. The former buzzword "information super highway," according to Sawyer (2005), has lost its luster in favor of other coinages such as the "digital environment." The presumed goal of this world wide system of computers and telecommunications is to give us lightning-fast (high-bandwidth) voice and data exchange, multimedia, inter-activity and near-universal, low-cost access- and to do so reliably and securely.

Computer as a component of Information Technology, according to Ogbonna (2010), has never had as much impact as it now has on accounting. Information Technology has affected the entire framework of accounting practice-methods, process, environment and economics: Traditional manual accounting methods can no longer cope with the growth and complexity of business enterprises and are being neatly phased out. The explosion in the application of IT to the accounting function means that accountants who are not computer-literate may have to seek their relevance elsewhere most likely outside the accounting profession. The above recommendations and comments increasingly call for extra-ordinary caution and challenge to the professional accountant to ensure at all time that the confidentiality of his client's and/or employer's information is strictly preserved and maintained. He should also ensure that knowledge gap or lack of adequate knowledge of his client's business activities does not exist. This constitutes the hallmark and acid test of the professional accountant as far as the client's and employer's information is concerned. Information systems according to Stair *et al.* (2008) have been developed to meet the needs of all types of organizations and people and their use is spreading throughout the world to improve the lives and business activities of many citizens. Information Technology (IT) helps to produce, manipulate, store, communicate and/or disseminate information (Sawyer, 2005). IT constitutes of hardware, software, telecommunications, database management and other information processing technologies used in computer-based information system to produce information for decision making in any organization (O'Brien, 2004).

Effects of it and performance of duties of Nigerian accountants on oil and gas industry in Nigeria: The major limitation of the use of computer and information technology is the acute shortage of technological and technical know-how of Nigerian Accountants as compared with their counterparts in the developed nations (The Associated Business Information and Computer Services Ltd, 1987).

According to Egbogah (2010), Nigeria is the largest oil producer in Africa, 6th in Organization of Petroleum Exporting Countries (OPEC), 5th largest supplier to USA and 11th in the world. The proven oil reserves of Nigeria improved from 0.184 billion (in

1958) to 36 billion barrels (present) and 4 billion barrels of condensate. Proven gas reserves have raised from 2.260 billion feet³ (in 1958) to 187 trillion feet³ (present), 40 billion barrels is projected for next year. Present average daily production is 2.6 million bbl/d. A total of 62 billion barrels equivalent of crude oil reserves is yet to be discovered in the country. Oil and gas play dominant role in Nigeria's economy and account for more than 90% of her gross earnings thereby pushing agriculture, the traditional mainstay of the economy to the background (Egbogah, 2006).

Yakub (2008) posits that since the early 1970s, the Nigeria economy has become more reliant on oil earnings, with a negative impact on the non-oil sector of the economy, resulting in the sector's declining contribution to GDP despite the phenomenal increase in prices of oil over the years. The importance of oil and gas is underscored by the fact that from 1970 to 2009 the petroleum industry in Nigeria generated 82% income for Federal Government while 18% came from non-oil revenue, as shown in the following Table 1 of this study:

Table 1 presents statistical data of Federal Government Revenue from oil and non-oil from 1970 to 2009.

The era of the slogan that "what you don't know can't hurt you" is gone (Haag *et al.*, 2006). These days' businesses understand that what you don't know may hurt you unexpectedly, especially in this era of cut throat competition and dynamic technology. Whether your area of specialization is petroleum, accounting, finance, human resource management, marketing, economics etc, information is an important key resource in the management of any organization. Therefore, to be relevant in the 21st century, Nigerian Accountants should continuously be preparing to enter the business world as effective knowledge workers. Knowledge workers according to Haag *et al.* (2006) work with and produce information as a product. They also search, analyze and disseminate information within an organization. The role of an accountant as a knowledge worker is very strategic in any organization.

According to Ekeigwe (1998), with increasing automation and networking of business processes, technological know-how is transforming the scope and texture of the auditing profession. Technological advancement and re-training of auditors in a corporate organization will save such an organization huge resources that are usually lost to frauds. Technology crime, he concedes, is at a frightening speed. In order to detect such frauds, auditors must be conversant and knowledgeable about such technology. To him, "the days of manual auditing are over." According to him, the future office (even now) will be a paperless one in which transactions can be initiated and completed

Table 1: Contribution of oil revenue and non-oil revenue to Nigerian federal government finances from 1970 to 2009

Year/decades	A	B	C	D	E
Four decades	Total federally collected revenue (N' million)	Oil revenue (N' million)	Non-oil revenue (N' million)	Oil revenue (%)	Non-oil revenue (%)
1970 to 1979	48,047	35,335	12,712	74	26
1980 to 1989	196,214	141,275	54,939	72	28
1990 to 1999	3,763,420	2,839,802	923,618	75	25
2000 to 2009	41,517,317	34,194,655	7,322,662	82	18
Total	45,524,998	37,211,067	8,313,931	82	18

Central bank of Nigeria statistical bulletin, golden jubilee edition, December 2008 and 2009 CBN bulletin

Table 2: Presents IT knowledge of Nigerian accountants and the effects on the performance of their duties in oil and gas industry

Categories of accountants	Characteristics of categories of accountants and IT effects on their performance	No. of accountants	Knowledge (%)
(a) Accountants without any IT knowledge	They can neither manipulate computer nor possess any knowledge of IT facilities and therefore are handicapped in lie performance of their duties.	347	24
(b) Accountants with minimal IT knowledge	They possess minimal knowledge of how to operate computer, use word processing, spreadsheets. customized system but do not have in-depth knowledge of 11 facilities to perform complex IT duties.	542	38
(c) Accountants with in-depth knowledge of IT	They possess in-depth depth knowledge of IT knowledge and skill of IT facilities such as word processing, excel/spreadsheet imaging, carry out internet transactions like E-business, E-commerce, surfing, programming skill etc.	534	38
Total number of accountants examined		1,423	100

Survey data (2010)

without physical audit trails. According to him, like what is happening in the United States, Britain and elsewhere, auditors need to be re-trained with modern technology or auditing accounts to contend with a high profile auditing which is a major challenge posed by technology. Such auditors are now to go through a training whose certificate in view is the Certified Information System Auditor (CISA). It is against this background that various organizations, especially the Nigerian government should, as a matter of deliberate policy, encourage and create conducive IT environment to enable accountants and other information providers acquire adequate IT knowledge and perform their roles efficiently in order to improve Nigerian oil and gas industry.

MATERIALS AND METHODS

The primary data for the study were generated through the administration of questionnaire one thousand four hundred and twenty three (1423) accountants, financial managers/controllers, management staff, chief executive who are knowledgeable to provide relevant answers to the questionnaire in the oil and gas industry in Rivers, Bayelsa, Delta, Akwa Ibom and Lagos States of Nigeria respectively in the year 2010. The questionnaire were pre-tested using (78) respondents in Rivers State and a reliability test was done on the data collected using Cronbach Alpha model, to explore the internal consistency of the questionnaire (Kothari, 2004; Krishnaswamy *et al.*, 2004; Ndiyo, 2005; Osuala, 2005; Baridam, 2008). The result of the reliability test shows that the designed questionnaire is highly reliable at 0.87. The questionnaire has 3 sections. The first section is related to demographic (name of organization, position, number of years worked, classification of your industry, the second section comprises research issues and the third section examines qualitative data. Using a

5 points scale of 1-5 (5-strongly agree, 4-agree, 3-neutral, 2-disagree and 1-strongly disagree). The results obtained from the ratings were analyzed using descriptive statistics and Z-test.

RESULTS AND DISCUSSION

Variables intervening between information technology and accountants' performance of duties in oil and gas industry in Nigeria: Table 2 shows the IT knowledge of Nigerian Accountants that has been categorized in three stages as follows:

- Out of a population of 1423 accountants working in the oil and gas organizations where some copies of questionnaire were administered, 347 accountants do not have any IT knowledge even the skill to effectively operate computer, access internet and use them for any meaningful accounting duties. This number represents 24% of the total population of actual accountants examined.
- There are yet other accountants who possess minimal knowledge of computer and can operate it and they know how to use it to do certain limited accounting duties but do not have in-depth knowledge of other IT facilities. While the number of such accountants is 542, their percentage is 38.
- The number of Nigerian Accountants who possess sound knowledge and skill of IT facilities is 534 and their percentage is approximately 38. The above survey result indicates that significant number of accountants fall within category (b), i.e., minimal knowledge.

The Nigerian Accountants in category (a) and (b) above cannot confidently and intelligently discuss information technology issues nor reasonably fill

Table 3: The effects of IT on the Nigerian accountants' performance of duties in the oil and gas industry

S/No	Effects of IT on accountants performance in oil and gas industry in Nigeria
1	Assignment of new jobs and responsibilities where IT knowledge is not much required. For instance, the preparation of payroll by computer was assigned to data processing manager while the accountant was given another function
2	Some accountants have been declared redundant and many others retired when should not have been retired
3	IT illiteracy delays the preparation and submission of financial statement
4	Retards effective communication, leads to loss of good customers and affects the firm's ability to make profit
5	Poor performance on the job
6	Incapacitates accountants ability to prevent and detect error and fraud in a computerized environment
7	Cybercrime, i.e., fraudsters and hackers can illegally get access to your system from remote distance, do some havoc without the illiterate IT accountant knowing it or what to do to prevent such practice
8	Exposes accountants to risk by signing financial and other reports without actually appreciating the implications

Survey data (2010)

Table 4: The reasons why Nigerian accountants are not making good use of IT

Reasons why Nigeria accountant are not making good	Score (%)	Ranking
Lack of government commitment to computerization/inability to provide computer/ IT facilities	60	1
Government failure to create enabling environment to aid computerization and IT	60	1
Indigenous consultants' failure to accomplish the terms of computerization contract due to lack of qualified IT personnel or experts	55	2
High cost of computers and IT equipments	45	3
Lack of clear-cut policies and effective laws	40	4
Lack of fund to acquire computer and IT equipment	30	5
Poor initial planning and advice	30	5
Poor initial systems specifications	25	8
Wrong choice of computer hardware and software	27	7
Misled by suppliers unfulfilled claims	29	6
Poor implementation	23	9
Accountants' resistance to provide fund for IT	21	10
Constant systems breakdown	20	1
Inadequate stall training	18	12
Staff resistance to change	15	13
Poor initial systems specifications	10	14

Survey data (2010)

questionnaire in IT. They acknowledged the fact that most of the terminologies in IT appear very strange and technical to them. According to them, "we have been hearing and reading all these terms such as Decision Support System (DSS), Executive Support System (ESS), Artificial Intelligence (AI) etc but have not actually practiced them or seen them work in real life". The accountants in category (c) in the Table 2 are those who possess sufficient and sound knowledge and skill of IT facilities such as word processing, spreadsheet. Internet transactions like E-business, E-commerce etc.

The data collected from respondents shows the Table 3 as the effects of IT on the performance of the duties of Nigerian Accountants who are not IT literate.

The factors in Table 3 may lead to a reduced accountancy profession if accountants fail to continuously update their IT knowledge.

The reasons why Nigerian accountants are not making good use of information technology in the performance of their duties: One of the objectives of this study is to find out whether IT facilities in the internal environment of the organization moderate the impacts of IT on the performance of the duties of Nigerian Accountants. Therefore, we intend to ascertain from respondents the reasons why Nigerian Accountants are not making good use of IT knowledge in the performance of their duties. There is a strong feeling among respondents that those accountants with IT knowledge would have performed better if they were

given the necessary facilities by the organizations they work for. Also, the difference between the Nigerian Accountants with IT knowledge and those without IT knowledge would have been more glaring and dramatic if the former were given the necessary facilities. In this vein, we summarize and present in Table 3 various reasons given by different respondents as in Table 4.

Among the reasons or factors given in Table 4, lack of government commitment to computerization/inability to provide computers and failure to create conducive enabling environment to aid computerization received the highest ranking of 1 (or 60%). Closely followed is indigenous consultants' failure to accomplish the terms of computerization contracts with 2 (or 55%). The third ranking goes to high cost of computers and IT equipment. Lack of clear-cut IT policies and effective laws is ranked 4 (or 40%) while lack of fund to acquire relevant IT and poor initial planning and advice received the same ranking of 5 (or 30%) etc.

In the Table 4, respondents were asked to state their criteria in assessing the performance of the duties of accountants or reasons for making use of IT literate accountants. We therefore present the following survey data in Table 4 which confirm the reason why IT literate accountants scored higher than the illiterate ones in the hypothesis tested.

The survey result indicates that increased timely reporting received the highest ranking of 1 (or 66%). This was closely followed by increased operating

Table 5: The criteria organizations use in assessing the performance of the duties of Nigerian accountants

Criteria/objectives (elements of performance)	(%)	Ranking
Increased timely reporting	66	1
Increased operating performance	62	2
Improved information quality	62	2
Improved customer/client services	59	3
Doing better than competitors	52	4
Cost reduction/saving	36	5
Reducing staff strength	26	6
Survey data (2010)		

Table 6: Various methods Nigerian accountants are currently using IT to acquire IT knowledge and skill

Methods of acquiring IT knowledge and skill	Effects on performance (or effectiveness)	Ranking
On-the job IT training	60	1
Short course with computing services centers	39	2
Informal IT training and workshops	36	3
Formal IT education in the institutions of higher learning	31	4

performance and improved information quality with the ranking of 2 (or 62%) each. However, improved customer/client services was another significant criterion that was ranked 3 (or 59%) and doing better than competitors ranked 4 (or 52%). While cost reduction received ranking of 5 (or 36%), reduction of staff strength took the last position with the ranking of 6 (or 26%). The above survey result shows that most organizations attach great importance to increased timely reporting, increased operating performance and improved information quality as shown in the order of ranking above. It also explains why employers prefer IT literate accountants to illiterate ones.

The methods of acquiring IT knowledge and skill:

One of the objectives of this study is to ascertain whether the method of acquiring IT knowledge moderates the impacts of IT on the performance of the duties of Nigerian Accountants. In order to determine the most effective method of acquiring IT knowledge, we present in Table 5 the different methods of acquiring IT knowledge, their effects on performance with the associated rankings as in Table 6.

An analysis of the data in Table 6 shows that the most effective method of acquiring IT knowledge and skill is on-the-job IT training which bagged (the highest ranking of 1 (or 60%). Short courses followed with ranking of 2 (or 39%), informal IT training 3 (or 36%) and formal IT education in the institutions of higher learning with 4 (or 31%) In view of the foregoing and our investigation, therefore, on-the-job IT training has shown to be the most effective, cheapest, convenient, easiest and practical method of acquiring IT knowledge and skill.

Hypothesis testing steps: The following are the steps involved in conducting a statistical test of a hypothesis:

Step 1: Statement of the hypothesis: The statistic used to determine the difference between the populations means is based upon the difference between the samples means ($x_1 - x_2$). Because of the central limit theorem, the statistic follows the normal distribution for large enough sample (i.e., n_1 and $n_2 > 30$):

$$Z = \frac{x_1 - x_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

In testing (lie hypothesis, the following procedure is used:

- HO: $\mu_1 = \mu_2$ or $\mu_1 - \mu_2 = 0$
- HA: $\mu_1 \neq \mu_2$ or $\mu_1 - \mu_2 \neq 0$ i.e., two tail test is involved

Step 2: Identification of test statistic: As stated earlier, the test statistic used here is Z-test as the sample size is large. The standard error of the difference between means is used as the basis for determining the Z value, i.e.:

$$Z = \frac{x_1 - x_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Step 3: Formulation of decision rule: In order to formulate the decision rule, we set the level of significance at alpha (α) = 0.05 (i.e., at 5% significant level). This implies that the null hypothesis will be rejected if it does not fall within the acceptance region as demonstrated in the normal distribution diagram in step 2 above. That is, if the actual values of Z is greater or less than the critical value of 7 (i.e., -1.96 and 1.96), the null hypothesis will be rejected at 5% level of significance.

Step 4: Computation of the test statistic: The necessary preliminary calculations regarding the test statistic are shown in appendices 2 to 4:

$$Z = \frac{x_1 - x_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Table 7: Nigerian accountants' with and without IT knowledge

S/No. of accountants	Accountants with IT knowledge % (x ₁)	Accountants without IT knowledge % (x ₂)	S/No. of respondents	Accountants with IT knowledge % (x ₁)	Accountants without IT knowledge % (x ₂)
1	83	40	51	75	20
2	51	55	52	75	65
3	55	20	53	0	0
4	53	40	54	40	10
5	88	30	55	80	60
6	63	20	56	85	30
7	80	50	57	0	0
8	0	67	58	10	30
9	78	30	59	10	10
10	19	88	60	60	50
11	25	20	61	40	20
12	65	50	62	25	20
13	23	10	63	65	50
14	72	25	64	23	10
15	73	20	65	83	20
16	76	33	66	27	83
17	35	77	67	20	28
18	73	20	68	83	20
19	33	15	69	33	15
20	65	40	70	65	40
21	98	20	71	98	20
22	75	30	72	75	30
23	85	30	73	85	30
24	70	30	74	70	30
25	80	80	75	80	80
26	60	17	76	60	17
27	65	20	77	65	20
28	75	20	78	75	20
29	33	10	79	75	40
30	33	10	80	95	30
31	60	40	81	85	45
32	65	25	82	75	20
33	78	35	83	85	20
34	33	15	84	70	20
35	65	40	85	93	25
36	98	20	86	55	10
37	75	30	87	50	25
38	85	30	88	88	20
39	70	30	89	85	28
40	80	80	90	25	60
41	60	17	91	78	30
42	65	20	92	78	70
43	75	20	93	80	45
44	35	35	94	80	25
45	53	53	95	70	20
46	53	35	96	85	29
47	88	31	97	80	30
48	53	22	98	75	22
49	83	30	99	85	30
50	88	30	100	85	20
Total				6429.5	2628

The preliminary calculations are contained in appendices 2

$$Z = \frac{(64 - 26)}{\sqrt{\frac{(24.82^2)}{100} + \frac{(15.41)^2}{100}}}$$

$$= \frac{38}{\sqrt{6.16 + 2.37}} = \frac{38}{2.92} = 13.01$$

Step 5: Decision/conclusion: Since the actual or calculated value of Z is 13.01 and the critical value is 1.96 and ± 1.96 , the null hypothesis is rejected at 5% level of significance and we accept the alternative hypothesis. In view of the foregoing systematic steps

and computations, we can conclude that there is significant difference between the performance of the politics of Nigerian Accountants with IT knowledge and Accountants without IT knowledge (Table 7).

CONCLUSION AND RECOMMENDATIONS

This study has revealed after empirical investigation and interviews that the margin of knowledge workers and all other workers is on the increase in the US and UK as stated above, Nigeria is contending with haphazard, disjointed, inadequate and inconsistent IT policies. Policy somersault has been the

Table 8: The comparative performance of duties by Nigerian accountants

Duties	Accountant with IT knowledge (% contribution)	Accountant without IT knowledge (% contribution)
Setting up accounting system and computerization	66	34
Accountant relevance in management decision-making	68	32
Preparing trading, profit and loss accounts and balance sheet	67	165
Preparing of budget, monitoring and budgetary control	35	68
Auditing and reporting to company shareholders	32	67
Investigation on financial matters	33	64
Corporate planning	36	66
Management consultancy	34	64
Information technology services	36	63
Extent of advice to clients and employers	37	64
Data processing	66	36
Sales processing	34	63
Payroll	37	66
Financial modeling/advice	34	66
Management accounting	34	65
Nominal ledger	35	58
Sales ledger	42	69
Purchases ledger	31	47
*Taxation planning and compliance	53	54
Cost analysis	46	34
Feasibility studies	67	33
Project analysis	66	34

Field survey (2010)

bane of Nigerian information technology systems as every succeeding Minister of information and communication has a new and different information technology policy and agenda quite different from his predecessor. The performance of an Accountant with IT knowledge (Table 8) is greater than those without IT knowledge. There is evidence that an organization that encourages the use of IT facilities enables the Accountants to acquire IT knowledge and skill and perform their duties better than organization that does not. That the use of computer in Accounting Information Systems (AIS), alters the method and procedure the Accountant uses in processing data. This is informed by the finding that there is positive relationship between the performance of the duties of the Accountant/Finance Manager and information technology/Computer. The cheapest and most effective method of acquiring information technology knowledge and performing efficiently is on-the-job computer training. The demand for computer generated information is more urgent than ever before. This has made the supply of information for decision-making to be more instantaneous and analytical than ever before. Also, the computer generated information is more timely neater and better presented as at and when required than what it used to be. Weak, outdated or absence of legal and regulatory frameworks that would boost IT and the ability of the knowledge workers in Nigeria are affecting IT growth. Poor and weak private-public partnership framework and this has created barrier to private sector full participation in IT. Lack of basic infrastructure such as power/electricity, transportation, good road and inadequate IT manpower development coupled with hostile investment environment and dearth of capital has been militating

against IT development in Nigeria. Lack of government commitment to computerization and development of information technology; this is evidenced by government inability to provide computers and IT facilities to enable its workers put into practice knowledge they gained during IT training. This is further underscored by the 2012 Federal Government Budget of N4.749 trn out of which only N18.31bn is earmarked for Communications Technology. This translates to approximately 0.389% which is quite insignificant when the importance of information and communication technology is considered. Government failure to create conducive and enabling environment to aid computerization and IT development; Lack of well thought out, coordinated, focused policy and plan that would bring about positive changes and improvement in the knowledge workers' skill. Lack of competitive bidding when contract for IT service providers is to being awarded; the above findings are in line with Fisher (1994) research findings on the Impact of IT on accounting profession which states that:

Any changes caused by the introduction or development of IT will not only affect the organization, the accountant and the practice, but will also have repercussions throughout the profession. The effect would also be a reduction in the use of the accounting function in advising clients on the acquisition, installation and use of IT systems and applications.

From all indications, the introduction and use of Computer are having a radical and far reaching impact not only on AIS but on the accountant's functions and his technical ability to carry out those functions.

In view of the findings and conclusions which are based on the hypothesis tested, survey data, personal interviews, this study recommends as follows:

- That Nigerian Accountants should intensify their efforts by utilizing every opportunity available to them to continuously train and retrain in information technology to improve their performance. The various oil and gas organizations and government establishments where accountants work should, as a matter of necessity, provide them with regular IT training and re-tool them with adequate IT equipment and skill. The organizations where the accountants work stand to benefit from the specialist skill the Nigerian Accountants will possess from this exercise.
- That government should seriously be committed to computerization and the provision of IT facilities. It should also create enabling and conducive environment that will encourage private sectors and Nigerian Accountants to make use of IT facilities in the performance of their duties without much problems and constraints.
- As the nature of IT facilities in individual organization impact on the performance of accountants duties, government and other organizations should, as a matter of policy, always carry out a technological and competence profile of prospective consultants, service providers and suppliers of IT facilities to ensure that they are technically fit to accomplish any computerization contract that may be awarded to them to avoid abandonment of such contracts half-way. The track-record or past performance of any prospective consultants needs to be considered before they are awarded computerization contract.
- To ensure development of IT, improve the performance of the duties of accountant and prevent wrong choice or computer hardware and software, there should be initial planning to determine the information need of the firm, the volume and nature of data involved, on-line internal control measures required and other necessary computer security technologies needed. Most importantly, a steering committee should be set up. Such committee should consist of representatives from the functional areas of the firm and the accountant should be given the opportunity to play a key role in the committee.
- In view of the fact that high rate of computer fraud affect the performance of the duties of Nigerian Accountants, this study recommends that all the necessary in-built. Internal controls should be introduced; access to files and computer room must be restricted to only authorized users only. Auditors should make effective use of auditing with the latest computer packages to enable them analyzes the contents of files and ensure the security and integrity of data. This is very expedient because auditing around the computer and through the computer is rapidly falling into

disuse. Software tools such as Audit Command Language (ACL) etc., should be extensively used to ensure forensic investigations and analysis of computer files for the aim of developing competent and reliable audit evidence.

- To ensure relevant IT training and enhance the performance of the duties of Nigerian Accountants, the accountancy professional bodies should give a new orientation to the training and repositioning of accountants for the new multi-dimensional changes in IT. The accounting education-both academic curricula and professional syllabuses-need radical changes in such a way that the impact of IT will be brought to bear in virtually all relevant courses. At least, one course should be designed specifically for information technology and another for accounting information systems and they should be practically based. The main purpose of the new orientation is to ensure that future accountants possess the requisite IT knowledge and skill to enable them assume their legitimate roles in the economy and perform their duties effectively.

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