ACCOUNTING FOR FINANCIAL RESOURCE INVESTMENT ON INFORMATION AND COMMUNICATION TECHNOLOGY TOWARDS MANAGEMENT AND SOCIAL INNOVATION IN TERTIARY INSTITUTIONS IN NIGERIA

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ABSTRACT

The study aimed at determining the justification of financial resource investment on information and Communication Technology (ICT) facilities in tertiary institutions in Nigeria. It is a descriptive survey research targeted on the population of students and lecturers of private and public colleges of education, polytechnics / Montechnics and universities recognized by their respective regulatory bodies in Nigeria. The sample of the study was 230 users (Students and Lecturers) selected using judgemental sampling technique. Instrument for data collection was structured questionnaire and the data were analyzed using mean score while hypotheses were tested using Z-test statistic. The findings were that users do not spend commensurate hours on ICT facilities, that there were no alternative sources to ICT facilities preferred by users of the ICT facilities for optimal productivity. Also, there were barriers such as inconsistent electricity supply, time constraint due to academic activities, poor network, Poor maintenance among others. The implication is that the anticipated objective of adoption and usage of ICT facilities in teaching and learning is still yet to be achieved. It is therefore recommended that users should desire to spend sufficient time restructuring their work schedule to allow effective ICT practice and usage. Also the various regulatory bodies and government should step up actions to curb barriers associated with ICT usage in the institutions.

Keywords: *Financial Investment, Information and Communication Technology, Management Innovation, Social Innovation and Tertiary Institution.*

INTRODUCTION

Information Communication Technology in recent time is a reliable backbone for national development and survival in a rapid developing country like Nigeria. As such Nigeria among the developing countries of the world painstakingly devise bold and courageous initiatives to address a host of vital social economic issues such as reliable infrastructure, transparent government administration, skilled human resources etc (Nigeria National Policy for Information Technology) such investment expects futural benefit . Organizations today invest on ICT to create and reach new markets and channels share and distribute knowledge and information (Malaarachchi, Wickraruasing he and Dasanayaka, 2016). They adopt the use of computer systems, database management systems, development of network systems to create, store, preserve, secure and use information for effective decision making (Sani, 2015). They make use of electronic devices such as laptops, palm-taps, personal computers, phones, 1-pads, Iphones, I –pods, CD – Players, VCD, DVD, Flash drive, memory card internet etc. Government recognizes Information Technology as a strategic imperative for national development and taking cognizance of the immense benefits, she resolved to provide considerable nationals resources both financial and otherwise for the realization of the National IT vision statement. ICT Serves as means of assessing, planning, managing development change for sustainable growth. Knowledge acquired through advances in ICT changes the global economy as such beneficiaries engage in different areas of work in life to enhance the GDP and GNP (Olusanya and Oluwasanya, 2014).

According to Olusanya and Oluwasanya (2014) the impact of Information Technology (IT) currently in all sphere of the society derives from education sector as it is a needful of today's knowledge based economy. ICT immensely contributes to acquisition and diffusion of knowledge and therefore applies in manipulation of the economy. The era of ICT metamorphosed in different stages expanding the scope of its services and tool of delivery, presently, there is e-library and virtual library that provide access to electronic books and journals, online references, web catalogues, web resources etc (Sani, 2015). Tertiary educational institutions thrives new scientific discoveries and innovations through teaching and learning delivered on the platform of ICT infrastructure. Availability of personal computers and their accessories enhances output of teachers and students. White board provides instant access to materials from various sources and applying pre-planned lectures that move without

apparent from visual to verbal or vise-visa. Visual library aids teaching and learning as well as research as it allows access to a large volume of library resources such as articles, journals, books etc through the internet.

STATEMENT OF THE PROBLEM

The global changes in mode of institutional administration gave rise to same in Ebonyi State to keep pace with the trend as it even makes uncertain administrative environment to be more stable, friendly and predictable to take reliable and quick decision. The data needed for information is no longer restricted to manner systems. The institutions new invest on ICT facilities to record, synthesize, analyse and quickly disseminate information to the user(s) However, evidences have shown that despite the benefits derivable form ICT in those institutions there are certain challenges encountered which hinder achievement of desired goals to less than 5 percent (Guardian, 2007) the inaccessibility still companies the awareness, application and knowledge to the era of analogue. Hence, the study of "accounting for financial resource investment on ICT in tertiary institutions in Nigeria.

OBJECTIVES OF THE STUDY

The broad objective of this study is to appraise the impact of financial resource investment on ICT in higher institutions in Nigeria with a view to identifying whether the usage and service provided by ICT worths its financial commitment. The specific objectives states

1.   To ascertain how many hours (time) spent per week in ICT facilities by users in tertiary institutions in Nigeria
2.   To identify other alternative ICT facilities preferred by users to ICT facilities in tertiary institutions in Nigeria
3.   To determine the barriers to effective use of ICT facilities by users in tertiary institutions in Nigeria

Research Questions

The following research questions derive from the objectives

1.   How many hours are spent per week on ICT facilities by users in tertiary institutions in Nigeria?
2.   What are other alternatives to ICT facilities preferred by users in tertiary institutions in Nigeria?
3.   What are the barriers to effective use of ICT facilities by users in tertiary institutions in Nigeria?

Statement of Hypotheses

Ho$_1$:   Users do not spend many hours per week in using ICT facilities in tertiary institutions in Nigeria

Ho$_2$:   There are no other alternative using ICT facilities preferred by users in tertiary institutions in Nigeria

Ho$_3$:   There are no barrier to effective use of ICT facilities in tertiary institutions in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Financial Resource: This simply refers to the money available to a business for spending in then form of cash, liquid securities and credit lines. This is necessary in order to operate the business efficiently and sufficiently. According to Oyekan, Adelodun and Oresajo (2015) financial resource means the monetary resource which serves as a means of acquiring all the other educational resources. The availability and its mobilization is matters much in education industry and it is emanates from various sources. Ogunlede (1989) in Campbell (2010) states four major sources of financing pubic tertiary institutions as:

-   Students' contribution in the form of living expenses on campus
-   Interest earning on short term bank deposits and rents of institutional properties
-   Federal and state government grants
-   Private contributions by commercial organizations in the form of occasional grants for specific research purpose

Investment: This implies to allocate money in the expectation of some benefits in the future. It is the commitment of current financial resources in order to achieve higher profits or benefits in the future. Financial resources investment infers those form of cash liquid securities and credit lines which are freely accessible, opening licensed text, media and other digital assets that are used to acquire knowledge, teaching, sharing knowledge, learning and research purposes. Simply financial resources is the set of liquid assets of an organization evidencing cash, bank deposits and liquid financial investment. In this content, these benefit is competence on utilization of ICT facilities to achieve excellent teaching and learning in tertiary institutions in Nigeria. Information and Communication Technology (ICT).

ICT is the technology that supports activities involving information such as gather, processing, storing and presenting data. It therefore covers any product that will store, retrieve, manipulate, transmit information electronically in a digital form for example personal computers, digital television, robots, email. ICT serves as modern handling of information by electronic means moving access to storage of processing, transportation or transfer and delivery (Bell, 2008). According to Balasubra - Maanian et al, (2009), use of ICT in Education improves the quality and quantity of education and equally causes to better innovative, creative and cognitive thinking, higher productivity, efficiency and educational outcomes (Adeosun, 2010). ICT consists of physical devices and software that link various computer hardware components and transfer data from one physical location to another thereby facilitating the use of electronic delivery transactions. Its facilities provide opportunity for personalized, flexible and asynchronous learning and shifts the learning form teacher centered to student centered and a catalyst for reforms about classroom, educational institute, community and system (Youssef and Dahmani, 2008).

Yekini and Lawal (2012) in Yekino N.A (2014).Opines that ICT is a powerful collection of elements such as computer hand and soft wares, robotics, workstations telecommunication networks and smart chups which is also at the root of information system. Note by Pelgrum and Adnerson (1999) education innovation in ICT is embedded within framework of education reforms that aimed at develop students' capacities for self-learning, problem-solving, information seeking and analysis and critical thinking as well as the ability to communicate, collaborate and then learn. Tertiary institutions: Refers to higher education institutions charged with the responsibilities of ensuring that pubic resources are efficiently spend to societal purposes. Highs education institutions are under three agencies that perform supervisory and regulatory functions under the federal ministry of education. They are National Universities Commission (NUC) for Universities, the National Board for Technical Education (NBTE) for polytechnics /Monotechnics and technical colleges and the National Commission for Colleges of Education (NCCE) for Colleges of Education According (Bamiro 2012). Tertiary Education for the knowledge society theoretical review (2008) Tertiary Institutions offer tertiary education that contributes to social and economic development through four major missions namely:

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1. Formation of human capital (primarily through teaching)
2. Building of knowledge bases (Primary) though research and knowledge development
3. Disseminating and using knowledge (Primarily through interactions with knowledge uses).
4. Finally maintaining knowledge (inter-generational storage and transmission of knowledge).

Empirical Review

Eze, Chinedu – Eze and Bellow (2018) Investigated Utilization of E-learning facilities in Educational Delivery System of Nigeria. A study of M-university. They adopted qualitative approach and used semi-structured interviews to gather data and analyzed them using thematic approach. The findings were that M-University, E-Learning facilities are adequate and accessible to users. Also, most teachers are comfortable with utilization of various facilities during classes compared to most public tertiary institutions although the utilization has not yield been maximized Iloanusi and Osuagwu explored ICT in Educational Achievement in Nigeria. It was reported that though funding projects in this direction has yielded proportionate outcomes it lacks expectations compared to similar investments made in GSM communication. Also, the mode of delivery of knowledge and communication are yet to be enhanced. Olojede, Ifenkwe and Okperriaojiaku (2017) studied factors influencing ICT use by women Research Scientists in Universities of Agriculture in Nigeria. Data were presented using descriptive statistics and logit regression. Major findings were that the respondents spent between 1-4 hours in accessing ICT facilities owing to their numerous academic engagements which global system of mobile communication and use of modern were most preferred channels of ICT used.

Furthermore, Kyalo and Nzuki (2014) examined the Determinants of ICT into ration in Tertiary institutions using multiple case study methodology. It was unveiled that enables and infrastructure aspects for ICT integration and the managerial aspect of incorporating the determinants were paramount tool for a state of art educational environment. In the study of Ghavifekr and Rosdy (2015) on Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools, data gathered were analyzed using SPSS (version 21) software. Results indicated that ICT integration has great effectiveness for both teachers and students resulting from professional development training

programs for teachers. Besides, Oluwatayo and Ojo (2017) researched on the determinants of Access to Education and ICT in Nigeria. Using probit regression model and descriptive statistical tool for analysis revealed age, gender, marital status, household size as determinants. Bellow and Johnson (2011) examined the role of ICT in managing higher education for sustainable development in Nigeria questionnaire was used to gather data and then analyzed using frequencies a percentages and ranked. It revealed that lecturers rank, inadequate provision of ICT facilities are the most inhibiting factors against ICT usage in management of higher education and that ICT facilities are not accessible in all locations in a particular institution. In conceptualized by Musa, Mahmud and Jalil (2018) on Review of obstacles of ICT usage in Nigeria tertiary education institutions" where related literatures were extracted findings were that: unsteady electricity supply, computer illiteracy, high cost of internet data and electronic services, fear of change, fear of redundancy, lack of adequate facilities, internet and electronic insecurity are notable hindrances to effective usage of ICT facilities.

Igwe (2015) carried out a study on factors influencing the use of information and communication Technology in teaching and learning computer studies in Ohaukwu L.G.A of Ebonyi state. Document analysis was used and discovered that school and home environmental factors collaborate to affect the use of ICT in the area. According to the research by Srivastava, Waghmare, Jagzape, Rawekar Quiaz and Mishra (2014) on the Role of Information and Communication Technology in Higher Education: Learners perspective in Rural Medical Schools analysis was by percentages and focus group discussion was by coding. The result was that learners value text books and Technology almost equally and regarded computer training as a desirable incorporation in medical curriculum.

THEORETICAL FRAMEWORK

The study was anchored on Accelerator theory of investment (accelerator) or theory of inventory investment. It originated from Carved (1903) while acceleration principle seems to have been carried by Clark (1917). It incorporates the kind of feedback from current output to investment that Keynes saw occurring through the effect of current output on investor's expectations of course firms do not observe future output with certainty rather expectations. The Accelerator model predicts that investment is proportional to the increase in output in the future. This is affirms that financial resource investment on ICT in this study is

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proportional to expected increase in output in future period all things being equal. That is enhanced teaching and learning that is not certain in tertiary institutions in Nigeria.

METHODOLOGY

The study is a survey research of descriptive design. Its population comprises users (lecturers and students) in private and public Colleges of Education/Technical colleges, polytechnics/Monotechnics and Universities approved by Federal Ministry of Education; Supervised and regulated by their various regulatory bodies. Judgmental sampling procedure was used to select sample of 230 respondents that were used. This was imperative in order to arrive at dependable result with minimum margin of error. The research instrument for data collection is structured questionnaire since the data were primary. The study employed the modified 4 – point Likert scale where weight were assigned thus; strongly Agree (4), Agree (3), Disagree (2) and strongly Disagree (1) To test formulated hypotheses Z – test statistic was used. The formula states:

$$Z = \frac{\bar{x} - \mu}{\sigma}$$

Where;   Z = Z test

            $\bar{x}$ = Sample mean

            μ = Population mean

            α = Standard deviation

            n = total number of observation

Time/hour spent per week on ICT facilities by users in tertiary institutions in Nigeria.

Table 1: Analysis of Responses(Hypothesis I)

Items	SA 4	A 3	D 2	SD 1	TOTAL 10
1 – 5 Hours per week	120 480	96 334	8 16	6 6	230 886
6 -10 hours per week	60 240	84 252	15 30	71 71	230 593
11-15 hours per week	41 82	78 230	74 148	37 37	230 497
16 – 20 hours per week	20 80	17 51	148 6	187 87	230 330
21 hours and above per week	21 82	34 68	86 172	89 59	230 407

Hypothesis I
Table 2: Calculation of Mean squared Deviation

S/N	X-$\bar{X}$	(X-$\bar{X}$)^2
1	886-543 = 343	117649
2	593 – 543 = 50	2500
3	497 – 543 = 46	2116
4	330 – 543 = 213	45369
5	407 – 543 = 136	18496
Total	2713	186,130

Source: Field Survey Data 2019

Table 3: Analysis of Responses (Hypothesis 2)

Alternative avenues preferred by users of ICT facilities to source information in higher institutions in Nigeria.

Items	SA 4	A 3	D 2	SD 1	TOTAL 10
Personal computers (laptops, I phones etc	65 260	46 138	84 168	35 35	230 601
Commercial cyber café	71 284	57 121	54 108	48 48	611 230
Seminars and workshops on ICT	76 304	63 189	50 100	41 41	230 634
School and personal library	36 144	63 189	51 102	80 80	230 515
Personal office computers	108 432	88 264	20 40	14 14	230 750
Textbooks, media and journals etc.	67 268	65 130	61 122	37 37	230 557

Hypothesis 2
Table 4: Calculation of mean squared Deviation

S/N	X-$\bar{X}$	(X-$\bar{X}$)^2
1	601-611 = - 10	100
2	611 – 611 = 0	0
3	634 – 611 = +23	529
4	515 – 611 = 96	9216
5	750 – 611 = 139	19321
6	537 – 611 = 54	2916
	Total	32082

Source: Field Survey data (2019)

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Table 5: Analysis of Responses (Hypothesis 3)
Barriers to effective use of ICT facilities in higher institutions in Nigeria

Items	SA 4	A 3	D 2	SD 1	TOTAL 10
Time constraints due to academic activities	65 260	84 252	31 62	50 50	230 622
Unsteady power supply	86 344	83 249	20 60	41 41	230 694
Techno phobia (fear of ICT facilities)	55 220	62 186	65 130	48 48	230 584
Lack of technical skills	90 360	71 213	32 64	37 37	230 674
Poor network	61 244	42 126	60 120	67 67	23 557
Unconducive office accommodation	94 376	44 132	48 96	44 44	230 648
Age of ICT facilities	47 188	59 177	63 126	61 61	230 552
Low interest of users	65 260	87 261	35 70	43 43	230 634
Irregular maintenance	92 368	68 204	48 96	22 22	230 690

Source: Field survey 2019

Hypothesis 3
Table 6: Calculation of Mean Square Deviation

S/N	$X-\bar{X}$	$(X-\bar{X})^2$
1	622 – 619 = 6	36
2	694 – 628 = 66	4356
3	584 – 628 = 44	1236
4	674 – 628 = 46	2116
5	557 – 628 = 71	5041
6	648 – 518 = 20	400
7	552 – 518 = 76	5776
8	634 – 628 = 6	36
9	634 – 628 = 62	32082
	Total	23541

Source: Field Survey data (2019)

DATA ANALYSIS

Mean and standard deviation were used to analyze data gathered from responses from modified 4 point Likert Scale.

Testing of Hypothesis
Hypothesis I:

Ho1: Users do not spend many hours per week on ICT facilities in tertiary institutions in Nigeria
The hypothesis was tested using the data in table 2.

Mean $(\bar{X}) = \frac{\mathcal{E}x}{n} = \frac{2713}{5} = 543$

Standard Deviation (6) = $\sqrt{\frac{\mathcal{E}(x-\bar{x}^2)}{n}} = \sqrt{\frac{186130}{5}} = \sqrt{37226} = 193$

$Z = \frac{\bar{X}-\mu}{\frac{SD}{\sqrt{n}}} = \frac{543-575}{\frac{193}{\sqrt{5}}} = \frac{32}{86.31} = 0.37$

Decision: Since Z – test calculated (0.37) is less than the Z– table value of 1.96 at 5% level of significance, accept the null hypothesis and reject the alternative hypothesis. It is therefore concluded that users do not spend many hours per week in assessing ICT facilities in tertiary institutions in Nigeria.

Hypothesis 2:

Ho2: There are no other alternative to ICT facilities preferred by users in tertiary institutions in Nigeria. This was tested using the data in table 3 and 4 .

Mean $(\bar{x}) = \frac{\mathcal{E}x}{n} = \frac{3668}{6} = 611$

Population mean (µ) = <u>Likert scale average x sample size x number of items</u>

<div align="center">Number of items</div>

$= \frac{2.5 \, x \, 230 \, x \, 6}{6} = \frac{3450}{6} = 575$

Standard deviation (б) = $\sqrt{\frac{\mathcal{E}(x-\bar{x}^2)}{n}} = \sqrt{\frac{32082}{6}} = \sqrt{5347} = 73$

$Z = \frac{\bar{X}-\mu}{\frac{SD}{\sqrt{n}}} = \frac{611-575}{\frac{73}{\sqrt{6}}} = \frac{36}{\frac{73}{\sqrt{6}}} = \frac{36}{29.80} = 1.21$

Decision: Since Z – test calculated (1.21) is less than the 2 – table value of 1.96 at 5% level of significance accept the null hypotheses and reject the

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attentive hypothesis and conclude that there are not alternatives to ICT facilities preferred by users in tertiary institutions in Nigeria.

Hypothesis 3

Ho3: The hypothesis was tested using the data in table 5 and 6.

Mean $(\bar{x}) = \dfrac{\mathcal{E}x}{n} = \dfrac{5655}{9} = 628$

Population mean $(\mu) = \dfrac{2.5 \, x \, 230 \, x \, 9}{9} = 575$

Standard deviation $(\mathfrak{б}) = \sqrt{\dfrac{\mathcal{E}(x-\bar{x}^2)}{n}} = \sqrt{\dfrac{23541}{9}} = \sqrt{2616} = 51$

$Z = \dfrac{\bar{X} - \mu}{\frac{SD}{\sqrt{n}}} = \dfrac{628-575}{\frac{51}{\sqrt{9}}} = \dfrac{53}{-17} = \dfrac{36}{29.80} = 3.12$

Decision: Since Z – test calculated (3.12) is higher than the Z – table value of 1.96 at 5% level of significance, reject Ho and accept H1 which means that there are barriers to effective use of ICT facilities in tertiary institutions in Nigeria.

Findings

The result of the analyses and hypotheses testing unveiled the following:
1. The users (lecturers and students) do not spend many hours per week in assessing ICT facilities in tertiary institutions in Nigeria.
2. There are no alternatives to ICT facilities preferred by users in tertiary institutions in Nigeria.
3. There are barriers to effective use of ICT facilities in tertiary institutions in Nigeria

DISCUSSION OF FINDINGS

The first finding attested that the users (lecturers and students) do not spend many hours per week in assessing ICT facilities in tertiary institutions in Nigeria. The implication is that the users will be adequately effective in operating ICT facilities into enhance teaching and learning in tertiary institutions in Nigeria if they devote more time in the practice.

This finding was corroborated by Olojede, Ifenkwe and Oparaojiaku(2017) who stated that respondents spend between 1-4 hours in accessing ICT. As well Srivastava, Waghmare et al 2014) opined that learners valued textbooks and technology almost equally and regarded computer training as a desirable incorporation in medical curriculum.

The second finding was that there are no alternatives to ICT facilities preferred by users in tertiary institutions in Nigeria. The implication is that the effective use of installed ICT facilities in teaching and learning process should adequately enhance teaching and learning. This was supported by Eze, Chinedu- Eze and Bello (2018) in their studies which revealed that many universities e-learning facilities are adequate and accessible to users and most teachers during classes compared to most public tertiary institutions although the utilization is yet to be maximized.

The third finding revealed that there are barriers to effective use of ICT facilities in tertiary institutions in Nigeria. This implies that the desired target of installing these facilities in the sector have not fully been achieved. Olojede, Ifenkwe and Oparaojiaku (2017) adduced that educational level, primary assignment, year of working experience and training on ICT network error and too many family problems have deterred the practice and use of ICT facilities. Also, Bello and Johnson (2011) discovered that lecturers rank, inadequate provision of ICT facilities, inaccessibility of ICT facilities in all locations in a particular institution hamper the usage in higher education.

According to Ebenezer (2014) internet and electronic insecurity made Nigeria to have bad reputation on internet fraud occasioned by joblessness of young people in order to survive. In addition, Olofin and Amede (2015) opined that laziness of students to learn modern technologies apart from their normal whatsapp, facebook and other social media services, high cost of internet data and speed of tariff. While Tongia (2004) emphasized the general causes of challenges facing complete adoption of ICT facilities as awareness, availability, accessibility and affordability.

CONCLUSION
From the test of the hypotheses formulated and findings therein this study concludes that users of ICT facilities do not spend enough time/hours per week on their usage despite that they are no alternative, hence they value textbooks and technology almost equally. In addition, many barriers were identified to hamper the effective usage of ICT facilities in tertiary institutions in the country and makes its financial investment unjustified.

RECOMMENDATIONS
Based on the foregoing the following recommendations are made:

1. The users (lecturers and students) should restructure their work schedule to accommodate effective ICT practice and usage to enhance efficiency in the system.
2. The user should desire to adequately acquire the knowledge of ICT facilities for effective implementation in teaching and learning.
3. Individualized ICT practice should be introduced in all the activities of the educational sector while government should enact laws regulating the activities of network providers.

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