Gender Influence of ICT Competence of Undergraduates in State – Owned Universities in the South – West Nigeria

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Abstract:

Purpose: *This study was carried out to examine gender influence of ICT competence of undergraduates in State –owned universities in the South-West Nigeria.*

Design/Methodology/Approach: *The descriptive research design was adopted for this study. Five state owned universities (Adekunle Ajasin, Ekiti State, Olabisi Onabanjo and Osun State) were purposively selected. Three departments, English, Geography and Biochemistry were randomly selected from the Faculties of Arts, Social Sciences and Sciences respectively. The stratified sampling technique was used to select 1798 respondents among 200 level to 400 level students from the selected departments. The respondents were 1529 undergraduates; 50.9% and 49.1% females with mean age of 26.5±5.62years.*

Findings: *The results revealed that gender did not have significant relationship with ICT competence; telephone were highly and frequently used by university undergraduates; internet centres were mostly accessible for teaching and learning; purpose for using ICT facilities centred majorly on learning, leisure and entertainment. Undergraduates' ICT was mostly constrained by irregular power supply, exorbitant users' fees, and inadequate internet services.*

Implication: *Suggested solutions to the constraints such as improvement in infrastructural facilities like electricity and internet services and access to improve the students ICT competence,* university management especially in Nigeria should as a matter of urgency make basic investment to acquire modern technologies with a clear vision among others.

Originality/Value: *It has recommended that curriculum designers must take ICT to consideration when designing the syllabus. There must also be a development of clear policy to guide the development and integration of ICT in the university system among others.*

Keywords: Gender Influence, Internet Access, State-owned Universities, Nigeria, Undergraduate ICT Competence, South West

Introduction

Information and Communication Technologies competence is a necessity to every organisation that seeks to achieve its goals and objectives in this information age. UNESCO (2005) defined competency as a set of attributes covering knowledge, skills and attitudes for enabling one to effectively perform the activities of a given occupation or function to the expected standard. The notion of competence with regards to the use of ICT especially by university undergraduates is broader than the technical skills needed to use ICT. It further stated that competency standards are often closely tied to local standards for students so that expected students outcome in a particular field of study implies a set of competencies with ICT in their learning and research. UNESCO (2014) stated that the competencies acquired in school should translate into private and social benefits. However, Blasé (2010) observed that an ICT competent user should be able to competently use computer related programmes as quickly as possible. UNESCO (2014) stated that educational policies should promote adequate use of ICT resources to enhance competence. It further opined that the competencies acquired in school should translate into private and social benefits.

ICT competence has been used by scholars in different dimension. Poelmeans, Truyen and Stockman (2012) noted that the research domain is characterised by the scattered and overlapping use of these terms, such as ICT skills, computer skills, computer ability, computer knowledge, computer or web fluency to mention a few. Kim and Lee (2013) described ICT competency as ICT skills necessary for living in a modern society; while Seungeun, Soojin, Daiyong, Hansung, Seungbum and Jamee (2011) stated that the term is a mastery of application software

and being able to use information well. This competence is necessary for economic development and social change worldwide. Adebambo and Adebayo, (2011) in their analysis of information and communication technology (ICT) usage in logistics activities of manufacturing companies in South-Western Nigeria saw the significant role of ICT users' competence in the adoption of ICT in an organisation. Westcott, Pizzaro, and Schiavo-Campo (2007) and Bach, Balardo, Bajwa, Kantharaju and Pransant (2011) also stated that ICT is a practical tool for service delivery which would result in competence.

The university is the citadel of learning where students acquire knowledge in different disciplines to increase their knowledge base. Universities also equip students with skills in reading, inquiry and independent thinking and strive to develop students' creativity, insight, and analytical skills. It is necessary to note that universities can provide opportunities for personal enrichment and also prepare students for future careers (Adetimirin, 2008). It is therefore imperative that university undergraduates require information which is very crucial to the overall academic development necessary for research and learning. She explained further that in the light of the above, information or media centres are established in each university to cater for the information needs of students, staff and other people in the university community. In view of the fact that many universities in Nigeria are underfunded and therefore unable to acquire sufficient information materials for their students, Information and Communication Technology (ICT) has been embraced to alleviate the problem. This provides access to current information needed for research and learning in the university system.

Studies had established that females tend to be less interested in computer and use them less often in their spare time (Schaumburg, 2001). In addition, studies have established that girls are less confident than boys in their computer skills, and that some international studies have found that boys scored better than girls in computer related knowledge and skills in vast majority of countries. In addition, the three computers related occupation (computer science, computer engineering and system analysis) are the top career choices for boys (Derbyshire, 2003). Females also have more negative attitude informed Kuzma (2005) to have argued that ICT towards computer (Bebetsos & Antoniou, 2008), thus they are often less computer literate than males (Kadel, 2005; Schaumburg, 2001) and this may result in different ways of using the computer (Jackson, Ervin, Gardner, & Schmitt, 2001). In a study, Sefyrin (2005) has shown that competence in ICT could be seen as a question of interest in ICT, where men are more interested in ICT than women. The study thus confirmed the view of gender and competence as actively constructed in a social process. This is because understanding of the terms was negotiated among individuals in the groups studied, and therefore, used as norms with which individuals understood themselves and their behaviours. Major ICT competencies required have been highlighted by Kirshner and Woperies (2003) to include competency in making personal use of ICT; mastery of a range of educational paradigms that make use of ICT; competency in making use of ICT as mindstools; competency in using ICT as a tool for academic competence. Sanda and Kurfi (2013) gave some challenges to gender and ICT users' competence in Nigeria. They are – poverty, access to ICT facilities education and skills, socio-cultural and economic problems.

Literature Review

ICT competence is very germane to our educational system. Afonso (2009) in his own view stated that, competence can be seen in relation to performance which can be measured through output and outcome indicators. He observed that, in the study of competence, there is need for homogenous population in order to achieve matching data. He saw heterogeneity as a limit when studying competence. Shofoyeke (2009) noted that the use of ICT in Nigeria is currently gaining prominence and has cut across all fields of study. He then asserted that an investigation into the competence of ICT in the university system is worth considering.

ICT competence has been a very significant demand in the present educational system. Nigerian Federal Government recognises primarily the importance of education and in its National Policy on Education (2004) adopted education as an instrument of national integration, socioeconomic development and technological growth. Despite this laudable policy, Nigeria's education system had suffered untold hardships in the last two decades. Standards have declined and the quality of

graduates is generally considered poor. The combination of these has made the public increasingly question the educational standard of Nigeria universities. The growing student population, deteriorating physical facilities, poor moral standards, inadequate teacher supply coupled with recurrent strike actions, and student unrest leading to truncated academic calendars, have all been invoked as direct causal factors. Regrettably, the declining quality of graduates from Nigerian universities as recognized by Mbakwem & Okeke (2007) has made many graduates unemployable. They very often do not possess the requisite knowledge, competences and skills to carry out the jobs they hold or seek and significant retraining costs are incurred when they are eventually employed. This current era of globalization, enhanced by ICT innovations, stands to improve the quality of students graduating from Nigerian universities thus making them competent ICT users. This is premised on the fact that ICT tools, if well positioned, could help to maintain and enhance competency as new ways of learning, research and development, and acquiring and disseminating knowledge are made possible. The end result of this would be graduates with the appropriate knowledge, skills and competencies needed in the world of work, moving Nigeria closer to the standards and productivity of the other countries competing in the global economy.

However, Ololube,Amaele, Kpolovie and Egbezor (2012) noted that undergraduates ICT competence in Nigeria has positive hope now that China has launched a communication satellite for Nigeria. They observed that it was first for an African country and the first time China has provided the satellite and the launch service. Ololube, Nbogu and Egbezor, (2007) stated that experts have predicted that the satellite will revolutionize telecommunication and bring about users' competence. China's efforts represent a progressive move towards making university undergraduates in Nigeria to have broader resources, secure reliable access to the internet and be competent in the use of ICT (Ololube et al 2012). They further observed that progress has been made in terms of improving ICT penetration in university education in Nigeria.

In recent years, the gender gap issues in ICT have been the subject of many studies both internationally and locally. Danner and Pessu (2013), have established that females tend to be less interested in ICT than males and use them less often in their spare time (Schavmburg 2001). In addition, studies have established that girls are less confident than boys in their computer skills, and that boys scored better than girls in computer related knowledge and skills. The three computers related occupations computer science, computer engineering and system analysis and engineering are top career choices for boys (Debyshire 2003)

Notwithstanding the above findings, some studies have not found significant differences in attitudes of male and female students toward computer education. For instance, Adenuga, Owoyele and Adenuga (2011) did not find significant differences in the gender groups' attitudes toward ICT education. Their study revealed generally that both boys and girls showed negative attitude towards ICT education. Wong and Hanafi (2007) also did not establish any significant difference in the attitudes of the male and female students toward ICT education. The study found that both gender groups had the same kind of attitude towards Information Communication Technology education. The various studies discussed thus far portray that evidence of gender disparities in students' attitudes toward computer education and use have not been conclusive. This situation necessitated the conduct of this study to broaden the discussion on gender disparity in undergraduates' attitude towards ICT users' competence.

Studies that have investigated the issue of gender in computer studies have come up with varied findings (Morris and Venkatesh 2000, Liaw 2002, Broos 2005, Wong et al 2008). Some have found differences in anxiety towards, use of and access to ICT with males more proficient and with better attitudes than females (Madell and Muncer 2004, Isman and Celikli 2009), whereas others found no gender differences (Shaw and Gant 2002, Wong and Hanafi 2007). Theories from psychology and sociology suggest that gender disparity in computer competence and use exists due to sex role typing (Aremu 2008). The gender schema theory suggests that sex typing occurs in children as a means of encoding and organizing information about their environments. Therefore, supporters of this theory believe that society has created an association between computers and "maleness" Under this theory, until computer use is required of all students at a very early age, men will continue to be more attracted to computer use

than women, thus creating a gender gap in both experience and knowledge. If the latter is so, then, this issue of gender becomes very important in training the of university undergraduates on ICT skills especially in Nigeria, where the number of female undergraduates is quite high. It is thus important that educators must investigate gender differences and possible biases that they present in the use of ICT so as to diminish the gender gap in computer use. This is very important especially for a developing country like Nigeria which is still in the beginning stages of interacting with ICT and implementing a computer education policy.

Objectives of the Study

This research work was carried out to investigate gender influence on ICT competence of undergraduates in state- owned universities in the South-west Nigeria.

The following are the specific objectives, to:

1. investigate the type of ICT available in the selected university
2. 2 find out the place(s) of accessibility of ICT facilities for research and learning
3. examine the purpose of use of ICT by undergraduates in the selected university
4. investigate the frequency of ICT use by undergraduates in the selected university
5. find out the constraints to ICT use by undergraduates in the university
6. examine the relationship between gender and ICT use by undergraduates in the selected university

Research Question

1. What is the type of ICT available in the selected university?
2. What are the place(s) of accessibility of ICT facilities for research and learning?
3. What is the purpose of use of ICT by undergraduates in the selected university?
4. What is the frequency of ICT use by undergraduates in the selected university?
5. What are the constraints to ICT use by undergraduates in the selected university?

Research Hypothesis

H0: There is no significant relationship between gender and undergraduates ICT competence in the university under study.

Methodology

The descriptive survey research was adopted and purposive sampling technique was employed to select five state-owned universities in the South-west, Nigeria out of the eight in the zone. Three departments- English, Geography and Biochemistry were randomly selected from the facilities of Arts, Social Sciences and Sciences respectively stratified sampling technique was used to select 1798 respondents among 200 level to 400 level students from the selected departments. Questionnaire and ICT competence test were used for data collection.

Table 1: Selected departments and faculties in the universities and sample size used for the study

Faculty/Dept	**Level**	**Universities**									
		AAUA		**EKSU**		**LASU**		**OOU**		**UNIOSUN**	
		SP	**SS**	**SP**	**SS**	**SP**	**SS**	**SP**	**SS**	**SP**	**SS**
Arts-(English)	200	96	38	168	67	106	42	120	48	203	81
	300	71	28	149	60	107	43	87	35	128	51
	400	55	22	160	64	110	44	100	40	109	44
Sciences-(Biochemistry)	200	97	39	204	82	68	27	121	48	110	44
	300	98	39	148	59	62	25	89	36	72	29
	400	105	42	113	45	149	60	400	160	125	50
Social Science-(Geography)	200	56	22	145	58	20	8	60	24	37	15
	300	55	22	106	42	16	6	30	12	21	8
	400	65	26	76	30	32	13	30	12	20	8
Total		698	**278**	1269	**507**	670	**268**	1037	**415**	825	**330**

SP – Study population = 4499 **SS – Sample size =** 1798

Three faculties were selected in each university and one department was selected in each Faculty. However, Ladoke Akintola University of Science and Technology, Ogbomoso, Ondo

State University of Science and Technology, Okitipupa and Tai Solarin University of Education, Ijebu-Ode were not used for the study.

Table 2: List of questionnaire with ICT competence test (ICTCT) distributed to respondents of the selected state-owned universities and retrieved ones

S/N	Name of University	Questionnaire with ICT competence test distributed	Questionnaire with ICT competence test retrieved
1.	Adekunle Ajasin University	278	220
2.	Ekiti State University	507	476
3.	Lagos State University	268	221
4.	Olabisi Onabanjo University	415	329
5.	Osun State University	330	283
	Total	**1798**	**1529**

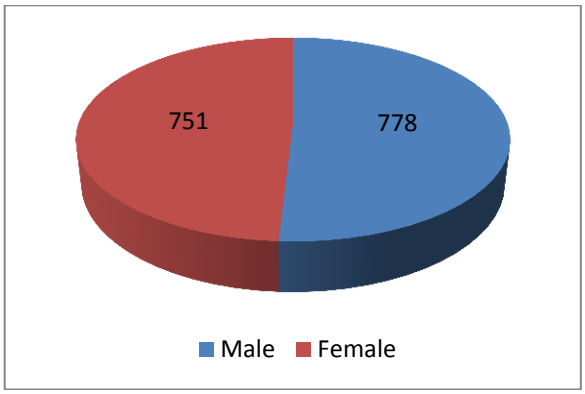

Fig. 1: Pie chart showing the distribution of the respondents by gender

Fig 1 presents that 50.9% of the respondents were males while their female counterparts were 49.1%. Figure 1 indicates the findings graphically.

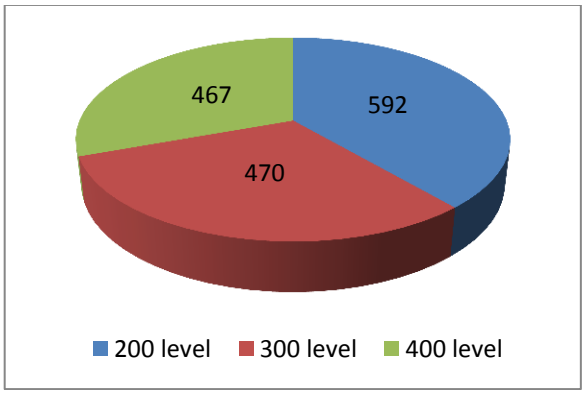

Fig. 2: Pie chart showing the distribution of the respondents by level of study

Fig 2 shows that 38.7% of the respondents were from 200 level, 30.7% were from 300 level while 30.5% were from 400 level. Figure 2 indicates the findings graphically.

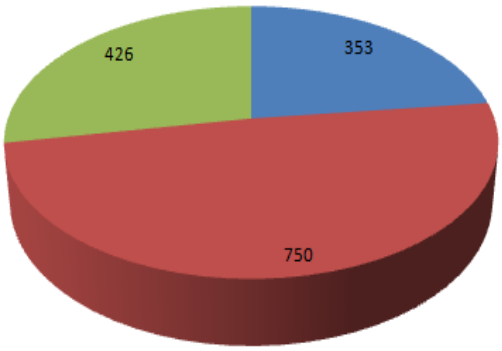

Fig.3: pie chart showing the distribution of respondents by age

Fig 3 presents 23.1% of respondents were between age 17-20, 49.1% were between age 21-23 while 27.8% were between age 24 and above. Figure 3 indicates the findings graphically.

Results and Discussions

.**Table 4 Which of the following ICT resources are available for use in your university?**

Use of ICT Resources by Students	Number of respondents	Percentage (%)
CD – ROM	580	38
Computers	1200	78
Facsimile	400	26
Internet	1400	92
Printer	1000	65
Digital Camera	700	46
Scanner	650	43
Projector multimedia	600	39
Telephone	1450	95

Telephone topped the list with 95% while internet came second with 92% facsimile came last with 26%. This finding support those of Khan, Bhatti and Khan (2011) whom confirmed that ICT were available to students in their main library, departmental computer laboratory and university hostel. The result also agrees with some findings from studies carried out in some Nigerian universities which affirmed that computers, CD-ROMS, Internet, printers etc. were available. (Adeniji, Adeniji and Ogunniyi, 2011; Etebu, 2010; Abubakar, 2010). It also corroborated the findings of Ojeniyi and Adetimirin (2013) on gender influence on ICT use by undergraduates in two university libraries in Nigeria.

Table 5. Places of accessibility to get information through ICT for teaching and learning.

Place of accessibility	Number of respondents	Percentage (%)
Lectures	500	33
Lecturers offices	600	39
University libraries	700	46
Homes	550	36
Internet centres	1300	85
Others specify	250	16

Majority of the students 85% identified the internet centres as the most accessible place to get information through ICT for teaching and learning. This collaborates the finding of Fabunmi (2012) where students rated internet centres as the highest place very useful and accessible to get information through ICT. It also supports Raji and Godsy (2010) in a study

9on the ICT use among the Students of Arts and Science Colleges in Kerala revealed that they used the Internet mostly for gathering information.

Table 6: Purpose of ICT Use by Undergraduates

Purpose for using ICT	AAUA		EKSU		LASU		OOU		UNIOSUN	
Resource	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree
	Feq. (%)	Feq. (%)	Feq. (%)	Feq. (%)	Feq. (%)	Feq. (%)	Feq. (%)	Feq. (%)	Feq. (%)	Feq. (%)
Support course of study (class work)	1200 (78%)	329 (22%)	1215 (79%)	314 (21%)	1205 (79%)	324 (21%)	1220 (80%)	309 (20%)	1210 (79%)	319 (21%)
Independent learning	1250 (82%)	279 (18%)	1260 (82%)	269 (18%)	1245 (81%)	284 (19%)	1255 (82%)	274 (18%)	1250 (82%)	279 (18%)
Research project	1230 (80%)	299 (20%)	1245 (81%)	284 (19%)	274 (18%)	1255 (82%)	1260 (82%)	269 (18%)	1245 (81%)	284 (19%)
Examination	1000 (65%)	529 (35%)	1010 (66%)	519 (34%)	509 (33%)	1020 (67%)	1030 (67%)	499 (33%)	1015 (66%)	514 (34%)
Assignment / Term Paper	1010 (66%)	519 (34%)	1020 (67%)	509 (33%)	494 (32%)	1035 (68%)	1040 (68%)	489 (32%)	1030 (67%)	499 (33%)
Leisure and general entertainment	890 (58%)	639 (42%)	890 (58%)	639 (42%)	890 (58%)	639 (42%)	890 (58%)	639 (42%)	880 (58%)	649 (42%)

Majority of the students agreed that the purpose of using ICT are : to support course of student (classwork), independent learning, research project, examination, assignment/term paper, leisure and general entertainment. This is line with Ojeniyi and Adetimirin (2013) in research conducted on gender influence on ICT use by undergraduates in two University libraries in Nigeria. Also, Rodríguez (2006) ascertained that an academic related activity was the major purposes of using ICT in his conducted studies in Venezuelan university. Mahmood (2009) agreed that 85% percent of students in a study conducted. Ibegwam (2004) agreed that University of Lagos Medical students used ICT for meeting their various academic needs.

Table 7 Frequency of use of ICT by students

ICT Facilities	Once a week	Twice a week	Daily	Occasionally
CD – ROM	(600) 39%	(610) 40%	(620) 41%	(630) 41%
Computers	(1220) 80%	(1230) 80%	(1250) 82%	(400) 26%
Facsimile	(420) 27%	(430) 28%	(1420) 93%	(460) 30%
Internet	(1250) 82%	(1430) 94%	(1450) 95%	(1030) 67%
Printer	(1020) 61%	(1030) 67%	(1050) 69%	(395) 25%
Digital Camera	(720) 47%	(730) 48%	(750) 49%	(410) 26%
Scanner	(670) 44%	(680) 44%	(700) 46%	(250) 16%
Projector Multimedia	(620) 41%	(630) 41%	(650) 43%	(410) 27%
Telephone	(1470) 96%	(1480) 97%	(1500) 99%	(240) 16%

Majority of the undergraduates identified the telephone as being frequently used: once a week 96%, twice a week 97%, daily 99%. This is in line with Fabunmi (2012) on a study on undergraduates' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University, Nigeria concluded that 70(35%) used computer once a week, 140(70%) used CD-ROM occasionally and other ICT often used included internet, printer, scanner, multimedia projector and telephone. It also corroborates Adetimirin (2012) on a frequency of ICT use by undergraduates

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Table 8: Constraints to undergraduates ICT competence in the selected universities

S/N	Statements	SD	D	A	SA	Mean	Std
1	Irregular power supply	376 (4.6%)	313 (20.5%)	441 (28.8%)	399 (26.1%)	2.56	1.12
2	Exorbitant users fees	362 (23.7%)	372 (24.3%)	427 (27.9%)	368 (24.1%)	2.52	1.10
3	Inadequate internet provision	442 (28.9%)	320 (20.9%)	393 (25.7%)	374 (24.5%)	2.46	1.15
4	Inaccessibility of the ICT facilities	484 (31.7%)	261 (17.1%)	401 (26.2%)	383 (25.0%)	2.45	1.18
5	Lack of maintenance culture	419 27.4%	344 22.5%	447 29.2%	319 20.9%	2.44	1.10
6	Printing cost is expensive	458 30.0%	324 21.2%	418 27.3%	329 21.5%	2.40	1.13
7	Regular breakdown of computers	524 34.3%	268 17.5%	336 22.0%	401 26.2%	2.40	1.20
8	Non conducive environment	429 28.1%	377 24.7%	408 26.7%	315 20.6%	2.40	1.10
9	Generators not always functioning properly	470 30.7%	326 21.3%	393 25.7%	340 22.2%	2.39	1.14
10	Server not always working	463 30.3%	363 23.7%	386 25.2%	317 20.7%	2.36	1.12
11	Very short opening hours	460 30.1%	359 23.5%	417 27.3%	293 19.2%	2.36	1.10
12	Inadequate systems and support staff	450 29.4%	392 25.6%	384 25.1%	303 19.8%	2.35	1.10
13	Duration of use is limited	489 32.0%	352 23.0%	360 23.5%	328 21.5%	2.34	1.14

From Table 8, the following are the findings. Irregular power supply was ranked highest (Mean =2.56), this was followed by exorbitant users fees (Mean =2.52) next, inadequate internet services (Mean =2.46). Very short opening hours was ranked second to the last (mean = 2.36), while inadequate systems and support staff was ranked first to the last (mean = 2.35), lastly, duration of use is limited (mean = 2.34).

This result is in line with findings of Ogunsola, Akindojutimi and Omoike (2011) that identified power unreliability, poor management attitude, inadequate computerization, infrastructure and human capacity as major challenges towards effective use of ICT. Also, it tallies, with findings of Adetimirin (2011) who identified six major factors as constraints to ICT of university undergraduates such as inaccessibility to ICT, inadequate ICT, lack of skills to use these facilities, irregular power supply, limited duration for the use of ICT and frequent computer breakdown. Out of these six challenges, irregular power supply was ranked highest with 67.4%

HO: There is no significant relationship between gender and undergraduates' ICT competence in the universities under study. Table 4.22 shows the findings

Table 9: Relationship between ICT competence and gender.

Variable	Mean	Std. Dev.	N	R	P	Remark
ICT competence	129.7050	9.7975				
Gender	01.4900	00.500	1529	0.03	.079	n.s.

Table 9 indicates that there was no significant relationship between ICT competence and gender with the result (r = 0.03, N= 1529). This implies that though there was a very weak positive relationship between gender and ICT competence but not significant. Hence the hypothesis is not rejected. The finding is in line with that of Calvert, Rideout, Woolard, Barr and Strouse (2005) that there was no significant difference between male and female performance in using computer. This study did not observe any major gender divide in the use of ICT but further findings showed gender divide at old age. Some other studies have not found significant differences in ICT competence. For instance, Wong and Hanifi (2008) did not establish any significant difference in male and female ICT users'. It also corroborated the

findings of Akande (2013) in the study of gender differences in information retrieval and use of electronic resources, where he did not establish any significant difference in the use of electronic resources of male and female.

Conclusion and Recommendation

It can be concluded from the findings of the study that undergraduates find the internet very useful and accessible. The implication is that ICT culture has come to stay globally and in all higher institutions. This is so because Information and Communication Technology is now the modern means of improving teaching and learning especially in the university system. This study found that University undergraduates in the South West Nigeria were generally favourable to ICT in an academic setting.

The use of Information and Communication Technology (ICT), no doubt, is gaining momentum in Nigerian universities. Once students embrace the use of ICT, the teaching, learning and research activities in the universities will be made easier in the university community. ICT usage will facilitate development since there will be free flow of information. Based on the aforementioned findings, it is recommended that administrators pay more attention to the use of ICT for teaching and learning in the universities. They should maintain the high levels of ICT usage among students though continuous education and promotion of the benefits attached to ICT resources. This would involve the use of seminars and training programmes as well as encouraging students to embrace ICT and its resources. This finding is also important in that it serves to inform educators about the usage of ICT in an academic environment. This is important in that the students will need to use of ICT in the workplace after graduation and prior to preparation is a necessity.

University management especially in Nigeria should as a matter of urgency make basic investment to acquire modern technologies with a clear vision. A lot needs to be done in order for universities in the country to join the rest of the developed and modern universities in the world in the area of ICT use in improving teaching and learning. There is therefore need for universities in Nigeria to develop a clear policy that will guide the development and integration of ICT use in the improvement of teaching and learning of the students.

Government should improve infrastructural facilities like electricity to make ICT work in universities in order to improve teaching and learning.

Curriculum designers must take ICT to consideration when designing the syllabus for tertiary institutions. Stakeholders must place ICT in a centre place of activities in all universities.

Internet access by students should be encouraged and made ore accessible at very affordable prices.

References

Adebambo, S. and Adebayo, T. 2011. Analysis of Information and Communication Technologies (ICT) usage on logistics activities of manufacturing companies in Southwestern Nigeria. *Journal of Emerging Trends in Economics and Management Sciences* (JETEMS), 2: 66-72

Adenuga, R., Owoyele, J. W. and Adenuga, F. T. 2011. Gender and socio-economic background differentials in students' attitude towards ICT education in Nigeria Secondary School. *International Journal of Psychology and Counselling*, 3.9:162-166.

Adetimirin, A.E. 2008. *Factors affecting Undergraduates' Use of Information Communication Technology in Selected Nigerian Universities. Thesis Library Archival and Information Studies, Education, University of Ibadan. X1V + 179*

Aremu, A. 2008. A cry for help! Endangered species in the science and technology classrooms. A paper presented at the joint Staff and student seminars of the department of Teacher Education, University of Ibadan, Ibadan Nigeria. March 2008.

Afonso, A. 2009. Quality of public finances; some illustrations. European Central Bank ISEG/UTL-Technical university of Lisbon; UECE-Research unit on complexity and Economics.

Bach, C., Belardo, S., Bajwa, H.,Kantharaju, P and Pransanth, O. 2011 Factors and Analysis in Measuring Information Systems Effectiveness. Proceedings of the 2011 ASEE Northeast Section Annual Conference, University of Hartford.

Balka, E and Smith, R. 2000. Woman, Work and Computerisation: Charting a Course to the Future. *IFIP International Federation for Information ProcessingTC9/W 69.1* Seventh International Conference on Woman, Work and computerisation, June 8- 11. Balka, E and Smith, R. Eds Vancouver, British Columbia, Canada. 320p.

Bebetsos, E. and Antoniou, P. 2008. University Students' Differences on Attitudes towards Computer Use, Comparison with Students' Attitudes towards Physical Activity; Interactive Educational Multi-Media, number 17: 20 – 28.

Blasé, E. 2010. Introduction to computers for engineers: notes for lecture 10. Rutgers University

Durndell, A., and Thomson, K. 1997. Gender and Computing: A Decade of Change? *Computers and Education*, 28(1), 1–9.

Chua, S. L., Chen, D., and Wong, A. F. L. 1999. Computer Anxiety and Its Correlates: A Meta-analysis.*Computers in Human Behavior*, 15, 609-623.

Ehikamenor, F. 2003. Social–economic factors in the application of Information Communication Technologies in Nigerian Print Media. *Journal of the American Print Media. Journal of the American Society of Information Science* 3.2:113-123.

Feather, J and Sturges, P. 2003. ICT International Encyclopedia of Information and Library Science. London: Routeledge (Taylor and Francis Group) 2nd ed. 688p.

HESA (Higher Education Statistics Agency 2000. Higher Education Statistics for the UK, 1998/9. London: HESA.

Jackson, L. Ervin, K; Gardner, P and Schmitt, N. 2001. Gender and the Internet: Women Communicating and Men Searching. *Sex Roles* 44:363-379.

Kadel, R. 2005. How Teacher Attitude affect Technology. *Learning and Leading with Technology* 39.5:34-47.

Kim, J.M, and Lee, W.G 2013. Meanings of criteria and norms: Analyses and comparisons of ICT literacy competencies of middle school students, *Computers and Education*, *64*, 81-94.

Kirshner, P. and Woperies, I.G.J.H. 2003. Pedagogic Benchmarks for Information and Communication Technology in Teacher Education. Technology, Pedagogy and Education, 12.1:127-149.

Kuzma, R. B. 2005. National Policies that connect ICT-based education reform to economic and social development. An Interdisciplinary Journal of Humans in ICT Environment 1(2), 117-156

Mahmood, K. (2009). Gender, subject and degree differences in university students' access, use and attitudes toward information and communication technology (ICT) *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2009, Vol. 5, Issue 3, pp. 206-216.

Marcelle, G. 2000. Gender, Justice and ICTs. Retrieved on 25 November, 2008.

Mbakwen, J.N and Okeke, F.N 2007. Enhancing internal and external quality assurance mechanisms in Nigeria universities through ICT compliance, in J.B Babalola, G.O Akpa, A.O. Ayeni and S.O. Adedeji (Eds) Access, Equity and quality in higher education (271-278) NAEP publishers.

McIlroy, D., Bunting, B., Tierney, K., and Gordon, M. 2001. The relation of gender and background experience

Mlitwa, N. 2004. *Global Perspective on Higher Education and the Role of ICT* lecture delive

red at the Cape Higher Education Consortium Conference. University of the Western Cape (UINC) Bellville, South Africa. September, 8. Retrieved September 10 2013 from http://www.hicte.uwc.ac .

Mullins, L. J. 2002. Management and Organization Behavior. Pitman, London, UK.

Oliver, R. 2002. The Role of ICT in Higher Education for the 21st century. ICT as a change Agent for Education. Retrieved from

http://elrond.scam.ecu.edu.au/oliver/2002/he21.pdf

Ojeniyi, O and Adetimirin, A (2013) Gender influence on ICT use by undergraduates in two University Libraries in Nigeria, Computer communication and collaboration, DOIC: 2292-1036-2013-01-062-01; Pp 62 – 71

Sanda, H.V. and Kurfi, S.M. 2013. Gender and Information Communication Technology (ICTS) in Nigeria: Challenges and Prospects. *Global Journal of Human Social Science* 13.6c.

Sefyrin, J. 2005. Understandings of Gender and Competence in ICT. Paper presented at 6th International Women into Computing Conference. University of Greenwich. Retrieved June 1, 2014 from http://www.miun.se/upload/institutioner/ITM/IKS/SI/ pvblikationer/.

Shofoyeke, D. 2009. An investigation into efficiency of ICT in Nigeria Distance Learning Education: A case study of National Open University of Nigeria. 1st international Conference on Education and new learning technology. 6-8 July 2009, Barcelona, Spain.

Seungeun, C., Soojin, J., Daiyong, K., Hansung, K., Seungbum, K., JaMee, K., et al. 2011. Measuring achievement of ICT competency for students in Korea.Computers and Education, 56(4), 990–1002.

Tondeur, J., Van Braak, J. and Valcke, M. 2007. Curricula and the use of ICT in education: Two

worlds apart. *British Journal of Educational Technology, 38*(6), 962-976.

Torkzadeh, G., and Koufteros, X. 1994. Factorial validity of a computer self-efficacy scale and the impact of Computer Training. *Educational and Psychological Measurement, 54* (3), 813-921.

United Nations Educational, Scientific and Cultural Organisation (UNESCO): 2014 System efficiency Retrieved 26th May, 2014

from:http://www.unesco.org/new/en/education/themes/strengthening-education-systems/quality-framework/supporting-mechanisms/system-efficiency/

Poelmans, S., Truyen, F., and Stockman, C. 2012. *ICT Skills and Computer Self-Efficacy of Higher Education Students*: Katholieke Universiteit Leuven.

Ololube, N.P Amaele, S, Kpolovie, J.P and Egbezor, D.E 2012. The issues of digital natures and tourists : Empirical investigation of the level of IT. It usage between university students and Faculty members in developing economy. *International Journal of Information and Communication Technology Education,* 9.3:42-64

Ololube, N.P, Ubogu, E.A, and Egbezor, D.E 2007. ICT and distance education programs in a sub-saharan African Country: a theoretical perspective. *Journal of information technology* 7.3:181-194.

UNESCO 2005. Regional Guidelines on Teacher Development for Pedagogy- Technology Integration (Working Draft). Thailand:UNESCO Asia and Pacific Regional Bureau for Education. (Electronic Version). Retrieved February 4, 2010, from www.unesdoc.unesco.org/images/0014/001405/140577e.pdf

UNESCO 2014 System efficiency Retrieved 26th May, 2014 from:

http://www.unesco.org/new/en/education/themes/strengthening-education-systems/quality-framework/supporting-mechanisms/system-efficiency/

Derbysire, H. 2003. Gender, Issues in the Use of Computers in Education in Africa. Retrieved June 1, 2014 from http://www.infundo..digitalbrain.com/infundo/web/ SEPHASEIFINAL...pdf.

Danner, R.B. and Pessu, C.O.A 2013. A Survey of ICT Computer Competencies among Student Teaches Preparation Programmes at the University of Benin, Benin-City, Nigeria *Journal of information Technology Education.* Research 12: 34-49

Schaumburg, H. 2001. *Fostering girls' computer through laptop learning – Can mobile computers help to level out the gender difference*? Retrieved 17 July 2012 from http://www.notesys.com/Copies/necc01.pdf.

Derbysire, H. 2003. Gender, Issues in the Use of Computers in Education in Africa. Retrieved June 1, 2014 from http://www.infundo..digitalbrain.com/infundo/web/ SEPHASEIFINAL...pdf.

Wong, S. L. and Hanafi, A. 2007. Gender differences in attitudes toward Information

technology among Malaysia student teachers: A case study at Universiti Malaysia. *Educational Technology and Society*, 10.2:158-169.

Morris and Venkatesh 2000, Liaw 2002, Broos 2005, Wong et al 2008)

Madell, D. and Muncer, S. 2004. Gender differences in the use of the Internet by English secondary scholl children. *Social Psychology of Education*. 7:229-251

Shaw, L and Grant, L.2002. Users divided? Exploring the gender gap in Internet use. *Cyber Psychology and behaviour* , 5.6:517-527

Wong, S. L. and Hanafi, A. 2007. Gender differences in attitudes toward Information

technology among Malaysia student teachers: A case study at Universiti Malaysia. *Educational Technology and Society*, 10.2:158-169.

Morris, G.C and Ventakesh V. 2000. Age differences in technology adoption decisions: Implications for a changing workforce. *Personnel Psychology* 53.2:375-403.

Liaw, S.S. 2002. An Internet survey for perceptions of computers and the worldwide web : relationship, prediction and difference. *Computers in Human Behaviour,* 18.1:17-35

Broos, M.A. 2005. Gender and Information and Communication Technology (ICT) Anxiety: Male Self-Assurance and Female Hesitation. *Cyber Psychology and Behaviour* 8.1:21-31.

Wong, S.L., Ng, S.F. and Hanafi, A. 2008. Gender differences in the usage and attitudes towards the Internet among Student Teachers in a public Malaysian University. *American Journal of Applied Sciences* 5.6: 689-697.

Madell, D. and Muncer, S. 2004. Gender differences in the use of the Internet by English secondary scholl children. *Social Psychology of Education*. 7:229-251

Isman A and Celikli, G.E. 2009. How does student ability and Self Efficacy affect the usage of Computer Technology. *The Turkish On-Line*

Journal of Educational Technology. 8.1:Article 4.

Shaw, L and Grant, L.2002. Users divided? Exploring the gender gap in Internet use. *Cyber Psychology and behaviour* , 5.6:517-527

Wong, S. L. and Hanafi, A. 2007. Gender differences in attitudes toward Information

technology among Malaysia student teachers: A case study at University Malaysia. *Educational Technology and Society*, 10.2:158-169.

Adeniji, M.A., Adeniji, S.E. and Ogunniyi, S. (2011) Availability and Use of ICT in Olabisi Onabanjo University Library. *PNLA Quarterly*, 75(3), (Spring 2011)

Etebu, T (2010). ICT Availability in Niger Delta University Libraries. *Library Philosophy and Practice* 2010 (March). [Online] Available at: http://unllib.unl.edu/LPP/etebu3.htm (May 24th, 2013).

[17] Fabunmi, F.A. (2012). Undergraduate students' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University, Ado-Ekiti, Nigeria. *International Journal of Library and Information Science*, Vol. 4(7), pp. 121-130, December 2012. [Online] Available at: http://www.academicjournals.org/ijlis (May 21st, 2013)

Raji and Godsy (2010), ICT use among the Students of Arts and Science Colleges in Kerala, Society for the Promotion of Alternative Computing and Employment Thiruvananthapuram March 2010. Research Report number SPACE-RR-1-2010, [Online] Available at: http://www.space-kerala.org/files/StudentICT-Final.pdf (May 20th, 2013)

Rodríguez, G. C. (2006), Educative uses of ICT, technological skills and academic performance of the Venezuelan university students (Barineses): A causal perspective *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2006, Vol. 2, Issue 4, pp. 28-43

Ibegwam, A. 2004: Internet access and usage by Students of the College of Medicine, University of Lagos. *The information Technologist.* 1(1and2) 81 – 87.

Adetimirin, A. E. (2012). ICT Literacy among undergraduates in Nigerian Universities. *Education and Information Technologies*, 17(4): 387-397

Ogunsola, L.A, Akindojutimi, B.F. and Omoike, A.D. 2011 information literacy in Nigerian higher institutions any role for librarians? *Ozean journal of social sciences* 4.2:85 – 92.

Adetimirin_2011. ICT Literacy among Undergraduates in Nigerian Universities, Education and Information Technologies. *The Official Journal of the IFIP Technical Committee on Education, LLC 201110.1007/s10639-011-9163,: 1-27.*

Wong, S.L., Ng, S.F. and Hanafi, A. 2008. Gender differences in the usage and attitudes towards the Internet among Student Teachers in a public Malaysian University. *American Journal of Applied Sciences* 5.6: 689-697.

Akande, S. O. 2013 Gender differences in information retrieval skills and use of Electronic resources among information professionals in South-Western Nigeria *International Journal of Library and Information Science* 5.7:208 215.