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Application of the Knowledge of Research in Data Analysis by Postgraduate Students in South-West, Nigeria

Eugenia A. Okwilagwe (PhD)
Institute of Education, University of Ibadan, Ibadan

Abstract
The study is designed to investigate Postgraduate students' proficiencies in application of research knowledge in data analysis using the computer and interpretation of analysed research data to make inferences on research outcomes in Universities in the South-West, Nigeria, and the challenges they face. The sample consisted of 746 participants selected from six departments in three faculties from three federal, three states and two private universities in the zone. A valid and reliable instrument 'Application of the knowledge of Research and Computer Processed Data in Research' ($\alpha = 0.86$) was used. Postgraduate students in Science and Technology faculties between (43.0% and 76.0%) possessed computer skills; hold a computer literacy certificate, can operate computer data processes and can run simple research data analyses. Postgraduate students from Agricultural – related faculties, between (40.4% and 76.0%) and Arts and Humanities Faculties between (39.0% and 61.0%), do not have all the computer literacy skills. Between 30.0% and 43% of the students were not skilful in applying research knowledge in research analyses. Majority of the respondents between 22.0% and 35.5% encountered challenges such as: hardly understand the 'information in computer printed data,' 'nature of data obtained', cannot 'relate one aspect of the data printout to other aspects of the results', 'locate the aspects that are significant and why they are significant'. To mitigate these, faculty courses in research methodology and statistical methods at postgraduate level should be reviewed and designed with better approaches for developing adequate and sustainable research skills in postgraduate students for enhanced and timely research completion process.

Keywords: Computer Knowledge, Computer Analysis, Research Data, Inferences, Challenges of Research

INTRODUCTION
Research is important for national economic development and for well-being of a country. Many prospective students enter university programmes with the expectation that they will not engage in serious statistical analyses. They conceive this to be too strenuous and out of their reach, more so when they believe that there are professionals and experts whose duties it is to engage in such activities for a fee. These perspectives are not limited to first degree students alone, but are inclusive of postgraduate students. Coupled with this is the introduction of technology to learning and other endeavours of man in the turn of the century. The use of technology and its accompaniments send shivers done the spine of many students especially among those regarded as 'born before tech'. Among other factors, the fear of figures and computer applications particularly with respect to data analysis and interpretation among research students can be so rabid that when the word statistics is mentioned they either switch off or simply reply 'please do not go there'. They tell you 'when we get there we will cross the bridge'. Reasons why students perhaps exhibit these poor skills or behaviours from personal interaction with students may not be unconnected to: the subjects they completed at high school or college, their chosen academic major, their work experience, and their personal interest in computers and computing. Kim and Bagaka (1) identify unequal learning experiences as a factor, even when access to technology and connectivity exists and teachers choose not to use technology in their teaching, leading to students becoming equally unprepared to become knowledgeable workers and to function well in society.

To be successful in many university programmes and perhaps to perform in careers of interest that students are being prepared for, [2], making reference to Smith and Furst- Bowe argue that they will require skills in the areas of computing skills, analytic skills and/or statistical skills. Gilmore and Feldon (3) have equally noted that an early introduction to developing research skills is very essential while preparing undergraduates for post graduate education. This preparation is expected to boost their ability to apply these skills in their research work and in future research activities. It seems that many students find it hard to understand and apply statistical ideas. Some authors such as Murtonen [4], who hold this positive view maintained that research skills or the use of statistics are not easily acquired by students. Mandap (5) corroborating these previous views, has revealed that many statistical concepts are complex and difficult for students to understand irrespective of the discipline they are in. These incompetencies result in anxieties for students and some related studies, [6; 7],

have found that statistics anxiety have inverse effects on students' performance at both the undergraduate and graduate levels.

In addition, Lahore in [2] (p. 264), observed that 'many faculties expect students to know how they should use a word processor to create and format papers, make use of software for classroom presentations and speeches, use spreadsheet software to prepare charts and graphs, navigate the internet for research, and have the ability to learn and participate in online classrooms using various software'. While perhaps this is the preferred way to go, and is true of foreign universities, the case cannot be said of many universities in Nigeria. Literacy and proficiency in computer for instance, is not a criterion for admission except in faculties and departments that offer computer courses. Universities in developed nations have also had to put in place substantial resources and personnel in order to help the students to acquire research skills and to prepare them as graduates of future human capital and to be knowledge-based workers [8]. This is not so in many developing nations.

Computer-assisted teaching methods introduced through 'Educational technology', an education course in many universities is an interactive process which makes learning easier, was introduced: to increase students' participation in classroom activities and to promote access to learning materials. A critical question to ask at this point is: how has this introduction assisted postgraduate students in the education faculties and other faculties to own personal PCs and explore their usage? The answer to this question is difficult to tell but the inadequacies become obvious during project supervision when research projects are to be conducted by way of data collection, data analysis, interpretation, reporting and making of inferences that lecturers/supervisors realise that not too many students are comfortable with many of these process skills. In addition, many faculties expose their students to a postgraduate course (also called 700 level course) on research methods. The essence is to make students gain adequate knowledge in research methodology and analysis and be able to apply the knowledge to their projects.

It is observed that the content of these courses vary from faculty to faculty and the variation may result in the quality of knowledge and expertise acquired by the students. These two courses are compulsory faculty courses which students must take and pass. To confirm these views, [9], contend that the diffusion of modern technology in teaching and learning and invariably in research, depend largely on the extent to which a large proportion of students and lecturers have acquired ICT knowledge and skills. Also relevant is the knowledge acquired from the course on research methods. However, contrary to the universities intents, courses in statistical skills have been found to pose overall difficulty especially in the methodology of research to most students in the social science and education during undergraduate and postgraduate programmes [10].

Computer literacy has been used and defined variously. To Loyd and Gressard (11); who focused on computer experience and use, programming skills and ability to use software, the term means time spent on the computer, ownership of a home computer and number of computer-related courses taken. In this study, the term '*computer literacy'* incorporates these views and more, such as the views of [12] who input computer literacy to mean transformation capability, proficiency and productive activities. It also incorporates [13], who expressed its meaning in relation to experience and ability to operate computers, knowing the structures of computer software and hardware, possessing the skills to operate computer software, and application of computer to solve social issues.

Computer literacy from the above views is very germane and vital as a basic and introductory learning phase for statistical analysis, data analysis understanding and print-out comprehension, and subsequent interpretation and reportage. It is dependent on adequate mastery of competencies associated with development of research instrumentation, and the associated statistical analysis of data collected using such instruments to guarantee valid and reliable result outcome. Empirical evidence tends to support the uneasiness that young researchers express when confronted with statistical tools of research as expressed by Akinboye in [14] Lack of research knowledge or inability to obtain the desired results from the research data collected can lead to phobia. In addition, the resultant outcome of these incompetencies are evident in poor data collection, delay in presenting results, and oftentimes statistical analysis computed are invalidated, unreliable and such results lack confidence placed in them [15].

Researchers' knowledge and skills in research involves the understanding of data, statistical concepts and terminologies, method of data collection and computation of descriptive and inferential statistics using appropriate software [16]. How many students for instance, are aware that for statistical analysis it is always advisable (and often easier) to use software written for the purpose by a reputable specialist manufacturer? According to [17], it is mandatory for individuals interested in any activity to be knowledgeable in the rudiments such as the concepts and techniques of carrying out the task. One should in addition have knowledge of both the process and the context in which the analysis will and is performed without which the benefit of the analysis

may not be achieved. Making reliable research inferences from data is also largely dependent on understanding of data analysis and ability to organise these data statistically, the statistics to summarise data with and, describing patterns, relationships and connections. Statistics can be *descriptive* or *inferential*. Descriptive statistics help to summarise data whereas inferential statistics are used to identify statistically significant differences between groups of data (such as intervention and control groups in a randomized control study). Previous authors such as [18, 19] have argued that the concomitant effect of researchers' inadequacies and phobia are some factors that can result in unnecessary delay in research analysis. These factors they stressed can also lead to employing the assistance of professional expertise, which can hinder research result integrity.

To enable these research processes, students must be ICT compliant (being computer literate), be exposed to and be knowledgeable in some research assumptions and principles and statistical analysis procedures such as application of research knowledge in data analysis, interpretation of analysed research data and inference making. Confirming deficiencies in these areas, The University of Cambridge (20) observe that sometimes, research students spend two or more years collecting large amounts of data before considering the problems of analysing the data and with little understanding of their statistical or computing needs – a situation that the University says has led to disturbing number of cases where the proposed analysis has subsequently had to be severely restricted or even abandoned. They further contend that problems arise as a result of several other reasons such as: data may be too massive to handle; more often some essential measurements may not have been made, survey questions are ambiguous or otherwise defective, or samples are of insufficient quality or size and the standard statistical or numerical methods and the available computer programmes are inadequate. Other serious problems identified that can also arise from the use of inappropriate computer software for data analysis is that they lead to results that are demonstrably incorrect or at least suspect, besides risking unfavourable comments from referees and reviewers.

In view of the foregoing, the application of knowledge obtained from research in data analysis that postgraduate students in Universities in South-West, Nigeria, their proficiencies in computer data analyses of their research work, was undertaken in this study. In addition, interpretation of analysed research data from computer printouts while making inferences on research outcomes and the challenges they face was equally studied. The study has potential for course review in research methodology and statistical methods at the postgraduate level that allows for the designing of better approaches for developing adequate and sustainable research skills in postgraduate students by their faculties for enhanced and timely research completion process rather than being presumptuous of their abilities.

Statement of the Problem

Research drives competencies both in teaching and learning. It also drives the development of economies of nations. Students need to understand the nitty-gritty of doing research and the application of data analysis in this process. This they see as a herculean task. Poor understanding of this interrelationship could lead to half-baked graduates been turned out into the eworld of work and are likely to be clogs to the wheel of progress in nations development. Though some previous studies at the undergraduate level have examined the importance and proficiency of computer skills and or application of statistics in research in fields such as technology, sciences among others, few have ventured into determining the extent to which knowledge of research is applied in data analysis by postgraduate students.

Research Questions

These questions guided the study investigation.

1. What are the computer literacy skills exhibited by postgraduate students in doing research across different fields of study in Nigerian universities?
2. How skillful are postgraduate students in the application of research knowledge in data analysis?
3. What are the challenges that postgraduate students encounter in interpreting and reporting analysed research data?

METHODOLOGY

Study Design

The study is an ex-post-facto study. No variable was manipulated.

Sampling Technique and Sample

Multi-stage sampling procedure was adopted to select study participants. At the first stage, universities in the South-West geo-political zone of Nigeria were stratified along ownership (federal, state and private) basis. At the second stage, three federal, three state and two private universities were randomly sampled from each of the geo-political zone. At the third stage, six departments in three faculties were randomly selected out of the sampled universities, from which six students were randomly selected from each department to make a total sample of 864 participants. However 746 participants who had complete data were used for data analysis.

Instrumentation

Data were collected using a valid and reliable instrument 'Application of the knowledge of Research and Computer Processed Data in Research'. The instrument consisted of a section on bio-data and

three sub-sections that measured 'Computer literacy' (13 items), 'Skillfulness in the Application of Research knowledge in Data Analyses' (6 items) and 'Challenges that Postgraduate Students Encounter in Interpreting Analysed Research Data' (12 items) was developed. For the 'Computer Literacy' sub – component, participants were to respond as 'Yes' and 'No' for the factual items. In the 'Application of Skillfulness of Research Knowledge', participants responded on a 4point scale of 'Very Correct' = 4 , 'Correct' = 3; Partly Correct' =2 and 'Not Correct' = 1; while on the 'Challenge that Postgraduate Students Encounter in Interpreting Analysed Research Data' participants responded on a 4point scale of 'Very True' =4, 'True' =3, 'Partly True' =2 and 'Not True' =1. The instrument was validated using 120 participants and analysed with Crombach alpha method, which yielded a coefficient of 86.0

Procedure for Data Collection

Six research assistants trained on the data collection procedure participated in the collection of data. Six students were randomly selected from selected departments in three faculties from three federal universities, three state universities and two private universities. Where the students in a department were less than six in a course, the exact number found in the class was selected to respond to the questionnaire.

Data Analysis Procedure

The data collected were cleaned to remove incomplete data before they were coded into SSPS 20.0. Only participants' with complete data were analysed using descriptive statistics like frequency counts and graphs.

RESULTS OF THE STUDY

Research question 1: What are the computer literacy skills exhibited by postgraduate students in research across different fields of study in the university?

Table 1 and Figure 1 present the postgraduate students (between 43.0% and 76.0%) in Science and Technology Faculties response that they have all the indicated computer literacy skills in doing research. However, 43% of the students indicated that 'they had a short course on computer appreciation' while 53% 'studied computer and computer related course at the undergraduate course' but 51.4% 'usually employ a computer expert to run their data'. The table also shows that between 40.4% and 76.0% of the postgraduate students in Agricultural- related Faculties responded that they do not have all the indicated computer literacy skills in doing research. However, 53% of the students indicated that 'they had no short course on computer appreciation' while 64% did not 'studied computer and computer related course at the undergraduate course' but 60% 'usually employ a computer expert to run their data'. The table further shows that between 39.0% and 61.0% of the postgraduate students in Arts and Humanities Faculties responded that they do not have all the indicated computer literacy skills needed in doing research. However, 59% of the students indicated that 'they had no short course on computer appreciation' while 54% 'studied computer and computer related course at the undergraduate course' but 55% 'usually employ a computer expert to run their data'.

Table 1: Computer Literacy Skills Exhibited by Postgraduate Students in (a) Science and Technology Faculties (b) Agricultural - related Faculties (c) Arts and Humanities Faculties

S/N	Item	Response								
		(a) Science and Technology Faculties			(b) Agricultural- related Faculties			(c) Arts and Humanities Faculties		
		Yes (%)	No (%)	Total (%)	Yes (%)	No (%)	Total (%)	Yes (%)	No (%)	Total (%)
1.	I hold a certificate in computer literacy	80 (56.7)	61 (43.3)	141 (100)	29 (27.6)	76 (72.4)	105 (100)	201 (41.4)	285 (58.62)	486 (100)
2.	I can operate all computer data processes like inputting with ease.	68 (47.2)	76 (52.8)	144 (100)	25 (24.0)	79 (76.0)	104 (100)	193 (39.5)	296 (60.5)	489 (100)
3.	I can operate all computer data processes like coding with ease.	90 (64.3)	50 (35.7)	140 (100)	43 (40.2)	64 (59.8)	107 (100)	240 (49.8)	242 (50.2)	482 (100)
4.	I can operate all computer data processes like labeling with ease.	86 (63.7)	49 (36.3)	135 (100)	47 (45.6)	56 (54.4)	103 (100)	229 (48.1)	247 (51.9)	476 (100)
5.	I usually employ a computer expert to run my data	73 (51.4)	69 (48.6)	142 (100)	62 (59.6)	42 (40.4)	104 (100)	265 (55.0)	217 (45.0)	482 (100)
6.	I can do simple analysis of data like frequency count with the computer.	77 (53.8)	66 (46.2)	143 (100)	45 (42.1)	62 (57.9)	107 (100)	196 (40.5)	288 (59.5)	484 (100)
7.	I can do simple analysis of data like mean with the computer.	67 (47.2)	75 (52.8)	142 (100)	40 (37.7)	66 (62.3)	106 (100)	219 (45.2)	266 (54.8)	485 (100)
8.	I can do simple analysis of data like correlation with the computer.	86 (61.0)	55 (39.0)	141 (100)	45 (42.1)	62 (57.9)	107 (100)	245 (50.7)	238 (49.3)	483 (100)
9.	I can do complex computer analysis like t-test unaided.	107 (75.9)	34 (24.1)	141 (100)	52 (49.1)	54 (50.9)	106 (100)	298 (61.4)	187 (38.6)	485 (100)
10	I can do complex computer analysis like ANOVA with the computer unaided.	104 (73.2)	38 (26.8)	142 (100)	47 (44.3)	59 (55.7)	106 (100)	296 (61.0)	189 (39.0)	485 (100)
11	I only had a short course on computer appreciation.	58 (42.6)	78 (57.4)	136 (100)	49 (47.1)	55 (52.9)	104 (100)	199 (40.9)	287 (59.1)	486 (100)
12	I studied computer and computer related course at my undergraduate course	76 (52.8)	68 (47.2)	144 (100)	39 (36.4)	68 (63.6)	107 (100)	262 (53.5)	228 (46.5)	490 (100)
13	I am well grounded in Statistics from my undergraduate days	86 (59.7)	58 (40.3)	144 (100)	47 (43.5)	61 (56.5)	108 (100)	271 (55.5)	217 (44.5)	488 (100)

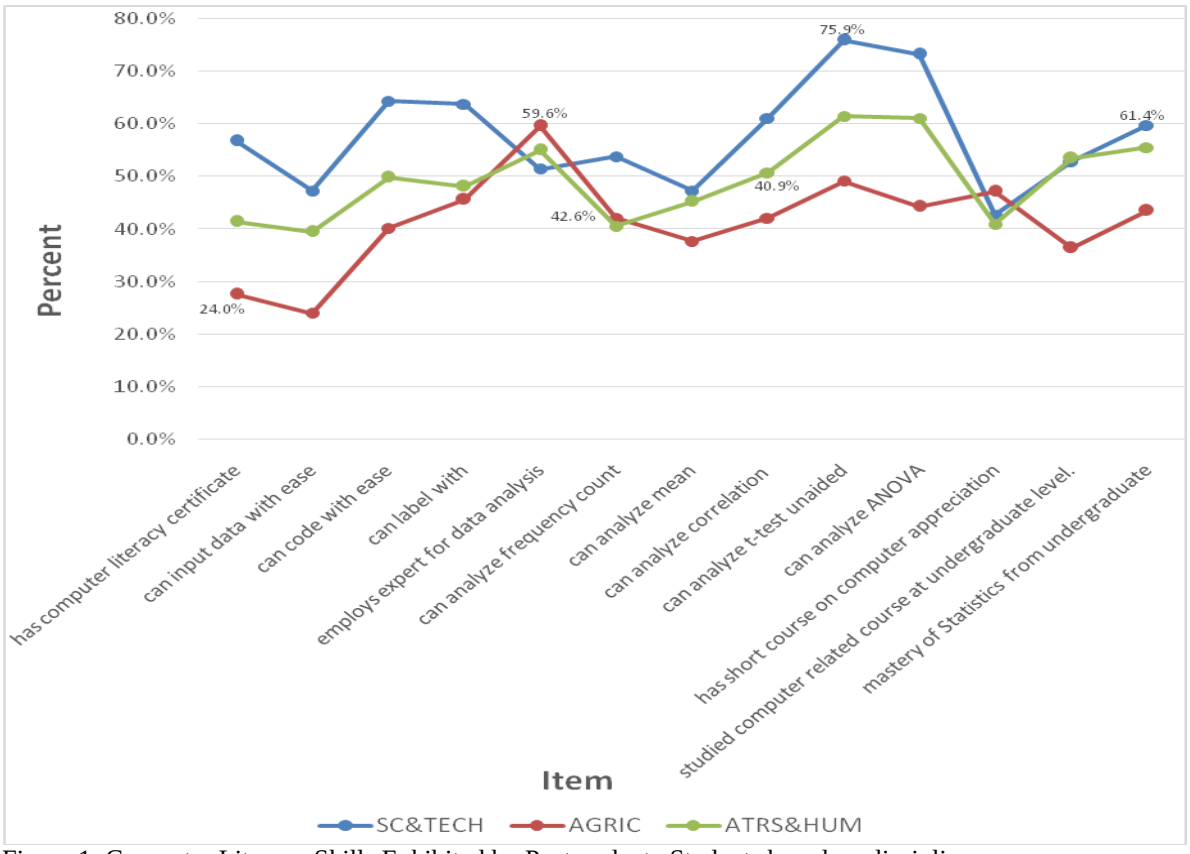

Figure 1: Computer Literacy Skills Exhibited by Postgraduate Students based on discipline

Research Question 2: How skillful are postgraduate students in the application of research knowledge in data analysis

Table 2: Postgraduate Students Skillfulness in the Application of Research Knowledge in Data Analysis

S/N	Item	Response				
		Very Correct Freq /%	Correct Freq /%	Partly Correct Freq /%	Not Correct Freq /%	Total Freq /%
1	I understand that SPSS is the current statistical package for data analysis.	105(14.4)	145(19.9)	238(32.6)	24133.1	729(100)
2	I find the various components of SPSS ease to operate.	180(24.8)	196(27.0)	224(30.9)	126(17.4)	726(100)
3	Data interpretation is making inferences in relation to the study conducted and drawing conclusions on the basis of this.	69(9.6)	196(27.3)	259(36.0)	195(27.1)	719(100)
4	Making inferences from the findings of research should be based on the results obtained.	85(11.7)	134(18.4)	243(33.3)	256(36.6)	729(100)
5	Making wrong inferences from research findings is as bad as making a wrong interpretation of results.	104(14.3)	113(15.5)	231(31.7)	281(38.5)	729(100)
6	I think that training in all aspects of computer & statistics are necessary for doing good research.	118(16.1)	125(17.1)	175(23.9)	314(42.9)	732(100)

Table 2 and Figure 2 present the extent of postgraduate students' skillfulness in the application of research knowledge in data analysis. Majority of the respondents 241(33.1%) did not understand that SPSS is the current statistical package for data analysis while 224 (30.9%) partially find the various components of SPSS ease to operate. Two hundred and fifty-nine (36%) of the students partially believed that data interpretation is making inferences in relation to the study conducted and drawing conclusions on the basis of this while 256 (36.6%) report that 'making inferences from the findings of

research should not be based on the results obtained'. The table also shows that 281 (38.5%) do not believe that 'making wrong inferences from research findings is as bad as making a wrong interpretation of results' while 314 (42.9%) indicate that 'training in all aspects of computer and statistics are not necessary for doing good research'

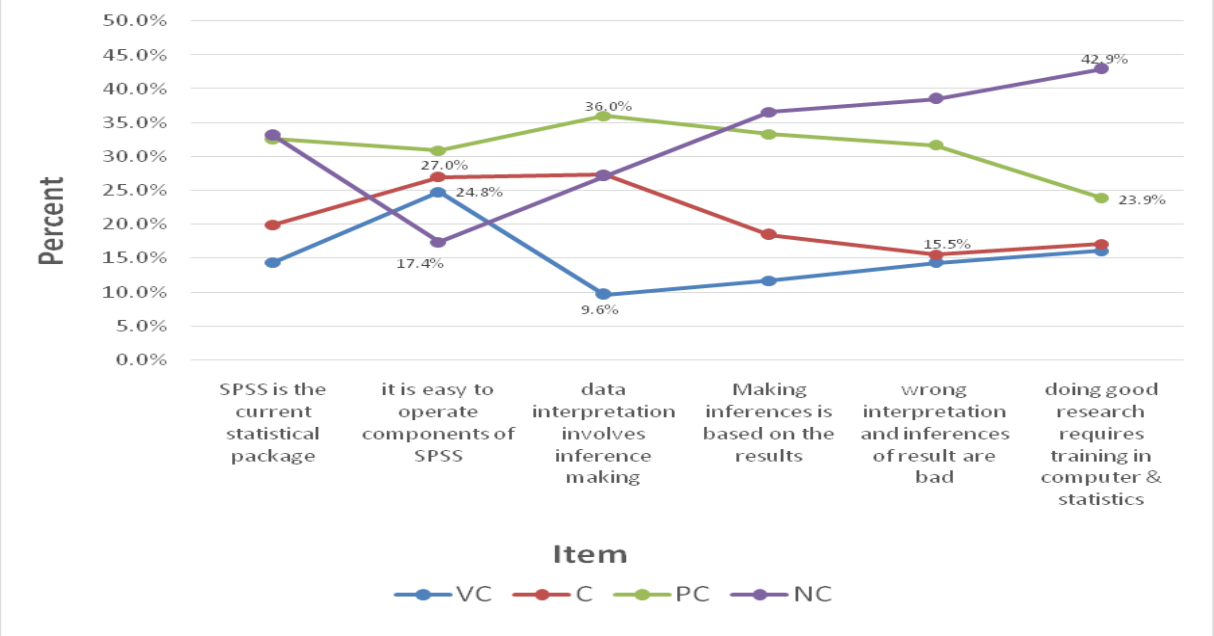

Figure 2: Postgraduate Students Skillfulness in the Application of Research Knowledge in Data Analysis

Research question 3: What are the challenges that postgraduate students encounter in interpreting and reporting analysed research data?

Table 3: Challenges that Postgraduate Students Encounter in Interpreting and Reporting Analysed Research Data

S/N	Item	Response				
		Very True	True	Partly True	Not True	Total
		Freq %	Freq %	Freq %	Freq %	Freq %
1	I understand the information in computer printed data when I see one	102(13.8)	190(25.7)	185(25.0)	262(35.5)	746(100)
2	I can comprehend the data presented in the printout in terms of nature obtained	135(18.3)	172(23.3)	266(36.0)	166(22.5)	746(100)
3	I can relate one aspect of the data printout to other aspects of the results in a printout.	106(14.4)	232(31.6)	208(28.3)	188(25.6)	746(100)
4	II can locate the aspects that are significant and why they are significant	84(11.5)	205(28.0)	268(36.7)	174(23.8)	746(100)
5	I can comprehend the level of significance of data	91(12.6)	183(25.2)	285(39.3)	166(22.9)	746(100)
6	I can link the printout data to the measuring instrument used in data collection	104(14.3)	260(35.7)	214(29.4)	151(20.7)	746(100)
7	I can interpret the results of analysed data without any assistance	116(15.9)	250(34.3)	198(27.2)	164(22.5)	746(100)
8	I find it easy linking research results/ outcomes to the research questions or hypotheses that I set out to study.	82(11.3)	201(27.8)	249(34.4)	191(26.4)	746(100)
9	Reporting research findings is easy for me to do.	92(12.7)	159(22.0)	297(41.1)	173(24.0)	746(100)
10	I can transfer computer printed data into meaningful data on a table.	112(15.4)	216(29.6)	221(30.3)	180(24.7)	746(100)
11	I can report and interpret data in a table without any confusion.	90(12.3)	255(34.8)	224(30.6)	162(22.1)	732(100)
12	I can make a broader meaning out of the research data analysed.	103(14.2)	231 (31.8)	226(31.1)	166(22.9)	746(100)

Table 3 shows the challenges that postgraduate students encounter in interpreting and reporting analysed research data. Majority of the respondents 262 (35.5%) hardly understand the information in

computer printed data when they are presented with one, 266 (36.0%) partially and 166 (22.5%) hardly comprehend the data presented in the printout in terms of the nature of data obtained. Two hundred and eight (28.3%) of the students partially and 188 (25.6%) hardly 'relate one aspect of the data printout to other aspects of the results in a printout'. Majority 268 (36.7%) and 285 (39.3%) can partially 'locate the aspects that are significant and why they are significant', and 'comprehend the level of significance of data' respectively, while 174(23.8%) and 166(22.9%) hardly comprehend these aspects of interpretation. Table 3 also shows that 214 (29.4%) and 198(27.2%) can partially 'link the printout data to the measuring instrument used in data collection' and 'interpret the results of analysed data without any assistance' respectively, while 151(20.7%) and 164 (22.5%) hardly comprehend these actions.

Also, 249(34.4%) and 297(41.1%) partially find 'linking research results/outcomes to the research questions or hypotheses that they set out to study easy' and 'finding research findings easy to report'. About 224 (30.6%) of the students can partially 'transfer computer printed data into meaningful data on a table', 'report and interpret data in a table without any confusion' and 'make a broader meaning out of the research data analysed' while 23% to 25% of them hardly can do these processes.

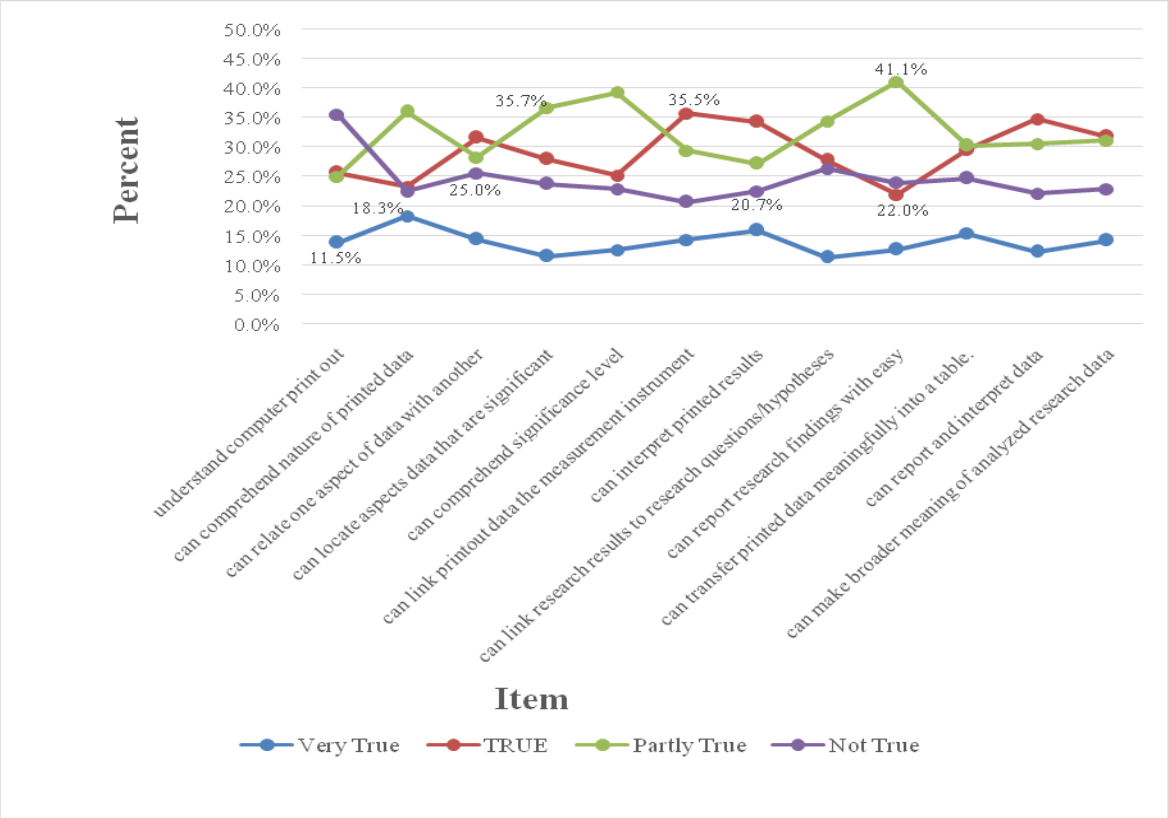

Figure 3: Challenges that Postgraduate Students Encounter in Interpreting and Reporting Analysed Research Data

DISCUSSION OF RESULTS

Study findings indicated that most postgraduate students in Science and Technology faculties (43.0% and 76.0%) compared to their counterparts in other faculties possessed computer skills such as; hold a computer literacy certificate, can operate computer data processes like inputting, coding, labeling, etc, run simple data analyses like frequency count, mean, standard deviation and common inferential statistics like t-test etc. From Agricultural – related faculties, the postgraduate students (40.4% and 76.0%) and the postgraduate students in Arts and Humanities Faculties (39.0% and 61.0%) indicated that they do not have all the computer literacy skills. These findings corroborate [2] in part where he argued that many faculties expect students to know how to and should use a word processor to create and format papers, make use of software for classroom presentations and speeches, use spreadsheet software to prepare charts and graphs, navigate the internet for research among other things which include simple data analysis. In the same vein, these findings corroborate the perspectives of [17] on computer literacy. These authors argued that it is mandatory for individuals interested in any activity to be knowledgeable in the rudiments such as the concepts and techniques of carrying out the task, have knowledge of both the process and the context in which the analysis will and is performed without which the benefit of the analysis may not be

achieved. The question is do students comply with faculty expectation and learn these processes and skills? Extent of compliance may be true for students in technology faculty, but not altogether true for students in the sciences, humanities and arts. Reasons for this could be that course contents and assignments in technology cannot be accomplished without the possession of a PC but in other faculties students can maneuver round these academic activities without necessarily possessing a PC. The proportion of students who are computer literate in technology compared to others exemplifies these views. The perspectives of [1, 2] on this, seem to be correct as unequal learning experiences among students even when they have access to technology and connectivity and their lecturers choose not to use technology in their teaching may result in such differences. Findings corroborate [21] who found that students who are majors in humanities courses spend higher hours using computer than the students who major in computer-related majors and were observed to have more difficulties in computer technology application.

In terms of students' skills in the application of research knowledge in data analysis, most of the students between 33.1% and 43% have no knowledge of the fact that SPSS is the current statistical package for data analysis, do not believe that 'making wrong inferences from research findings is as bad as making a wrong interpretation of results' and that 'training in all aspects of computer and statistics are necessary for doing good research'. Similarly, between 30.9% and 37% of the students are partially knowledgeable operating the various components of SPSS with ease, partially know that data interpretation is making inferences in relation to the study conducted and conclusions drawn on the basis of this and partially know that 'making inferences from the findings of research should be based on the results obtained'. Since *'computer literacy'* connotes student's ability to perform specific tasks on a personal computer, and the ability of students to proficiently transform the computer's capability into productive activities [13] on the one hand and the experience and ability to operate computers, including knowing the structures of computer software and hardware, having the skills to operate these software, besides applying computer to solve social issues [14] on the other hand, then skillfulness of the postgraduate students should naturally come with knowledge of it. Since a modest proportion of the students hardly and are partially skilful in many of the indicated skills of conducting and analysing research processes, the various faculties that had produced these graduates prior to their engagement in current programme as well as the current faculties that the courses taken are domicile, should provide necessary support to mitigate these weaknesses so that the students become knowledgeable prospective employee who can function well in society.

With regards to the challenges encountered by the students, majority of the respondents 35.5% hardly understand the information in computer printed data when they are presented with one, while between 22% and 26.4% of the students 'hardly comprehend the data presented in the printout in terms of the nature of data obtained', cannot 'relate one aspect of the data printout to other aspects of the results in a printout' 'locate the aspects that are significant and why they are significant', and 'comprehend the level of significance of data'. These proportion of students could not also 'link the printout data to the measuring instrument used in data collection' and 'interpret the results of analysed data without any assistance', 'link research results/outcomes to the research questions or hypotheses that they set out to study easily' and 'finding research findings easy to report, 'transfer computer printed data into meaningful data on a table', 'report and interpret data in a table without any confusion' and 'make a broader meaning out of the research data analysed'. In addition, between 27% and 41% of these students partially comprehend these processes.

The views of [2], is very apt here still. Citing Kennedy, Lawton and Plumlee, he argued that many students do not have the knowledge, memory, learning, intelligence, or expertise to assess what they do and do not know, and what they need to learn to succeed in a particular course. As such they become apathetic like their lecturers. Sabzwari, Bhatti and Ahmed (22) found that students have low problems for searching and browsing, file downloading, conversion of file in different formats and were due to less use of searching research articles. The respondents in their study reported not getting help from their librarian in resolving problems in use of ICT may be due to inadequate knowledge and skills by LIS professionals.

In view of study findings, University staff, research workers and supervisors of research students are admonished in the views of [20] while making particularly reference to the Arts and Social Sciences, where data are intrinsically very complex, to ensure that methodological and computing requirements for data analysis are thoroughly evaluated at an early stage in the planning of any relevant project and certainly before any substantial resources are spent in collecting data. This suggestion does not only reduce resource wastefulness but also engender adequate skills or understanding of the procedures involved in the process of data collection, analysis and interpretation.

LIMITATION OF THE STUDY

A major limitation of the study is the fewer number of private universities that participated in the study. Unlike in other categories of universities, obtaining information from private universities was a herculean task as they did not want to divulge information concerning their operation. This explains why only two private universities participated in the study.

CONCLUSION AND RECOMMENDATION

Research knowledge in data analysis through the medium of proficiency in computer literacy is very important in a student's academic activities, as these can translate to efficient data analysis and making of inferences on research outcome. Deficiencies in any of these phases of learning and skills acquisition can result in poor computer utilisation, poor skillfulness in the application of learnt research knowledge that could led to challenges that could impede speedy completion of research projects. In view of these, it is recommended that:

1. Relevant courses that are necessary prerequisites to understanding the various stages in the project writing phases are well presented by experts in the field and are taught prior to writing phase. Similarly, support system should be provided to students with inadequate knowledge in this area through short or supplementary courses.
2. Students should show greater interest in the use of technology as this is the only way to go in this 21st century.

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