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Ict Competences as Correlates of Attitude Towards Thesis Completion Among Post Graduate Students in Cross River State, Nigeria		
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Keywords		Abstract
ICT competences, Attitude; Thesis completion	This study examined ICT competences and attitude towards thesis completion among post graduate students in Cross River State, Nigeria. To realize the stated objectives, two null hypotheses were formulated to direct the study. The review of related literature was based on the sub-variables of the study. The research design adopted for the study was correlational research design. The population of the study consists of is 252 spillover post graduate students in 2023/24 session (masters M.Ed / M.Sc) and doctoral (PhD) programmes), made up of 153 males and 99 females drawn from University of Calabar and University of Cross River. Purposive sampling procedure was employed in this study. Due to the small number of the population, the entire population (census) was used as the sample. Hence, the sample size for the study consists of 250 (151 males and 99 females). The questionnaire titled ICT Competences/ Attitude Towards Thesis Completion Questionnaire (ICTCATTCQ) was the instrument for data collection. The 250 copies of the instrument were administered and retrieved immediately after completion. The Face validity of the instrument was explored to check for the appropriateness of the items. The Cronbach reliability estimate of the instrument gave a range of 0.72-0.84. The null hypotheses were analyzed using simple linear	
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	regression analysis. The result indicated that ICT competencies in pre-data analysis and ICT competencies in data analysis significantly predicts attitude towards thesis completion among postgraduate students. Based on the findings of the study, it recommended among others that data analysis should be offered as a separate course in postgraduate studies since ICT in data analysis rank highest in term of it ability to predict the attitude towards thesis completion.
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INTRODUCTION

The effectiveness of the postgraduate programme of any institution is measured, not only by the quality of faculty members available for teaching but also, by the possibility of students' completion of their respective research work and their overall programmes on time. When students successfully complete their thesis/dissertation and the overall programme as at when due, it leads to improved faculty rating, enhanced reputation of the institution, attraction of more students to the institution, motivates research funding agencies because they are seeing prompt results as well as stimulate national development.

Today. Evidences abound both on record and experiences about students lackadaisical attitude towards project completion. Most students put up attitudes that portray them as students with "very busy schedules", instead of engaging in thesis writing and completion. Most worrisome are students that resist supervisor's feedback by refusing to do the necessary corrections, because they are offended by what they called , the supervisor's " unreasonable criticisms and high handedness" instead of seeing it as an opportunity for improvement. Some students are even careless to the extent that they avoid classes of courses like advance research and statistics method and ICT that help in the writing of research like the advance statistics .These negative

attitudes by the students have ended in frosty relationships between the supervisors and supervisees,

The different negative attitudes have metamorphosed into making the students to spend many years in a programme they are expected to complete within two to three years, because of their failure to complete their research work which is mandatory for graduation. As a matter of fact, these negative attitudes have hydra-headed consequences on the students, institution and the society at large. To the students the consequences ranges from increase in financial burden, to exhaustion, loss of motivation and focus in the affected students as their attention might be diverted to other life commitments they are associated with for their personal, family, communal and career development and progress.

To the institution, it ranges from work overload on faculty, to pressure on educational infrastructural facilities, low research productivity, low rating of the institution as well as threat to potential candidates. The nation will lose the opportunity to obtain new research finding that could have contributed to the advancement of policy formulation and implementation towards solving societal problems.

In view of these consequences, previous researchers who have made efforts to identify the cause(s) of the negative attitudes towards Thesis Completion among students have attributed this to different factors. To some, low interest in research, un-seriousness, anxiety, stress, lack of adherence to instructions given the mentor feedback, inability of the students to build mutual trust with their mentors, inability to ensure effective listening as well as ask relevant questions are the leading causes. Other researchers attributed it to limited competences in using spreadsheet, database, internet resources among others. The question which begs for an answer by the present

researcher is: “do the students have the necessary ICT competencies for effective conduct of research”?

Against this backdrop, the researcher is poised at answering the general questions: “what is the relationship between ICT competences and attitude towards thesis completion among post graduate student on the other hand. The researcher believes that answers to questions that emanate from this major question will guide in proffering solution to the problem of the study.

Purpose of the study

1. The ICT competencies in pre-data analysis predict attitude towards Thesis completion among postgraduate students.
2. The ICT competencies in data analysis predict attitude towards thesis completion among postgraduate students.

Research questions

1. To what extent does ICT competencies in pre-data analysis predict attitude towards Thesis completion among postgraduate students?
2. To what extent does the ICT competencies in data analysis predict attitude towards Thesis completion among postgraduate students?

Statement of hypotheses

1. The ICT competencies in pre-data analysis does not significantly predict attitude towards thesis completion among postgraduate students.
2. The ICT competencies in data analysis does not significantly predict attitude towards thesis completion among postgraduate students.

LITERATURE REVIEW

ICT competences in pre-data analysis and attitude towards thesis completion

Asibi, Sarwuan, Ojokuku and Unwana (2023), in a study of "Information and communication technology (ICT) competencies and job performance of librarians in some selected university libraries in North Central of Nigeria", investigated the era of ICT competencies and job performance of librarians in some selected university libraries in North Central of Nigeria. A descriptive survey research design was adopted for the study. The population of the study consists of 171 professional and para-professional librarians from Francis Sarwuan Tarka University library and Benue State University library. A total of 171 questionnaires were distributed while only 133 were retrieved. Data collected were analyzed using descriptive statistics mean and percentage mean score of 2.5 and above and percentage score of 50% were considered.

The study revealed that ICT competences possessed by Librarians are digital literacy skills, professional skills, computer skills and information retrieval skills. The study also affirmed that the ICT competencies as regards job performance of librarians, enhanced service delivery, facilitates library administration, increases efficiency, reduced stress and also increases librarian's confidence on the job. The study also revealed the challenges in developing and applying ICT competencies in respect to job performance as outdated and inadequate tools equipment, poor ICT skills because of lack of up to date and latest training, and insufficient access to ICT tools due to limited time on exposure to some of the equipment like the computer. The study recommended that librarians should be sensitized and provided training on digital literacy so as to improve their job output.

There should be adequate provision of digital facilities in the library to encourage library staff to use them both for their personal need and meeting the needs of their users. To align with global best practices, academic libraries should deploy approved library management software and packages for efficient and effective services

to their patrons. In the current study, competencies in information search, information retrieval and data collections using online questionnaire with the aid of ICT will increase the efficiency of researcher, reduce the researchers stress, and improve the attitude towards thesis completion among PG students which this study supported.

In a study of the “Impact of Information and Communication Technology (ICT) on Educational Improvement”, Ghaznavi, Keikha, Yaghoubi (2011), noted that information and communication technology has become an inseparable part of human life and caused doing things more easily through the consumption of less time and cost. The study aimed at investigating the effect of information and communication technology on the educational improvement of third grade high school students in Khash-Iran. The research was a descriptive survey. The population included the third-grade high school students of Khash city who were about 1900 people studying in 35 educational units in 2010. The sample size was determined using Kirgizia and Morgan statistical tables and was determined to be 320 people. Random multistep method was employed for sampling among male and female students in proportion with the community size.

The researcher-made 24-question questionnaire with a grading scale of Likert type was used for data collection whose validity and reliability was confirmed by Cronbach’s alpha. The method of measurement type was used for data analysis; frequency distribution table, frequency percentage and diagram drafting were used descriptive statistics section. Thechi-square, U Mann –Whitney and Kruskal-Wallis statistical tests were used in inferential statistics section with regard to the measurement scale. SPSS was used to analyze data. Research findings revealed that using information and communication technology is effective in increasing educational motivation, improving questioning skill, improving research spirit and raising school marks. It is

generally effective on third grade high school students' educational improvement to a great extent. This effect was the same among male and female students with different average scores, ages and fields. However, its effect on vocational and high schools students was different. Motivation was found to be a boost to attitude.

In a study of undergraduate students' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University, Ado-Ekiti, Nigeria, Fabunmi and Adesoji (2012) used four research questions to guide the study and the instrument used was the questionnaire. The research method used was survey. The study came out with the results that there is a preference for ICT use in improving teaching and learning, though costlier than the traditional book sources. It was also discovered that students frequently use internet centres as places of accessibility to get information through ICT teaching and learning. It concluded by affirming the need for the development of ICT use in Nigeria universities for the improvement of teaching and learning for the students.

Bicanich, Slivinski, Hardwicke, and Kapes (1997) reported on a research project in which an Internet-based vocational test battery and a parallel paper-and-pencil test battery were administered to two samples of secondary and post-secondary vocational-education students. They reported that the test results from the two versions were very similar and did not yield a bias related to gender or special educational needs (e.g., disability). They also found that students preferred Internet delivery to paper-and-pencil versions by a three-to-one margin. Bicanich et al. reported, furthermore, that the test administrators told of a significant saving in time and effort from Internet test delivery. In regard to financial utility, the economic parameters of their project showed that cost savings could be expected to accrue after 375 test-takers.

Stanton (1998) compared identical psychological survey questionnaires administered to two equivalent groups of “employed professionals” in either paper-and-pencil ($n = 181$) or Internet-based ($n = 50$) versions. Twelve items in the questionnaire measured respondents’ perceptions of fairness in their day-to-day interactions with their supervisors, and a few others referred to demographic information and the nature of supervisory relations. Stanton found very similar results in the two samples in terms of the magnitude and internal structure of the items. The items in the Internet version, however, showed greater variability. Another noteworthy finding in this study was that there were significantly fewer missing values in the Internet version than in the paper-and-pencil version.

Pasveer and Ellard (1998) compared the administration of a 20-item self-trust questionnaire through paper-and-pencil and the Internet to two standard (n ’s of 760 and 148, respectively) and two Web-user (n ’s of 429 and 1,657, respectively) samples. Findings revealed that (a) both forms were similarly internally consistent (Cronbach alpha coefficients were .84 and .86 in the two standard samples, and .86 and .88 in the two Internet samples); (b) the two versions had a similar four-factor structure; (c) item means were similar in the two versions. The only meaningful difference occurred in the variance of the item responses, which was slightly higher in the Web version of the scale (mean item standard deviations of .56 and .60, and of .63 and .73, for the standard and the Internet administrations, respectively). This difference could be attributed, however, to the more heterogeneous sample responding to the Internet-based questionnaire.

Buchanan and Smith (1999a) compared a traditional paper-and-pencil version of a self-monitoring scale consisting of 18 dichotomous items to its Internet version. They found that the Web version ($n = 963$) had a coefficient alpha of .75, compared

with .73 for the traditional-version comparison group ($n = 224$), and with .70 reported by earlier studies. A similar three-factor structure, similarly loaded by items, was found in the two versions. In addition, the mean scale scores and standard deviations of the two forms were similar.

Pettit (1999) explored the possibility of using the Internet to collect psychological information. He launched a computer-anxiety scale on a university website, advertised it through Web search engines and indices, and asked Web surfers to fill it out. Analyses of 839 completed surveys showed that the scale was as internally consistent as the original paper-and-pencil scale. In addition, an examination of correlations of the scale with several other variables (e.g., age, gender, computer usage) showed that it possessed high construct validity.

Joinson (1999), in a 2 by 2 factorial design, examined whether conditions of anonymity (anonymous versus non-anonymous) and testing mode (paper-and-pencil versus Internet) might affect social desirability, social anxiety, and self-esteem scores in a sample of university students. He found that respondents who filled out questionnaires on the Internet, showed lower social desirability, lower social anxiety, and marginally higher self-esteem than did those tested by paper-and-pencil questionnaires. Similarly, the study participants scored lower on social desirability and social anxiety and higher on self-esteem in the anonymous than in the non-anonymous condition. As expected, the combination of anonymity and Internet-based testing resulted in the lowest social desirability scores. Joinson asserted that his research offered clear empirical support for the use of Internet-based self-reported psychological questionnaires, especially in an anonymous condition, as a better method to collect valid research data. The ability to use the internet to administer questionnaire will

increase speed, reduce anxiety and may likely boost the attitude of students towards thesis completion

ICT is also a useful instrument in the supervision of thesis in the recent times, in the study of the impact of ICT-assisted thesis writing on students researchers psychological empowerment, Misdi, Harti and Kusr (2020), observed that, ICT-assisted thesis writing is now a demand to empower researchers. In their study 16 student researchers from a private English college participated in the study. All participants were involved in a multi-mode ICT-assisted thesis writing supervisor website. Youtube and whatsapp were used to facilitate student researchers distance supervision. The data were gathered through questionnaire and a focused group interview. The result revealed that they feel motivated to complete their thesis with internet supervision, but the study was not carried out in Nigeria, this constitute a gap.

ICT culture has come to stay globally in all higher institutions. Information and Communication Technology is now the modern means of improving teaching and learning especially in the University system. Studies show that exploiting from modern technologies like computer and world wide web in classrooms, gives this possibility to the students to learn by faster speed and better performance (Mehmet, 2004) and have more satisfaction by attending in the classroom (Milleken & Bames, 2002). ICT enhances speed in research work and can quicken the completing time of a thesis as in the present study.

ICT in data analysis and attitude towards thesis completion

Vanith (2022), studied the attitude of researchers and their dependance on Information and Communication Technology (ICT) for pursuing research. The purpose of this study was to motivate the remote aspirants to pursue their research with the support of ICT and to identify the strength of ICT in doing research. A study was carried

out with researchers of Arts, Science and Engineering discipline candidates, in a student's or teacher's capacity in a higher education institute situated at a rural village in India. Study consists of 60 respondents from various Arts, Science and Engineering disciplines. Samples were selected using the random sampling technique, so each sample forms a representative sample of entire population. According to the respondent's age, gender, marital status, discipline, nature of candidature and status of research, the attitude of researchers towards ICT in their research process were tested individually on the above-stated hypotheses.

Normative survey method and statistical package for social science (SPSS) were applied to study and analyse the attitude of researchers about ICT at that time of research with respect to age, gender, discipline, marital status, full time/part-time candidature and PhD, completed peer/ongoing peer category. Findings concluded that ICT can be a powerful tool to bridge limitations such as manual calculations during analysis , economy, expert personalities, resource insufficiency, natural hazards and pandemic situations for learners. The objective of this study is to find out the existing researchers' attitude towards ICT and to motivate remote research aspirants towards ICT to pursue their research, on the sum, the use of ICT can boost attitude towards thesis completion, if it can eliminate the limitations associated with the traditional method of writing research.

In a study of Students' successes and challenges applying data analysis and measurement skills in a Fifth-Grade Integrated STEM, Glancy, Moore, Guze and Smith (2017) opined that the understanding of statistics and skills in data analysis are becoming more and more essential, yet research consistently shows that students struggle with these concepts at all levels. This case study documents some of the struggles 4 groups of fifth-grade students encounter as they collect, organize, and

interpret data and then ultimately attempt to draw conclusions or make decisions based on these data. The activities in which the students engaged were part of an integrated science, technology, engineering, and mathematics (STEM) unit that had students collecting and analyzing data both in the context of learning science concepts and in the context of evaluating prototypes for an engineering design challenge. Students were observed to struggle in a variety of ways, specifically having difficulty (1) properly using certain measurement devices, (2) coordinating quantitative data with the phenomenon being measured, and (3) properly interpreting the significance of variation, uncertainty, and error in the data.

As noted by Garfield et al. (2008), statistics began to rise in prominence within K-12 classrooms following its addition to the National Council of Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards for School Mathematics (1989). Since then, educators and researchers have learned much about how students think and learn data analysis skills (Watson, 2006; Garfield, 1995). According to these researchers, along with many others, the primary goal of K-12 statistics education should be statistical literacy. Gal (2004) provides one articulation of the concept, describing statistical literacy as (a) people's ability to interpret and critically evaluate statistical information, data-related arguments, or stochastic phenomena, which they may encounter in diverse contexts, and when relevant (b) their ability to discuss or communicate their reactions to such statistical information, such as their understanding of the meaning of the information, their opinions about the implications of this information, or their concerns regarding the acceptability of given conclusions. For example, Lehrer, Kim, and Jones (2011) showed that having students design their own statistics for data that they had collected themselves encouraged deep consideration of measurement and variability, and these authors recommended this as a pedagogical

approach for teaching statistics. Science and engineering educators make similar recommendations for developing data analysis skills in applied settings.

Bybee (2011) argues that “planning and carrying out investigations should be standard experiences in K-12 classrooms” (p. 36), and Hofstein and Lunnetta (2004) found that the literature consistently supports these kinds of tasks saying, “well-designed science laboratory activities focused on inquiry can provide learning opportunities that help students develop concepts” (p. 47). However, Hofstein and Lunnetta also noted that the success of this approach is highly dependent on the nature of the task itself and recommended that more research be done into identifying the characteristics of tasks that make them successful. Additionally, Kuklianksy and Eshach (2013) were able to support students’ understanding of data analysis during a college physics course by integrating statistics instruction with laboratory investigations throughout the semester.

Similarly, with regard to engineering, Hjalmarson, Moore, and delMas (2011) were able to support and develop students’ understanding of statistics by requiring them to create their own statistical measures. Data analysis tasks prove most successful when students engage deeply with the data and are involved with the planning and development of the analysis. Despite or perhaps even because of the wide range of applications of data analysis and statistics, learning these concepts in context can be difficult for students. As Moore (1990) explains, “data are not merely numbers, but numbers with a context” (p. 96). Interdisciplinary applications of concepts in statistics provide students with many opportunities to engage with these ideas, yet the contextual nature of the data means that each application will be unique thus presenting its own challenges for students. Educators should strive to help students to see the connections between context-specific applications of data analysis and the big ideas and concepts

that make up the discipline of statistics, but before we can do that we need to identify exactly how students engage with data analysis concepts in applied settings.

Kroes, James, Chen, Yuwen and Mangiameli, (2013), in a study of "Improving Students' Data Analysis and Presentation Skills: The Ocean State Circuits, Inc. Forecasting Project", observed that many potential employers expect that newly hired students will arrive on-the-job with the ability to analyze data, utilize spreadsheets, and communicate findings and recommendations. They designed the Ocean State Circuits, Inc. Forecasting Project to address these gaps in their students' knowledge of analytical tools (such as the SPSS and pivot tables), their ability to write mathematical formulas in a spreadsheet, their understanding of more advanced data analysis features (e.g. regression, correlation), and their ability to communicate and present managerial conclusions. The exercise required student teams to act as "consultants" and utilize spreadsheets to analyze and forecast the demand for a hypothetical set of products and then communicate their findings to "management" in a professionally formatted report document.

A survey of students that have completed the exercise indicates that their knowledge level of the tools used in the project increased significantly from before to after they completed the case. Similarly, anecdotal feedback from employers suggested that students that have completed the exercise seem more capable of dissecting data when investigating business issues. The more the competencies in ICT of employee, the higher the output of the staff and the more the competencies in ICT, the better the attitude of the PG student towards thesis completion.

RESEARCH METHODOLOGY

The study adopted correlational research design. Correlational research design investigates relationships between variables without the researcher controlling or

manipulating any of them. The study is conducted in Cross River State. Cross River state is located between (lat 5°45'N, Long 8°30'E)and (,Lat. 6°40'N, Long9°53'E) in Nigeria. The population of the study comprised all post graduate students in 2023/2024 academic session who are currently in their at least second year and third year, specifically masters and doctoral prorammes (spillovers) in University of Calabar and University of Cross River .these students are due to graduate, but have not completed their Theses. The estimated/accessible population for the study is 252, these were made up of 153 males and 99 females, distributed in the two (2) institutions. Homogeneous Purposive sampling technique was adopted to select the study sample. Homogeneous Purposive sampling is a technique in which the person conducting the research relies on their judgment to choose members who have the same characteristics to be part of the study. Due to the small nature of the population, the census of 252 was adopted by the researcher as the sample. The instrument for this study was a questionnaire constructed by the researchers titled: ICT Competences and Attitude Towards Thesis Completion Questionnaire. (ICTCATTCQ). The questionnaire consists of three sections: A and B. Section A was designed to obtain information on the respondent's biodata, while section B consists of 25 structured items on two independent variables with five items for each variable ICT competences in pre-data analysis and ICT competences in data analysis; 15 Items measure attitude towards thesis completion is also developed. Respondents are asked to tick (✓) correct options among the four options of the likert scale from strongly agree to strongly disagree with all sincerity and the importance of confidentiality on any information they give in their response is emphasized in the questionnaire.

Face validity of the instrument was explored, to check for the appropriateness of the items, by taking the initially constructed 45 Items to three experts in measurement

and evaluation in the faculty of Educational Foundation Studies, university of Calabar. The reliability of the instrument was determined using Crombach Alpha reliability and the reliability estimate ranged between 0.71-0.86. The researchers personally visited the information units of the two universities; the university of Calabar and university of Cross River State.

Presentation of results

4.2.1 Hypothesis one: The ICT competencies in pre-data analysis does not significantly predict attitude towards thesis completion among post graduate students. To test this hypothesis of the study, simple linear regression analysis was employed with ICT competencies in pre-data analysis as predictor (independent) variable and attitude towards thesis completion (dependent) variable. The results obtained from the test statistical analysis are summarized and presented in Table 1.

Table 1

Summary of Regression Analysis for the prediction of the attitude towards thesis completion on the attitude towards thesis completion accounted for by the variation in mentee's professional training competencies is 16.9% ICT competencies in pre-data analysis on the attitude towards thesis completion

R	R Square	Adjusted R Square	Std. Error of the Estimate		
.466	.217	.214	8.54731		
Sources of variation	Sum of Squares	df	Mean Square	F-value	p-value
Regression	5028.125	1	5028.125	68.825	.000
Residual	18118.019	248	73.057		
Total	23146.144	249			
		Unstandardized Coefficients	Standardized Coefficients		p-value
Model	B	Std. Error	Beta	t-value	p-value
Constant	50.340	1.969		25.565	.000
ICT competencies in pre-data analysis	-.980	.118	-.466	-8.296	.000

*p<.05

Table 1 gives an interpretation of the results of the simple linear regression analysis of ICT competencies in pre-data analysis and attitude towards thesis completion. An r-value of .466 was obtained, resulting in an R-squared value of .217. This implies that the variation in the attitude towards thesis completion accounted for by the variation in ICT competencies in pre-data analysis is 21.7% , the p-value (.000) associated with the computed F-value (68.825) is less than .05. As a result, the null hypothesis was rejected. This means that ICT competencies in pre-data analysis significantly predicts attitude towards thesis completion with both the regression constant (50.340) and coefficient (-.770) making a significant contribution to the prediction model ($t = 26.168$ & $-.980$ respectively, $p=.000 < .05$). The mathematical relationship of the regression model is depicted by the following equation $y=50.340 -.980x$ thus, x is ICT competencies in pre-data analysis and y is attitude towards thesis completion.

Hypothesis two: The ICT competencies in data analysis does not significantly predict attitude towards thesis completion among post graduate students. To test this hypothesis of the study, simple linear regression analysis was employed with ICT competencies in data analysis as predictor (independent) variable and attitude towards thesis completion (dependent) variable. The results obtained from the test statistical analysis are summarized and presented in Table 2.

TABLE 2
Summary of Regression Analysis for the prediction of attitude towards thesis completion on ICT competencies in data analysis

Adjusted R					
R	R Square	Square	Std. Error of the Estimate		
.404 ^a	.164	.160	8.83581		
Sources of variation	Sum of Squares	Df	Mean Square	F-value	p-value
Regression	3784.397	1	3784.397	48.473	.000 ^b
Residual	19361.747	248	78.072		
Total	23146.144	249			

Model	Unstandardized Coefficients		Standardized Coefficients		p-value
	B	Std. Error	Beta	t-value	
Constant	45.679	1.682		27.154	.000
ICT competencies in data analysis	-.717	.103	-.404	-6.962	.000

*p<.05

Table 2 gives an interpretation of the results of the simple linear regression analysis of ICT competencies in data analysis and attitude towards thesis completion. An r-value of .404 was obtained, resulting in an R-squared value of .164. This implies that the variation ICT competencies in data analysis can account for about 16.4% of the total variation in attitude towards thesis completion thus, the p-value (.000) associated with the computed F-value (48.473) is less than .05. As a result, the null hypothesis was rejected. This means that ICT competencies in data analysis significantly predicts attitude towards thesis completion with both the regression constant (45.679) and coefficient (-.717) making a significant contribution to the prediction model ($t = 27.154$ & -6.962 respectively, $p=.000 < .05$). The mathematical relationship of the regression model is depicted by the following equation $y=45.679+ -.717x$ thus, $x=$ ICT competencies in data analysis and $y=$ attitude towards thesis completion.

Discussions of findings

The results of the first hypothesis showed that the ICT competencies in pre-data analysis significantly predict attitude towards thesis completion among post graduate students. This finding conform to the findings of Asibi, Sarwuan, Ojokuku and Unwana (2023) who carried out a study titled "Information and communication technology (ICT) competencies and job performance of librarians in some selected university libraries in North Central of Nigeria", found that ICT competences possessed by Librarians are digital literacy skills, professional skills, computer skills and information

retrieval skills. The study also affirmed that the ICT competencies as regards job performance of librarians, enhanced service delivery, facilitates library administration, increases efficiency, reduced stress and also increases librarian's confidence on the job.

Similarly, Ghaznavi, Keikha, Yaghoubi (2011) examined the "Impact of Information and Communication Technology (ICT) on Educational Improvement" and noted that information and communication technology has become an inseparable part of human life and caused doing things more easily through the consumption of less time and cost. The Research findings revealed that using information and communication technology is effective in increasing educational motivation, improving questioning skill, improving research spirit and raising school marks. It is generally effective on third grade high school students' educational improvement to a great extent.

The findings of the second hypothesis agreed that ICT competencies in data analysis significantly predict attitude towards thesis completion among post graduate students. Which implies adequate competences in data analysis will influence attitude towards thesis completion among post graduate students. In corroboration with this finding, Vanith (2022), studied the attitude of researchers and their dependence on Information and Communication Technology (ICT) for pursuing research. Findings concluded that ICT can be a powerful tool to bridge limitations such as manual calculations during analysis, economy, expert personalities, resource insufficiency, natural hazards and pandemic situations for learners. In the same vein, Bybee (2011) argued that "planning and carrying out investigations should be standard experiences in K-12 classrooms" (p. 36), and Hofstein and Lunnetta (2004) found that the literature consistently supports these kinds of tasks saying, "well-designed science laboratory activities focused on inquiry can provide learning opportunities that help students develop concepts" (p. 47). However, Hofstein and Lunnetta also noted that the success

of this approach is highly dependent on the nature of the task itself and recommended that more research be done into identifying the characteristics of tasks that make them successful.

Conclusion

Based on the findings, it was concluded that CT competencies in pre-data analysis and ICT competencies in data analysis play critical roles on thesis completion among post graduate students.

Recommendations

The following recommendations were made based on the findings.

Develop comprehensive training programme focused on what is used in pre-data analysis such as google scholar, google search engines, data management and storage system.

- vi. Data analysis should be offered as a separate course in postgraduate studies, since ICT in data analysis rank highest in term of its ability to predict the attitude towards thesis completion.

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