ICT Integration in Accounting Education: Evidence from Two Private Higher Institutions in Nigeria

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Abstract: This study examined the role of ICT integration in accounting education on the value adding capacity of accounting students in Nigeria. The study adopted the Survey research design involving the collection of data from accounting students in selected private universities in Nigeria. Copies of Questionnaire were administered to 147 respondents out of which 111 were gathered. Pearson Correlation and Linear Regression were employed in the analysis of the data collected with the use of Statistical Packages for Social Sciences (SPSS). The results revealed that integration of ICT (accounting software packages and IT knowledge and skills) into accounting education (curriculum) would help accounting graduates fulfill their responsibility of adding value to organizations. Consequently, it was recommended that the Nigeria Universities Commission (NUC) and relevant educational bodies should compulsorily integrate (in all higher institution) into accounting curriculum at all level a practical course on accounting packages and IT knowledge and skills.

Keywords: Accounting education; accounting packages; accounting industry; information and communication technology

1. Introduction

Previous years before the inception of information and communication technology (ICT), accountants in organizations employed socially acceptable behavioral method of reporting accounting transactions and events in order to generate books such as profit and loss account, balance sheet, income and expenditure account amongst others. Technological advancement and globalization is said to have created a new global economy having Information and communication technology (ICT)

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occupying a complex position in relation to globalization (Agbo, 2012). Today, as a result of this said globalization which has led to the introduction of ICT, the application of ICT on accounting practice in most organization in Nigeria has become of utmost importance to business entities (Linus, 2012).

There is an indication by professional organizations around the world that today's accountant differs dramatically from the accountant of the past (Bolt-lee and Foster, 2002). This is as a result of the fact that the new professional requires a value-added focus from time of entry to time of mandatory retirement. Accounting as one of the subjects in business education is equipped with the function of developing in students certain skills, knowledge, attitudes and values towards solving problems and towards satisfaction of real life needs in life (Saleme, 2013). Unfortunately, accounting education seems to be lacking in the inculcation of ICT knowledge and skills in accounting students (Rhodes, 2013). This is evidenced in a research study carried out by Wessels (2007) where he found out that students has limited exposure to the use of ICT with particular emphasis on the use of accounting packages and that is why according to Rhodes (2013), accounting education has not gotten to the level expected of it by the industry itself. This is because, employers of labour or industries expect the turning out of accounting graduates who must have acquired reasonable levels of accounting skills to enable them add value to the industries they would find themselves in someday. In a bid to close the identified gap in the skills and knowledge of accounting students, there is the need to integrate ICT and accounting education in Nigeria.

It has been observed that though there are many research studies on accounting education and technology (Heagy & Rakow 1991; Heagy & Gallun 1994; Borthick 1996; Groomer & Murthy 1996; Theuri & Gunn 1998; Bain, Blankley, & Smith 2002; Chang & Hwang 2003; Greenstein & McKee 2004; Borokowski, Bukics, & Welsh 2007; Roberts, Kelley, & Medlin 2007), there are very few empirical research studies that considered the impact of integration of ICT with particular emphasis on accounting software packages and IT knowledge and skill acquisition in accounting curriculum on Nigeria private higher institution accounting students. It is in a bid to close the identified gap in literature that this study seeks to examine the role of ICT integration in accounting education on the value adding capacity of accounting students in Nigeria. This paper evaluates accounting education using accounting curriculum while information and communication technology would be looked at from the angle of accounting packages and IT knowledge and skills. This paper is divided into five (5) sections, section one (1) is the introduction, section two (2) is

the review of relevant literatures, section three (3) is the methodology adopted, section four (4) contains data analysis and presentation while chapter five (5) concludes the paper and includes recommendation.

2. Literature Review

2.1. Concept of Accounting Education and ICT

There have been several researches on discovering the solution to high unemployment amongst higher institution graduates with particular emphasis on accounting graduates ever since the issue became a national phenomenon especially since the incidence of economic downturn years back (Udepi, 2013). Paramount amongst the solutions proffered is ICT, having recognized its potentials in preparing students for the labour market. Lopez (2003) opined that using ICT provides better opportunities for accounting students in higher institutions for the acquisition of valuable ICT knowledge and skills which are fundamental for gaining employment in the present day job market. This is therefore to say that ICT increases student's preparation for most future careers (Udepi, 2013).

In the words of Adebayo (2012), applying ICT to accounting in an organization could bring about getting information on financial position of an organization by mere pressing/touching a button, providing detailed information on expenditure in order to aid decision making of management, reduction in financial and administrative overhead, prevention of fraud and timely report on the financial performance and position of an organization. Information and communication technology refers to the application of various software and hardware that supports all of those activities involving information (Igbaji, 2014). According to OECD (1987), Information technology is "a term used to cover technologies used in the collection, processing and transmission of information". Ebijuwa and ToAnyakoha (2005) define ICT as "tools and as well as means used for collection, capture, process, storage, transmission and dissemination of information". Ukpebor (2006) opined that information and communication technologies are vast web of high speed digital communication networks involving delivering of information, education and entertainment services to schools, offices, homes amongst others.

According to Ama (2000), "accounting is 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". Igboke (2003)

adjudges accounting as that which equips individual with knowledge of recording, analyzing, classifying and interpreting financial information as well as the as well as what is required in teaching the skills. In the words of Ezeani (2011), Accounting education is seen as an area of study that is presumed needed to equip accounting students with required knowledge, skills and attitudes necessary for them to perform efficient financial calculation required for occupational competence and economic self-reliance. In lieu of complexities of business units, mounting taxes, increasing regulations of business by law and by governmental agencies, there is need for accounting students to acquire high degree of accounting competencies for effective job performance in areas such as: Auditing, Cost Accounting Services, Management Accounting, Budgetary Accounting, Tax Accounting, Governmental Accounting, Accounting Instruction, Record keeping (Ama, 2000; Ezeani, 2008; Salome & Chukwunwendu, 2014). As a result of this, accounting education must provide students with this required skills and knowledge needed to become competent professionals in a changing business world.

2.2. Cultural-historical Activity Theory (CHAT)

The theory adopted for the purpose of this study is Cultural-historical activity theory (CHAT). This theory is a theoretical framework which helps to understand and analyze the relationship between the human mind and activity. This theory is premised on the core ideas that: human act collectively, learn by doing and communicate in and via their actions; humans make, employ and adapt tools of all kinds to learn and communicate. This theory has been identified as a road map for the alignment of an accounting educational environment to the practical environment of practice, as well as demonstrating the potential to overcome challenges in educational theory and practice.

2.3. Accounting curriculum and integration of accounting software packages

Accounting software packages refers to intangible products. They can be described as a type of application software that records and processes accounting transactions within functional modules such as accounts payable, accounts receivable, payroll, and trial balance. They include Peachtree, Quickbook, Lotus 123, Super calc etc. A study by Wessels (2007) of the information and communication technology (ICT) education offered to accounting students at South African universities revealed that students had limited exposure to the use of accounting software packages thereby affecting their ability to add value to organizations they find themselves. A study was carried out on more accounting theory or more information technology by

Harrast, Strong and Bromley (2010), survey method was used to analyze the technology skills of undergraduate accounting students to determine their technological strengths and weaknesses. The findings of the research revealed that a large fraction of students are not proficient in requisite technologies even after completing the majority of their undergraduate accounting course work, thereby supporting the argument that the accounting curriculum would benefit from an increase in technology training with particular emphasis on tax software, audit software and spreadsheets.

The result of another study carried out by Rhodes (2013) on the future of accounting education with the integration of ICT (with particular interest on accounting software packages) with particular interest on the reform of accounting education that flowed from a process followed to align accounting education to accounting practice in higher education revealed that the alignment of accounting education and accounting practice through the integration of ICT could bring the accounting graduate and employer into alignment thereby adding value to the graduates of 2013.

It has been observed that though there are many research studies on accounting education, there are very few empirical research studies that considered the impact of integration of ICT with particular emphasis on accounting software packages in accounting curriculum on Nigeria private higher institution accounting students. Going by this inadequacy of substantial literature in this area, the under listed question is proposed for an empirical investigation

***H_0**: Integration of accounting software packages into the accounting curriculum would improve accounting education and result in improvement of the value adding capacity of accounting*

2.4. Accounting Curriculum and Integration of IT Knowledge and Skills

IT knowledge and skills refers to acquisition of relevant knowledge and skills in the application of computers and telecommunication equipment to store, retrieve, transmit and manipulate data. Researchers over the years after a comprehensive review of studies regarding the importance of integration of information technology (IT) knowledge and skills have clearly taken a stand on the importance of integration of IT knowledge and skills in accounting curriculum while few others believe that an integration is not an assurance that accounting graduates would create value in their workplace in the future thereby meeting the expectation of their employers.

Armitage and Boritz (1986) suggests integration should be aimed at developing computing skills across the range of accounting subjects, literally linking all subjects

within an accounting degree. Ravel (1989) proposed a curriculum-wide approach to integrating computer usage in the accounting discipline and highlighted a wide spectrum of roles and constraints pertaining to users and teachers. Al-khadash and Al-Beshtawi (2009), carried out a research on Attitudes toward learning accounting by computers: the impact on perceived skills. The aim of the study was to determine the effectiveness of teaching undergraduate accounting students courses in using computer in accounting. Four hundred and sixty-three (463) accounting students were examined and a multiple choice question survey was performed after concluding a course offered to teach students certain computer skills. The result of the study showed that the course had an impact on attitudes towards the perceived skills from using computers for accounting purposes. That is, the course taken by the students' that is meant to develop their IT knowledge and skills had a significant impact on the accounting students examined. Contrary to the findings of Al-khadash and Al-Beshtawi (2009), based on a study carried out by Ng and Er (1989), they opined that computing is irrelevant to the learning of accounting concepts. Hence, IT knowledge and skills is irrelevant to accounting students.

Zureigat (2015) embarked on a research study on Accounting graduates skills and employers' needs: The Saudi case. The result of the findings of the research study revealed that IT knowledge and skills are essential for accounting graduates based on the employers view point in one of the biggest emerging market namely KSA in Saudi Arabia. As a result, accounting education programs are encouraged to restructure their programs to equip accounting graduates with the relevant IT knowledge and skills needed for the labour markets. Similarly, another study conducted by Muda, Che-Hassan and Abdul-Samad (2009) on employers' reaction to the quality of accounting graduates produced by Universiti Technologi Mara (UiTM) revealed that there is a gap between the employers' perception on the determinants of quality of the graduates and the University's curriculum apparatus for ensuring quality of the graduates. The findings of the study suggests that it is important to ensure that accounting graduates are equipped with the required knowledge and skills to facilitate them in securing relevant employment and adding value to organizations in the future. The study also revealed that educators and university administrators play important roles in ensuring that accounting graduates obtain the necessary skills and knowledge for them to be marketable in the industry and in the public sector.

As observed, there are quiet few research works that examined the integration of IT knowledge and skills in the accounting curriculum in with the case study being

Nigeria private higher institution students. This is what has led to the formulation of the underlisted hypothesis:

H_1: *Accounting students IT knowledge and skill inculcation would bring about an enhancement of value adding benefits to organizations*

3. Hypotheses

For the purpose of this study, two (2) Hypotheses were generated from the review of relevant literature. They are:

H_1: Integration of accounting software packages into the accounting curriculum would improve accounting education and result in improvement of the value adding capacity of accounting

H_1: Accounting students IT knowledge and skill inculcation would bring about an enhancement of value adding benefits to organizations

4. Research Methodology

The survey research method was employed in this study. The choice for the survey method lies in the fact that it focuses on obtaining subjective opinion of respondents and aims at drawing an accurate assessment of the entire population by studying samples derived from the population usually in the form of questionnaire (Osuala, 2005). The primary data was used as a source of data. The primary data was obtained from the group of respondents through a properly constructed questionnaire. The questionnaire was constructed using a five-point and a four-point Likert scale. The questionnaire was divided into two sections, Section A is on questions pertaining to the two (2) hypotheses while Section B comprises personal information of the respondents.

For the purpose of this study, the population size for this study is the 107 third year students of accounting in the department of accounting department of Covenant University and 40 fourth year students of accounting with a total of 47 both schools in Ota, Ogun State. These institutions are both private institutions, and the rationale behind selecting the population lie in the fact that during the session break, at the end of their second year, accounting students of Covenant University usually go for Industrial Attachment. On the other hand, at the end of their 3rd year, accounting

students of Bells Technology usually go for their compulsory Industrial Attachment which they do in accounting firms and other organizations.

Since the population was based on census, the sample size was equal to the population size. Hence the total sample size is 107 from Covenant University and 40 from Bells University of Technology giving us a total of 147 students. The target audience is accounting students of selected Nigeria private higher institutions. The data collected were analyzed with the use of both descriptive and inferential statistics. The hypotheses formulated for this study were tested with the use of statistical parametric tools known as known as correlation and regression analysis. While correlation technique was used as a result of having three variables in hypothesis one, linear regression was used to test the degree of the relationship that exists between the two variables in hypothesis two.

5. Results

The reliability test using cronbach's Alpha is 0.733 which revealed that the questionnaire is reliable.

Table 1. Reliability Statistics

Cronbach's Alpha	N of Items
.733	15

Field survey 2015

Hypothesis One: Accounting software will improve accounting curriculum and result in value adding capacity of accounting students.

Table 2. Correlations of Accounting Software and Curriculum

		Accounting Software Usage	Accounting Curriculum	Value Adding Performance
Accounting Software Usage	Pearson Correlation	1	.110	.371**
	Sig. (2-tailed)		.254	.000
	N	110	110	110
Accounting Curriculum	Pearson Correlation	.110	1	.182
	Sig. (2-tailed)	.254		.057

	N	110	111	110
Value Adding Performance	Pearson Correlation	.371**	.182	1
	Sig. (2-tailed)	.000	.057	
	N	110	110	110

***Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows the correlation results of the relationship between Accounting software, Accounting curriculum and value adding capacity of accounting students. The statistical results indicate a weak relationship between Accounting software and Accounting curriculum (r = .11; COD = 1.2 percent). The relationship between Accounting software and Value adding performance of students is, at an average level (r = .37; COD = 13.7 percent). Accounting curriculum and value adding performance also indicate a weak relationship (r = .18; COD = 3.2 percent). The trend of the research results is has very important implications of Accounting education research. Although, a relationship is found to exist between accounting software, Accounting curriculum and value adding performance of students, there are possibilities to the fact that the curriculum may still need to be redesigned in a way that makes it practically relevant to accounting practice. It may be that whereas, the inclusion of accounting software use into accounting curriculum have a strong theoretical fit, it yet has a practical gap.

Hypothesis 2: Accounting Students' IT knowledge and skill will not result in value adding benefits to organizations

Table 3(a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.265[a]	.070	.062	.43644

a. Predictors: (Constant), IT Knowledge Skill

Table 3(b) ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.551	1	1.551	8.144	.005[b]
	Residual	20.572	108	.190		
	Total	22.123	109			

a. Dependent Variable: Value Adding Performance

b. Predictors: (Constant), IT Knowledge Skill

Table 3(c) Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.394	.347		6.901	.000
	IT Knowledge Skill	.220	.077	.265	2.854	.005

a. Dependent Variable: Value Adding Performance

Table 3 (a, b and c) show the regression effect of IT knowledge and skill of accounting students on their value adding performance. The statistical result show a significant relationship between IT knowledge and skills and value adding performance ($p<0.01$). R Square value of 0.70 (70 percent) indicate that IT knowledge and skill explain for Seventy percent change in value adding performance of students.

4. Discussion of Findings

The main aim of this study is to examine the role of ICT integration in accounting education on the value adding capacity of accounting students in Nigeria. This study engaged two Hypotheses

Hypothesis one states that "Accounting software will improve accounting curriculum and result in value adding capacity of Accounting students" Pearson correlation technique was ran for the purpose of testing this hypothesis. The null

hypothesis was rejected, while the alternate hypothesis which states that "Integration of accounting software packages into the accounting curriculum would improve accounting education and result in improvement of the value adding capacity of accounting". This empirical finding is consistent with the result of a research carried out by Rhodes (2013) on the future of accounting education with the integration of ICT (with particular interest on accounting software packages) with particular interest on the reform of accounting education that flowed from a process followed to align accounting education to accounting practice in higher education revealed that the alignment of accounting education and accounting practice through the integration of ICT could bring the accounting graduate and employer into alignment thereby adding value to the graduates of 2013.

Hypothesis two states that "Accounting students IT knowledge and skill inculcation would bring about an enhancement of value adding benefits to organizations". Based on the result of the analysis carried out, the null hypothesis was rejected while the alternate hypothesis was accepted. This shows that the way and manner in which the accountants in business are being impacted by the codes of ethics, is the same way by which the accountants in practice are also impacted. The result of this study is consistent with that of Zureigat (2015) whose findings revealed that IT knowledge and skills are essential for accounting graduates based on the employers view point in one of the biggest emerging market namely KSA in Saudi Arabia.

7. Conclusion

Accounting graduates like other business graduates need to have the required skills that would enable them engage in their own accounting and auditing profession as well as deal with daily accounting and auditing issues. In recent times, literature has widely criticized accounting graduates based on the argument that accounting education does not meet the requirement of the labor market and the needs of employers. Such arguments have been widely evidenced through many studies. Accounting is one of the programmes most of institutions (both at the local and international level) offer. The dynamism in it requires frequent review of the syllabus to capture the realities in the modern global economic system and the challenges of knowledge up-date that is necessary for the products of the programmes to be relevant to the strategic plans of their prospective employers.

8. Recommendation

Based on the findings from this research study, the under listed were recommended:

1. The National Universities Commission (NUC) and relevant educational bodies should integrate (in all higher institution) into accounting curriculum at all level a practical course on accounting packages and IT knowledge and skills. This would enable students put into practice all the theories on accounting that they have been taught in class.

2. NUC should ensure strict adherence to the newly ICT integrated curriculum by ensuring that higher institutions (both public and private) without adhering to this new curriculum would not be accredited and may even be sanctioned.

3. Higher institutions should also be encouraged to employ IT knowledgeable and skilled lecturers who would be in charge of driving IT knowledge and skills in the students

4. Students before graduating i.e. in the course of their study in the higher institution should be mandated by the university to go on Industrial Attachment (IT). This would open them up to know that which the accounting industry and their profession expect of them in the area of ICT knowledge acquisition.

9. References

Al-Khadash, H. and Al-Beshtawi, S. (2009). Attitudes toward learning accounting by computers: The impact on perceived skills. *Journal of Accounting and Taxation, 1*(1):001-007.

Armitage, H.M., & Boritz, J.E. (1986). *Integrating Computers into the Accounting Curriculum, Issues in Accounting Education*, (Spring) 1(1):86-101.

Dandago, K. and Shaari, N. (2013). Effects of focus of accounting research on the quality of accounting education in Malaysian Universities. *Asian Economic and Financial Review, 3*(10): 1371-1385.

Ebijuwa, A. (2005). Information and communication and technology in university libraries: The Nigeria experience. *Journal of Library and Information Science, 7*(1): 23-30.

Heffes, E. (2001). Making accounting relevant and attractive. *Financial Executive 17* (3): 49-52.

Jebeile, S. and Abeysekera, I. (2010). The spread of ICT innovation in accounting education. *International Journal of Teaching and Learning in Higher Education, 22*(2): 156-168.

Lin, Z., Xiong, X. and Liu, M. (2005). Knowledge base and skill development in accounting education: Evidence from China. *Journal of Accounting Education, 23*(3): 149-169.

Muda, S., Che-Hassan, A.and Abdul-Samad, R. (2009). Requirement of soft skills among graduating accounting students: Employers and UITM students' View, Shah Alam: *Research Management Institute,* 1-58.

Organization for Economic Community Development (1987). *Are women sustainable in infotech industry? Women and emerging technologies*, British Council Division, British Deputy High Commission, Chennai, 1996.

Organisation for Economic Cooperation and Development (OECD). (1996). *The knowledge-based economy.* Retrieved from http://www.oecd.org/dsti/sti/s_t/ inte/prod/kbe.htm.

Raval, V. (1989). A Curriculum-wide Approach to Integration of Computer in Accounting Education. *Journal of Information Systems*, 3(2): 132-144.

Salome, E. & Chukwunwendu, A. (2014). Integrating information and communication technology (ICT) in accounting education instruction in Ekiti State Universities. *International Journal of Business and Social Sciences, 5*(6): 195-204.

To-Anyakoha, M. (2005). Information and communication technology (ICT) in library science. *Coal City Libraries, 2*(1):2-12.

Ukpebor, N. (2006). The use of ICT as instructional materials in schools: Mathematics implication for secondary schools. *ABCUS of Nigeria, 31*(1):80.

Zureigat, Q. (2015). Accounting graduates skills and employers' needs: The Saudi case, Jordan. *Journal of Business Administration, 11*(1):227-237.