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Perceived Availability, Accessibility, Usability, Training and Competence in Ict Resources as Predictors of Universities Biology Lecturers' Productivity in North East, Nigeria

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Abstract

This study examined the perceived availability, accessibility, usability, training and competence in ICT resources by rank predict universities Biology lecturers' perceived productivity and perceived availability, accessibility, usability, training and competence in ICT resources by rank and gender predict universities Biology lecturers' perceived productivity. The study adopted the correlation research design. The study was carried out only in Federal Universities in North-East zone Nigeria. The zone is made up of six states namely Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe states. The population for the study comprised of 629 Biology lecturers. Sample of 315 Biology lecturers were drawn from Federal Universities in North east, Nigeria for the study as suggested by (Nwana 2005). 50% of the population was drawn as sample size for the study. Samples for the study were obtained from the six universities by Proportional stratified sampling technique. The actual selection of elements was done using simple random sampling technique. The instrument used for data collection was titled "ICT Resources and University Biology Lecturers Perceived Productivity Questionnaire" (IRUBLPQ). The questionnaire used modified Likert scale response options of Very High Level (VHL), High Level (HL), Moderate Level (ML), and Low Level. The research

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instrument was validated by three experts. The experts were in Biology, Mathematics and Physics. The reliability of the instrument was determined using Cronbach Alpha method to determine the internal consistency of the items of the questionnaire. Reliability Coefficient of 0.74 was obtained for 10 items from perceived availability, accessibility, usability, training and competence instrument. Universities Biology lecturers' perceived productivity instrument with 30 items gave a reliability coefficient of 0.77. The data for this study were collected by six research assistants, one for each of the six federal universities in the North East, Nigeria. Mean and standard deviation were used to answer the research questions. Hypotheses one to two were tested using multiple regression analysis. The hypotheses were tested at 0.05 level of significance. The findings of the study revealed perceived availability, accessibility, usability, training and competence in ICT resources by rank do not significantly predict universities Biology lecturers perceived productivity in North East, Nigeria. (R^2 = 0.02, F = F = 2.455, P = 0.25) and perceived availability, accessibility, usability, training and competence in ICT resources by gender do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria. (R^2 = 0.03, F = 2.94, P = 0.1). Based on the findings of the study, since evidence from the P- value revealed that perceived availability, accessibility, usability, training and competence in ICT resources do not significantly predict the university Biology lecturers perceived productivity in north east, Nigeria' based on rank. Therefore, university Biology lecturers should be encouraged to incorporate ICT resources in their teaching irrespective of rank. Also results from the study revealed perceived availability, accessibility, usability, training and competence in ICT resources do not predict university Biology lecturers' perceived productivity of in north east, Nigeria based on gender. Therefore, both male and female university Biology lecturers should be encouraged to be engaged in ICT resources during their research and teaching programs.

Keywords: Perceived, Availability, Accessibility, Usability, Training Competence, Resources Predictors

INTRODUCTION

Information and Communications Technologies (ICT) at present are influencing every aspect of human life. The use of ICT in education lends itself to more student-centred learning. ICT has helped in improving teaching and learning. It is important for teachers in performing their role of creators of pedagogical environments. It is recognized as catalysts for change; change in teaching methods, learning approaches, scientific research.

Many lecturers have missed being promoted to the next rank because of their inability to carryout research and publish the outcome of their research in journals. Successful publications bring attention to scholars and their sponsoring institutions, which can facilitate continued funding and an individual's progress through a chosen field. In popular academic perception, scholars who publish frequently, or who focus on activities that do not result in publications, such as instructing undergraduates may lose ground in competition in available tenure track positions.

Kpolovie and Awusaku (2016) in their investigation on the attitude of lecturers towards the adoption of Information and Communication Technology in teaching and research revealed that moderately and less experienced lecturers were more competent in the use of ICTs than their highly experienced counterparts.

Gender is the variety of features relating to, and distinguishing between, male and female. Fomsi and Emeka (2017) observed gender in the usability of ICT to be controversial. Gender has most times been used interchangeably with sex. However there seems to be a slight difference between them. Simpson and Weiner (2016) explained these differences when it states that the word sex refers to 'the state of being male or female' as it relates to biological differences, while gender refers to cultural or social differences.

Joel, Abasido, Benjamin and Muhibeedeen (2012); Owusu-Ansah (2013); Akpan (2014) who were in agreement that availability, accessibility, usability, training and perceived competence in ICT resources by gender do not significantly predict universities Biology lecturers' productivity. Macqual and Ichakpa (2014) investigated lecturers ICT competency level towards the quality of teacher education, the difference in lecturers ICT competence based on their demographic characteristics and factors that had impacted on their ICT competences. The findings of the study indicated that majority of lecturers perceived themselves as competent in both basic and advanced use of ICT. Computer ownership, pre- service training as well as in-services training are significantly related to the perceived ICT competence. The lecturers' competence does not differ according to gender as well as according to basic and advanced ICT usage.

Anyanwu, Ekechukwu, Ettu, Ndunagu and Faustina (2016) surveyed the competency skills and use of ICT by teacher educators showed that gender has no effects on the procession and use of ICT into teaching and learning by teacher educators in tertiary institution. Less experienced lecturers were more exposed in use of ICT than high experienced lecturers.

Some lecturers lacked adequate training and competence in using computer as a tool for effective teaching and research work. Also Akpan (2014) sought to find out the influence of ICT competence on lecturers' Job Efficacy. The results of the study revealed that male and female lecturers did not differ significantly in their level of ICT competence. Lecturers with high ICT competence were found to be more efficacious in classroom instruction, research/publication, communication and record- keeping than those with moderate and low ICT competence.

Joel, Abasido, Benjamin, and Muhibeedeen (2012) examined the impact of Information Technology (IT) skills of Male and Female Secretarial Teachers and their ability to utilize the Internet for Effective Lecture Delivery. The result further revealed lack of basic IT skills needed to adequately equip the male and the female Secretarial Teachers with ability to download and upload quality information and teach students how to do that. Owing to the lack of these IT skills therefore, the teachers were not capable in accessing Internet by using some Information Technology facilities to get vital information for effective classroom delivery. In addition Kpolovie and Awusaku (2016) investigated the attitude of lecturers towards the adoption of Information and Communication Technology in teaching and research. Results revealed that gender and area of specialization have no significant difference in the attitude of lecturers' towards ICT adoption in teaching and research.

The purpose of the study is to examine the perceived availability, accessibility, usability, training and competence in ICT resources as predictors of universities Biology lecturers' perceived productivity in North East, Nigeria. The specific objectives of the study are to examine whether:

1. Perceived availability, accessibility, usability, training and competence in ICT resources by rank predict universities Biology lecturers' perceived productivity.
2. Perceived availability, accessibility, usability, training and competence in ICT resources by gender predict universities Biology lecturers' perceived productivity.

Research Questions

The following research questions were raised to guide the study:

1. What is the level of perceived availability, accessibility, usability, training and competence in ICT resources of universities Biology lecturers in North East, Nigeria?
2. What is the level of perceived productivity of universities Biology lecturers in North East, Nigeria?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

$H0_1$: Perceived availability, accessibility, usability, training and competence in ICT resources by rank do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria.

$H0_2$: Perceived availability, accessibility, usability, training and competence in ICT resources by gender do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria.

METHODS

The predictive correlation research design was adopted. The population for the study comprised of 629 Biology lecturers. Sample of 315 Biology lecturers were drawn from Federal Universities in North east, Nigeria for the study as suggested by (Nwana 2005). 50% of the population was drawn as sample size for the study. Samples for the study were obtained from the six universities by Proportional stratified sampling technique. The actual selection of elements was done using simple random sampling technique. The instrument used for data collection was titled "ICT Resources and University Biology Lecturers Perceived Productivity Questionnaire" (IRUBLPQ). The questionnaire used modified Likert scale response options of Very High Level (VHL), High Level (HL), Moderate Level (ML), and Low Level. The research instrument was validated by three experts. The experts were in Biology, Mathematics and Physics. The reliability of the instrument was determined using Cronbach alpha method. Reliability Coefficient of 0.74 was obtained for 10 items from perceived availability, accessibility, usability, training and competence instrument. Universities Biology lecturers' perceived productivity instrument with 30 items gave a

reliability coefficient of 0.77. The retrieved questionnaires were coded, inputted for analysis. Mean and standard deviation were used to answer the research questions. The mean was used to determine the level of responses, while standard deviation was used to determine the level at which the respondents' responses deviated or clustered around the mean. Hypotheses were tested using multiple regression analysis at 0.05 level of significance. Hypotheses with p-values greater than 0.05 level of significance were not rejected while those with p-values less than 0.05 level of significance rejected.

RESULTS

Mean and standard deviation were used to answer research questions raised. Hypotheses one to two were tested using multiple regression. The results for research questions were illustrated in Tables 1 – 2. The results of research hypotheses tested were presented in tables 3a,3b and 3c to 4a, 4b and 4c.

Research Question One: What is the level of perceived availability, accessibility, usability, training and competence in ICT resources by rank of universities Biology lecturers in North East, Nigeria?

The responses of the 315 lecturers on the perceived availability of ICT resources were obtained. Thereafter mean and standard deviations were computed to find out the level of perceived availability of each ICT resources by Universities Biology lecturers. The result is displayed in Table 1.

Table 1: Mean and Standard Deviation of the Level of Perceived Availability, Accessibility, Usability, Training and Competence in ICT Resources of Universities Biology Lecturers in North East, Nigeria?

S/No.	Items	Mean	SD	Decision
1.	Internet/web services	3.60	1.11	HL
2.	e-mail	3.60	1.24	HL
3.	MS Word	4.29	0.77	HL
4.	Google form	3.48	1.22	ML
5.	Interactive white board	4.13	0.78	HL
6.	Audiotapes	3.37	1.05	ML
7.	E-Journals	3.93	0.88	HL
8.	Computers	3.50	1.20	HL

9.	Photocopy machines	3.55	1.06	HL
10.	Electronic cameras	4.63	0.53	HL
	Grand Mean	**3.81**	**0.98**	**HL**

Table 1, shows the level of perceived availability of ICT resources by university Biology lecturers. From the results displayed in the table, it was evidenced that items 1, 2, 3, 5, 7, 8, 9 and 10 show perceived availability of ICT resources by Biology lecturers was at high level; with mean range 3.50-4.63. While items 4 and 6 were moderately available with mean 3.48 and 3.37. The grand mean of 3.81 indicates that, the level of perceived availability of ICT resources in universities by Biology lecturers is high.

Research Question 2: What is the level of perceived productivity of universities Biology lecturers in North East, Nigeria?

Table 2: Mean and Standard Deviation of the Level of Perceived Productivity of Universities Biology Lecturers in North East, Nigeria.

S/No.	Items	Mean	SD	Decision
1.	Preparation of lesson notes	3.53	1.06	HL
2.	Presentation of lesson	3.59	1.24	HL
3.	Gave assignments that were helpful in understanding the subject better.	4.20	0.78	HL
4.	Described concepts to topic with the fundamental logic behind them.	3.42	1.18	ML
5.	Used to take interactive sessions.	3.95	0.74	HL
6.	Prepare exercises for students	3.33	1.01	ML
7.	Strictly adhered to the deadlines of assignment submission.	3.84	0.85	HL
8.	Briefly summarize the previous lecture at the beginning of each class.	3.38	1.12	ML
9.	Encourage students' to think.	3.54	1.06	HL
10.	Set examinations	4.62	0.54	HL
11.	Recording students examinations results	4.46	0.49	HL
12.	Supervision of students projects	4.17	0.88	HL
13.	Provided course outline having helpful suggestions regarding recommended books.	4.37	0.73	HL
14.	Clearly explained the evaluation criteria to students.	4.32	0.72	HL

15.	Encouraged students' to seek help whenever in need.	3.51	1.01	HL
16.	Conduct research	3.60	1.08	HL
17.	Writing research proposals	4.47	0.56	HL
18.	Writing up research for publication	3.93	0.92	HL
19.	Establish collaborative links with other institutions	4.73	0.43	HL
20.	Assessing students work	3.75	1.03	HL
21.	Invigilating examinations	4.49	0.61	HL
22.	Attending conferences	4.22	0.82	HL
23.	Make presentations at seminars	4.68	0.50	HL
24.	Implement new methods of teaching	4.06	0.87	HL
25.	Participate in staff training activities	3.87	0.90	HL
26.	Supervising other staff	4.08	0.95	HL
27.	Be responsible for pastoral care of students	4.58	0.50	HL
28.	Have knowledge of the subject	3.71	1.10	HL
29.	Attending staff meetings	4.52	0.61	HL
30.	Managing research budget	4.30	0.89	HL
	Grand Mean	**4 .04**	**0.83**	**HL**

Table 2, shows the level of perceived productivity of universities Biology lecturers. Items 4, 6 and 8 were moderately productive with mean 3.42, 3.33 and 3.38 respectively. While others were at high level with mean range 3.51 – 4.73. The grand mean of 4.04 indicates that, the level of perceived productivity of universities Biology lecturers is high.

Testing Hypotheses

The null hypotheses 1 and 2 were tested using multiple regressions analyses at 0.05 level of significance.

$H0_1$: Perceived availability, accessibility, usability, training and competence in ICT resources by rank do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria.

This hypothesis was tested by correlating the mean responses on perceived availability, accessibility, usability, training and competence in ICT resources by rank with the mean response on universities Biology lecturers' perceived productivity using multiple regression statistic. The results are obtainable in Tables 3a, 3b and 3c respectively.

Table 3a: Regression of Prediction among Perceived Availability, Accessibility, Usability, Training and Competence in ICT Resources by Rank and Universities Biology Lecturers' Perceived Productivity in North East, Nigeria

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2846.540	6	474.423	2.455	0.25
	Residual	59511.409	308	193.219		
	Total	**62357.949**	**314**			

a. Dependent Variable: Level of perceived Productivity

b. Predictors: (Constant), rank, Level of ICT resources perceived availability, Level of ICT resources perceived training, Level of perceived competence in using ICT resources, Level of ICT resources perceived accessibility, Level of ICT resources perceived usability

Table 3b: Model Summary of Prediction among Perceived Availability, Accessibility, Usability, Training and Competence in ICT Resources by Rank and Universities Biology Lecturers' Perceived Productivity in North East, Nigeria

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.214[a]	0.046	0.027	13.90

a. Predictors: (Constant), rank, Level of ICT resources perceived Availability, Level of ICT resources perceived training, Level of perceived competence in using ICT resources, Level of ICT resources perceived accessibility, Level of ICT resources perceived usability

Table 3c: Coefficient of Prediction among Perceived Availability, Accessibility, Usability, Training and Competence in ICT Resources by Rank and Universities Biology Lecturers' Perceived Productivity in North East, Nigeria

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**T**	**Sig.**
(Constant)	38.219	7.817		4.889	.000
Level of ICT resources perceived Availability	-.029	.189	-.011	-.153	.878
Level of ICT resources perceived accessibility	.050	.178	.020	.283	.777
Level of ICT resources perceived usability	.143	.282	.045	.507	.612

Level of ICT resources perceived training	.100	.281	.028	.355	.723
Level of perceived competence in using ICT resources	.248	.073	.229	3.416	.001
Rank	-.206	.144	-.100	-1.431	.153

a. Dependent Variable: Level of Perceived Productivity

Table 3a, 3b and 3c show significant differences between the various R values, F = 2.455 (df 1, 314), P < 0.05. Since the computed p-value (0.25) is greater than 0.05 level of significance. Therefore, the null hypothesis is not rejected and concluded that, perceived availability, accessibility, usability, training and competence in ICT resources by rank do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria. Furthermore, the adjusted R-square value (0.02) indicates that, only 2% of universities Biology lecturers' perceived productivity in North East, Nigeria in this study was accounted by the perceived availability, accessibility, usability, training and competence in ICT resources by rank.

$H0_2$: Perceived availability, accessibility, usability, training and competence in ICT resources by gender do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria.

To test this hypothesis, mean responses on perceived availability, accessibility, usability, training and competence in ICT resources were classified by gender and correlated with universities Biology lecturers' perceived productivity. The results are presented in Tables 4a, 4b and 4c respectively.

Table 4a: Model Summary of Prediction among Perceived Availability, Accessibility, Usability, Training and Competence in ICT Resources by Gender and Universities Biology Lecturers' Perceived Productivity

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3382.395	6	563.733	2.944	0.1[b]
	Residual	58975.554	308	191.479		
	Total	**62357.949**	**314**			

a. Dependent Variable: Level of Perceived Productivity

b. Predictors: (Constant), Gender, Level of ICT resources perceived training, Level of perceived competence in using ICT resources, Level of ICT resources perceived availability, Level of ICT resources perceived accessibility, Level of ICT resources perceived usability

Table 4b: Model Summary of Prediction among Perceived Availability, Accessibility, Usability, Training and Competence in ICT Resources by Gender and Universities Biology Lecturers' Perceived Productivity

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.23	0.05	0.036	13.84

a. Predictors: (Constant), Gender, Level of ICT resources perceived training, Level of perceived competence in using ICT resources, Level of ICT resources perceived availability, Level of ICT resources perceived accessibility, Level of ICT resources perceived usability

Table 4c: Coefficient of Prediction among Perceived Availability, Accessibility, Usability, Training and Competence in ICT Resources by Gender and Universities Biology Lecturers' Perceived Productivity

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	28.875	8.130		3.552	.000
	Level of ICT resources Availability	-.067	.189	-.025	-.352	.725
	Level of ICT resources accessibility	.054	.177	.021	.303	.762
	Level of ICT resources usability	.175	.280	.055	.624	.533
	Level of ICT resources training	.012	.270	.003	.045	.964
	Level of perceived competence in using ICT resources	.160	.064	.148	2.494	.013
	Gender	.217	.098	.127	2.206	.028

a. Dependent Variable: Level of Perceived Productivity

Table 4a, 4b and 4c show significant differences between the various R values, $F = 2.94$ (df 1, 314), $P < 0.05$. Since the computed p-value (0.1) is less than 0.05 level of significance. Therefore, the null hypothesis is rejected and concluded that, perceived availability,

accessibility, usability, training and competence in ICT resources by gender do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria. Furthermore, the adjusted R-square value (0.03) indicates that, only 3% of universities Biology lecturers' perceived productivity in North East, Nigeria in this study was accounted by the perceived availability, accessibility, usability, training and competence in ICT resources by gender.

Findings of the Study

The findings of the study are as follows:

1. Perceived availability, accessibility, usability, training and competence in ICT resources by rank do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria. ($R^2 = 0.02$, F = F = 2.455, P = 0.25)
2. Perceived availability, accessibility, usability, training and competence in ICT resources by gender do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria. ($R^2 = 0.03$, F = 2.94, P = 0.1)

DISCUSSION

Furthermore, evidence from the current study showed that perceived availability, accessibility, usability, training and competence in ICT resources by rank do not significantly predict universities Biology lecturers' perceived productivity in North East, Nigeria. Results for junior and senior academic staff showed that perceived availability, accessibility, usability, training and competence in ICT resources by rank do not prediction among universities Biology lecturers' perceived productivity in North East, Nigeria. This shows that ICT resources by rank do not have significant influence on universities lecturers' perceived productivity. Perhaps this is so because universities Biology lecturers' promotions were anchored on their abilities to teach and conduct researches which are published in journals; regardless of their ranks. This study concurred with Igbineweka and Ahmed (2013) who in his independent study revealed that perceived availability, accessibility, usability, training and competence in ICT resources by rank do not significantly predict universities Biology lecturers' productivities.

Also, evidence from the study showed that perceived availability, accessibility, usability, training and competence in ICT resources by gender do not significantly predict

universities Biology lecturers' perceived productivity in North East, Nigeria. Gender does not predict university Biology lecturers' perceived productivity. Perhaps male dominance does not exist as female university Biology lecturers' response revealed that both male and female Biology lecturers claim to apply ICT in teaching and research. This revealed that gender variables were not a predictor of ICT resource of universities Biology lecturers' productivity in North East Nigeria. Rather the need by both male and female Biology lecturers to improve their productivity. This agreed with Joel, Abasido, Benjamin and Muhibeedeen (2012); Owusu-Ansah (2013); Akpan (2014) who concurred that perceived availability, accessibility, usability, training and competence in ICT resources by gender do not significantly predict universities Biology lecturers' productivity. However, Macqual and Ichakpa (2014) in their investigation on lecturers ICT competency level indicated that majority of lecturers perceived themselves as competent in both basic and advanced use of ICT. Computer ownership, pre- service training as well as in-services training are significantly related to the perceived ICT competence. The lecturers' competence does not differ according to gender.

CONCLUSION

The significance of ICT implementation and use in universities for active and improved productivity needs not to be over-emphasized. The use of ICT resources in predicting universities Biology lecturers' productivity is mostly useful to help the educators in increasing research and teaching process. Educational policy has for long ignored any consideration of productivity. Today's world of fiscal imbalances and budgetary pressures makes it impossible to continue ignoring the issue of universities Biology lecturers' productivity. The disconnection between inputs and outputs are unlikely to continue to increase as quickly as they have as in the past. The outcome of this predictive study would assist in providing fore- sight on impeding challenges that are likely to hinder or decrease universities Biology lecturers' productivity in North East, Nigeria.

Recommendations

Based on the findings and conclusions drawn from the study, the following recommendations were made for implementation:

1. Evidence from the P- value revealed that perceived availability, accessibility, usability, training and competence in ICT resources do not significantly predict the

university Biology lecturers perceived productivity in north east, Nigeria' based on rank. Therefore, university Biology lecturers should be encouraged to incorporate ICT resources in their teaching irrespective of rank.

2. Results from the study revealed perceived availability, accessibility, usability, training and competence in ICT resources do not predict university Biology lecturers' perceived productivity of in north east, Nigeria based on gender. Therefore, both male and female university Biology lecturers should be encouraged to be engaged in ICT resources during their research and teaching programmes.

REFERENCES

Akpan , C. P. (2014). ICT competence and lecturers' job efficacy in universities in Cross River State, Nigeria, *International Journal of Humanities and Social Science*, 4(10), 259-266.

Anyanwu, J. O.; Ekechukwu, L. E.; Ettu, T. U.; Ndunagu, J. N. & Faustina. E. (2016). Competency skills and use of ICT by teacher educators in Imo State tertiary institutions, *American Journal of Education and Learning,* 1(1), 1-15.

Appiahene, P., Boateng, F. L., Floyd-Hockman, A., Onwona-Agyeman, A. L. & Opoku, M. (2014). Using information and communication technology (ICT) to predict teachers productivity, International Journal of Innovation and Scientific Research,4(2), 348-355.

Fomsi, F. E. & Emeka, O. E. (2017). Gender differences in the use of ICT among teachers in model primary schools in Rivers State, Nigeria, European center for research training and development: UK, *British Journal of Education, 5(4),* 88-94.

Joel, A.T.; Abasido, U.; Benjamin, N. & Muhibeedeen. A. (2012). Impact of information technology skills of male and female secretarial lecturers in Nigeria Colleges of Education on utilization of internet for effective lecture delivery, *Educational Research, 3(8)*, 632-638.

Kpolovie, P. J. & Awusaku, O. K. (2016). ICT adoption attitude of lecturers, European center for research training and development UK, *European Journal of Computer Science and Information Technology,*.4(5), 9-57.

Macqual, S. M. & Ichakpa, V. (2014). An investigation of Federal College of Education Pankshin lecturers information and communications technology (ICT) competences: implications for quality teacher education, *International Journal of Research in Science, Technology and Mathematics Education,* .2(1), 56-64.

Nwana, O. C. (2005). Introduction to educational research, Ibadan: Henemann educational books (Nig) Plc.

Owusu-Ansah, S. (2013). Application of information and communication technology (ICT): A comparative analysis of male and female academics in Africa, *Library Philosophy and Practice (e- journal)*, 1(1), 1-35.

Simpson, J. & Weiner, E. (Ed.). (2016) Oxford university press, 2nd edition https://en.oxforddictionaries.com/definition/gender