Application of ICT Devices and Accounting Software Packages in Teaching and Learning Accounting Education: Challenges and Way Forward

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Abstract
This study was designed to examine the application of ICT devices and accounting software packages in Nigerian Tertiary Institutions for teaching and learning accounting education. The study adopted survey research design. Three research questions and three hypotheses were crafted to guide the study. The population for the study consists of 63 lecturers and 225 final year students of Accounting and Accounts related courses, selected from the seven public Colleges of Education in South Eastern Nigeria. Data generated were analyzed using mean and standard deviation to answer the three research questions while t-test statistical technique was employed to test the null hypotheses. The result reveals that application of ICT devices and accounting software packages in teaching and learning accounting education would help the graduates fulfill their responsibility creditably in the labour market as well as add value to modern business environment. The study therefore recommends that the National University Commission (NUC), National Commission for Colleges of Education (NCCE) and the National Board for Technical Education (NBTE) should ensure adequate supply and use of modern ICT devices and accounting software learning resources in teaching and learning accounting education; also compulsorily integrate practical courses on application of ICT devices and accounting software packages in Nigeria tertiary institutions' accounting curriculum.
Keywords: *Accounting, Accounting Education, ICT Devices, Accounting Software Packages*

Introduction

In Nigeria contemporary education policy, the changes that occur in teaching and learning as a result of the invention of Information and Communication Technology (ICT) has affected every aspect of academic discipline. Advances in ICT has transformed the accounting function in businesses and industries and made significant impact in teaching and learning accounting education. Chandra, Cheh and Il-Woon (2006) and other researchers have identified the need for incorporating sound ICT skills in accounting education. On the other hand, Linus (2012) opines that most business organizations and industries in Nigeria today operate an ICT incorporated accounting system. This is because Information and Communication Technology brings about great improvement in business practice and efficiency. However, since these businesses and industries have accounting graduates as their major employees, the application of ICT devices and accounting software packages in teaching and learning of various accounting education courses is inevitable.

Accounting according to Agboh (2007) is a generic term covering both book-keeping and accounts aspect of an economic entity. It is the engine hub of every economic entity, without which the measurement of organisation's economic activity in order to assess and, or compare the value of inputted resources against the output may be impossible. Ile (1999) defined accounting as a set of theories,

concepts (or ideas), and techniques by which financial data are processed into meaningful information for reporting, planning, controlling and decision making purpose. Accounting education according to Igben (2007) is that aspect of education which equips individual with the knowledge of recording, analyzing, classifying and interpreting financial information as well as what is required in teaching the skills. It is that aspect of education that is purposed towards the inculcation of accounting skills, norms and values in the learner. Accounting education encompasses all that is done in accounts classroom to enable the learner acquire the knowledge, techniques, skills and competence needed to process, interpret and communicate financial information as would be communicated to the benefit of both the internal and external users of accounting information.

Seethamraju (2010) stated that accounting has a large technological foundation in the real world; as such teaching and learning accounting is expected to be practically fused with current ICT devices and application packages. Heales (2005) affirms that the widespread diffusion of ICT in businesses and industries (the workplace) means that students who have high level and up to date Information Technology (IT) skills will likely integrate more rapidly into organizations and become productive than those who do not. In other words, for accounting graduates to successfully function in the current competitive workplace and business environment, the acquisition of ICT knowledge, skills and competence is paramount. Thus, the use of ICT devices and accounting software packages cannot be overemphasized in teaching and learning accounting education in Nigerian tertiary institutions.

Salehi and Salehi (2012) noted that Information and Communication Technology (ICT) is seen as a key tool in acquiring, processing and disseminating knowledge. Godson and Ogbodo (2016) described ICT as an important tool for educational reform and which can be utilized as a knob for organizational change; as a vehicle to introduce new teaching and learning practices; and, or as an enabler for restructuring of the educational system. Blurton (2002) defines ICT as a diverse set of technological tools and resources used to communicate, create, disseminate, store and manage information. These technologies may be broadly classified into two, namely: the ICT devices or products and the software/application packages. The ICT devices include Computer and Peripheral equipment (hardware) such as Point-of-sale Terminals, ATM and similar machines, Monitors and Projectors, Input peripherals (keyboard, joysticks, mouse etc.), Scanners, portable data processing machines (laptops, notebooks etc.), media storage units, personal digital assistants and so forth; Communication equipment such as burglary or fire alarms, transmission apparatus, television cameras, line telephone sets, telephone for cellular networks; Consumer electronic equipment such as video game consoles, video camera recorders, digital cameras, radio broadcast receivers, television receivers, microphone stands, sound recording and reproducing apparatus; and Miscellaneous ICT components and goods which examples are printed circuits, thermionic, cold cathode or photo-cathode valves and tubes, diodes, transistors, semi-conductor devices, photo sensitivity semi-conductor devices, magnetic media, optical media, smart cards, cards with magnetic stripe, liquid crystal devices etc. The application software is that which enables the tools and devices to function effectively according to the programmed instruction given to it. It is a set of computer programme designed to permit the user to perform a group of coordinated functions. For software to be an application, it should be able to perform a specific task or range of tasks.

According to Oyebisi, Ayodotun and Jinadu (2015) accounting software

packages are application packages that records and processes accounting transactions within functional modules such as account payable, account receivables, payroll, and trial balance. They include saga one (Peachtree, spreadsheet, tally application packages, statistical packages for social sciences, Microsoft accounting packages, accounting edge application packages, Microsoft dynamic etc. Accounting software can optimize teaching and learning of accounting as well as financial management of business organizations in different ways. It has improved more the accuracy of book-keeping processes, accounting recordings and calculation; saved time and cost involved in posting of data and its analysis; reduced cancellation and enhanced error free entries; eased extraction of information and its review; linked researchers with the world for reliable information; ease documentation and retrieval; improved productivity and information resource transparency. Accounting software packages also have affected on business transaction through recording of transaction, accuracy in calculation and computation, analyses of transaction and passing of information for decision making.

Unfortunately, in-spite of the above elaborated benefits of ICT and accounting software packages, entrenching fully and practically current and emerging ICT technologies in accounting education seems sluggish. This is evidenced in a research study carried out by Wessels (2007), which one of the findings revealed that accounting students have limited exposure to the use of ICT with particular emphasis on the use of accounting software packages. Wessels further stated that, several core subjects in the Accounting Curriculum such as financial Accounting, Management Accounting, Taxation and auditing are taught without much reference to the role of ICT and IT-enabled automation of accounting processes, transactions, controls and reports. In the same vein, Mndzebele (2013) reported that, a major challenge confronting accounting graduates of most developing nations is their graduating without practical exposure to ICT devices and accounting software packages. Shittu (2012) opined that accounting education has not gotten to the level expected of it by the employers of labour, especially with regards to imparting the required ICT skills on the graduates being turned out every year to occupy positions in industries. To these views and observations, researchers have swung into action to identify possible ways to curb these anomalies.

It has been observed that though there are many research studies on the need for incorporating ICT in teaching and learning accounting education (Kler, 2014; Seethamraju, 2010; Mikre, 2011; Olson and Means, 1997), there are very few empirical research studies that considered challenges and way forward of applying ICT devices and accounting software packages in teaching and learning Accounting Education in Nigerian tertiary institutions. It is in the bid to close this identified gap that this study was conceived. The present study seeks to examine the application, challenges and way forward of incorporating ICT devices and accounting software packages in teaching and learning accounting education in Nigerian tertiary institutions.

This work derives its importance from the theory of experiential learning as propounded by David K. Kolb in 1984. The theory states that, the change in an individual that results from reflection on a direct experience results in a new abstraction and application. According to Kolb's theory, to learn is not the special province of a single specialized realm of human functioning such as cognition or perception. It involves the integrated functioning of the total being – thinking, feeling, perceiving and doing. This theory does not differ from the famous dictum of Confucius of around 450 BC, "*Tell me, and I will forget. Show me, and I may remember*. *But involve me, and I will understand*." Practical involvement of

learners, learning to do by doing, sticks learned experience in the sub-conscious; since the change in behavior of the learner results from reflecting on the experiences obtained through practice.

Statement of the Problem

ICT globally has changed the face of, not just education and methods of teaching and learning, but generally the global work environment, economy, businesses and governance. Policy makers, educationists, academia, industries, government and non-governmental organizations, even the ordinary citizen are increasingly concerned with the need to make their environment competitive in today's emergent information economy. This has created a new wave of challenge in most developing nations. In Nigeria, though most industries/businesses (work places) are on the speed lane inclining to the use of ICT in their operations, the academic environment where it should be imbibed most seems sluggish in embracing fully the use of ICT in teaching and learning. Supporting this assertion, Rabah (2015) stated that information transfer using ICT is minimal or non existing in most Nigerian schools. Several core accounting subjects such as financial Accounting, Management Accounting, Taxation and auditing are taught in most Nigerian tertiary institutions without recourse to application of ICT devices and accounting software packages. This is a problem, since graduates of accounting no more matches the needs of their employers – the industries.

Balanskat, Blamire and Kafala (2006) conducted a study in National, International and European Schools and discovered that absolute majority of teachers in Europe (90%) claim to use ICT to do their teaching tasks. Little wander; the European graduates match the needs of her employers of labour, while in Nigeria, the reverse is often the case. This is a challenge to the academia, thus why this work is apt. However, researchers have swung into action, researching on challenges and better ways of entrenching ICT in teaching and learning in Nigerian schools. Such researches as found in literature include, but are not restricted to: Challenges for using ICT in education (Salehi and Salehi, 2012); Benefits and challenges of ICT (Rabah, 2015); impact of ICT on educational performance and efficiency (Aristovnik, 2012); challenges faced by schools when introducing ICT in developing countries (Mndzebele, 2013); and challenges of ICT in teaching and learning process (Shaik, 2013). A close observation to these research works mentioned and others not specifically mentioned here confirms that, there are many research studies on the use and challenges of ICT in teaching and learning (education), but none of the research works concentrated on finding out the challenges inhibiting the use of ICT devices and accounting software packages in teaching and learning accounting education in Nigeria and seeking the way forward; the gap the present study seeks to close.

Purpose of the Study

The purpose of the study is to find out the challenges inhibiting the application of ICT devices and accounting software packages in teaching and learning of accounting education as well as ways of improving on its use. Specifically, the study determined:

1. The extent ICT devices and accounting software packages are applied in teaching and learning accounting education
2. The challenges inhibiting the application of ICT devices and accounting software packages in teaching and learning accounting education.
3. The strategies for improving on the application of ICT devices and accounting software packages in teaching and learning accounting education.

Research Questions

1. To what extent are the ICT devices and accounting software packages applied in teaching and learning accounting education in your institution?

2. What are the challenges inhibiting the application of ICT devices and accounting software packages in teaching and learning accounting education?
3. What are the strategies for improving on the application of ICT devices and accounting software packages in teaching and learning accounting education in your institution?

Research Hypotheses

The following three (3) research hypotheses were generated to aid the study:

$H0_1$: There is no significant difference in the mean scores of students and lecturers on the extent of application of ICT devices and accounting software packages in teaching and learning accounting education in Nigerian tertiary institutions.

$H0_2$: There is no significant difference in the mean scores of students and lecturers on the factors that inhibit the application of ICT devices and accounting software packages in teaching and learning accounting education in Nigerian tertiary institutions of learning.

$H0_3$: There is no significant difference in the mean scores of students and lecturers on the strategies for improving on the application of ICT devices and accounting software packages in teaching and learning accounting education in Nigerian tertiary institutions of learning.

Method

This study adopted survey research design. The choice for the survey method lies in the fact that it focuses on obtaining subjective opinion of the population of study. The study was conducted in the 7 (seven) Public Colleges of Education in South East Nigeria since these Colleges either offer accounting or accounting related courses. The population for the study consists of 63 lecturers and 225 final year students of accounting and accounting related courses randomly selected from the Colleges. Structured questionnaire was used as instrument to collect data from the respondents. The questionnaire was structured in line with the research questions. It was divided into two sessions, sections A and B. Section A is on personal data, while section B, made up of 3 (three) sub-sections, was constructed to elicit responses on the 3 (three) research questions. The instrument was evaluated for content and face validity by three experts. The validated instrument was trial tested using Cronbach alpha and 0.83 internal consistency coefficient was established. Data were analyzed using mean and standard deviation to answer the research questions, while t-test statistic was used to test the null hypotheses at 0.05 level of significance. The grand mean bench mark for acceptance is 2.99 and above.

Results

The results for this study were obtained based on the research questions answered and the hypotheses tested. The analyses were presented in the tables below:

Research Question 1

To what extent are the ICT devices and accounting software packages applied in teaching and learning accounting education in your institution?

Table 1

Mean ratings and standard deviation of the responses of students and lecturers from South Eastern Public Colleges of Education on the extent of application of ICT devices and accounting software packages for teaching and learning accounting education ($N_S = 212$; $N_L = 63$)

SN	ICT devices and accounting software packages	$\bar{X}_S$	$\bar{X}_L$	$\bar{X}_G$	SD	Rmks

1.	Computer System	1.01	1.14	**1.08**	0.00	**NA**
2.	Smart phones – Ipads, Tables, Androids etc	1.00	1.06	**1.03**	0.00	NA
3.	Multimedia projectors	1.00	1.05	**1.03**	0.13	**NA**
4.	Portable data processing machines – laptops, notebooks etc	1.05	1.19	**1.12**	0.34	**NA**
5.	Spreadsheet application packages	1.00	1.14	**1.07**	0.22	**NA**
6.	Tally application packages	1.02	1.48	**1.25**	0.58	**NA**
7.	Statistical Package for Social Sciences (SPSS)	1.00	1.00	**1.00**	0.23	**NA**
8.	Finacle (Bank software application package)	1.00	1.00	**1.00**	0.00	**NA**
9.	Microsoft (MS) Access	1.00	1.00	**1.00**	0.00	**NA**
10.	Quickbooks Application packages	1.00	1.00	**1.00**	0.00	**NA**
11.	Saga one (Peach Tree) application packages	1.00	1.00	**1.00**	1.00	**NA**
12.	Lotus 123	1.00	1.00	**1.00**	0.00	**NA**
13.	Accounting edge application packages	1.00	1.00	**1.00**	0.00	**NA**
14.	Kashoo accounting software packages	1.00	1.00	**1.00**	0.00	**NA**
15.	ZohoBook application packages	1.00	1.00	**1.00**	0.15	**NA**
16.	Freshbook packages	1.00	1.00	**1.00**	0.00	**NA**
17.	Xero accounting application packages	1.00	1.00	**1.00**	0.00	**NA**

Key: $\boldsymbol{X_S}$ *= Mean of Students;* $\boldsymbol{X_L}$ *= Mean of Lecturers;* $\boldsymbol{X_G}$ *= Overall Grand Mean; SD = Standard Deviation;* ***NA****= Not Applied*

The data presented in Table 1showed that all 17 items have mean scores far below 2.99 cut-off mark for decision rule. This implies that all the respondents were in agreement that the ICT devices and accounting software packages as outlined are not applied in Nigeria public Colleges of Education for teaching and learning accounting education. The standard deviation values for all the items are below 1.00 which implied that the respondents opinion were close to each other and to the mean that, these ICT devices and accounting software packages were not applied in the institutions for teaching and learning accounting education.

Null Hypothesis 1

There is no significant difference in the mean scores of students and lecturers on the extent of application of ICT devices and accounting software packages in teaching and learning accounting education in Nigerian tertiary institutions.

Table 2

Comparison of t-test differences between the mean ratings of responses of students and lecturers on application of ICT devices and accounting software packages in teaching and learning Accounting Education.

STATUS	N	X	SD	DF	Significant level	t-cal	t-val	Decision
Students	**212**	**.2158**	**.03102**	**273**	**.235**	**4.692**	**0.5**	**Accepted**
Lecturers	**63**	**.1943**	**.3496**	**92.908**		**4.397**		**Accepted**

From the result calculated as shown in Table 2, the calculated t-value of students and Lecturers are both positive. Thus, the hypothesis which affirms no significant

differences between the mean score of responses of students and lecturers on the application of ICT devices and accounting software packages in teaching and learning Accounting Education is accepted.

Research Question 2

What are the challenges inhibiting the application of ICT devices and accounting software packages in teaching and learning accounting education?

Table 3

Mean ratings and standard deviation of the responses of students and lecturers from South Eastern Public Colleges of Education on the challenges inhibiting application of ICT devices and accounting software packages in teaching and learning accounting education (N_S = 212; N_L = 63)

SN	ICT devices and accounting software packages	$\overline{X}_S$	$\overline{X}_L$	$\overline{X}_G$	SD	Remarks
1.	High cost of procuring ICT devices and accounting software packages	3.84	3.41	**3.63**	0.61	**GE**
2.	Lack of proper funding of Accounting programme	3.33	3.95	**3.64**	0.66	**GE**
3.	Lack of relevant ICT devices and accounting software packages for teaching and learning	3.93	3.90	**3.92**	0.32	**GE**
4.	Poor knowledge of teachers on ICT innovation	3.33	3.33	**3.33**	0.78	**GE**
5.	Limited access to internet facilities	3.99	3.21	**3.60**	0.55	**GE**
6.	Resistance to change and negative attitude of teachers towards ICT	3.15	3.24	**3.20**	0.74	**GE**
7.	Resistance to change and negative attitude of students towards ICT	3.14	3.13	**3.14**	0.79	**GE**
8.	Poor electricity /power supply	3.99	3.73	**3.86**	0.35	**GE**
9.	Lack of practical teaching of Accounting with ICT devices and accounting software packages	3.48	3.71	**3.60**	0.66	**GE**
10.	Lack of ICT updated accounting textbooks	4.00	3.78	**3.89**	0.28	**GE**
11.	Accounting curriculum not incorporating ICT devices and accounting software packages use	3.17	3.05	**3.09**	0.78	**GE**
12.	Poor service outfits and maintenance culture on the use of ICT facilities	3.12	2.90	**3.51**	0.85	**GE**
13.	Poor formulation and implementation policies and ethics on the use ICT devices and application packages	3.29	3.00	**3.15**	0.75	**GE**
14.	Lack of positive value orientation on the application of ICT packages in teaching and learning accounting	3.08	3.00	**3.04**	0.81	**GE**

Key: $\overline{X}_S$ *= Mean of Students;* $\overline{X}_L$ *= Mean of Lecturers;* X_G *= Overall Grand Mean; SD = Standard Deviation;* ***GE****= Great Extent*

In Table 3, all the 14 items listed have grand mean score of at least 3.00 and above, indicating that all the factors listed in the Table are to a great extent, challenges inhibiting the application of ICT devices and accounting software packages in public Colleges of Education in South Eastern Nigeria.

Hypothesis 2

There is no significant difference in the mean scores of students and lecturers on the factors that inhibit the application of ICT devices and accounting software packages in teaching and learning accounting education in Nigerian tertiary institutions of learning.

Table 4

Comparison of t-test differences between the mean ratings of responses of students and lecturers on the challenges inhibiting application of ICT devices and accounting software packages in teaching and learning Accounting Education

STATUS	N	X	SD	DF	Significant level	t-cal	t-val	Decision
Students	**212**	**3.4151**	**.61371**	**273**		**1.299**	**0.5**	**Accepted**
Lecturers	**63**	**3.1111**	**.59868**	**87.036**	**.147**	**1.154**		**Accepted**

Source: Field Survey, 2017

From the calculated result as shown in table 6, the t-calculated value of students and lecturers are both positive and above the t-table value of 0.5. This indicated that, there is no significant difference between the mean scores of students and lecturers on the challenges inhibiting the use of ICT devices and accounting software packages in teaching and learning Accounting Education. Therefore the null hypothesis of no significant difference is accepted.

Research Question 3

What are the strategies for improving on the application of ICT devices and accounting software packages in teaching and learning accounting education in your institution?

Table 5

Mean ratings and standard deviation of responses of students and lecturers from South Eastern Public Colleges of Education on the strategies for enhancing application of ICT devices and accounting software packages for teaching and learning accounting education ($N_S = 212$; $N_L = 63$)

SN	Strategies for improving on the application of ICT Devices and Accounting Software Packages	$\overline{X}_S$	$\overline{X}_L$	$\overline{X}_G$	SD	Rmks
1.	Adequate provision of ICT devices and application packages at subsidize rates to schools	3.30	3.76	**3.53**	0.73	**GE**
2.	Adequate funding of accounting programme	3.51	3.76	**3.64**	0.52	**GE**
3.	Government provision of adequate relevant ICT devices and application packages	3.46	3.00	**3.23**	0.64	**GE**
4.	Organization of workshops, seminar and symposia for teachers on ICT innovation and use in accounting	3.38	4.00	**3.69**	0.70	**GE**
5.	Provision of firm and reliable internet facilities	3.50	3.94	**3.72**	0.60	**GE**
6.	Updating Accounting Textbooks to incorporate modern ICT devices and accounting software packages application	3.23	3.57	**3.40**	0.78	**GE**
7.	Positive reorientation of students on the impact of ICT in education and world of work	3.95	3.95	**3.95**	0.22	**GE**
8.	Establishment of ICT centers/studios (ICT training pool) in accounting departments	3.04	3.19	**3.16**	0.84	**GE**
9.	Provision of technical support staff and system for training on ICT devices and accounting software packages	3.93	3.33	**3.63**	0.54	**GE**
10.	Installation of solar power and other alternative power supply in all schools	3.36	3.25	**3.31**	0.72	**GE**
11.	Developing improved maintenance culture for ICT facilities and devices	3.15	3.35	**3.25**	0.83	**GE**
12.	Restructuring accounting curriculum to accommodate application of ICT devices and software in teaching and learning accounting	3.36	3.70	**3.53**	0.68	**GE**

Key: $\bar{X}_S$ *= Mean of Students;* $\bar{X}_L$ *= Mean of Lecturers;* X_G *= Overall Grand Mean; SD = Standard Deviation;* ***GE****= Great Extent*

The data presented in Table 5 showed that all the 12 items listed in the Table are to great extent, strategies for enhancing application of ICT devices and accounting software packages for teaching and learning Accounting Education.

Null Hypothesis 3

There is no significant difference in the mean scores of students and lecturers on the strategies to adopt to improve on the application of ICT devices and accounting software packages in teaching and learning accounting education in Nigerian tertiary institutions of learning.

Table 6

Comparison of t-test differences between the mean ratings of responses of students and lecturers on the strategies for enhancing the application of ICT devices and accounting software packages in teaching and learning Accounting Education

STATUS	N	$\bar{X}$	SD	DF	Significant level	t-cal	t-val	Decision
Students	**212**	**0.2009**	**.03554**	**273**		**-2.035**	**0.5**	**Rejected**
Lecturers	**63**	**0.2109**	**.02851**	**124.676**	**.005**	**-2.291**		**Rejected**

Source: Field Survey, 2017

From the calculated result as shown in Table 6, the t-calculated value of students and lecturers are both negative and below the t-table value of 0.5. This implies that, the null hypothesis of no significant difference between the mean scores of students and lecturers on the strategies to enhance the application of ICT devices and accounting software packages in teaching and learning Accounting Education is rejected.

Study Findings and Discussion

The result of the present study as shown in Table 1 admitted that ICT devices and accounting software packages, computer system, smart phones, multimedia projectors, portable data processing machines, tally application packages, statistical packages for social sciences, finacle, Microsoft access etc. as itemized in the Table were not applied in teaching and learning accounting education in Nigeria public Colleges of Education. This result is corroborated with the earlier findings of Mndzebele (2013), that readiness; access and usage are the first processes on the ICT development value chain but are not taken into consideration in most developing countries. In other words, application of ICT in teaching and learning can only be made possible if all education stakeholders understand the benefits of investing in ICT and are ready to provide the infrastructure required in introducing it. In some Colleges of Education visited, most of the students and some teachers feel indifferent when mention was made of some accounting software packages; talk less of its application in teaching and learning. This situation calls for urgent attention if accounting education would be made to produce highly skilled and educated workforce with aptitude and skills in the application of ICT and ardent competitors in the global competitive economic environment. The test of hypothesis in Table 2 affirms non application of ICT devices and accounting

software packages in teaching and learning accounting education since the null hypothesis of no significant difference was upheld.

The findings of the study in Table 3 revealed that, lack of proper funding, high cost of procurement, poor knowledge of teachers, limited access to internet and facilities, resistance to change on the part of teachers and students, poor power/electricity supply to mention but a few, were challenges deterring the application of ICT devices and accounting software packages in teaching and learning accounting education. These challenges are common in literature and had been upheld by many researchers (Shaik, 2013; Mingaine, 2013; Wassel, 2007; Salehi and Salehi, 2012 etc.). However, Rabah (2015), though did not refute the above findings, observed that, it would be inappropriate to view ICT-based education without taking into consideration the school's context, setting and environment. Rabah's opinion is that the classroom (micro-level), the administrative infrastructure and objectives of the school (meso-level) and the boarder perspective of the socio-political and/or ministerial policies surrounding the school and the classroom (macro level) must be set and in readiness for successful integration of ICT in education setting. With this view, supported with the on the ground experience of the researcher during the conduct of this research, one may posit that the Colleges of Education environment are yet at the preparatory stage of integrating ICT devices and accounting software packages in teaching and learning generally. The students and lecturers opinion also do not differ significantly with the challenges, thus the null hypothesis of no significant differences was accepted.

In Table 5, the 12 outlined strategies for improving on the application of ICT devices and accounting software packages in teaching and learning accounting education were all accepted. These strategies include: adequate provision of ICT devices and application packages at subsidized rates; adequate funding of accounting programme; Government provision of ICT enabling environment and adequate ICT devices and accounting software packages; provision of reliable internet services and facilities in schools; organization of seminars and workshops for teachers; updating accounting textbooks to incorporate application of ICT; installation of solar power and other alternative power sources in all schools; etc. This finding is in consonance with the findings of other researchers like: Rabah, 2015; Meenakshi, 2013; Aristovnik, 2012; and Chandra et-al, 2006. Each of these researchers agree to some of the aforementioned strategies as would improve on the use of ICT in teaching and learning. In addition, Olson (1997) in Rabah (2015) gave an interesting advice which ought to be mentioned to strengthen the finding of the present study. Olson advised educationist to have a clear vision before investing and spending money on ICT. This vision Olson further stated, should not be a solid hand press from top to bottom. It should go in many directions, with various stakeholders involved in building the vision, including teachers, board members and IT consultants. This advice clearly portends the major crises of interest which often stall the progress that would have been made in integrating ICT in teaching and learning in Nigeria.

Conclusion and Recommendations

The work place in the present era of globalization requires technologically compliant individuals and graduates. It is evident in Nigerian work milieu that job openings often had existed with graduates in the same job area available, but without matching skill. Often, the reason may not just be that the individual obtained the qualification without acquiring the knowledge, rather was taught without the requisite ICT devices and software packages required to gain practical experience needed in the work place. It would be inappropriate that the pursuit of accounting education in schools in today's

ICT era is devoid of application of ICT devices accounting software packages. The findings of the present study certify the position of non application of ICT devices and accounting software packages in teaching and learning accounting, thus the following recommendations were suggested:

1. *Emulation of the Advanced Economies*: Nigerian government must emulate the advanced economies; provide enabling environment, infrastructure and policies for integrating ICT in all educational institutions (at all levels, private and public) in the country to make sure that Nigerian graduates meet the global technological criteria.
2. *Evolving Participatory Teaching and Learning Approach*: Recommendation 1 (one) above, must not be an already weaved basket thrown down from the top. The stakeholders (teachers, students, ICT consultants and technicians etc.) must be involved in building the vision, mission, policy, creating the guide post and placing the request (procurement) for the needed ICT devices and software packages. The major role of the government and its agencies are to fund and supervise the implementation of this project.
3. *Adoption of Public Private Partnership to Realize Inclusive Growth*: The envisaged project that would grow the nation technologically cannot be achieved by the government alone. An all inclusive institutionalized ICT driven educational industry requires huge outlay of fund, thus achieving it requires partnering with both the private and public sectors, and the non-governmental organizations (NGO's). There is need for the government to partner with these institutions for resource mobilization to fund this project.
4. *Policies and Educational Curriculum Restructuring*: Educational policies and curriculum that will promote broad access to achievable ICT skills and competencies should be developed. This shall equally involve creation of incentives (example, tax holidays) for firms and individuals that provides training and facilities in ICT or other relevant ICT aids, packages and devices to schools.
5. *Setting-up Ministry of ICT*: The role of Ministry of Science and Technology, though the extent it may be assumed it covers the ICT needs of the nation is poor. Government must set up Ministry of ICT saddled with the responsibility of creating and implementing, management and planning, monitoring and review, and improving access, usage, maintenance, evaluate the economic and social impact of the state of ICT in the schools' system for government needed intervention.
6. *Creation of ICT Tax Fund*: Another Fund, ICT Tax Fund (different from Tertiary Education Trust Fund, Education Tax Fund, etc) is advocated should be created to access some percentage of company tax, value added and even personal income tax; for funding of ICT projects and programmes in schools (pre-primary, primary, secondary and tertiary institutions of learning).
7. *Adequate Supply of Modern ICT Devices and Software Packages*: The study equally recommends that the National University Commission (NUC), National Commission for Colleges of Education (NCCE), National Board for Technical Education (NBTE) and other relevant educational bodies should ensure adequate

supply of modern ICT devices and software learning resources to facilitate compulsory integration of practical courses on the application of ICT devices and Accounting software packages in the department of accounting and other related discipline in all Nigeria tertiary institutions.

8. The lecturers in accounting and other related discipline should, from time to time, be sent on in-services training and retraining to enable them update their knowledge on ICT and its application in teaching and learning. Teachers at all levels of education should be encouraged and exposed to workshops, conferences and seminar on ICT.
9. Accounting ICT pool/studios should be compulsorily built in all the departments that teaches accounting with an ICT service staff employed to train the students on the application of ICT devices and software packages in solving accounting problems. This ICT pool must have access to alternative and steady power supply – solar and other alternate power.

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