



LECTURERS' PERCEPTION OF DIGITAL TECHNOLOGY INTEGRATION AND FUNDING CHALLENGES FOR TECHNOLOGY-DRIVEN PRACTICES IN NASARAWA STATE UNIVERSITY KEFFI, NIGERIA

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Abstract.

This study investigated lecturers' perceptions of digital technology integration and funding challenges for technology-driven instruction in Nasarawa State University Keffi, Nigeria. The study aimed to ascertain lecturers' perceptions of digital technology integration and funding challenges for technology-driven instruction at Nasarawa State University Keffi, Nigeria. Five research questions guided the study. A descriptive survey research design was adopted to describe the responses from 32 lecturers randomly selected from the 60 departments of the 10 faculties in the university. A questionnaire titled 'Lecturers' Perception on Digital Technology Integration and Funding Challenges (LPDTIFC) was used for data collection. The findings revealed that most lecturers have yet to incorporate modern technology tools into instruction delivery. Although they recognize the potential of digital technology to enhance teaching and learning, they face significant challenges, including inadequate funding, poor infrastructure, and limited technical support. Other findings show that most lecturers decry the high level of negative impact the funding challenges have on integrating digital technologies in instruction. They maintained that some of the funding challenges include but are not limited to the high cost of digital tools, insufficient budgetary allocation and lack of access to funding opportunities. The study, therefore, highlighted the need for increased investment in digital technology, faculty training, and infrastructure development, as well as public-private partnership as a funding source to facilitate effective technology integration in Nigerian universities. The results have implications for policymakers, university administrators, and educators seeking to promote technology-driven instruction in higher institutions

Key words: Digital technology integration, funding challenges, technology-driven instruction, lecturers' perspective.

Introduction

Digital technology has revolutionised the education sector in the world, including Nigeria, by transforming how lecturers plan and deliver instruction, how students learn, and how institutions of learning operate. Integrating digital technologies in education has become essential for preparing students for success in the 21st-century world. Digital technology integration develops students' critical thinking, problem-solving, and collaboration skills. Technology-driven

instruction enhances students' digital literacy adaptability and employability as well as prepares students for the evolving workforce and global competitiveness (Ololube, 2018). The advent and spread of COVID-19 across the globe have changed not only the way people live but also the modes of work and education. Safety protocols and restrictions have forced most activities to move from offline to online.

Trends in distance learning and remote work have accelerated, encouraging a more digitally driven lifestyle toward more informal work (Olorundare, 2022). This view, therefore, brings us to the concept of digital technology. Digital technology uses digital tools, systems, and devices to process, store and communicate information (Belenger & Crossler, 2011). This encompasses various technologies, including computers, smartphones, software applications and digital networks (Kumar, Scheer & Steenkamp, 2017). The use of these digital tools has enhanced students engagement through the use of interactive digital tools that increases students' participation and motivation, tailors education to individual needs and abilities, improved accessibilities, helped in developing the digital skills that are essentials to modern workforce, increase efficiency by streamlining the administrative tasks and automated grading, enhances access to global resources like online courses and digital libraries, and as well reduced textbook cost and energy efficiency. Despite these digital technology tools' usefulness, Nigerian universities have a funding problem. The challenges of digital technology funding are the difficulties and obstacles that individuals, organisations, governments, and institutions face in securing financial resources to support developing, implementing, and maintaining digital technologies (OECD, 2019).

This challenge has become the clog in digital technology integration in Nigerian universities, especially in Nasarawa State University Keffi. Digital technology integration incorporates digital technologies into various aspects of life, including education, business and healthcare (Kerler & Mishra, 2009). It involves the effective use of digital tools to enhance productivity and learning outcomes, improve communication in instruction delivery and provide access to information (UNESCO, 2018).

The above highlighted the importance of digital technology integration and its different benefits to the students, teachers and institutions. For institutions, it can increase efficiency, save costs, improve students' learning outcomes, and enhance their reputation. For teachers, it has streamlined lesson planning, enhanced students' engagement, brought productive interactions within the classroom during instruction, and helped professional career opportunities. In contrast, it has made learning so flexible for the students, created real-time feedback and assessment, presented a virtual learning environment and developed students' critical thinking and problem-solving skills. One of the challenges of digital technology integration is the level of digital capacity of the user (lecturers) in higher institutions regarding the technical know-how of integrated technology, which can be improved through training and retraining programmes. This re-emphasizes that lecturers need training programmes that focus on developing their technical skills, pedagogical knowledge, and content knowledge to effectively integrate digital technologies into their instruction (Koehler, 2020). Koehler further maintained that the effective use of digital technologies in instruction requires lecturers to be adaptable, flexible and willing to learn new technologies and pedagogies and that lecturers' training programs should prioritise hands-on experiences, coaching and mentoring to support the development of their digital literacy. This conforms with Adeyinka T.'s (2020) study, which affirms that the integration of digital technologies in Nigerian Universities is crucial for enhancing teaching, learning and

research and that to bridge the digital divide gap, Nigerian universities must prioritise investment in digital technology and faculty training.

As beautiful as the benefits and importance of digital technology seems as presented above, the current state of penetration in Nigeria poses a sense of concern for instance, Nigeria Internet penetration stood at 63%, mobile broadband subscription is 87million people out of the almost 200 million population, i.e. 43.5% of the population (NCC,2022). On a similar account, Nigeria's Bureau of Statistics and E-Commerce Africa reported that the digital literacy level in Nigeria stood at 55%, while e-commerce growth remained at 20% annually between 2020 and 2022. (NBS, 2022; E-Commerce Africa, 2022). This statistic shows the extent of digital penetration and literacy level across Nigeria, where Nasarawa State University, Keffi, is not exempted.

Even though there are various initiatives by the government aimed at ameliorating these penetration challenges, Initiatives like the National Digital Economy Policy 2020, Nigeria Infrastructure sharing policy, Federal government digital literacy initiatives by the Nigeria Information and Technology Development agency (NITDA) Programmes, etc. Nevertheless, many Nigerians, especially Lecturers in Nigerian universities, are to be carried along with the digital technology revolution and penetration ideas for many reasons, including paucity of education financing and general poverty. These two challenges have contributed to clogging the technological shift wheel in Nigeria's education system. According to the National Digital Economy Policy and Strategy (NDEPS) 2020-2030, a comprehensive roadmap was developed by the Federal Ministry of Communications and the Digital Economy of Nigeria. The policy aims to harness the power of digital technologies to drive economic growth and education, create jobs, enhance government services, and improve the overall well-being of Nigerians. One of its main targets was to achieve 70% broadband penetration within four years to expand access to digital services across the country and provide various technological infrastructures to aid economic growth. It proposed five key implementation strategies: Digital Skills Training, Infrastructure Investment, Regulatory Reforms, Cybersecurity Measures and Public-Private Partnerships.

While the NDEPS presents a comprehensive framework and implementation plans, the review of the document shows the major constraint is funding. These funding issues also apply to the education sector, especially the university sector, which is one of the beneficiaries of this policy. It is worth noting that government budgetary allocation to education has been dwindling over the years. This has generated concerns among stakeholders and the public, especially regarding funding university education in Nigeria.

This reoccurring debate has also led to lots of research work in which recommendations were made specifically on the need for the government to meet up with the recommendation of between 15-20% allocations from the national budget to fund the education system by UNESCO Education For all EFA 2015-2020 under the achievement and challenges report. This is because from 2013 to 2023, allocation to education has been 7.1% on average. This is because the education budget rose from 8.7% in 2013 to 10.7% in 2014 and slightly upward to 11% in 2015 went as low as 7.9 in 2016 and a disturbing 6% in 2017 slight increase to 7.04% in 2018 and marginal increase to 7.05% in 2019 (Famade, 2015 and 2022). The percentages went down to 6.5% in 2020, 5.6% in 2021, 5.4% in 2022 and slightly up in 2023 to 10%. However, these fall below the UNESCO recommendation, as aforementioned. This corroborates Ogunyemi's (2020) study, which emphasised that Insufficient funding is a significant barrier to digital technology integration in Nigerian universities. Ogunyemi further maintained that the lack of sustainable funding models hinders the effective implementation of digital technology integration in

Nigerian universities. He then suggested that public-private partnerships can bridge the funding gap for digital technology integration in Nigerian universities.

Following these dwindling funding challenges, the researcher intended to obtain the lecturers' perspective on key elements of digital technology integration in Nigerian universities. These elements are: Digital technology availability, specific digital tools used, digital infrastructures and support, classroom integration into digital technologies, challenges and limitations to digital technologies, availability of professional development on the use of digital tools and Students access and equity to digital technology in the university, as well as the area of funding challenges to digital technology integration. Therefore, this researcher intends to review the perspective of lecturers on integrating digital technologies in Nigeria's university system in the face of dwindling funding for the education sector.

Research Questions

The study seeks to answer the following research questions:

1. What is the lecturers' perception on digital technology integration in Nasarawa State University, Keffi, Nigeria?
2. What is the lecturers' perception of the funding challenges of digital technology integration at Nasarawa State University, Keffi, Nigeria?
3. What is the lecturers' perception of the impact of digital technology integration on technology-driven instruction in Nasarawa State University, Keffi, Nigeria?
4. What is the lecturers' perception of the training required for digital technology integration at Nasarawa State University, Keffi, Nigeria?
5. What is the lecturers' perception of the future direction required for digital technology integration at Nasarawa State University, Keffi, Nigeria?

Methodology

The study adopted a descriptive research design to describe the responses from 32 lecturers randomly selected from the 60 departments of the 10 faculties in the university. This means, on average, 3 lecturers from each faculty were randomly selected to respond to the questionnaire. A questionnaire titled 'Lecturers' Perception on Digital Technology Integration and Funding Challenges (LPDTIFC) was used for data collection.. The instrument for the study was a questionnaire named "Lecturers' view on digital technology integration and funding challenges in Nigeria" (LVDTIFCN). The questionnaire was divided into six sections (A, B, C, D, E and F). Section A, was on Demographic information of the respondents, Section B, contained three questions about lecturers' perception on digital technology integration in Nasarawa State University, Keffi, Section C contained three questions about lecturers' perception on funding challenges of digital technology integration in Nasarawa State University, Keffi,, section D, contained three questions about lecturers' perception on the impact of digital technology integration on technology driven instruction in Nasarawa State University, Keffi, section E contained three questions about Lecturers' perception on training required for digital technology integration in Nasarawa State University, Keffi. In contrast, section F contained 1 question about lecturers' perceptions of the future direction required for digital technology integration at Nasarawa State University, Keffi. Frequencies, percentages, bar, and pie charts were used to answer the study's research questions.

Method of data collection and analysis

The researchers digitally administered and retrieved the instruments for data collection. Out of the 40 questionnaires that were sent out for the study, only 32 were retrieved and dully completed by the respondents, and these retrieved numbers (32) were used for data analysis. Simple percentages were used to analyse the data collected.

Results

Fig A (1,2&3): What is lecturers' perceptions on Digital Technology Integration in Nasarawa State University, Keffi, Nigeria

Fig 1. What digital technology tools do you use for instruction? (Check all that apply)
32 responses

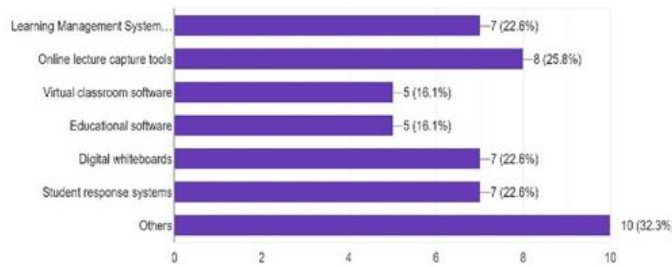


Fig 2. How often do you use digital technology tools for instruction?
32 responses

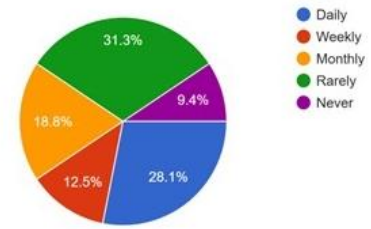


Fig 3. What percentage of your courses incorporates digital technology?
32 responses

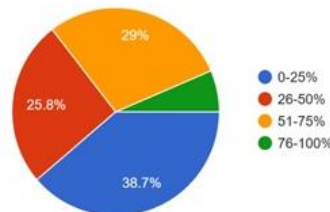


Fig A shows in fig.1. lecturers' responses to 'what digital technology tools do they use for instruction': cumulatively, 22% of lecturers attested to have used the learning management system, 28% used online lecture capture tools, 22% used digital whiteboard and students' response system respectively, 16.1% used visual classroom and education software respectively, while 22.3% attested to have used other sources of digital technology integration in their respective instruction. Fig.2. shows lectures responses to 'how often they used digital technology tools in their instruction': 31.3% of the lecturers attested that they rarely use digital technology tool in their instruction, 28.1% attested they use digital technology tool daily in their instruction, 18.8% use digital technology tool monthly in their instruction, 12.5% attested that they use digital technology tool weekly while 9.4% maintained that they never used digital technology tools in their instruction. Fig.3. shows lectures responses 'what percentage of their courses incorporates digital technology': 38.7% attested that only 0-25% of their courses incorporate digital technology, 29% attested that 51-75% of their courses incorporate digital technology, 25.8% attested that only 26-50 % of their courses incorporate digital technology, while 6.5% maintained that 76-100% of their courses incorporate digital technology.

Fig B (1,2 &3): What is lecturers' perceptions on Funding Challenges of Digital Technology Integration in Nasarawa State University, Keffi, Nigeria

Fig 1. What funding challenges do you face in integrating digital technology? (Check all that apply) 32 responses

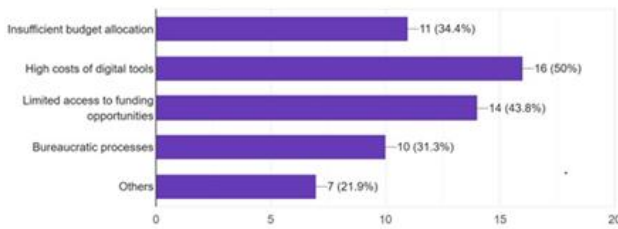


Fig 2. How do funding challenges impact digital technology integration? (Scale: 1-5, where 1 = minimal impact and 5 = significant impact) 32 responses

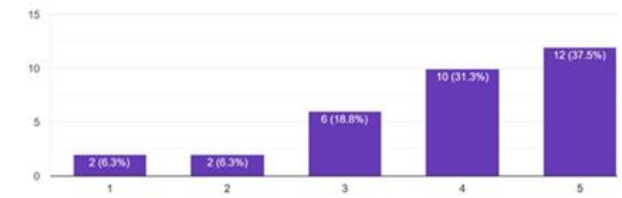


Fig 3. What potential funding sources would you explore? (Check all that apply) 32 responses

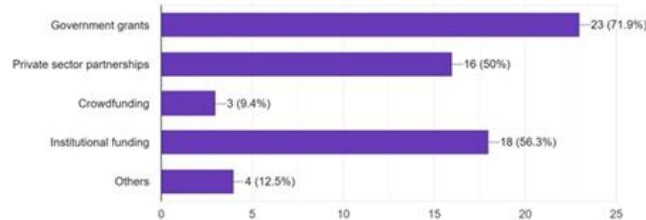


Fig B shows in fig.1. lecturers’ responses to ‘funding challenges they face in integrating digital technology’: cumulatively, 50% attested to the challenges of high cost of digital tools, 43.8% complained of limited access to funding opportunities, 34.4% lamented on insufficient budgetary allocation, 31.3% complained of bureaucratic process to access funding for digital technology integration in instruction, while 21.9 % of the lectures complained of other funding challenges. Fig.2. shows lecturers’ responses to ‘how funding challenges impact digital technology integration in instruction’: 37.5% maintained funding challenges have a significant impact, 31.3% maintained it has maximum impact, 18.8 % asserts that it has a moderate impact, and 6.3% maintained that they have both minimal and mild impact, respectively. Fig.3 shows lectures responses to ‘potential funding sources they could explore’: cumulatively, 71. % suggested government grants, 56.3% suggested institutional funding, 50% pointed towards private sector partnership, 9.4% suggested crowd funding, while 12.5% suggested other sources of funding potential.

Fig C (1,2 &3): What is lecturers’ perceptions on the Impact of Digital Technology Integration on Instruction in Nasarawa State University, Keffi, Nigeria

Fig 1. Have digital technology tools improved instructional efficiency?
32 responses

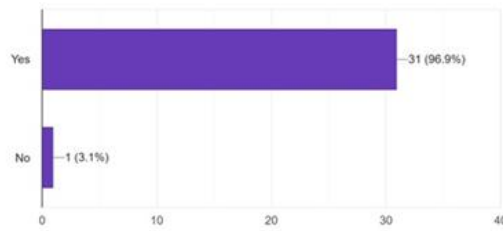


Fig 2. How has digital technology integration impacted student engagement?
32 responses

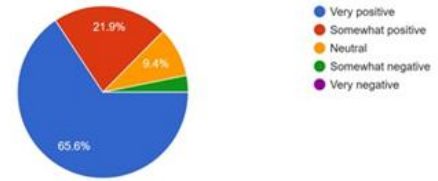


Fig 3. What challenges do you face in assessing student learning outcomes with digital technology?
32 responses

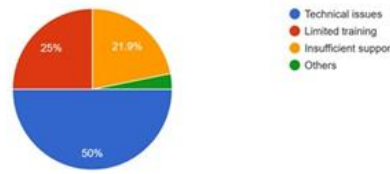
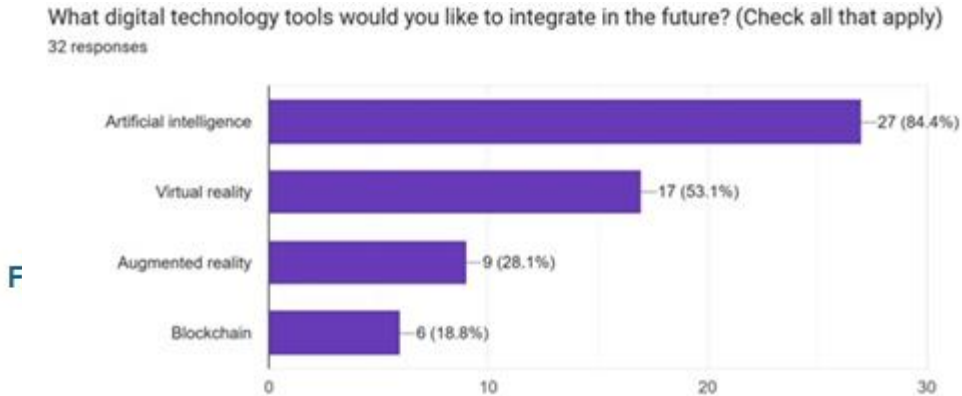


Fig C shows in fig.1. Responses of lecturers to ‘if digital technology tools have improved instructional efficiency’: 96.9% of the lecturers reiterated that digital technology tools have indeed improved instructional efficiency, while only 3.1% feel otherwise. Fig.2. shows lectures responses to ‘how digital technology integration has impacted students’ engagement’: 65.6% maintained that digital technology integration on instruction has positively impacted on students’ engagement, 25.9% attested that it has somewhat impacted on students’ engagement, 9.4% remained neutral, while the remaining 3.1% maintained it has negatively impacted students’ engagement. Fig.3. shows lectures' responses to ‘the challenges they faced in assessing students learning outcome while using digital technology tools’: 50% attested to having technical challenges, 25% complained of limited training, 21.9% lamented insufficient support, and the remaining 3.1% complained of other challenges.

Fig D (1,2 &3): What is lecturers’ perceptions on the support and training required for Digital Technology Integration Nasarawa State University, Keffi, Nigeria

Fig 1. Ha
32



F

Fig E.

Fig D. shows in fig.1. lectures' responses on 'if they have received digital technology training': 56.3% maintained they have received some training on digital technology integration on instruction. In comparison, 43.6% assert they have not received any training on digital technology integration on instruction. Fig.2. shows that lecturers' responses to 'if they like more training on digital technology integration on instruction': 100% of the lecturers assert that they like to have more training. Fig.3. shows lectures responses to 'what supports system could enhance digital technology integration on instruction': cumulatively, 65.6% maintained they require technical support, 62.5% asserts they require institutional support, 46.9% suggested they require pedagogical support, 28.1 maintained that peer support is required while 3.1% considered other sources of support.

Fig E: What is the lecturers' perception on the Future Direction required for Digital Technology Integration in Nasarawa State University, Keffi, Nigeria

Fig E. shows lecture responses on “future digital technology tools they like to integrate’: cumulatively, 84.4% maintained they like to integrate artificial intelligence, 53.1% asserted that they like to integrate virtual realities, 28.1% maintained they would like to integrate augmented realities, and 18.8% asserted they will like to integrate blockchains.

Summary of the Findings

The data analysis of the study showed various far-reaching discoveries, data gathered on lecturers perception on Digital Technology Integration in Nasarawa State University, Keffi, Nigeria, especially on digital technology tools they used for instruction shows that a versed majority of lectures are yet to incorporate modern technology tools to instruction delivery, on how often they use digital technology and what percentage of their courses incorporate digital technology, despite the importance of how digital technology is capable of improving learning outcome and instruction delivery, majority maintained only 0-25%. This further re-emphasises the worry of Adeyinka T (2020), whose study affirms that the integration of digital technologies in Nigerian Universities is crucial for enhancing teaching, learning and research and that to bridge the gap of the digital divide, Nigerian universities must prioritise investment in digital technology and faculty training.

Further findings on lecturers’ perceptions regarding the funding challenges of digital technology Integration in Nasarawa State University, Keffi, Nigeria, show that most lecturers decry the high level of negative impact the funding challenges have on integrating digital technologies on instruction. They listed their major funding challenges as high cost of digital tools, insufficient budgetary allocation and lack of access to funding opportunities. Insufficient funding is a significant barrier to digital technology integration in Nigerian universities (Ogunyemi, 2020). Ogunyemi further maintained that the lack of sustainable funding models hinders the effective implementation of digital technology integration in Nigerian universities. He suggested that public-private partnerships can bridge the funding gap for digital technology integration in Nigerian universities.

Findings on data gathered on how digital technology integration has impacted instruction, 96.9% of the lecturers agreed that integrating digital technology has simplified instruction, helped in students’ seamless assessment and improved students’ engagement in learning. Digital technology integration enhances students’ engagement, motivation and learning; it facilitates personalised and collaborative learning and accessibility (Yusuf, 2020). The study, therefore, generally reveals that while lecturers recognise the potential of digital technology to enhance teaching and learning, they face significant challenges, including inadequate funding, poor infrastructure, and limited technical support

Conclusion and Recommendations

The study generally highlights the need for increased investment in digital infrastructure, facilities, training and the creation of sustainable funding models for university education to fund the complete integration of digital technologies in Nigerian universities, especially Nasarawa State University and Keffi. It is, therefore, important for policymakers, administrators, and educators to address these challenges to harness technology integration for improved educational

outcomes. Based on these findings and the conclusion of this study, the following recommendations are made to Nigerian universities, especially Nasarawa State University Keffi, Nigeria.

1. Nasarawa State University Keffi, Nigeria to develop a robust strategic plan for digital technology integration
2. Nasarawa State University Keffi, Nigeria, **will provide lecturers with training and need-driven technical support for better technology-driven instruction.**
3. Nasarawa State University Keffi, Nigeria to explore public and private partnership for maximum funding.
4. Nasarawa State University Keffi, Nigeria, to establish a sustainable funding model for digital technology integration.
5. Nasarawa State University Keffi, Nigeria, **will harness opportunities from philanthropic organisations and** university alumni for digital integration funding.

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