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Attitude of Postgraduate Students Towards the Utilization of Computer in Data Analysis in Faculty of Education, Ignatius Ajuru University of Education, Port Harcourt, Rivers State

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Abstract

This study examined the attitude of post graduate students towards the use of computer in data analysis in the Faculty of Education, Ignatius Ajuru University of Education, Port Harcourt. Two research questions and hypotheses were used. A sample size of 200 postgraduate students drawn from a population of 814 postgraduate students were used. The instrument used was a structured 4-point likert scale questionnaire. The face and content validities of the instrument were achieved by an expert in measurement and evaluation. Cronbach alpha statistics was used to establish a reliability of 0.832. Data was analysed using mean and standard deviation, while hypotheses were tested using independent sample t-test and ANOVA. Findings revealed among others that there is statistically significant difference on the attitude of postgraduate students towards the use of computer based on gender. The researcher recommends that ICT use be made compulsory in the faculty of education.

Keywords: Computer attitudes, Data analysis, Utilization of computer, Postgraduate students

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INTRODUCTION

The attitude of students towards the utilization of computer are considered to be very vital indicators of the inclination the students adopt in this new technology in their lifelong learning. Liu, *et-al,* in Abdullah et-al, (2015) states that attitudes are learned, and as a result, they are closely related to the experience that one gets in the process of learning. Attitudes towards the utilization of computers refer to the feelings of an individual about personal and societal use of computers in an appropriate manner. Some of these attitudes which includes; desire to use the

computer, confidence in the ability to use a computer, and a sense of computer responsibility, may be positive, Halder (2018). Measurement of attitudes has a vital function in analysing the way students behave, this is due to the fact that there is a strong correlation between attitude and behaviour, Bertea in Egbe (2014). In his assertion, Allport in Ado et-al, (2017) defines attitude as a neural and mental state of preparedness, arranged through experience, exerting a directive upon the response of an individual towards all objects and conditions with which it is related. The postgraduate students' attitude towards the use of computer is influenced by several factors, such as anxiety in computer, Ado et-al (2017), age and gender (Kutluca, 2010). In a study conducted by Abedalaziz, et-al, (2013) on 289 postgraduate students' attitudes towards the internet and computer use, the study found out that, there was no statistically significant difference between respondents' attitude towards the utilization of internet and computer based on gender, field of study and ethnicity. Glissow, in Mandal et-al, (2018) showed that females have significantly less experience and enthusiasm for computer in comparison to males.

Data analysis is a process of inspecting, cleaning, transforming, and modelling data with the goal of discovering useful information, suggesting conclusions and supporting decision making (Zaheer, 2008). Data analysis can also be viewed as a process whereby data set can be examined in order to locate trends and draw inferences about the information contained by them. Data analysis as an ongoing activity does not only answer your questions but also give directions for future data collection. Data analysis can be classified into preliminary analysis and hypothesis testing, (Panneerselvam, 2015). Many software are now available to perform the mathematical part of the research process such as calculations using various statistical methods. Organizations and individuals gain enormously through the use of computers for data analysis. Shaikh, (2009) has opined that ICT aids in the development of knowledge-based societies while improving the quality of learning and educational outcomes. Large number of digital materials which are available previously in different institutions as physical objects in limited numbers are now made available over the internet. Therefore, students can easily have access to this knowledge sources at any point in time and from any place that they so desire, Blurton in Chathurika, (2015). Computer based teaching and learning process improves content delivery, enhances the learner's skills, and prepares them for the economy globally and information society. In addition, it promotes the development decision making by the students and skills in problem solving, data processing skills, and communication capabilities, Meenakumari, (2012).

Another merit of utilizing computer for educational process is that it enables us to work beyond the traditional class time especially with the use of web-based technologies such as chat, email, blogs etc. It therefore makes education to be more flexible and students can engage with teaching and learning process at any time from any location. This condition helps to successfully provide a lifelong learning capability to students. In addition, the flexibility created through the use of ICT in data analysis allows for the improvements in virtual education, Zare-ee, (2011). In her assertion, Chathurika (2015) asserts that some of the technologies that aid in the analysis of data in education are desktop, notebook, and handheld computers; digital cameras; local area networking (LAN); the internet and the world wide web (www); CD-ROMs and DVDs; and applications such as word processors, spread-sheets, tutorials, simulations, electronic mail

(email), digital libraries, computer-mediated conferencing, videoconferencing, and virtual reality.

The utilization of computer in research has caused significant transformation in our modern world not only because it helps to save time and money used during and after research, but it also reduces the challenge in working with big data or information resources which were difficult in the past. Therefore, the utilization of computer for data analysis can be influenced by the attitudes of students towards it. There are huge number of researches on the use of ICT in data analysis in other fields of study, but there is a gap as regards the study on the attitude of postgraduate students towards the utilization of computer for data analysis in the field of education in terms of the gender and programme of study in Ignatius Ajuru University of Education.

The paradigm shift from manual use in data analysis to use of computers for data analysis is no longer new. Despite the availability and importance of computer in data analysis across the world by students in various universities, results from research have shown that postgraduate students do not make adequate use of computers as it should be. This could be adduced to lack of competence or negative attitude towards the use of computer for data analysis. Therefore, it is in the light of the above assertion that the present study drew the analogy and undertook the study to measure the attitude of the postgraduate students towards the utilization of computer in analysing data as it relates to gender and programme of study in the faculty of education, Ignatius Ajuru University of Education, Port Harcourt, Rivers State.

Aims and Objectives

This study is aimed at investigating the attitude of postgraduate students towards the utilization of computer in data analysis in the Faculty of Education, Ignatius Ajuru University of Education, Port Harcourt. To achieve the aim of the study, the following objectives were outlined;

1. To determine the attitude of postgraduate students towards the utilization of computer in data analysis based on gender in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt.
2. To examine the attitude of postgraduate students towards the utilization of computer in data analysis based on programme of study i.e. PGDE, M.Ed and Ph.D in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt.

Research Questions

The following research questions guided the study;

1. To what extent does the attitude of postgraduate students towards the utilization of computer in data analysis differ based on gender in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt?
2. To what extent does the attitude of postgraduate students towards the utilization of computer in data analysis differ based on the programme of study in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt?

Hypotheses

The following null hypotheses were tested at 0.05 alpha level of significance;

1. There is no significant difference in the attitude of postgraduate students towards the utilization of computer in data analysis based on gender in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt.
2. There is no significant difference in the attitude of postgraduate students towards the utilization of computer in data analysis based on programme of study in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt.

Methodology

The study is a quantitative study which employed a descriptive survey method. The population for the study comprised of eight hundred and fourteen (814) postgraduate students who were currently enrolled in the 2021/2022 academic session in the faculty of education into postgraduate degree programmes at Ignatius Ajuru University of Education. A sample size of 200 post graduate students which comprise of 88 males and 112 females, was calculated using Taro Yamen statistics. However, for the purpose of this study, three (3) postgraduate programmes which include; postgraduate diploma in education (PGDE), masters in education (M.Ed) and doctor of philosophy (Ph.D) in the faculty of education were selected through quota sampling technique. The instrument used for the collection of data was the computer attitude scale questionnaire (CASQ) which contains 2 sections. "Section A" focussed on demographic information of the postgraduate students such as gender and programme of study while "Section B" contains 14 items which were intended to elicit responses on the postgraduate students' attitude towards the utilization of computer in data analysis based on gender and programme of study in the faculty of education which was developed by the researcher. The 4-point likert response mode of very high extent (VHE) = 4, high extent (HE) = 3, low extent (LE) = 2, very low extent (VLE) = 1 was used.

The instrument was validated by two experts in measurement and evaluation and the internal consistency of the questionnaire was determined through Cronbach's alpha reliability coefficient statistics which gave an alpha value of 0.832. The questionnaire was administered to the respondents through the help of research assistants. Their responses were collated and the results analysed using mean and standard deviation to answer the research questions with a criterion mean of 2.5, while the hypotheses were tested at 0.05 alpha level of significance using independent sample t-test for gender (male and female), and one-way ANOVA for programme of study. The data were analysed using Statistical Package for Social Sciences (SPSS), version 21.

Results

Table 1: Demographic Information of Respondents

Variables		Number	%
Gender	Males	88	44.0%
	Females	112	56.0%
Programme of Study	PGDE	78	39.0
	M.ED	67	33.5%
	PHD	55	27.5%

Research Question 1: To what extent does the attitude of postgraduate students towards the utilization of computer in data analysis differ based on gender in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt?

Table 2: Mean Distribution and Standard Deviation On Attitude of Postgraduate Students Towards the Utilization of Computer in Data Analysis Based on Gender

		Males			Females		
S/N	**Items**	$\underline{x}$	***SD***	***Rmk***	$\underline{x}$	***SD***	***Rmk***
1	I love to use computer to analyze my data.	3.22	0.75	VHE	2.41	0.75	LE
2	The use of a computer for data analysis waste my time.	2.16	0.60	LE	2.21	0.67	LE
3	I will love to learn new skills in the utilization of computer in data analysis	3.08	0.76	VHE	3.04	0.62	VHE
4	Use of computer in data analysis makes research more interesting for me.	3.14	0.63	VHE	2.95	0.60	HE
5	It is not interesting analyzing data with computer.	2.28	0.80	LE	2.41	0.81	LE
6	I don't have enough skill to use the computer for data analysis.	2.68	0.62	HE	2.67	0.53	HE
7	Manual calculation is more straightforward in data analysis.	1.99	0.63	VLE	1.97	0.51	VLE
	Aggregate Mean	**2.65**		**HE**	**2.52**		**HE**

Table 2 shows the result of the extent to which the attitude of postgraduate students towards the utilization of computer in data analysis based on gender in the faculty of education, Ignatius Ajuru University of Education, Port Harcourt with mean and standard deviations. Item 1 shows (M =3.22, SD = 0.75) and (M =2.41, SD = 0.75) which implies that to a very high extent male students love to use computer to analyse data more than their female counterparts. Item 2 shows that (M = 2.16, SD = 0.60) and (M = 2.21, SD = 0.67) which implies that to a low extent both male and female postgraduate students see the use of computer for data analysis as a waste of time. Item 3 shows that (M = 3.08, SD = 0.76) and (M = 3.04, SD = 0.62), which implies that to a very high extent both male and female postgraduate students love to learn new skills in the utilization of computer in data analysis. Item 4 shows that (M = 3.14, SD = 0.63) and (M = 2.95, SD = 0.60), which implies that the male and female postgraduate students to a very high extent and high extent respectively agreed that the use of computer in data analysis makes research more interesting for them. Item 5 shows that (M = 2.28, SD = 0.80) and (M = 2.41, SD = 0.81), which implies that to a low extent both male and female postgraduate students disagreed with the statement that it is not interesting to analyse data with computer. Item 6 shows that (M = 2.68, SD = 0.62) and (M = 2.67, SD = 0.53) which implies to a high extent both male and female postgraduate students agreed to the fact that they don't have enough skills to use the computer

for data analysis. Item 7 shows that (M = 1.99, SD = 0.63) and (M = 1.97, SD = 0.51) which implies that both male and female postgraduate students to a very low extent disagreed to the statement which says that manual calculation is more straightforward in data analysis. The aggregate mean and standard deviations for both male and female postgraduate students are (M = 2.65, SD = 0.68) and (M = 2.52, SD = 0.64) which implies that the attitude of postgraduate students towards the utilization of computer in data analysis in the faculty of education, Ignatius Ajuru University of Education, Port Harcourt is very high.

Research Question 2: To what extent does the attitude of postgraduate students towards the utilization of computer in data analysis differ based on programme of study in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt?

Table 3: Mean and Standard Deviation On Attitude of Postgraduate Students Towards the Utilization of Computer in Data Analysis Based On Programme of Study

		PGDE			M.ED			Ph.D		
S/N	**Items**	$\bar{x}$	***SD***	***Rmk***	$\bar{x}$	***SD***	***Rmk***	$\bar{x}$	***SD***	***Rmk***
8.	The use of computer in data analysis saves time.	3.09	0.59	VHE	2.87	0.55	HE	3.02	0.73	VHE
9.	The use of computer in data analysis should be made compulsory in the faculty.	3.05	0.77	VHE	2.93	0.77	HE	2.69	0.96	HE
10.	It is a very difficult task to participate in any kind of course that uses computer in data analysis	2.94	0.71	HE	2.93	0.61	HE	3.16	0.57	VHE
11.	I do more in research when computer is used in data analysis.	2.81	0.51	HE	2.87	0.74	HE	3.05	0.85	VHE
12.	I get my results fast and efficiently with the utilization of computer in data analysis.	2.94	0.57	HE	2.94	0.30	HE	2.96	0.69	HE
13.	Computer use in data analysis is more straightforward.	2.68	0.86	HE	2.28	0.75	LE	2.51	0.74	HE
14.	The use of computer in data analysis is very difficult.	2.24	0.71	LE	2.12	0.59	LE	2.15	0.65	LE
	Aggregate Mean	**2.79**		**HE**	**2.82**		**HE**	**2.71**		**HE**

Table 3 shows the result of the attitude of postgraduate students towards the utilization of computer in data analysis based on programme of study in the faculty of education, Ignatius Ajuru University of Education, Port Harcourt with means and standard deviations. Item 8 shows (M = 3.09, SD = 0.59), (M =2.87, SD = 0.55) and (M = 3.02, SD = 0.73) which implies that all the postgraduate students in the 3 programmes to a high extent accept the fact that the use of computer in data analysis save them time. Item 9 shows (M = 3.05, SD = 0.77), (M = 2.93, SD = 0.77) and (M = 2.69, SD = 0.96) which implies that all the postgraduate students in the 3 programmes of study to a high extent accepted the fact that the use of computer in data analysis should be made compulsory in all the faculties. Item 10 shows (M = 2.94, SD = 0.71), (M = 2.93, SD = 0.61) and (M = 3.16, SD = 0.57), which implies that all postgraduate students in the 3 programmes of study to a high extent agreed to the fact that participating in any kind of course that uses computer in data analysis is a very difficult task. Item 11 shows (M = 2.81, SD = 0.51), (M = 2.87, SD = 0.74) and (M = 3.05, SD = 0.85) which implies that to a high extent most of the postgraduate students in the 3 programmes of study agreed that they accomplish more in their research work when computer is used in analysing data. Item 12 shows (M = 2.94, SD = 0.57), (M = 2.94, SD = 0.30) and (M = 2.96, SD = 0.69) which implies that most of the postgraduate students in the 3 programmes of study to a high extent agreed that results are turned out faster and more efficiently when computer is used in data analysis. Item 13 shows (M = 2.68, SD = 0.86), (M = 2.28, SD = 0.75) and (M = 2.51, SD = 0.74), which implies that postgraduate students in post graduate diploma in education and doctorate programmes to a high extent agreed to the fact that the use of computer in data analysis is more straightforward, while students from the masters in education programme to a low extent disagreed to the statement. Item 14 shows (M = 2.24, SD = 0.71), (M = 2.12, SD = 0.59) and (M = 2.15, SD = 0.65) which implies that to a low extent all the postgraduate students in the three programmes of study disagreed to the fact that the use of computer in data analysis is very difficult. The aggregate mean and standard deviations for the 3 programmes of study are (M = 2.79, SD = 0.74), (M = 2.82, SD = 0.67) and (M = 2.71, SD = 0.62) which implies that the attitude of postgraduate students in the 3 programmes of study towards the utilization of computer in data analysis in the faculty of education, Ignatius Ajuru University of Education, Port Harcourt is very high.

Test of Hypotheses

Hypothesis: There is no significant difference in the attitude of postgraduate students towards the utilization of computer in data analysis based on gender in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt.

Table 4: T-test Results of Significant Difference in The Attitude of Postgraduate Students Towards the Utilization of Computer in Data Analysis Based On Gender

$Gender$	N	$Mean$	SD	df	α	$t-value$	$P-value$	$Decision$
Males	88	18.77	2.02	198	0.05	3.272	.001	Significant
Females	112	17.83	2.02					

Table 4 shows the result of an independent sample t-test carried out to compare the mean analysis based on gender. The result above shows that there is a difference in the mean scores based on gender, males (M = 18.77, SD = 2.02) and females (M = 17.83, SD = 2.02) which is 0.94. The result of the independent sample t-test showed that there was a difference statistically between the average attitude of postgraduate students in the faculty of education towards the utilization of computer in data analysis based on gender, (p = 0.001). Following the decision rule, the null hypothesis was rejected since p < 0.05. Therefore, it can be deduced that postgraduate students in the faculty of education differ in their attitude towards the utilization of computer in data analysis based on gender.

Hypothesis 2: There is no significant difference in the attitude of postgraduate students towards the utilization of computer in data analysis based on programme of study in the Faculty of Education, Ignatius Ajuru, University of Education, Port Harcourt.

Table 5: One-way ANOVA Results on the Attitude of Postgraduate Students Towards the Utilization of Computer in Data Analysis Based on Programme of Study

	Sum of Squares	Df	Mean Square	F	p-value
Between Groups	42.670	2	21.335	7.489	.001
Within Groups	561.250	197	2.849		
Total	603.920	199			

Table 5 shows the result of one–way analysis of variance (ANOVA) test performed. The result showed that, there was a significant difference in attitude of postgraduate students in the different programmes of study towards the utilization of computer in data analysis F (2, 197) = 7.676, p = 0.001. The null hypothesis which was earlier stated that there is no significant difference in the attitude of postgraduate students in the different programmes of study towards the utilization of computer in data analysis is rejected. To ascertain where the difference lies among the attitude of postgraduate students in the different programme of studies, Turkey's HSD post hoc test was conducted. The result of the post hoc test showed that there was a statistically significant difference between postgraduate students from Ph.D. and M.Ed programmes of study F(2, 197) = 7.489, p = 0.001. However, there was no statistically significant difference between M.Ed and PGDE students F(2, 197) = 7.489, p = 0.293 and between PGDE and Ph.D. F(2,197) = 7.489, p = 0.133.

Table 6: Result of Post Hoc Test on the Attitude of Postgraduate Students Towards the Utilization of Computer in Data Analysis Based on Programme of Study

Multiple Comparisons

Dependent Variable: Postgraduate Students Scores Based on Programme of Study

Scheffe

(I) PGDE, M.ED AND PHD	(J) PGDE, M.ED AND PHD	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PGDE	M.ED	-.46737	.29720	.293	-1.2004	.2657
	PHD	.62008	.30712	.133	-.1374	1.3776
M.ED	PGDE	.46737	.29720	.293	-.2657	1.2004
	PHD	1.08745*	.28115	.001	.3940	1.7809
PHD	PGDE	-.62008	.30712	.133	-1.3776	.1374
	M.ED	-1.08745*	.28115	.001	-1.7809	-.3940

*. The mean difference is significant at the 0.05 level.

DISCUSSIONS OF FINDINGS

The discussion of findings were based on the research questions and hypotheses testing using independent sample t-test and one-way ANOVA on the attitude of postgraduate students towards the utilization of computer in data analysis in the faculty of education, Ignatius Ajuru University of Education.

Hypothesis One: was aimed at finding out if there is any statistically significant difference in the attitude of male and female postgraduate students towards the utilization of computer in data analysis. The result of the t-test conducted showed that there was a difference in the mean scores between males (M = 18.77, SD = 2.02) and females (M = 17.83, SD = 2.02) which was 0.94. However, the result of the independent sample t-test showed that there was a difference statistically between the average attitude of male and female postgraduate students in the faculty of education towards the utilization of computer in data analysis ($p = 0.001$), following this result, the null hypothesis was rejected since $p < 0.05$. It was therefore concluded that male

postgraduate students and female postgraduate students in the faculty of education differ in their attitude towards the utilization of computer in data analysis. This finding is consistent with that of Mandal et-al, (2018) who reported that girls have significantly less experience and enthusiasm for computer when compared with boys and as such there was a significant difference in attitude towards the utilization of computer in data analysis based on gender. The result is however, at variance with that of Yusuf et-al, (2011) who found no gender difference in their attitude towards the use of ICT.

Hypothesis Two: examined the attitude of postgraduate students towards the utilization of computer in data analysis on the basis of the programme of study. The result of the one-way ANOVA test carried out shows that, there was a significant difference in attitude of postgraduate students in the different programmes of study towards the utilization of computer in data analysis $F(2, 197) = 7.676$, $p = 0.001$. The null hypothesis which was earlier stated that there is no significant difference in the attitude of postgraduate students in the different programmes of study towards the utilization of computer in data analysis was rejected. However, in other to find out where the difference lies, Turkey's HSD post hoc test was conducted and the result showed statistically significant difference between postgraduate students from Ph.D. and M.Ed programmes of study $F(2, 197) = 7.489$, $p = 0.001$. The results of this study is in agreement with a survey on postgraduate students' use of information and communications technology (ICT) facilities by Thomas et-al, (2015) who carried out a study on 100 postgraduate students at the Rivers State University, Port Harcourt in the faculty of technical and science education where the respondents were randomly stratified into 3 groups according to their departments. The result of their findings indicates a significant difference in the opinion of the three (3) groups of postgraduate students which includes educational foundation, technical and science education; and business education on the utilization of ICT facilities, where the calculated f-value (3.562) was greater than the critical f-value (3.07), thus the null hypothesis which states that; there is no significant difference between the three groups of PG students on the postgraduate students' utilization of ICT facilities was rejected. However, on the current study, the significant difference in the attitude observed between M.Ed and PHD students, in the researcher's view may be due to the poor background of some postgraduate students on ICT and the use of computers prior to their commencement of a postgraduate programme.

RECOMMENDATIONS

Based on the findings of the study, the researcher therefore recommends that;

1. The university authorities should make the learning of ICT as a compulsory course for all levels of postgraduate programme in the faculty of education, Ignatius Ajuru, University of Education.
2. The university authorities should ensure that they have well-equipped and functional ICT centres in the institution in other to encourage postgraduate students who may not be able to afford their own personal computers or laptops have access to computers in course of their programme of study.

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