Digital Facilities Availability and Lecturers' Effectiveness in Federal Universities, North-Central Geo-Political Zone, Nigeria

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Abstract

Lecturers' effectiveness in teaching, research and community service appears to have been adversely affected by inadequate digital facilities and poor digital facilities management in many Federal Universities. Researcher's observation has shown that Universities lecturers in North-Central Geo-Political Zone, Nigeria seem to be ineffective in teaching, research and community service perhaps due to inadequate provision of digital facilities. In terms of teaching and record management, manipulation of interactive board and laptop for instructional delivery, upload of students results and reporting students' information using digital facilities appears to be a problem to some lecturers. This study investigates the relationship between digital facilities availability and lecturers' effectiveness in federal universities within the North-Central geo-political zone of Nigeria. The rapid integration of digital technologies into higher education has significantly transformed teaching, research and community service, thereby necessitating efficient provision of digital facilities to optimize academic performance. Despite increased investments in digital infrastructure such as e-learning platforms, internet connectivity, smart classrooms and libraries, concerns persist regarding their proper provision, monitoring and utilization which may influence lecturers' effectiveness. The study adopts cross-sectional survey research design and correlational research design. A sample of 670 respondents was drawn from a total population of 6696. The sample was drawn from 4 federal universities within north-central zone Nigeria. Data were collected using a researcher-developed questionnaire titled "Lecturers' Effectiveness Questionnaire (LEQ)", "Digital Facilities Planning Questionnaire (DFPQ)" and "Digital Facilities Inventory Scale(DFIS)", validated by experts and found reliable with a coefficient of 0.70. Descriptive statistics such as frequency counts, percentage and mean were used to analyze the research questions, while inferential statistics of chi-square (x2) was used to test the hypothesis. Findings revealed that improvement in digital facilities availability through forecasting, policy formulation, digital platforms and human capacity sustainability would significantly enhance lecturers' effectiveness. It was also discovered that improvement in digital facilities monitoring through feedback mechanisms and good reporting system would influence lecturers' effectiveness. Furthermore, a strong positive relationship was

established between digital facilities management and lecturers' effectiveness. The study concludes that strategic provision of digital facilities is essential for improving lecturers' efficiency and achieving educational objectives in Nigerian federal universities.

Keywords: *Digital facilities, Availability, Lecturers' effectiveness, Information and Communication Technology Tools (ICTT) and Federal Universities.*

Introduction

The rapid advancement of digital technology has significantly transformed the global educational landscape, particularly in higher education. Universities across the world are increasingly integrating Information and Communication Technology (ICT) into teaching, research and administrative processes. In Nigeria, especially within the North-Central Geo-Political Zone – comprising states such as Benue, Kogi, Kwara, Nasarawa, Niger, Plateau and the Federal Capital Territory, federal universities are gradually embracing digitalization to enhance academic performance and institutional efficiency. Digital facilities refer to technological and infrastructure such as computers, internet connectivity, digital libraries, multimedia projectors, virtual learning platforms and learning management systems (LMS). The provision for these facilities involves policy formulation, planning, utilization, monitoring and maintenance to ensure sustainability and effectiveness. Lecturers' effectiveness is the ability of academic staff to perform their core responsibilities, which include teaching, research and community service efficiently and productively. The effectiveness of lecturers is influenced by several factors, among which digital facilities play a crucial role. The integration of digital technologies into university systems has become increasingly necessary due to globalization, increased student population and need for flexible learning environments. However, the effectiveness of these technologies largely depends on how well they are managed. Studies have shown that ICT infrastructure significantly impacts academic planning and administrative effectiveness among university lecturers in Nigeria. This journal therefore examines the relationship between digital facilities availability and lecturers' effectiveness in federal universities in North-Central Geo-Political Zone, Nigeria. It emphasizes on how proper management of digital facilities enhances teaching, research productivity and administrative efficiency. University education determines to a large extent the available high level manpower and level of development in any country. In recognition of the importance of university education, the roles of the University are streamlined in the National Policy on Education to include teaching, research and community service. The National Policy on Education (NPE) (Federal Republic of Nigeria (FRN), 2023). The system is expected to contribute to national development through relevant higher level manpower training; development and inculcate proper values for the survival of the individual and the society; understand and appreciate their local and external environment; acquire both physical and intellectual skills; promote national and international understanding which will enable individual to be self-reliant and useful members of the society. Universities are established to prepare lecturers for teaching, research and community service. Administrative functions that could arouse and stimulate lecturers towards effective utilization of digital facilities, as well as the process of determining the efficacy of digital facilities in relation to school objectives, seem to be unobtainable in most federal universities in Nigeria. These could affect lecturers' effectiveness in the federal universities. Lecturers' effectiveness can be described as the ability of the lecturers to perform tasks, responsibilities and duties at a particular period in the school system usually

focusing towards achieving both broad and specific objectives. The roles of the University lecturers are streamlined in the National Policy on Education to include teaching, research and community service. Lecturers' effectiveness in teaching involve adequate preparation for teaching, being regular in class, adequate use of digital facilities in teaching, proper classroom management during teaching and timely upload of results online. It also involves publications in reputable journals at local, national and international level, access to sponsorship for conferences and academic pursuit, participation in academic seminars at local and international level, attaining training courses to update knowledge and personal development through accessing research grants for collaborative research

Discussion

Teaching is the deliberate, interactive process through which a teacher (or educator) attends to learners' needs, experiences, existing knowledge and makes intervention such as explaining, questioning, demonstrating, guiding or facilitating with the intention that learners acquire particular knowledge, skills, attitudes or ways of thinking beyond what they already know (Agba & Ocheni, 2019). This knowledge guide the lecturer to perform his/her work adequately in terms of record/classroom management competence, classroom interpersonal relationship, classroom motivation, pedagogy, and lesson presentation competence (commitment, dedication, punctuality and regular attendance to school, prompt marking and recording, and uploading of examination records, making corrections, issuing an assignment on topic covered). Teaching is an enormous task that demands professionalism. Public universities seem to put more focus on improving student welfare—such as constructing learning facilities—while neglecting employee needs like remuneration increase, access to research grants, bonuses, and fair appointments. Proficient lecturer will be effective in research and community service.

Research is the systematic and scholarly investigation undertaken by a lecturer to generate, advance and disseminate knowledge within a particular discipline or across fields of study. It also refers to the work perform by lecturers in terms of research outcomes, publications and self-development for achievement of University's objectives. Researches in the university seem to be declining, primarily due to challenges in accessing research grants and lack of motivation. Often, completed research remains shelved without practical application (Akuegwu, 2020). Lecturers also seem to face administrative overload, such as handling student's registration and result compilation, without incentives like training sponsorship or annual leave. These conditions contribute to lower the number of local and international research publications.

The effect of constant research in a lecturer will result in positive impact to the university and the surrounding community through community service in terms of workshops, seminars, developmental projects among others. In the university, research effectiveness is strongly linked to access to reliable digital tools, platforms and data management systems. Effective management of digital facilities such as learning management systems (LMS), digital libraries, cloud storage, data analysis software and collaborative platforms enables lecturers to efficiently research, store and analyze information, thereby improving research productivity and quality (UNESCO, 2024). Ineffective management of digital facilities can affect lecturers' research quality which also affects community service. Community Service refers to the quality of work performed by a lecturer in community service which include the voluntary performance of any projects or services by a lecturer that will benefit his or her University community and other communities. It is a voluntary performance of projects or services by a lecturer that will benefit

his or her community. Universities are expected to identify and solve community problems, yet most of them seem to operate within elitist systems that disconnect from local realities. Community members are often unaware of lecturers' mandates to serve them. Lecturers seem reluctant to conduct workshops or seminars perhaps due to limited skills, overloaded schedules, or lack of mentorship. These issues reduce time for research and weaken staff commitment and productivity, ultimately affecting students' outcomes and university goals. The cumulative effect of these un-conducive work environments is that universities fail to meet national development expectations. These include training skilled manpower, instilling values, intellectual development, self-reliance, and promoting national and international understanding. The government appears to be more focused on establishing new universities than improving existing standards, leading to a brain drain of qualified lecturers. A growing body of empirical and reviewed literature shows that weak management of digital facilities (poor planning, scarce/obsolete hardware, unreliable networks, inefficient maintenance and little technical support) reduces lecturers' ability to plan, deliver and sustain high-impact community service activities. Community service by university lecturer increasingly depends on digital tools for needs assessment, training delivery, monitoring, knowledge transfer and scaling local interventions. Practically, poor digital facilities management erodes concrete dimensions of community service effectiveness. Limited internet bandwidth and few digital points restrict remote training, dissemination of guidelines and the use of a synchronous learning material, so fewer community members are reached and follow-up is weakened. Without up-to-date platforms and software, lecturers cannot deliver multimedia, interactive or localized content, reducing learning gains and community uptake of innovations. Frequent technical failures and inefficient digital training lower lecturers' self-efficacy and willingness to invest time to community projects that rely on technology. This could be as a result of inefficient professional training, the learning facilities exposed to, and the shortage of digital learning facilities, as well as the management strategies of the facilities. Availability of digital facilities refers to situation where facilities such as interactive whiteboards, learning management systems (LMS), e-books, online collaboration tools, virtual learning environments (VLES), simulations and virtual labs, educational apps, video lectures, computers, internet are made available for instructional delivery. In many Federal Universities, there is limited access to computers, internet services, digital libraries, projectors and other ICT facilities perhaps due to poor funding and weak infrastructural development. Availability of digital facilities enhances lecturers' effectiveness in instructional delivery, research productivity, communication and record-keeping. If these facilities are not provided in sufficient quality and quantities, many staff and students would find difficulty in accessing the ICT facilities for proper utilization in teaching, research and learning.

1.2 Statement of The Problem

Availability of digital facilities in Federal Universities in north-central geo-political zone Nigeria is faced with a number of challenges that hinders lecturers' effectiveness. For example, lecturers are mostly faced with the challenges of inadequate required facilities to work with, they seem to have heavy workload and most often teach overcrowded classrooms, they appear to have limited access to digital facilities. In the area of research, most often lecturers hardly get access to research funds and current Scopus journals through data base and there seems to be weak collaboration in research among lecturers. Lecturers seem to have low recognition of

community service which results to low participation in the community. However, available literature revealed that 35.4 percent of lecturers in public university are effective in the use of digital technology, 20 percent have been able to secure grant for their university and 29 percent are involved in community services, National Universities Commission (NUC, 2021-2024). These challenges might have been aggravated by poor digital facilities management in the universities. For example, low level of digital facilities in the university, poor internet connectivity, shortage of qualified personnel to operate digital facilities, epileptic power supply, poor maintenance of digital facilities, among others. These challenges can negatively affect lesson preparation, online teaching, research collaboration, academic publication, student engagement and overall institutional performance. If these challenges remain unresolved, Federal Universities may experience declining teaching quality, low research productivity, reduced global competitiveness, poor graduate employability, limited innovation and diminished capacity to achieve their core mandate of producing high-quality human capital for national development. Efforts have been put in place by the federal government aimed at improving teaching, research and community services in federal universities such as the introduction of Tertiary Education Trust Fund (TETFund), introduction of research grant such as National Research Fund (NRF), Institutional Research (IR), sponsorship of lecturers to attend conferences within and outside Nigeria among others. Despite these efforts, most of the researches conducted by lecturers end up in book shelves while some lecturers might not secure research grants in their university. This calls for the need for a study on digital facility management and lecturers' effectiveness in Federal Universities in North-Central Geo-Political Zone Nigeria. There is a need to solve these problems of lecturers' inefficiency in teaching, research and community service to enhance lecturers' effectiveness for high educational achievement. This study therefore sought to examine digital facilities management and lecturers' effectiveness in Federal Universities, North-Central Geo-Political Zone, Nigeria.

Aim and Objectives

The study aims to examine digital facilities availability and lecturers' effectiveness in federal universities North-Central Geo-Political Zone, Nigeria. This specifically has the following objectives to:

1. determine the level of availability of digital facilities in federal universities in North-Central Geo-Political Zone, Nigeria.
2. determine the level of lecturers' effectiveness in teaching in Federal Universities, North-Central Geo-Political Zone, Nigeria.
3. ascertain the level of lecturers' effectiveness in research in Federal Universities, North-Central Geo-Political Zone, Nigeria.
4. find out the level of lecturers' effectiveness in community service in Federal Universities, North-Central Geo-Political Zone, Nigeria.

Research Questions

The following research questions are raised for the study:

1. What is the level of availability of digital facilities in federal universities in North-Central Geo-Political Zone, Nigeria?
2. What is the level of lecturers' effectiveness in teaching in Federal Universities, North-Central Geo-Political Zone, Nigeria?

3. What is the level of lecturers' effectiveness in research in Federal Universities, North-Central Geo-Political Zone, Nigeria?
4. What is the level of lecturers' effectiveness in community service in Federal Universities, North-Central Geo-Political Zone, Nigeria?

Hypotheses

The following hypotheses are formulated to be tested at 0.05 level of significance:

1. There is no significant difference between lecturers' effectiveness mean scores of federal universities with high availability of digital facilities and those with low in federal universities north-central geo-political zone, Nigeria.
2. There is no significant relationship between availability of digital facilities and lecturers' effectiveness in federal universities north-central geo-political zone, Nigeria.

Methodology

Cross-sectional survey research design and correlational research design was adopted for the study. According to Saleh and Kowalczyk (2023), a cross-sectional survey research design focuses on gathering data from a population or a representative sample at a single point in time, often used to measure prevalence, understand determinants, or describe characteristic of a group. The rational for using cross-sectional survey research design is that it allows the researcher to collect data from a large population at a single point in time to describe lasting conditions, attitude, behaviour and relationship among variables. Correlation design is also applied in this study because it allows the researcher to observe and measure variables as they naturally occur and uses statistical methods to determine the strength of relationship between the variables. The population of the study consists of 6,696 respondents which include lecturers, Head of Departments and Deans of Faculties from the Federal universities across north-central geo-political zone, Nigeria. The sample for the study consists of four federal universities in north-central geo-political zone, Nigeria. The study adopted proportionate stratified and simple random sampling techniques. The justification for this is that, it is used when the population of the study is made up of different strata (Mishra, 2021). The instruments that were used for data collection are "Lecturers' Effectiveness Questionnaire (LEQ)", Digital Facilities Planning Questionnaire (DFPQ)" and Observation Rating Scale titled "Digital Facilities Availability Inventory Scale (DFAIS)". Content validity was used to ensure that items in the instrument fairly represent the contents of the study. Construct validity was used in the study to determine the validity of the instrument. Cronbach's alpha reliability method was used employed because the items of the instrument include scaled responses or items that can be grouped into subscales, as well scored polytomously in Likert format which Cronbach's alpha is suitable for (Cohen, Manion & Morrison 2018).

Results

Research Question One

What is the level of availability of digital facilities in federal universities North-Central Geo-Political Zone, Nigeria?

To answer this research question, frequency and percentage were used and the results are presented in Table 1.

Table 1
Level of Availability of Digital Facilities in Federal Universities, North-Central Geo-Political Zone, Nigeria

S/n	Facilities	Available F(%)	Not Available F(%)	Remark
1	Computers	49(100.0)	0(0.0)	Available
2	Internet	49(100.0)	0(0.0)	Available
3	PowerPoint	44(89.8)	5(10.2)	Available
4	Television	49(100.0)	0(0.0)	Available
5	Overhead Projectors	44(89.8)	5(10.2)	Available
6	Camera	34(69.4)	15(30.6)	Available
7	Radio Cassette	15(30.6)	34(69.4)	Not Available
8	Video tape	25(51.0)	24(49.0)	Available
9	Audio Cassette	10(20.4)	39(79.6)	Not Available
10	Audio CD	44(89.8)	5(10.2)	Available
11	World Wide Web (WWW)	49(100.0)	0(0.0)	Available
12	Telephone	49(100.0)	0(0.0)	Available
13	Educational apps	29(59.2)	20(40.8)	Available
14	Smart boards	10(20.4)	39(79.6)	Not Available
15	Learning Management Systems (LMS)	20(40.8)	29(59.2)	Not Available
16	E-books	44(89.8)	5(10.2)	Available
17	E-readers	5(10.2)	44(89.2)	Not Available
18	Online collaboration tools	20(40.8)	29(59.2)	Not Available
19	Virtual Learning Environments (VLEs)	5(10.2)	44(89.2)	Not Available
20	Simulations and virtual labs	0(0.0)	49(100.0)	Not Available
21	Video lectures	0(0.0)	49(100.0)	Not Available
22	Podcasts	0(0.0)	49(100.0)	Not Available

NB: Decision: <50.0% = Not Available, ≥50.0% = Available

Table 1 illustrates the availability of digital tools in federal universities across Nigeria's North-Central zone. High availability (over 50%) was reported for resources such as computers, internet access, PowerPoint, World Wide Web, e-books, educational apps, Overhead Projectors, telephone, camera, Audio CD, television, and virtual labs. Conversely, facilities like smart boards, Learning Management Systems (LMS), online collaboration tools, E-readers, VLEs, simulations and virtual labs, video lectures, and podcasts are less accessible, with response rates falling below 50%. This suggests that while basic digital hardware and media are common, advanced integrated platforms and specialized digital tools remain limited in most federal universities in North-Central zone, Nigeria.

Hypothesis Two

There is no significant relationship between the availability of digital facilities and lecturers' effectiveness in federal universities in north-central geo-political zone, Nigeria.

To test this hypothesis, Chi-square was used and the result is presented in Table 2.

Table 2

Chi Square (χ2) Test on the Relationship between Availability of Digital Facilities and Lecturers' Effectiveness in Federal Universities, North-Central Geo-Political Zone, Nigeria

		Lecturers Effectiveness							
Facilities		**Low**	**Moderate**	**High**	**Total**	**df**	**(χ2)**	**P**	**Decision**
Not Available	Fo	0	179	134	313	2	118.72	0.000	Rejected
	Fe	20.9	209.9	82.2	313.0				
Available	Fo	41	232	27	300				
	Fe	20.1	201.1	78.8	300.0				
Total	Fo	41	411	161	613				
	Fe	41.0	411.0	161.0	613.0				

NB: N = 613, $p < 0.05$. fo =observed frequency and fe = expected frequency

Table 2 displays result of relationship between the availability of digital facilities and lecturers' effectiveness. Since the p-value (0.000) is below the 0.05 significance level, the null hypothesis is rejected which demonstrates a significant correlation between the availability of digital facilities and lecturers' effectiveness. [^{2} (2) = 118.72, $p < 0.05$]. This indicates that increasing the availability of digital resources would substantially improve teaching effectiveness within federal universities in North-Central zone, Nigeria.

Research Question Three

What is the level of lecturers' effectiveness in teaching in federal universities North-Central Geo-Political Zone, Nigeria?

To answer this research question, frequency and percentage were used and the results are presented in Table 3.

Table 3

Level of Lecturers' Effectiveness in Teaching in Federal Universities, North-Central Geo-Political Zone, Nigeria

Level of Teaching Effectiveness	**Range of Scores**	**Frequency**	**%**
Low	5-11	69	11.3
Moderate	12-18	423	69.0
High	19-25	121	19.7
Total	**25**	613	100.0

N = 613. ***Source: Field Survey 2025***

Table 3 illustrates the teaching effectiveness of lecturers within federal universities in North-Central zone, Nigeria. The data indicates that a substantial majority (69.0%) of lecturers teach at a moderate level of effectiveness, while 19.7% showed high effectiveness and only 11.3% reported low levels. These findings suggest that, overall, instructional effectiveness within federal universities in North-Central zone, Nigeria is currently at a moderate level.

Research Question Four

What is the level of lecturers' effectiveness in research in federal universities North-Central Geo-Political Zone, Nigeria?

To answer this research question, frequency and percentage were used and the results are presented in Table 4.

Table 4

Level of Lecturers' Effectiveness in Research in Federal Universities, North-Central Geo-Political Zone, Nigeria

Level of Research Effectiveness	Range of Scores	Frequency	%
Low	5-11	14	2.3
Moderate	12-18	505	82.4
High	19-25	94	15.3
Total	**25**	613	100.0

N = 613. ***Source: Field Survey 2025***

Results in Table 4 revealed the extent to which lecturers in federal universities in North-Central Geo-Political Zone are effective in research. The data revealed that 2.3% indicates low level, 82.4% reported moderate level, while 15.4% indicated high level of effective research. This result signifies moderate level of effectiveness in research among lecturers in federal universities in North-Central Geo-Political Zone, Nigeria.

Research Question Five

What is the level of lecturers' effectiveness in community service in federal universities North-Central Geo-Political Zone, Nigeria?

To answer this research question, frequency count and percentage were used and the results are presented in Table 5.

Table 5

Level of Lecturers' Effectiveness in Community Service in Federal Universities, North-Central Geo-Political Zone, Nigeria

Level of Community Service Effectiveness	Range of Scores	Frequency	%
Low	5-11	69	11.3
Moderate	12-18	423	69.0
High	19-25	121	19.7
Total	**25**	613	100.0

N = 613. ***Source: Field Survey 2025***

Table 5 outlines the effectiveness of lecturers in community service across federal universities in North-Central zone, Nigeria. The data shows that 69.0% of lecturers perform at a moderate level, while 11.3% reported low level and another 19.0% reported high level. These results indicate that, overall, the contribution of these lecturers to community service is at a moderate level.

Discussion

The study investigated digital facilities management and lecturers' effectiveness in federal universities in North-Central Geo-Political Zone, Nigeria. The findings are discussed according to the objectives of the study as follows: On the level of Availability of Digital Facilities and Lecturers Effectiveness in Federal Universities in North-Central Geo-Political Zone, Nigeria, findings suggest that while basic digital hardware and media are common, advanced integrated platforms and specialized digital tools remain limited in most federal universities in North-Central zone, Nigeria. High availability (over 50%) was reported for resources such as computers, internet access, PowerPoint, World Wide Web, e-books, educational apps, overhead projectors, telephone, camara, Audio CD, television, and virtual labs. Corroborating this finding, Agoha (2025) explored the use of modern technology for teaching effectiveness. The findings revealed that while laptops and desktop computers are somewhat available, critical technological tools like digital projectors, media boards, and internet facilities remain largely absent. Conversely, facilities like smart boards, Learning Management Systems (LMS), online collaboration tools, E-readers, VLEs, simulations and virtual labs, video lectures, and podcasts are less accessible. Insufficient digital infrastructure, lack of technical support and inadequate training are some of the main hindrances to integration of digital facilities (Akinsola & Oyediran, 2020). Similarly, Amesi and Yellowe (2018) reported limited availability of digital facilities in teaching and learning such as the internet, laptops, e-library, projectors, smart boards, and mobile services. Provision and accessibility of digital facilities in the universities would facilitate teaching and learning and brings about good teaching and learning outcomes. A deficiency in terms of the digital facilities available in classrooms in the federal universities in North Central Zone in Nigeria would create digital divide. The finding demonstrated a significant correlation between the availability of digital facilities and lecturers' effectiveness. Thus, increasing the availability of digital resources would substantially improve teaching effectiveness within federal universities in North-Central zone, Nigeria. In harmony with this finding, Yahya, Rahman and Mulyadi (2023) showed that the existence of adequate digital facilities and infrastructure management fosters enthusiasm, motivation and innovation, teamwork and involvement in the classrooms. Alrubaidi (2024) discovered that management, particularly provision of CMMS, BIM, IoT, AI, smart applications, and interactive dashboards significantly enhanced classroom management and decision-making. Also, in tune, Karimu and Ishola (2024) examined the influence of digital transformation on effective teaching in public universities. The findings of the study revealed that improved accessibility of digital facilities, personalize learning approaches, visual reality, cloud-based learning opportunities, incorporating internet access into the school environment, security across digital devices and teaching digital citizenship enhanced effective teaching in public universities. On the level of Lecturers Effectiveness in Teaching across Federal Universities in NorthCentral Geo-Political Zone, NigeriaAnother finding indicated that a substantial majority (69.0%) of lecturers demonstrated teaching competence at a moderate level of effectiveness. It suggests that, instructional effectiveness within federal universities in North-Central zone, Nigeria is currently at a moderate level. Supporting this revelation, Bardach and Klassen (2020) viewed moderate effectiveness among academic staff as the types of action that produce or facilitate learning. In other words, teaching is effective when it enables student learning. Therefore, the authors submitted that lecturer effectiveness is the effects of high-quality teaching on student learning in terms of achievement gains. Slightly contrary to the current findings, Najar (2020), observed high effectiveness from the point of view

of satisfaction received by a recipient for whom a product is supplied or service rendered. Therefore, in an educational context, effectiveness of a lecturer is measured by the extent to which the employer or students is satisfied with the services of the lecturer. This is often reflected in students' academic performance. In the present study, at moderate level, lecturers attested that they do adequate preparation for teaching and ensured to be regular in class for teaching. Majumdar (2022), highlighted that effective pedagogy results in students developing new knowledge, skills, and attitudes, and applying them effectively. They moderately make adequate use of digital facilities such as laptop, projectors among others for teaching and learning, do proper classroom management during teaching, and ensure timely upload of results online. On the level of Lecturers Effectiveness in Research across Federal Universities in North Central Geo-Political Zone, Nigeria, another portion of findings signified moderate level of effectiveness in research among lecturers in federal universities in North-Central Geo-Political Zone, Nigeria. in tandem with current outcomes, Uzun (2022), observes a sharp decline in the research productivity of academics in terms of the number of articles published in Nigeria of recent. For instance, pedagogical knowledge, content knowledge and technological knowledge of the lecturer influences their ability to effectively perform their job which include lesson planning, content delivery and students' evaluation (Atunde, Aremu & Yusuf, 2023). Effective lecturers always supplement traditional teaching methodologies with strategies like group learning, cooperative learning, and peer learning. Ganai (2023), found that lecturers indicated that they make publications in reputable journals at local, national and international level, and have access to sponsorship for conferences and academic pursuit to a moderate level. They also moderately participate in academic seminars at local and international level, attain training courses to update knowledge and remain current, and moderately develop themselves through accessing research grants for collaborative research projects. On the level of Lecturers Effectiveness in Community Service across Federal Universities in North-Central Geo-Political Zone, Nigeria, findings indicated that the contribution of lecturers to community service was at a moderate level. Ganai (2023), also observed moderate level of effectiveness (including community services) among the academic staff, and attributed such outcomes to factors such as knowledge: Knowledge (familiarity, awareness, or understanding of someone or something) such as facts, information, descriptions, or skills which is acquired through experience or education by perceiving, discovering, or learning. In the present study, lecturers critically analyzed their instructional practices to identify strengths and areas for improvement, used feedback and data to inform future lessons by ensuring that student progress. High community services among the lecturers need to be documented, which is especially critical in service to community and for monitoring learner engagement (Danielson, 2023). To a moderate level, current findings revealed that lecturers as part of community services graduate students at undergraduate, masters and PhD level, participate in external examination of masters and PhD students, and present papers at conferences. Kandavel and Joseph (2024), states that high lecturers' effectiveness in community services has positive impact on students and it encompasses teaching competency, ethical behaviour, adaptability and personality. Effective lecturers need to demonstrate ethical behaviour and adapt to diverse learning needs, and positively impact student outcomes in the community. Corroborating current findings, Ifedili and Egenti (2022), observed moderate to high community services among lecturers. The authors went to state that the main reason for community service is to put forth better surroundings that may benefit the host community. The level to which they participate in

community projects, share knowledge through professional advice and consultancy service in the local community was also at the moderate level as indicated by the present findings.

Conclusion

Digital facilities management plays a crucial role in enhancing lecturers' effectiveness in federal universities North-Central Nigeria. The availability of digital infrastructure significantly influences teaching quality, research productivity and administrative efficiency. While challenges such as inadequate infrastructure, poor maintenance and limited training persist, strategic interventions can address these issues. Ultimately, the success of digital transformation in Nigerian universities depends on a holistic approach that combines investment, policy implementation, capacity building and effective management practices. By prioritizing digital facilities provision and management, federal universities in North-Central Nigeria can improve lecturers' effectiveness and contribute to national development.

Recommendations

The following recommendations are outlined as remedy to the challenges of digital facilities management in Nigerian federal universities: The government should allocate more funds for provision, development, utilization and maintenance of digital facilities in federal universities.
Universities should invest in reliable internet connectivity, modern equipment and stable power supply. A strong maintenance culture should be established to ensure the sustainability of digital facilities. For federal universities in North-Central Nigeria to achieve global relevance and improve educational quality, there must be a strong commitment to effective digital facilities provision. When properly implemented, digital technologies will significantly enhance lecturers' effectiveness and contribute to national development.

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