

MODERN TECHNOLOGICAL EQUIPMENT FOR TEACHING AND LEARNING OFFICE TECHNOLOGY AND MANAGEMENT

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ABSTRACT

This study investigates the impact of modern technological equipment on the teaching and learning of Office Technology and Management (OTM) using quantitative analysis. A sample size of 150 students and educators was selected to assess the effectiveness of digital tools such as computers, office software, interactive boards, and e-learning platforms in enhancing OTM education. Data were collected through structured questionnaires and analyzed using mean, percentage scores, and standard deviation. The results indicate that the use of modern technology significantly improves students' proficiency in office management tasks, with a high mean score reflecting positive perceptions of technological integration. The percentage scores further reveal that a majority of respondents acknowledge the effectiveness of digital tools in fostering engagement, collaboration, and practical skill acquisition. Standard deviation values demonstrate consistency in responses, highlighting the reliability of the findings. The study concludes that investing in technological infrastructure and continuous training for educators is essential for optimizing the benefits of modern equipment in OTM education.

Keywords: Modern Technology, Office Technology and Management, E-learning.

1.0 INTRODUCTION

Office Technology and Management (OTM) is a course and interdisciplinary field of study that deals with office automation, technology, telecommunication, office management and record keeping. Office Technology and Management is an aspect of business education programme, a subset of Vocational and Technical Education. The course was designed by the National Board for Technical Education (NBTE), 2024 to replace the former Secretarial Studies offered in Nigerian tertiary institutions. The National Board for Technical Education (NBTE), (2016), stated the main objective of OTM to include equipping students with secretarial/office skills for employment in various fields of endeavour. This objective is expected to be achieved in the tertiary institutions where OTM is offered.

The change in nomenclature from Secretarial Studies to Office Technology and Management brought about new skills and knowledge to be studied by students in the institutions. The OTM in both content and context has to incorporate more technological equipment used in modern offices where students are expected to learn and master the uses before they graduate from school. The new name, OTM is used as a comprehensive term which refers to those aspects of

the educational process that involves general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of the economic and social life, particularly, in Polytechnics and Colleges of Education.

OTM in Polytechnics and Colleges of Education could be seen as a curriculum response to the demands of dynamic and computerized work place, which is aimed at the production of highly proficient administrative personnel that would coordinate high office information systems and provide technical skills with core business line of functions. The revised aspect of the curriculum is emphasizing more on psychomotor domain, which is, practical work. Ojukwu, (2019) observed that ICT courses in the OTM curriculum include ICT Office Applications I and II, Database Management System, Management Information systems, Advanced Web Page Design, Advanced Desktop Publishing and Modern Office Technology. To this end, there is now more emphasis on ICT related courses in OTM

The role of modern technological equipment in Office Technology and Management is quite crucial and necessary. The availability of relevant modern technological equipment as well as their utilization is also very essential ingredient in Office Technology and Management. Recently, it has been observed that some practicing secretaries in the world of work seem to be faced with the challenges of being acquainted with the new relevant office technologies such as the computers, laptops, and set of desktops, printers, photocopy machine, paper shredders, and scanning machines, among others, that are needed around the globe. Owing to this fact, it is quite disheartening that most tertiary institutions, especially public polytechnics and colleges of education that are offering OTM seem to lack facilities and some necessary equipment that are required to enhance the level of students' knowledge and skills in Office Technology and Management to be in line with the contemporary era. This situation may likely persist if there are not adequate resources, especially modern technological equipment or if those available are not adequately utilized. That is, graduates of OTM may become half-baked and unable to fit properly into the modern offices.

Longman (2023) asserts that availability refers to resources ready to be used, able to be used or that can easily be found and used. Onyejiemezie (2022) noted that availability is a state of making provision for a satisfactory standard required in terms of teaching resources to enhance effective instructional activity in a particular subject. According to the author, no meaningful learning or transfer of knowledge will take place if such learning occurs in abstract, that is, in a situation devoid of relevant activity and concrete experiences. For this reason, availability can be defined as human and material resources ready for use in teaching OTM in tertiary institutions. Examples of these facilities that should be available includes: computer laboratories/language laboratories, standby power supply (generator), OTM e-library among others.

1.1 Statement of the Problem

The immeasurable importance of ICT to every sector of the economy and to education in particular, necessitates its being firmly incorporated into the teaching and learning process at all levels of education. Most importantly, in Office Technology and Management where training is geared primarily at producing persons with adequate skills and competencies in

office management and which constitute the hub of all economic activities in a society. Offices in some decades ago, witnessed the traditional role of typing, taking dictation in shorthand and using the manually operated machines such as the manual typewriter, duplicators, and other office machines. Over time, the manually operated equipment was replaced with electronically operated machines that require Information Communication Technological (ICT) knowledge on the part of the users. In line with the National Board for Technical Education (NBTE), 2022 bench mark stated that individual student should be allocated a computer system and other ICT packages should be adequately available for proper and effective teaching and learning in Tertiary Institutions.

1.2 Purpose of the Study

The main purpose of the study was to ascertain the availability, adequacy and utilization of modern technological equipment for teaching and learning Office Technology and Management courses in tertiary institutions in South-West, Nigeria. Specifically, the study determined:

- i. the availability of modern technological equipment for teaching and learning OTM courses in tertiary institutions in South-West, Nigeria,
- ii. the adequacy of modern technological equipment for teaching and learning OTM courses in tertiary institutions in South-West, Nigeria, and
- iii. the extent of utilization of modern technological equipment for teaching and learning OTM courses in tertiary institutions in South-West, Nigeria.

1.3 Research Questions

The following research questions were raised to guide the study

- i. What is the level of availability of modern technological equipment for teaching and learning OTM courses in tertiary institutions in South-West, Nigeria?
- ii. What is the level of adequacy of modern technological equipment for teaching and learning OTM courses in tertiary institutions in South-West, Nigeria?
- iii. What is the extent of utilization of modern technological equipment for teaching and learning OTM courses in tertiary institutions in South-West, Nigeria?

1.4 Hypotheses

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

- i. There is no significant difference between the mean responses of OTM lecturers and students in the utilization of modern technological equipment for teaching and learning OTM courses in Polytechnics and Colleges of Education in South-West, Nigeria.
- ii. There is no significant difference between Polytechnics and Colleges of Education in the utilization of modern technological equipment for teaching and learning OTM courses, in South-West, Nigeria.

2.0 LITERATURE REVIEW

2.1 Concept of Office Technology and Management

Office Technology and Management (OTM) which was a nomenclature that was given to replace the former Secretarial Studies was designed by the National Board for Technical Education (NBTE). Okoro and Amagoh (2018), opined that OTM is an efficient, effective, productive and functional education which leads itself to self-employment, self-reliance, paid employment and consequently self-actualization. It focuses on combining office information technological skills with adequate and relevant business knowledge in solving organizational wide problems. OTM is one of the components of Business Education where students learn knowledge and skills in managing and operating technologies in the offices. In Office Technology and Management, according to Board (2010), students learn a wide variety of computer application skills needed to work in administrative support positions. Baba and Akaraha (2012), were of the opinion that it is aimed at acquisition of appropriate skills, abilities and competencies both mental and physical as equipment for individual to live and contribute to the development of the society. According to NBTE, (2016), OTM programme was designed to equip students with secretarial/office skills for employment in various fields of endeavour. The current OTM programme lays much emphasis on computer and computer related courses. These courses are divided into:

- i. Special area which includes secretarial studies, technique in office management and control.
- ii. Information and communication technology application which includes ICTs, word processing, computer application, web page design, desktop publishing, database management.
- iii. General education relating to contemporary problems usually called general studies (Ogiagah, 2019).

The goals and objectives of OTM according to the National Board for Technical Education (NBTE, 2004), is to:

- i. Equip the students with the knowledge, competencies and specific skills to enable them to successfully hold position as secretaries, managers and administrative assistant in both public and private sectors of the economy.
- ii. Expose student to industrial experience they by affording the opportunity to practicalize their skills.
- iii. Develop the student's potentials for further academic and professional pursuit.
- iv. Develop in the students and occupational intelligence that will make them versatile and adaptable to the changing situation in the world of work.

2.2 Aid of Modern Technological Equipment

Lots of office functions and secretarial duties that were previously carried out manually have been mechanized. As a result, many of these modern office technologies require the office secretary to possess new skills and sub-skills to assist him/her to be relevant in the modern office and these skills and competencies can only be acquired during teaching and learning in school. It is therefore pertinent that Office Technology and Management students in the tertiary institutions be given the opportunity of seeing, knowing and learning the usage of these modern

technological equipment in order to become well equipped, employable, and full-fledged OTM professionals; ready to flow along with the current global technological trend.

2.3 Modern Technological Equipment for Teaching and Learning in OTM Programme

Varieties of modern educational technological equipment need to be made adequately available and used to teach OTM students in the various institutions in order to bridge the gap between what is been taught in the various tertiary institutions and facilities used in the world of work. Utoare and Kren-Ikidi, (2013) stated that for our education systems to deliver on their mandates, the quality of the training given to individuals passing through a course or the other should be such that can give adequate skills and information needed in the real world sense. Hennessy, Onguko, Harrison, Ang'ondi, Namelefe, Naseem and Wamakote, (2010), listed ICT facilities as radio set, television set, audio tape player, cassette and video players, projectors, satellites connection, sensor and other hardware and software, essential in delivery of instruction. In other words, modern office technological equipment used in teaching and learning of OTM courses includes ICT hardware like radio set, television set, telephone, computer, overhead projectors, electronic interactive whiteboard, video tape recorder, filmstrip, CD-ROM, photocopier, scanner, printer, among others. On the other hand, ICT software includes Microsoft word, Microsoft power point, coral draw, database (Microsoft Access), Adobe PageMaker, Microsoft Excel, Web Page, chart room, e-mail, internet.

2.4 Review of Related Empirical Study

Availability, adequacy and utilization of modern technological equipment in tertiary institution that are offering OTM courses have received much attention in recent times, and as a matter of fact, we are in the technological age where it is expected that every sundry should key in to the global trend. This study reviewed some research related work, and some journals, reports and research works which showed that many studies have been carried out on different variables responsible for non-availability of modern technological equipment for OTM programme. Notable among many of these literatures is the work of John, F.N. and Saleh, M.A. (2015) who carried out a study titled: Availability of Educational Technological Appliances for Office Technology and Management programme in Sa'adatu Rimi College of Education, Kano.

The study adopted survey research design and raised two research questions as a guide. A 10-item questionnaire with four point rating scale was developed and used to obtain data for the study. The population comprised five (5) OTM lecturers who teach in the college and thirty NCE students in the same college, making a total population of thirty-five (35) subjects. No sample was used because the population was manageable. Out of the thirty-five (35) questionnaires distributed, thirty-one (31) copies were retrieved fully completed. Data generated was analyzed descriptively, using mean and standard deviation, based on a 4-point rating scale.

The results of the study revealed that available uninterrupted power supply, local area networking and ICT support personnel were somewhat adequate while other items listed as available such as projector, teleconferencing, and cybercafé, among others, were rated inadequate. John and Saleh's study looked at the availability of educational technological appliances for Office Technology and Management programme in Sa'adatu Rimi College of Education, Kano while the present study is also looking at availability, adequacy and utilization

of modern technological equipment for Office Technology and Management programme in tertiary institutions in South-West Nigeria. John and Saleh's study is relevant because it considered same variable that the present study is looking at. Therefore, the results of John and Saleh were relevant in discussing the findings of this present study.

Jebba (2010) carried out a research titled: Survey of Accessibility and Usability of Information and Communication Technology among Students of Technical Education in Tertiary Institutions in Niger State, Nigeria. The main objective of the study was to investigate the extent of availability, level of accessibility and use of ICT and its resources by students of technical education in Niger State tertiary institutions. The study adopted survey research design. The population of the study comprised all the 1161 students of the technical education department from the two tertiary institutions offering technical education programmes in Niger State. Yaro Yamane's sampling formula was used to sample 297 students from the two institutions, while purposive sampling technique was adopted to select students that have spent at least one year in the institution under study. Four research questions were formulated to guide the study. A structured questionnaire was employed as the instrument for data collection. The questionnaire based on the subject matter had 40 items generated to address the research questions. The questionnaire was structured with a four point scale. Data for the study were analyzed using mean and standard deviation to answer the research questions. To determine the level of acceptance, a mean score of 2.5 was chosen as a 25 decision point. Consequently, any item with a mean score of 2.50 and above was considered acceptable (Agree) while responses with a mean score of 2.49 and below were regarded as not acceptable (Disagree). The findings of the study revealed among other things that ICT facilities were not available for students' use at the Department and as such they do not have access to them. This researcher based his research on two technical institutions within Niger State, while the current researcher based her research on Polytechnics and Colleges of Education in South-West, Nigeria. In the same vein, the two studies are related in the sense that both they are both looking at the availability and usability of modern technology, (ICT).

Akude and Ebeniza (2022) South-East Nigeria conducted a study on ICT computer resources in teaching and learning in State Colleges of Education. The purpose of the study was to examine the level of application of ICT computer resources in teaching and learning. Four specific objectives and four reformulated to guide the study on the achievement of the purpose of the study. Descriptive survey research design was adopted for the study. Questionnaire was designed to gather information from the sampled population. The reliability index of the questionnaire was calculated using the Pearson Product Moment Correlation Coefficient at 0.71. There are four (4) states owned Colleges of Education in the South-East of Nigeria with a total of six hundred and forty-one (641) lecturers. However, the researcher purposively sampled 50% of the lecturers. Thus, a sample of 321 lecturers was arrived at and used. Data were collected using a questionnaire of a four point modified Likert type scale. The reliability of the instrument was ascertained by using 10 teachers from another College of Education to carry out a test – re-test exercise, and the reliability coefficient of 0.71 was established using Pearson Product Moment Correlation Coefficient Statistics. Data were analyzed using the mean and standard deviation statistical tools. Generally, the study revealed that the extent of lecturers' and students' utilization of ICT facilities was very low due partly as a result of poor electricity power supply, insufficient ICT facilities and lack of basic computer operational skills.

Akude and Ebeniz looked at ICT computer resources in teaching and learning in State Colleges of Education in South-East, Nigeria while the present study is also looking at availability, adequacy and utilization of modern technological equipment for Office Technology and Management programme in tertiary institutions in South-West Nigeria. Akude and Ebeniza's study is relevant because it considered same variables that the present study is looking at. Therefore, the results of Akude and Ebeniza were relevant in discussing the findings of this present study.

A study also conducted by Amiaya, Anita Ogheneovo on Availability and utilization of new technology in Business Education for teaching Office Technology and Management: A case study of Delta State Polytechnics. Descriptive survey research design was adopted to the study and population and sample for the study comprised all the thirty-four (34) OTM lecturers excluding the researcher in the three polytechnics in Delta State (Delta State Polytechnic Ozoro, Delta State Polytechnic Ogwashi-Uku and Delta State Polytechnic, Utefe-Oghara) as gathered from the various institutions; ten (10) OTM lecturers from Delta State Polytechnic, Ozoro excluding the researcher; fourteen (14) from Delta State Polytechnic, Ogwashi-Uku and ten (10) Delta State Polytechnic, Otefe-Oghara. Data collected were analyzed using mean and standard deviation for answering the research questions and ANOVA for testing the null hypotheses at 0.05 level of significance. The research instrument used for data collection was a 20-item structured questionnaire base on the research questions and hypotheses.

The findings showed that new technologies in Business Education needed for the success and effective teaching of OTM are not adequately provided and as such, utilization as a function of availability has been hindered in Delta State Polytechnic. The study is however related to the present study in the sense that they are both looking at the availability and utilization of modern technological equipment for teaching and learning OTM programme. Amiaya's study looked at the availability and utilization of new technology in Business Education for Office Technology and Management programme in Delta State Polytechnics while the present study is also looking at availability, adequacy and utilization of modern technological equipment for Office Technology and Management programme in tertiary institutions in South-West Nigeria. Amiaya's study is relevant because it considered same variables that the present study is looking at. For this reason, the results of Amiaya were relevant in discussing the findings of this present study.

Another study was conducted by Ogundele and Lasun on Influence of new technologies on the teaching of Business Education courses in tertiary institutions in Kwara State. A descriptive survey research design was adapted to the study and it covered the entire public owned institutions in Kwara State polytechnic, Ilorin and Kwara State College of Education. The population for the study comprised Business Education lecturers from the public owned institutions in Kwara State. No sample was taken as the entire population was used for the study. The instrument used was a structured questionnaire consisting of 25 items. The research questions were answered using percentages, while the hypothesis was tested using t-test. The findings showed that lecturers have access to the new technologies for teaching of Business Education courses. The result of the test of the null hypothesis showed no significant differences in the mean rating of respondents.

3.0 METHODOLOGY

This aspect dealt with the method with which the researcher carried out the study.

3.1 Design of the Study

The descriptive survey research design was adopted for the study. Descriptive research survey according to Olaitan and Nwoke (2007) is a type of design in which the entire population or representative sample is studied by collecting and analyzing data from the group through the use of structured questionnaire. This design was therefore suitable for this study because the opinions and facts that was elicited from OTM lecturers and final year students on availability, adequacy and utilization of modern technological equipment for teaching and learning OTM courses was collected and analyzed using questionnaire from a representative of the population.

3.2 The Population of the Study

The population for the study consisted of 150 OTM lecturers, and 1000 OTM final year students of 14 Polytechnics and 19 Colleges of Education, in South-West, Nigeria. The total population therefore was 1,150. Data derived from the Academic Planning Unit (APU), 2022 of the institutions.

3.3 Sample and Sampling Technique

The sample for the study comprised OTM lecturers and final year students in (6) six randomly selected polytechnics out of the (14) fourteen and (6) six randomly selected colleges of education out of the (19) nineteen in South-West, Nigeria. Multistage sampling procedure was used in selecting the sample for the study. In the first stage, (3) three States were selected from the (6) six States in South-West, Nigeria using simple random sampling techniques. Second stage involved random selection of (2) two polytechnics and (2) two colleges of education from each selected State. In the third stage, (20) twenty final year students, and (5) five lecturers were also randomly selected from OTM department of each institution. This made a total of (240) two hundred and forty OTM final year students and (60) sixty OTM lecturers that were used for the study; making an overall total sample size of 300 three hundred.

3.4 Research Instrument

The instruments used for generating data for the study were the National Board for Technical Education, (NBTE), (2022) Standard Check List and a structured questionnaire. The questionnaire was titled "Utilization of Modern Technological Equipment for Office Technology and Management Programme" (UMTEOTMP). It was structured base on the research questions after intensive review of literature. The second instrument was adopted from the (NBTE), (2022) Check List.

These instruments were segmented into three sections, A, B and C. Section A elicited information on the demographic variables of the respondents which comprised gender, type of school, business educators options of cadre and student's present educational levels. Section B consisted of 30 items; it measured the availability and adequacy of modern technological equipment, while Section C also consisted of 30 items statements that measured the utilization of the modern technological equipment. The items in Section B were rated on standard bench mark using the NBTE Checklist, while items in Section C were rated on modified rating scale

of Very Highly Utilized (VHU 4), Highly Utilized (HU 3), Fairly Utilized (FU 2) and Not Utilized (NU 1).

3.5 Validity of Instrument

The instrument was subjected to face validation to determine its adequacy and appropriateness for the study and for its proper wordings. This was done by presenting it to the researcher's two supervisors and one other expert from Vocational and Technical Education Department, Faculty of Education, University of Benin, Benin City. The instrument was modified to suit the study based on their comments and suggestions.

3.6 Reliability of Instrument

To ascertain the reliability of the instrument for the study, a pilot study was embarked upon in Kwara State Polytechnic, Ilorin. Forty (40) copies of the instruments were administered to lecturers and final year students of OTM department of Business Education. Split-half method was used to measure the reliability and consistency of the instruments before they were used for the study. The test yielded a coefficient value of 0.78 indicating that the instrument reliable for the study.

3.7 Method of Data Analysis

The data analysis were carried out as follows; research question 1, 2 and 3 were answered using aggregate scores (frequency count, percentages, mean and standard deviation) while two sample independent t-test were used for the hypotheses. Decision rule for the research question 1-3 was based on calculated value from research instrument. From the checklist, those who have below fifty (50) percent of the required modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria were considered to have low modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria, those who have fifty (50) percent and above of the required modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria were considered to have high availability of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria

More so, those who have below seventy five (75) percent of the required modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria were considered not to have adequate modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria while those who have seventy five (75) percent and above of the required modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria were considered to have adequate modern technological equipment for teaching OTM courses in tertiary institutions.

Regarding the extent of utilization of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria, an average mean less than 2.5 is regarded as low extent of utilization while an average mean greater than 2.50 is regarded high extent of utilization.. On the bases of hypotheses, the probability value (p) was used. If p-value is less than or equal to 0.05, H_0 was rejected, but if p-value is greater than 0.05, H_0 was retained.

4.0 PRESENTATION AND DISCUSSION ON FINDINGS

This aspect dealt with the presentation of results of the data analysis for the research questions, hypotheses and discussion of the findings.

4.1 Presentation of Results

Research Question One: What is the level of availability of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria?

Table 1: level of availability of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria

S/N	Modern Technological Equipment	N	No req.	<50%		>50%		Remarks
				F	%	F	%	
1.	Computer lab/shorthand lab	12	3	4	33.33	8	66.67	High
2.	Computers and Accessories	12	30	2	16.67	10	83.33	High
3.	Headphones	12	30	6	50.00	6	50.00	Average
4.	Microphones	12	3	4	33.33	8	66.67	High
5.	Cubicles to accommodate students	12	2	8	66.67	4	33.33	Low
6.	Magic Board	12	3	5	41.67	7	58.33	High
7.	Multimedia projector	12	3	4	33.33	8	66.67	High
8.	Coloured Television	12	1	0	0.00	12	100.0	High
9.	Scanner	12	3	12	100.00	0	0.00	Low
10.	Handset	12	1	0	0.00	12	100.0	High
11.	Refill cards	12	3	5	41.67	7	58.33	High
12.	Staple machine	12	5	1	8.33	11	91.67	High
13.	Punch machine/perforator	12	3	6	50.00	6	50.00	Average
14.	CD /Flash drive	12	30	5	41.67	7	58.33	High
15.	Photocopying machine	12	3	5	41.67	7	58.33	High
16.	Shredding machine	12	3	12	100.00	0	0.00	Low
17.	Personal computer	12	30	2	16.67	10	83.33	High
18.	Duplicating machine	12	3	10	83.33	2	16.67	Low
19.	Calculating machine	12	3	6	50.00	6	50.00	Average
20.	Cash register machine	12	3	12	100.00	0	0.00	Low
21.	Letter opening machine	12	3	12	100.00	0	0.00	Low
22.	Paper cutter	12	3	11	91.67	1	8.33	Low
23.	Folding machine	12	3	12	100.00	0	0.00	Low
24.	Computer printer	12	3	1	8.33	11	91.67	High
25.	Letter tray	12	3	6	50.00	6	50.00	Average
26.	Mail chart/trolley	12	3	7	58.33	5	41.67	Low
27.	Dictating machine	12	3	12	100.00	0	0.00	Low
28.	Addressing machine	12	3	12	100.00	0	0.00	Low

29.	Tabulating machine	12	3	12	100.00	0	0.00	Low
30.	Internet modem	12	3	8	66.67	4	33.33	Low

Table 1 showed the availability of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria. The data revealed that majority of the schools were having more than average required technological equipment for teaching OTM courses, this implied that the level of availability of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria is high.

Research Question Two: What is the level of adequacy of modern technological equipment for teaching OTM courses.

S/N	Modern Technological Equipment	N	No req.	<50%		>50%		Remarks
				F	%	F	%	
1.	Computer lab/shorthand lab	12	3	12	100.00	0	0.00	Inadequate
2.	Computers and Accessories	12	30	7	58.33	5	41.67	Inadequate
3.	Headphones	12	30	7	58.33	5	41.67	Inadequate
4.	Microphones	12	3	12	100.00	0	0.00	Inadequate
5.	Cubicles to accommodate students	12	2	8	66.67	4	33.33	Inadequate
6.	Magic Board	12	3	7	58.33	5	41.67	Inadequate
7.	Multimedia projector	12	3	12	100.00	0	0.00	Inadequate
8.	Coloured Television	12	1	12	100.00	0	0.00	Inadequate
9.	Scanner	12	3	12	100.00	0	0.00	Inadequate
10.	Handset	12	1	12	100.00	0	0.00	Inadequate
11.	Refill cards	12	3	12	100.00	0	0.00	Inadequate
12.	Staple machine	12	5	5	41.67	7	58.33	Adequate
13.	Punch machine/perforator	12	3	12	100.00	0	0.00	Inadequate
14.	CD /Flash drive	12	30	6	50.00	6	50.00	Adequate
15.	Photocopying machine	12	3	1	8.33	11	91.67	Adequate
16.	Shredding machine	12	3	12	100.00	0	0.00	Inadequate
17.	Personal computer	12	30	5	41.67	7	58.33	Adequate
18.	Duplicating machine	12	3	10	83.33	2	16.67	Inadequate
19.	Calculating machine	12	3	9	75.00	3	25.00	Inadequate
20.	Cash register machine	12	3	12	100.00	0	0.00	Inadequate
21.	Letter opening machine	12	3	12	100.00	0	0.00	Inadequate
22.	Paper cutter	12	3	12	100.00	0	0.00	Inadequate
23.	Folding machine	12	3	12	100.00	0	0.00	Inadequate
24.	Computer printer	12	3	8	66.67	4	33.33	Inadequate
25.	Letter tray	12	3	12	100.00	0	0.00	Inadequate
26.	Mail chart/trolley	12	3	12	100.00	0	0.00	Inadequate
27.	Dictating machine	12	3	12	100.00	0	0.00	Inadequate
28.	Addressing machine	12	3	12	100.00	0	0.00	Inadequate
29.	Tabulating machine	12	3	12	100.00	0	0.00	Inadequate
30.	Internet modem	12	3	9	75.00	3	25.00	Inadequate

Table 2 showed the adequacy of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria. The data revealed that majority of the schools technological equipment for teaching OTM courses were not adequate, this implied that the level of adequacy of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria is low. The data revealed that modern technological equipment available for teaching OTM courses in tertiary institutions in the study area is not adequate.

Research Question Three: What is the extent of utilization of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria?

Table 3: Mean and Standard Deviation showing the extent of utilization of modern technological equipment for teaching OTM courses.

S/N	ITEMS	N	X	SD	Remarks
1.	To what extent is modern technological equipment such as computer lab/shorthand lab/Language lab used for teaching and learning OTM courses?	300	2.047	1.001	Not Utilized
2.	To what extent is modern technological equipment such as computers and accessories used for teaching and learning OTM courses?	300	2.010	.909	Not Utilized
3.	To what extent is modern technological equipment such as headphones used for teaching and learning OTM courses?	300	2.940	1.052	Utilized
4.	To what extent is modern technological equipment such as Microphones used for teaching and learning OTM courses?	300	2.607	1.112	Utilized
5.	To what extent is modern technological equipment such as Cubicles to accommodate students used for teaching and learning OTM courses?	300	2.610	1.084	Utilized
6.	To what extent is modern technological equipment such as magic board used for teaching and learning OTM courses?	300	2.813	1.138	Utilized
7.	To what extent is modern technological equipment such as multimedia projector used for teaching and learning OTM courses?	300	2.320	1.043	Not Utilized
8.	To what extent is modern technological equipment such as coloured television used for teaching and learning OTM courses?	300	2.790	1.165	Utilized
9.	To what extent is modern technological equipment such as scanner used for teaching and learning OTM courses?	300	2.467	1.137	Not Utilized
10.	To what extent is modern technological equipment such as handset used for teaching and learning OTM courses?	300	2.963	.999	Utilized

11.	To what extent is modern technological equipment such as refill cards used for teaching and learning OTM courses?	300	2.817	1.149	Utilized
12.	To what extent is modern technological equipment such as staple machine used for teaching and learning OTM courses?	300	2.457	1.045	Not Utilized
13.	To what extent is modern technological equipment such as punch machine/perforator used for teaching and learning OTM courses?	300	2.627	1.104	Utilized
14.	To what extent is modern technological equipment such as CD/Flash drive used for teaching and learning OTM courses?	300	2.273	1.040	Not Utilized
15.	To what extent is modern technological equipment such as photocopying machine used for teaching and learning OTM courses?	300	2.170	1.076	Not Utilized
16.	To what extent is modern technological equipment such as shredding machine used for teaching and learning OTM courses?	300	2.810	1.044	Utilized
17.	To what extent is modern technological equipment such as personal computer used for teaching and learning OTM courses?	300	2.267	1.080	Not Utilized
18.	To what extent is modern technological equipment such as duplicating machine used for teaching and learning OTM courses?	300	2.653	1.115	Utilized
19.	To what extent is modern technological equipment such as calculating machine used for teaching and learning OTM courses?	300	2.493	1.114	Not Utilized
20.	To what extent is modern technological equipment such as audio tape player used for teaching and learning OTM courses?	300	2.703	1.113	Utilized
21.	To what extent is modern technological equipment such as satellite connection used for teaching and learning OTM courses?	300	2.710	1.082	Utilized
22.	To what extent is modern technological equipment such as CD and DVD players used for teaching and learning OTM courses?	300	2.613	1.141	Utilized
23.	To what extent is modern technological equipment such as electronic whiteboard used for teaching and learning OTM courses?	300	2.580	1.175	Utilized
24.	To what extent is modern technological equipment such as computer printer used for teaching and learning OTM courses?	300	2.193	1.077	Not Utilized
25.	To what extent is modern technological equipment such as filmstrip used for teaching and learning OTM courses?	300	2.970	1.119	Utilized

26.	To what extent is modern technological equipment such as internet modem used for teaching and learning OTM courses?	300	2.463	1.095	Not Utilized
27.	To what extent is modern technological equipment such as faxes used for teaching and learning OTM courses?	300	2.770	1.087	Utilized
28.	To what extent is modern technological equipment such as digital cameras used for teaching and learning OTM courses?	300	2.717	1.143	Utilized
29.	To what extent is modern technological equipment such as digital videos used for teaching and learning OTM courses?	300	2.670	1.110	Utilized
30.	To what extent is modern technological equipment such as software packages used for teaching and learning OTM courses?	300	2.277	1.015	Not Utilized

Source: Survey Field 2024

Table 3 shows the extent of utilization of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria. The data revealed that item 1-30 had mean scores of 2.047, 2.010, 2.940, 2.607, 2.610, 2.813, 2.320, 2.790, 2.467, 2.963, 2.817, 2.457, 2.627, 2.273, 2.170, 2.810, 2.267, 2.653, 2.493, 2.703, 2.710, 2.613, 2.580, 2.193, 2.970, 2.463, 2.770, 2.717, 2.670 and 2.277 respectively compared against the normative mean of 2.50 which is used for making empirical conclusion on the study. With a combined average mean of 2.560 which is higher than the normative mean of 2.50, this implies that the extent of utilization of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria is high.

Hypothesis One: There is no significant difference between the mean responses of lecturers and students on the utilization of modern technological equipment for teaching and learning OTM courses in Polytechnics and Colleges of Education in South-West, Nigeria.

Table 4: t-test analysis of the differences between the mean responses of lecturers and students on the utilization of modern technological equipment for teaching and learning OTM courses.

Categories	N	Mean	Standard Deviation	Degree of freedom	t-value	P-value	Remark
Students	240	77.663	18.748	298.00	1.622	0.106	Not Significant
Lecturers	60	73.350	17.041				

Table 4 showed the t value as 1.622 with 298 degree of freedom ($df = n-2$) and P-value at 0.940.106 level for utilization of modern technological equipment for teaching and learning OTM courses in Polytechnics and Colleges of Education in South-West, Nigeria. Thus, the null hypothesis which stated that there is no significant difference between the mean responses of lecturers and students on the utilization of modern technological equipment for teaching and

learning OTM courses in Polytechnics and Colleges of Education in South-West, Nigeria is retained. The data revealed that Students and Lecturers in Polytechnics and Colleges of Education in South-West are not significantly different in their response to utilization of modern educational technological equipment for teaching and learning OTM courses.

Hypothesis Two: There is no significant difference between Polytechnics and Colleges of Education in the utilization of modern technological equipment for teaching and learning OTM courses, in South-West, Nigeria

Table 5: t-test analysis of the differences between the mean responses Polytechnics and Colleges of Education in the utilization of modern technological equipment for teaching and learning OTM courses.

	Categories	N	Mean	Standard Deviation	Degree of freedom	t- value	p- value	Remark
UtiMTE	Polytechnic	150	77.793	20.746	298.00	0.931	0.358	Not Significant
	Colleges of Education	150	75.807	15.886				

Table 5 shows the t value as 0.931 with 298 degree of freedom ($df = n-2$) and p-value at 0.358 level for utilization of modern technological equipment for teaching and learning OTM courses, in South-West, Nigeria. Thus, the null hypothesis which states that there is no significant difference between the mean responses of Polytechnics and Colleges of Education in the utilization of modern technological equipment for teaching and learning OTM courses, in South-West, Nigeria is retained. The data further revealed that Polytechnics and Colleges of Education in South-West are not significantly different in their response to utilization of modern technological equipment for teaching and learning OTM courses.

4.2 Discussion of Findings

From research question one, the findings revealed that the level of available modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria is high. This result disagreed with Jebba (2010) whose result among others revealed that ICT facilities were not available for students' use at the Department and as such they do not have access to them.

From research question two, the result revealed that level of adequacy of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria is very low. This implies that modern technological equipment available for teaching OTM courses in tertiary institutions in South-West, Nigeria is not adequate. This result agrees with Amiaya, Anita Ogheneovo whose findings showed that new technologies in Business Education needed for the success and effective teaching of OTM are not adequately provided.

From research questions three which state that what is the extent of utilization of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria, the findings revealed that there is high extent of utilization of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria. This

findings disagreed with Akude and Ebeniza (2022), they revealed that the extent of lecturers' and students' utilization of ICT facilities was very low, due partly as a result of poor electricity power supply, insufficient ICT facilities and lack of basic computer operational skills in South-East Nigeria. The differences may be due to the available less consumable power technological equipment and use of inverter in higher institutions

From research hypothesis one, findings showed that there is no significant difference between the mean responses of lecturers and students on the utilization of modern technological equipment for teaching and learning OTM courses in Polytechnics and Colleges of Education in South-West, Nigeria. This finding agreed with Ugbe (2018), who concluded that there is no significant difference between the mean responses of lecturers and students on the availability of teaching facilities in Colleges of Education, North-West Nigeria.

From research hypothesis two, findings showed that Polytechnics and Colleges of Education in South-West are not significantly different in their response to utilization of modern technological equipment for teaching and learning OTM courses.

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Based on the findings of this study, it was concluded that the level of availability of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria is high and the extent of utilization of availability of modern technological equipment for teaching OTM courses in tertiary institutions in South-West, Nigeria is also high. However, it was discovered that the level of adequacy of modern technological equipment is low.

5.2 Recommendation

Based on the finding of the study, the following recommendations were made:

- i. Urgent steps should be taken by the government to set up ICT centres and make available adequate modern technological equipment's and other modern instructional materials that are useful for teaching and learning of OTM courses in South West, Nigeria
- ii. Modern classrooms similar to sophisticated business offices should be established in OTM departments in Polytechnics and College of Education in South West Nigeria.
- iii. OTM lecturers should be encouraged to pursue ICT training with all seriousness. This could be achieved by making computers available, establishing necessary modern facilities and ensure effective internet connectivity that will provide opportunity for educational development.
- iv. Management of Polytechnics and Colleges of education should ensure available electricity that has capacity to power available new technologies for utilization during lecture periods.
- v. Laws relating to the utilization of new technologies at all levels of educational system in Nigeria should be enacted and policies fully implemented in order to raise the level of awareness of these new technologies in the education system.

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