

Influence of Digital Competence on Teaching and Research: A Survey of Academic Staff of Modibbo Adama University, Yola, Nigeria

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ABSTRACT

This study investigated the influence of digital competence in teaching and research of the Academic Staff of Modibbo Adama University, Yola, Nigeria. The objectives of the study comprised the level of digital competence of Academic Staff, in Nigeria, the influence of digital competence on teaching among Academic Staff, and the influence of digital competence in research among Academic Staff of Modibbo Adama University, Yola, Nigeria. Three research questions and two hypotheses were used to guide the study. A descriptive survey was adopted. The population of the study consists of all the 619 academic staff in the university. A self-developed questionnaire was used for data collection. Descriptive statistics of bar charts, pie charts and histograms were used to present the bio-data of respondents, while, mean and standard deviation were used to analyze the data generated. Chi-Square was used to test the null hypotheses tested at a 0.05 level of significance. The results of the study revealed among others that the Academic Staff of Modibbo Adama University, Yola, Nigeria had a high level of digital competence, and highly influenced their teaching and research activities, the study also revealed that they lacked skills in using an Interactive whiteboard / smart board, searching for information; the study also found that the respondents can upload audio-visual files and recordings for students, and finally the results shows that the respondents have the ability to use any computational data analysis tools such as SPSS, Microsoft Excel, python, and KPI.

KEYWORDS: Digital Competence, Teaching, Research, Academic Staff, Modibbo Adama University.

INTRODUCTION

Digital competence is a generic term used to describe the ability, skills, knowledge and confidence to use information and communication technologies for problem-solving in all aspects of life. This has become imperative for every academic staff to be able to become digitally competent to carry out their academic activities. For them to

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be digitally competent there is the need to acquire digital literacy. Digital literacy refers to the basic knowledge, skills, and attitudes that an individual must possess to use digital technologies competently, safely, and appropriately (NITDA, 2023). Digital literacy includes the ability to read and interpret media, reproduce data and images through digital manipulation, and evaluate and apply new knowledge gained from digital environments. Moreover, the European Commission Digital Literacy Group in Digital Competence (2016) defined digital literacy as the basic set of skills required to support the development of digital competence which is one of the sets of competencies identified as key for every person to operate successfully in today's knowledge-based economy. It involves the ability to find, evaluate, utilize, share and create content using information technologies and the internet. For instance, knowing how to answer your emails, access a company's files on Google Drive, or tweak a website's code are all digital literacy skills that are increasingly sought after in today's job market. Digital competence level, in turn, encompasses the knowledge and skills required to use ICT more competently in a particular social, educational, or work context. This level of digital proficiency skills is developed based on what the individual intends to apply them. It comprises the related skills and knowledge that one needs to exploit ICT efficiently for one's purpose be it for personal or professional life.

Teaching and research are core functions of any university, and these two functions are the reasons why universities spend huge financial resources on either recruiting or mentoring the best academic staff. To this end, lecturers in universities use the Internet to access information that will be used in knowledge production activities; teaching, and research (Kanyengo & Smith, 2022). For academic staff to carry out teaching and research activities effectively and efficiently, there is a need to embrace the use of digital technologies especially in this era of the 21st century. This is why universities are placing ICTs provision among top priority areas in the campuses by ensuring digital technologies are procured as well as internet services are provided. University lecturers have various tasks to accomplish and these range from teaching, research and publications, to marking of tests and examinations, supervising students' research activities, supporting students through advisory roles, attending conferences, providing community services, etc. Some of the digital technologies that can improve technology and research activities include: Desktop / Laptop Computer systems; projector for power point presentations and slides; e-learning platforms such as Zoom, Google Meet, Google Classroom, Join.me, Microsoft Teams, Cisco Webex Meeting, Skype, etc.; Smartphone, iPad, iPhone, etc; interactive whiteboard / smart board; touch screen pen/stylus pen; interactive whiteboard / smart board; e-books, e-journals and online databases; electronic library tools e.g. CDROM, OPAC, Subject Gateways etc.; Search engines; computer system/application software e.g. Microsoft Word and Microsoft Excel; computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc.; Artificial Intelligence such as ChatGPT; Anti-Plagiarism checking software such as Turnitin; digital writing tools such as Grammarly, QuillBot, BibMe, etc.; Social Media, Blogs and Discussion Forums; Web sources / Websites; and digital repositories, among others. This study was conducted to determine the influence of digital competence on teaching and research of Academic Staff of Modibbo Adama University, Yola, Nigeria.

STATEMENT OF PROBLEM

Information and Communication Technology has become an impetus upon which every sector relies for transformation including the education sector. Academic staff in the university carry out teaching and research to develop the capacity of citizens and manpower within the country hence need to embrace the use of digital

technologies for effective and efficient job delivery. In developed countries, studies have shown that Academic Staff in various universities have a high level of digital competence, especially in the area of adopting digital technologies in conducting teaching and research that could impact positively and solve societal problems. However, a preliminary investigation conducted by the researchers revealed that academic staff at Modibbo Adama University, Yola were yet to harness to opportunities availed by digital technologies in carrying out teaching and research activities effectively and efficiently. Could this be attributed to the low level of digital competence among the academic staff? What is the influence of digital competence on teaching among Academic Staff? These and others form the thrust upon which this research was conducted to ascertain the influence of digital competence on the teaching and research of the Academic Staff of Modibbo Adama University, Yola, Nigeria.

OBJECTIVES OF THE STUDY

The main objective of this study was to examine the influence of digital competence on teaching and learning among Academic Staff of Modibbo Adama University, Yola, Nigeria. The specific objectives were to determine the:

1. Level of digital competence of Academic Staff of Modibbo Adama University, Yola, Nigeria.
2. Influence of digital competence in teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria.
3. Influence of digital competence in research among Academic Staff of Modibbo Adama University, Yola, Nigeria.

Research Questions

The study was guided by the following research questions:

1. What is the level of digital competence of Academic Staff of Modibbo Adama University, Yola, Nigeria?
2. How does digital competence influence teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria?
3. How does digital competence influence research among Academic Staff of Modibbo Adama University, Yola, Nigeria?

Research Hypothesis

Ho₁: Digital competence has no significant influence on teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria.

Ho₂: Digital competence has no significant influence on research among Academic Staff of Modibbo Adama University, Yola, Nigeria.

LITERATURE REVIEW

Digital competence is very significant to academic staff as it facilitates effective teaching, learning and research activities. Jorge-Vázquez, Alonso, Saltos and Mendoza (2021) indicated that the average profile of university faculty in Ecuador is characterised by an intermediate level of digital competencies, regardless of gender. The study also found that younger teachers belonging to the millennial generation have a more advanced profile in digital skills. Vishnu, *et. al.* (2022) carried out a study to determine the digital competence of higher education learners in the context of COVID-19 triggered online learning. The study was conducted among graduate and postgraduate students of Kerala Agricultural University (KAU), India. The data was collected in September 2020 using an online survey tool named Survey Monkey. The study found that the smartphone was the most important digital device that the

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majority of the respondents had access to, compared to other devices such as laptops, desktop computers, or tablets. Based on the findings, it is evident that in most of the dimensions of digital competence, the respondents were found to be moderately competent or competent. The high level of competence of a significant portion of learners in certain components such as the ability to share learning content online or follow standard practices in the digital learning environment could be an indication of their ability to adapt quickly to the new mode of learning. Besides, the level of digital competence was found to vary depending on the socio-economic profile of the respondents. Male respondents tended to have higher mean scores in the specific dimensions of digital competence, without factoring in the cultural disadvantages faced by the female learners

In Africa, Kanyengo and Smith (2022) examined the digital literacy levels of lecturers at the School of Medicine at the University of Zambia. Semi-structured questionnaires were used to collect information from a sample of 57 respondents. Data were analysed quantitatively using simple statistics in MS Excel. The study has established that the digital skills of the lecturers at UNZA, Veterinary School were relatively advanced with the majority of them (39, 95.2%) indicating that their skills were good to excellent. The study findings established that the Internet as a source of information was utilised more because it provided users with digitised versions of sources that were easily accessible as long as access to the Internet was available. Further, the majority used online digital content for their academic purposes and believed this content was reliable. The study recommends that frequent training in digital literacy be implemented for all academic staff.

In South Western Nigeria, Omosekejimi, Brume-Ezewu, Brume-Ezewu, Nwobu and Nweke (2018) surveyed ICT and Digital Literacy Skills: a Mechanism for Efficient Teaching in Nigerian Colleges of Education. Survey research was adopted for this study. The total population for this study comprised 1,500 college of education lecturers from four colleges of education in South West, Nigeria. The data collected for this study was analyzed using simple percentages and frequency counts. The study revealed that the majority of the respondents agreed to the fact that ICT and digital literacy will to a very large extent facilitate effective teaching in colleges of education and that computers, printers, photocopiers, projectors, interactive whiteboards/Electronic notice boards, Internet facilities and CD ROM will to a very large extent/a large extent be an effective ICT tool for teaching in Colleges of education while, audio and video player, television and digital camera are considered by the respondents as ICT tools that will have little influence on effective teaching in Colleges of education. The study further revealed that the majority of the respondents only possesses internet searching skills, is proficient in the use of Microsoft word, and can effectively utilise CD ROM and other storage devices while a a whole lot of the respondents can not apply computers to solve academic real life problem, they are not proficient in the use of PowerPoint, Excel and spreadsheet, they lack information-gathering skills and they cannot maximally utilise multimedia facilities.

Soyemi, Ojo and Abolarin (2018) conducted a study on digital literacy skills and MOOC participation among lecturers in a private university in Nigeria. The study adopted the survey research design. The population of the study comprised 110 lecturers from the School of Management and Social Sciences of a private University in Nigeria. Descriptive statistics including frequency counts, simple percentages, and mean scores were used for data analysis. Logistic regression was also carried out to ascertain the influence of the respondents' digital literacy skills on MOOC enrolment. The study's findings revealed that generally, lecturers had advanced digital literacy skills.

This implies that lecturers can manage computer hardware and software, create information online, find information online and use online information at an advanced level. The study also found that just a few of the respondents had enrolled for at least a course on any MOOC website and that time and access to a fast internet connection were factors that informed respondents' decision to enroll for a course on any of the MOOC websites. The study's regression analysis revealed that lecturers' digital literacy skill did not significantly influence their enrolment in MOOC. Therefore, participation in MOOC is not a function of digital literacy skill level.

Moreover, Omorobi, Harry and Kenn-Aklah (2022) carried out a study to ascertain the digital skills profile and academic staff service delivery during the COVID-19 pandemic lockdown in universities in Cross River State. An ex-post facto research design was adopted for the study. The population of the study was 2427 academic staff of the University of Calabar and the University of Cross River State. The sample for the study was 755 academic staff who were drawn through the simple random sampling technique. A population t-test of a single mean was used to analyse the data collected. The results of the hypothesis indicated that academic staff digital literacy skills were significantly low concerning electronic conferencing skills, use of PDAs, computer accessories navigation skills, internet surfing skills, computer operation skills, media projecting skills, use of electronic bulletin skills, and Microsoft packages skills. The study further showed that academic staff service delivery during the COVID-19 pandemic lockdown was significantly low in terms of instructional delivery, supervision of students' research, conference attendance, research publication, evaluation of students and student advising/counseling. The study also indicated that there is a significant influence between academic staff's level of digital skills and academic service delivery during the lockdown. It was revealed that academic staff with high digital skills provided academic services the most during the lockdown, followed by those with moderate digital skills and those with low digital skills provided academic service the least.

On the influence of digital competence towards teaching and research activities, [Aldhaen](#) (2023) surveyed the influence of digital competence of academicians on students' engagement at the university level: the moderating effect of the pandemic outbreak. A cross-sectional, quantitative and explanatory research design was used to conduct the study. Data were gathered with an adopted questionnaire administered to a randomly selected sample of 500 university faculty members who were not digitally literate before the outbreak of the pandemic. Apart from the goodness of data tests, inferential statistics were applied to test hypotheses. Results indicate a significant influence of teachers' digital competence on student engagement and the pandemic outbreak positively moderates the relationship. Digital competence equally influences all three dimensions of student engagement (cognitive, affective and behavioural). Asuquo and Nkem (2018) surveyed the influence of digital proficiency level skills on access, operation and decision-making in a digital environment by Business Education Lecturers in South-South Nigeria. The study adopted a descriptive survey design and was carried out in South-South Nigeria. The population of the study consisted of 58 business education lecturers in University of Uyo, University of Calabar, University of Benin, Rivers State University of Science and Technology, Port Harcourt, Niger Delta University, Yenogoa, and Cross River State University of Technology, Calabar offer a business education programme. The study shows a cluster mean of 3.24 indicating that digital literacy level skills have great influence on accessibility to digital environment by business education lecturers in universities in South-South Nigeria. The study further shows a cluster means for all the items of 3.30 indicating that there is a great influence of digital competence level skills on operational activity

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in the digital environment by business education lecturers in universities in South- South Nigeria. This result implies that business education lecturers in the universities require these skills in order to effectively carry out their operational activities in the digital environment.

Furthermore, David-West (2022) conducted a study to determine the digital literacy skills and utilisation of online platforms for teaching by LIS Educators in Universities in Rivers State, Nigeria. The study was undertaken as a quantitative method and a descriptive survey research design and the population consisted of 26 lecturers from the Department of Library and Information Science, University of Port Harcourt, Ignatius Ajuru University of Education, Rivers State University. Criterion Mean (\bar{x}) of 2.5 was used to analyze the research questions and the hypotheses were tested with Z – test at 0.05 level of significance. The respondents agreed on all the items with a high Mean (\bar{x}) Score greater than the criterion Mean (\bar{x}) of 3.50 following the rank order from 1st to 5th. The aggregate Mean (\bar{x}) Score of 2.99 explains that good, adequate, and effective knowledge of digital literacy enhances utilisation of online platforms for teaching by LIS educators in Universities in Rivers State, Nigeria. Also, the aggregate Mean (\bar{x}) Score of 3.01 explains that LIS educators operate computers dependently for elaborate teaching, the inability to operate a computer system deters online teaching, using smartphones effectively to access online teaching, and the use of a projector is not used to access online teaching. Also, the aggregate Mean (\bar{x}) Score of 3.01, explains that effective use of Zoom App, Google Classroom, WhatsApp, and Whova online platforms enhance teaching delivery. Also, poor utilisation of the learning management system deters online teaching delivery. The hypothesis tested revealed that there is no significant difference between the mean (\bar{x}) score of digital literacy skills and online platforms utilisation for teaching by LIS educators in Universities in Rivers State, Nigeria. Also, there is no significant difference between the Mean (\bar{x}) Score of online platform utilisation and online teaching delivery by LIS educators in Universities in Rivers State, Nigeria.

Ogundele and Moses (2019) conducted a study on managing lecturers' digital literacy skills for quality assurance of Federal Universities in North Central Nigeria. The research design adopted for the study was a descriptive survey research design of a correlation type. The population of the academic staff in the seven public universities in the North Central Nigeria was 2658 stratified random sampling technique was used to select 700 respondents. Based on the analysis of the data collected, the results indicate that most of the digital facilities and equipment that could be used for the teaching-learning processes were not readily available. From the results, computer board, interconnectivity, blended classroom, electronic media and PowerPoint camera and transparency were not readily available. The hypotheses formulated and tested at a 0.05 significance level show that lecturers' literacy in digital influences quality teaching in Federal universities. The study also shows that a high significant influence existed between the availability of digital literacy and the quality of the research publication.

RESEARCH METHODOLOGY

A descriptive survey was adopted in carrying out this research which determined the influence of digital competency on the teaching and research activities of academic staff in Modibbo Adama University, Yola. The preliminary investigation conducted by the researchers revealed that there were six hundred and nineteen (619) academic staff cutting across all the programs in the university. Due to the manageable number of the population, total enumeration was adopted, hence, all 619 academic staff were used for the study. A self-developed questionnaire was designed

using the Google Form mobile application with a 4-Points-Likert scale. The title of the questionnaire was “QIDCOTAR” and was administered by the researchers by posting the links to the respondents on the MAU Academic WhatsApp and Telegram platforms as well as other academic platforms soliciting their responses. Descriptive statistics of bar charts, pie charts and histograms were used to present the bio-data of respondents, while, mean and standard deviation was used to analyse data generated from research questions. Chi-Square was used to test the null hypotheses at a 0.05 level of significance. SPSS software was used in the study.

DATA ANALYSIS

Out of the total six hundred and nineteen (619) respondents, three hundred and eighty-four (384) representing 62.0% filled the questionnaire, some in hard copy while others in softcopy (Google Form).

Demographic Data of Respondents

Male respondents constituted the majority of the respondents with 268(69.8%), while, female respondents constituted 116(30.2%). Respondents from the Faculty of Social and Management Sciences constituted the majority with 111(29.9%), followed by those from the Faculty of Education with 69(18.0%), Faculty of Environmental Sciences were 60(15.6%), Faculty of Agriculture were 39(10.2%), Faculty of Engineering were 33(8.6%), Faculty of Physical Sciences were 24(6.3%), School of General Studies were 17(4.4%), Faculty of Life Sciences and Faculty of Medical Sciences had 12(3.1%) respectively, while, respondents from Ibrahim Babangida Library were 7(1.8%). Moreover, respondents that were Lecturer I in rank constituted the majority with 144(37.5%), followed by Senior Lecturers with 74(19.3%), Lecturer II with 52(13.5%), Assistant Lecturer with 40(10.4%), Associate Professor with 36(9.4%), Professor with 24(6.3%), while, Graduate Assistants were the least among the respondents with 14(3.6%).

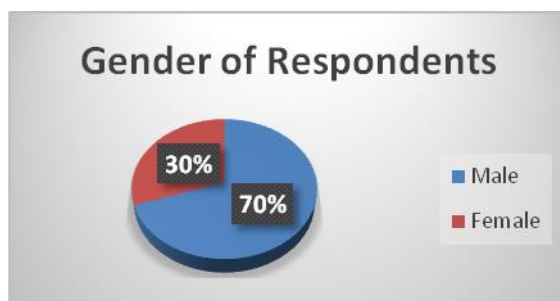


Figure 1: Gender of Respondents

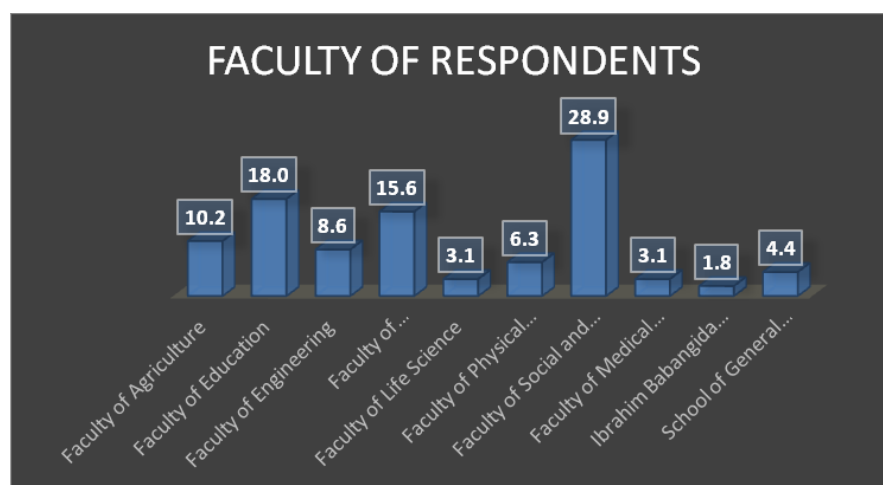


Figure 2: Faculty of Respondents

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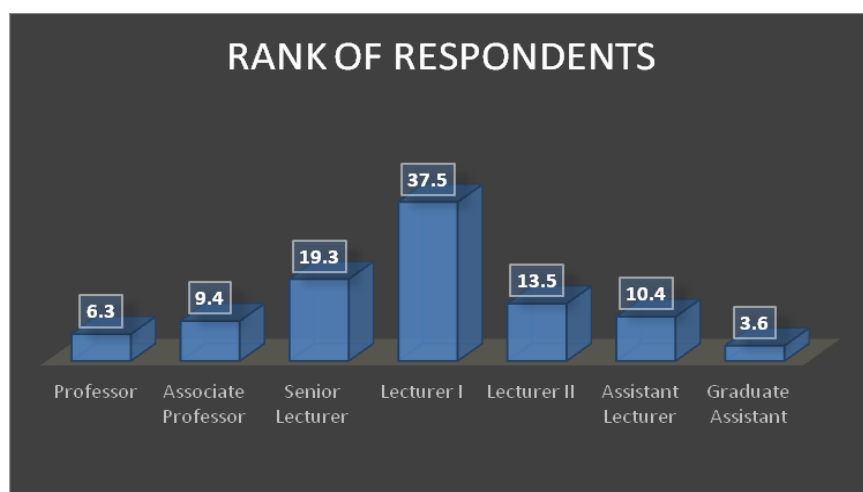


Figure 3: Rank of Respondents

Research Question 1: What is the level of digital competence of Academic Staff of Modibbo Adama University, Yola, Nigeria?

Table 1: Level of digital competence of Academic Staff of Modibbo Adama University, Yola.

S/N	Competence	N	Mean	Std	Decision
1	I can operate Desktop / Laptop Computer systems	384	2.80	0.49	Accepted
2	I can set up and use a Projector for Power Point Presentations and Slides	384	2.98	1.05	Accepted
3	I have the ability to use E-learning platforms such as Zoom, Google meet, Google Classroom, Join.me, Microsoft Teams, Cisco Webex Meeting, Skype etc.	384	2.66	0.99	Accepted
4	I have proficiency to use Smart phone, Ipad, Iphone, etc	384	2.70	0.96	Accepted
5	I have the ability to use an Interactive whiteboard / smart board	384	1.83	0.72	Rejected
6	I have the ability to use a touch screen pen / stylus pen	384	2.11	0.77	Accepted
7	I can use Audio visual files and recordings	384	2.25	0.90	Accepted
8	I can search for information through E-books, E-Journals and Online Databases	384	2.35	0.80	Accepted
9	I can use Electronic library tools e.g. CDROM, OPAC, Subject Gateways etc.	384	2.80	0.49	Accepted
10	I can search for information through various of Search engines	384	2.97	1.06	Accepted
11	I can use Computer system/application software e.g. Microsoft word and Microsoft excel	384	3.49	0.69	Accepted
12	I can use Computational data analysis tools such as SPSS, Microsoft excel, python, KPI, etc.	384	1.49	0.57	Rejected

13	I am very conversant with and make use of Artificial Intelligence such as ChatGPT	384	2.37	0.96	Accepted
14	I am very conversant with Anti-Plagiarism checking softwares such as turnitin	384	2.38	0.88	Accepted
15	I am very conversant with Digital writing tools such as Grammerly, QuillBot, BibMe etc.	384	1.92	0.76	Rejected
16	I am very conversant with Social Media, Blogs and Discussion Forums	384	2.44	0.81	Accepted
17	I usually search for information through Web sources / Website	384	2.71	0.66	Accepted
18	I usually search for information through Digital repositories	384	1.99	0.73	Rejected
Weighted Means			2.30	0.79	Accepted

Source: Field survey, 2024

The table above presented the level of digital competence of the Academic Staff of Modibbo Adama University, Yola, Nigeria. In the items listed, fourteen (14) items attracted higher mean scores which were acceptable such as the ability to use Computer system/application software e.g. Microsoft Word and Microsoft Excel attracted the highest mean score ($\bar{X} = 3.49$, SD = 0.69), followed by the ability to use a Projector for PowerPoint Presentations and Slides ($\bar{X} = 2.98$, SD = 1.05), followed by the ability to search for information through various of Search engines ($\bar{X} = 2.97$, SD = 1.06), followed by the ability to operate Desktop / Laptop Computer systems ($\bar{X} = 2.80$, SD = 0.49) and ability to use Electronic library tools e.g. CDROM, OPAC, Subject Gateways, etc. ($\bar{X} = 2.80$, SD = 0.49). Other digital competencies according to the responses include: the ability to search for information through Web sources / Websites ($\bar{X} = 2.71$, SD = 0.66), proficiency to use Smartphones, iPad, iPhone, etc. ($\bar{X} = 2.70$, SD = 0.96), ability to use E-learning platforms such as Zoom, Google Meet, Google Classroom, Join.me, Microsoft Teams, Cisco Webex Meeting, Skype etc. ($\bar{X} = 2.66$, SD = 0.99), conversant with Social Media, Blogs and Discussion Forums ($\bar{X} = 2.44$, SD = 0.81), conversant with Anti-Plagiarism checking software such as Turnitin ($\bar{X} = 2.38$, SD = 0.88), conversant with and make use of Artificial Intelligence such as ChatGPT ($\bar{X} = 2.37$, SD = 0.96), ability to search for information through E-books, E-Journals and Online Databases ($\bar{X} = 2.35$, SD = 0.80), ability to use Audiovisual files and recordings ($\bar{X} = 2.25$, SD = 0.90) and ability to use a touch screen pen/stylus pen ($\bar{X} = 2.11$, SD = 0.77). Moreover, four (4) of the items attracted lower mean scores that were rejected such as: ability to use an Interactive whiteboard / smart board ($\bar{X} = 1.83$, SD = 0.72), ability to use Computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc. ($\bar{X} = 1.49$, SD = 0.57), conversant with Digital

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writing tools such as Grammarly, QuillBot, BibMe etc. ($\bar{x} = 1.92$, $SD = 0.76$) and ability to search for information through Digital repositories ($\bar{x} = 1.99$, $SD = 0.73$). Meanwhile, the the overall weighted mean score of ($\bar{x} = 2.30$, $SD = 0.79$) indicated that The academic staff of Modibbo Adama University, Yola, Nigeria have a high level of digital competence, but lack skills on Interactive whiteboard / smart board, Computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc., Digital writing tools such as Grammarly, QuillBot, BibMe, etc. as well as searching for information through Digital repositories.

Research Question 2: How does digital competence influence teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria?

Table 2: Influence of Digital competence on teaching among Academic Staff of Modibbo Adama University, Yola

S/N	Competence	N	Mean	Std	Decision
1	I can use a Desktop / Laptop Computer systems in teaching my students	384	3.49	0.69	Accepted
2	I can use projector to make my lessons more engaging and interactive and increasing student participation	384	2.77	0.81	Accepted
3	I have the ability to create a slideshow of valuable information through Power Point Presentations and Slides.	384	2.71	0.79	Accepted
4	I am an expert in organising lectures through e-learning platforms such as Zoom, Google meet, Google Classroom, Join.me, Microsoft Teams, Cisco Webex Meeting, Skype etc	384	2.88	0.88	Accepted
5	I have the proficiency of utilising a smart phone, Ipad, Iphone, etc to conduct effective teaching to my students.	384	2.69	0.97	Accepted
6	I have the capability of using interactive whiteboard / smart board in teaching	384	2.34	0.73	Accepted
7	I know how to use touch screen pen / stylus pen when conducting teaching digitally	384	2.14	0.77	Accepted
8	I have the ability to upload audio visual files and recordings for students	384	1.99	0.72	Rejected
9	I can also search and upload e-books to the students during virtual teaching	384	2.99	0.64	Accepted
10	I can participate in Massive Open Online Courses (MOOCs)	384	1.71	0.96	Rejected
	Weighted Means		2.57	0.80	Accepted

Source: Field survey, 2024

The table above presented the influence of digital competence on teaching among the Academic Staff of Modibbo Adama University, Yola, Nigeria. In the items listed, eight (8) items attracted higher mean scores which were acceptable such as the use of Desktop / Laptop Computer systems in teaching students attracted the highest mean

score ($\bar{X} = 3.49$, SD = 0.69), followed by searching and uploading e-books to the students during virtual teaching ($\bar{X} = 2.99$, SD = 0.64), organising lectures through e-learning platforms such as Zoom, Google meet, Google Classroom, Join.me, Microsoft Teams, Cisco Webex Meeting, Skype, etc ($\bar{X} = 2.88$, SD = 0.88), the use of a projector to make my lessons more engaging and interactive and increasing student participation ($\bar{X} = 2.77$, SD = 0.81), the ability to create a slideshow of valuable information through PowerPoint Presentations and Slides ($\bar{X} = 2.71$, SD = 0.79), the proficiency of utilizing a smartphone, Ipad, iPhone, etc to conduct effective teaching to my students ($\bar{X} = 2.69$, SD = 0.97), the capability of using interactive whiteboard / smart board in teaching ($\bar{X} = 2.34$, SD = 0.73) and the use of touch screen pen/stylus pen when conducting teaching digitally ($\bar{X} = 2.14$, SD = 0.77). Moreover, two (2) of the items attracted lower mean scores that were rejected such as the ability to upload audio-visual files and recordings for students ($\bar{X} = 1.99$, SD = 0.72) and the ability to participate in Massive Open Online Courses (MOOCs) ($\bar{X} = 1.71$, SD = 0.96). Meanwhile, the overall weighted mean score of ($\bar{X} = 2.57$, SD = 0.80) indicated that the digital competence of the Academic Staff of Modibbo Adama University, Yola, Nigeria highly influences their teaching activities, but they cannot upload audio-visual files and recordings for students as well as the ability to participate in Massive Open Online Courses (MOOCs).

Research Question 3: How does digital competence influence research among Academic Staff of Modibbo Adama University, Yola, Nigeria?

Table 3: Influence of Digital competence on research among Academic Staff of Modibbo Adama University, Yola

S/N	Competence	N	Mean	Std	Decision
1	I can make use of a Desktop / Laptop Computer system to carry out research	384	3.16	0.74	Accepted
2	I can also search and use e-books, e-journals and Online databases to aid my research activities	384	3.09	0.76	Accepted
3	I have the capability to retrieve vital information from electronic library tools e.g. CDROM, OPAC, Subject Gateways etc. for my research	384	2.88	0.88	Accepted
4	I have the proficiency of retrieving information from variety of search engines when conducting research	384	2.69	0.97	Accepted
5	I have the proficiency of utilising a smart phone, Ipad, Iphone, etc to conduct effective research	384	3.05	0.97	Accepted
6	I am an expert in using computer system/application software e.g. Microsoft word and Microsoft excel when carrying out research	384	3.05	0.97	Accepted
7	I have the ability of using any computational data	384	1.99	0.72	Rejected

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	analysis tools such as SPSS, Microsoft excel, python, KPI, etc to analyse data				
8	I can use Artificial Intelligence such as ChatGPT in the course of carrying out research	384	1.94	0.71	Rejected
9	I can use Anti-Plagiarism checking softwares such as turnitin in the course of carrying out research	384	1.60	0.60	Rejected
10	I can use digital writing tools such as Grammerly, QuillBot, BibMeetc when carrying out research	384	1.60	0.60	Rejected
11	I can retrieve vital information from Social Media, Blogs and Discussion Forums for my research	384	2.79	0.75	Accepted
12	I can toggle through different web sources / website so as to get relevant information for my research	384	3.00	0.66	Accepted
13	I can search through digital repositories to get relevant information for my research	384	2.98	0.61	Accepted
	Weighted Means		2.36	0.77	Accepted

Source: Field survey, 2024

The table above presented the influence of digital competence on research among the Academic Staff of Modibbo Adama University, Yola, Nigeria. In the items listed, nine (9) items attracted higher mean scores which were acceptable such as the use of a Desktop / Laptop Computer system to carry out research which attracted the highest mean score ($\bar{X} = 3.16$, SD = 0.74), followed by search and use of e-books, e-journals and Online databases to aid my research activities ($\bar{X} = 3.09$, SD = 0.76), utilizing a smartphone, iPad, Iphone, etc to conduct effective research ($\bar{X} = 3.05$, SD = 0.97), using computer system/application software e.g. Microsoft Word and Microsoft Excel when carrying out research ($\bar{X} = 3.05$, SD = 0.97), toggling through different web sources/website to get relevant information for my research ($\bar{X} = 3.00$, SD = 0.66), search through digital repositories to get relevant information for my research ($\bar{X} = 2.98$, SD = 0.61), the capability to retrieve vital information from electronic library tools e.g. CDROM, OPAC, Subject Gateways etc. for my research ($\bar{X} = 2.88$, SD = 0.88), retrieve vital information from Social Media, Blogs and Discussion Forums for my research ($\bar{X} = 2.79$, SD = 0.75) and retrieving information from a variety of search engines when conducting research ($\bar{X} = 2.69$, SD = 0.97). Moreover, four (4) of the items attracted lower mean scores that were rejected such as: using any computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc to analyse data ($\bar{X} = 1.99$, SD = 0.72), use Artificial Intelligence such as ChatGPT in the course of carrying out research ($\bar{X} = 1.94$, SD = 0.71), use Anti-plagiarism checking software such as Turnitin in the course of carrying out research ($\bar{X} = 1.60$, SD = 0.60) as well as the use digital writing tools such as Grammarly, QuillBot, BibMeetc when carrying out research ($\bar{X} = 1.60$, SD = 0.60). Meanwhile, the overall

weighted mean score of ($\bar{X} = 2.36, SD = 0.77$) indicated that the digital competence of the Academic Staff of Modibbo Adama University, Yola, Nigeria highly influenced its research activities but lacked the ability of using any computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc to analyse data, use Artificial Intelligence such as ChatGPT in the course of carrying out research, use Anti-Plagiarism checking software such as Turnitin in the course of carrying out research and the use of digital writing tools such as Grammerly, QuillBot, BibMeetc when carrying out research.

Hypothesis Testing

Ho₁: Digital competence has no significant influence on teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria.

Table 4: Chi-Square Result on the Influence of Digital Competence on teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria.

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	374.246 ^a	325	0.031
Likelihood Ratio	296.718	325	0.868
Linear-by-Linear Association	0.045	1	0.832
N of Valid Cases	384		

Source: Field survey, 2024.

In the table above, the Chi-Square result indicated that digital competence has a significant influence on the teaching activities of Academic Staff at a 0.05 level of significance. Therefore, hypothesis one (1) is rejected, because, the probability value (P = 0.031) is less than the critical value at 0.05 level of significance at a Chi-Square value= 374.246. Hence, Digital competence has a significant influence on teaching among the Academic Staff of Modibbo Adama University, Yola, Nigeria.

Ho₂: Digital competence has no significant influence on research among Academic Staff of Modibbo Adama University, Yola, Nigeria.

Table 5: Chi-Square Result on the Influence of Digital Competence on research among Academic Staff of Modibbo Adama University, Yola, Nigeria.

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	443.044 ^a	450	0.0583
Likelihood Ratio	307.649	450	1.000
Linear-by-Linear Association	0.461	1	0.497
N of Valid Cases	384		

Source: Field survey, 2024.

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In the table above, the Chi-Square result indicated that digital competence has a significant influence on the research activities of Academic Staff at a 0.05 level of significance. Therefore, hypothesis two (2) is rejected, because, the probability value ($P = 0.0583$) is less than the critical value at 0.05 level of significance at a Chi-Square value= 443.044. Hence, Digital competence has a significant influence on research activities among the Academic Staff of Modibbo Adama University, Yola, Nigeria.

DISCUSSION OF FINDINGS

The result of this has indicated that the Academic Staff of Modibbo Adama University, Yola, Nigeria had a high level of digital competence but lacked skills in Interactive whiteboard / smart board, Computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc., Digital writing tools such as Grammarly, QuillBot, BibMe, etc. as well as searching for information through Digital repositories. This could be attributed to the fact that these technologies are not too popular and only a few of them could use them this finding corroborates Vishnu, *et. al.* (2022) reported high level of competence of a significant portion of learners in certain components such as the ability to share learning content online or follow standard practices in the digital learning environment could be an indication of their ability to adapt quickly to the new mode of learning in Kerala Agricultural University (KAU), India. Kanyengo and Smith (2022) established that the digital skills of the lecturers at UNZA, Veterinary schools were relatively advanced with the majority of them (39, 95.2%) indicating that their skills were good to excellent. Further, the the majority used online digital content for their academic purposes and believed this content was reliable at the School of Medicine at the University of Zambia.

Other studies that are in line with this finding include Soyemi, Ojo and Abolarin (2018), which revealed that generally, lecturers in a private university in Nigeria had advanced digital literacy skills. This implies that lecturers can manage computer hardware and software, create information online, find information online and use online information at an advanced level. Omosekejimi, Brume-Ezewu, Brume-Ezewu, Nwobu and Nweke (2018) revealed that the majority of College of education lecturers only possess internet searching skills, are proficient in the use of Microsoft Word, and can effectively utilize CD ROM and other storage devices while a whole lot of the respondents can not apply computers to solve academic real-life problems, they are not proficient in the use of PowerPoint, Excel and spreadsheets, they lack information-gathering skills and they cannot maximally utilise multimedia facilities. However, the finding of this study disagreed with Omorobi, Harry and Kenn-Aklah (2022) study indicated that academic staff digital literacy skills were significantly low concerning electronic conferencing skills, use of PDAs, computer accessories navigation skills, internet surfing skills, computer operation skills, media projecting skills, use of electronic bulletin skills, and Microsoft packages skills in universities in Cross River State.

Furthermore, this study has revealed that the digital competence of Academic Staff of Modibbo Adama University, Yola, Nigeria highly influence their teaching activities, but they could not upload audio-visual files and recordings for students as well as the ability to participate in Massive Open Online Courses (MOOCs). Also, the hypothesis tested revealed that digital competence has a significant influence on teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria. This finding aligns with [Aldhaen](#) (2023) which indicated a significant influence on teachers' digital competence in student engagement i.e, teaching and the pandemic outbreak positively moderates the relationship. Digital competence equally influences all three dimensions of student engagement (cognitive,

affective and behavioural). Asuquo and Nkem (2018) indicated that there is a great influence on digital competence level skills on operational activity such as teaching, learning and research in the digital environment by business education lecturers in universities in South-South Nigeria. This implies that business education lecturers in the universities require these skills to effectively carry out their operational activities such as teaching, learning and research in the digital environment. David-West (2022) found adequate and effective knowledge of digital literacy enhances the utilisation of online platforms for teaching by LIS educators in Universities in Rivers State, Nigeria. Also, LIS educators operate computers dependently for elaborate teaching, inability to operate computer systems deter online teaching, using smartphones effectively to access online teaching, and the use of a projector is not used to access online teaching.

Meanwhile, Omosekejimi, Brume-Ezewu, Brume-Ezewu, Nwobu and Nweke (2018) revealed that the majority of the respondents agreed with the fact that ICT and digital literacy could to a very large extent facilitate effective teaching in colleges of education and that computers, printers, photocopiers, projectors, interactive whiteboards/Electronic notice boards, internet facilities and CD ROM will to a very large extent/a large extent be an effective ICT tool for teaching in Colleges of education. Ogundele and Moses (2019) revealed that lecturers' literacy in digital influences quality teaching in Federal Universities in North Central Nigeria. Contrary to this finding, Soyemi, Ojo and Abolarin (2018) revealed that lecturers' digital literacy skills did not significantly influence their enrolment in MOOCs. Therefore, participation in MOOC is not a function of digital literacy skill level.

Meanwhile, the study found that the digital competence of the Academic Staff of Modibbo Adama University, Yola, Nigeria highly influences their research activities, but they lacked the ability to use any computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc to analyse data, use Artificial Intelligence such as ChatGPT in the course of carrying out research, use Anti-Plagiarism checking software such as Turnitin in the course of carrying out research and the use of digital writing tools such as Grammarly, QuillBot, BibMeetc when carrying out research. Also, the hypothesis tested revealed that digital competence has a significant influence on research activities among Academic Staff of Modibbo Adama University, Yola, Nigeria. This finding is in agreement with Asuquo and Nkem (2018) finding which indicates that there is a great influence on digital competence level skills in operational activity such as teaching, learning and research in the digital environment by business education lecturers in universities in South-South Nigeria. This implies that business education lecturers in the universities require these skills to effectively carry out their operational activities such as teaching, learning and research in the digital environment. In the same vein, Ogundele and Moses (2019) reported high significant influence existed between the availability of digital literacy and quality of the research publication in Federal Universities in North Central Nigeria. In disagreement with this finding, Omorobi, Harry and Kenn-Aklah (2022) showed that academic staff service delivery during the COVID-19 pandemic lockdown was significantly low in terms of instructional delivery, supervision of students' research, conference attendance, research publication, evaluation of students and students advising/counseling. The study also indicated that there is a significant influence between academic staff's level of digital skills and academic service delivery during the lockdown in universities in Cross River State.

CONCLUSION AND RECOMMENDATION

This study was conducted to determine the influence of digital competence on teaching and research of Academic Staff of Modibbo Adama University, Yola, Nigeria. This the study revealed that the Academic Staff of Modibbo Adama University, Yola, Nigeria had a high level of digital competence but lacked skills in Interactive whiteboard / smart board, Computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc., Digital writing tools such as Grammarly, QuillBot, BibMe, etc. as well as searching for information through Digital repositories. Furthermore, this study has revealed that the digital competence of Academic Staff of Modibbo Adama University, Yola, Nigeria highly influence their teaching activities, but could not upload audio-visual files and recordings for students as well as the ability to participate in Massive Open Online Courses (MOOCs). Also, the hypothesis tested revealed that digital competence has a significant influence on teaching among Academic Staff of Modibbo Adama University, Yola, Nigeria. Meanwhile, the study found that the digital competence of Academic Staff of Modibbo Adama University, Yola, Nigeria highly influence their research activities, but they lacked the ability of using any computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc to analyse data, use Artificial Intelligence such as ChatGPT in the course of carrying out research, use Anti-Plagiarism checking software such as Turnitin in the course of carrying out research and the use of digital writing tools such as Grammerly, QuillBot, BibMeetc when carrying out research. Also, the hypothesis tested revealed that digital competence has a significant influence on research activities among Academic Staff of Modibbo Adama University, Yola, Nigeria.

Based on these findings, the following are recommended:

Academic Staff of Modibbo Adama University, Yola need to acquire competency on technologies such as Interactive whiteboard / smart board, Computational data analysis tools such as SPSS, Microsoft Excel, python, KPI, etc., Digital writing tools such as Grammarly, QuillBot, BibMe, etc. as well as searching for information through Digital repositories. This could enable them to carry out their core mandate of teaching and research effectively.

The University management should endeavour to organise training and retraining of academic staff towards harnessing digital technologies in their teaching and research activities. This would ensure that academic staff carry out teaching and research in tandem with the best global practices.

Government in collaboration with donor agencies need to provide all the digital facilities needed for effective teaching and research activities as well as internet service within the campus.

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