DIGITALIZATION OF HIGHER EDUCATION IN NIGERIA: BENEFITS AND CHALLENGES

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Abstract

This study investigated digitization of higher education in Nigeria: Benefits and Challenges. Digitization as the process of converting educational resources from material forms to electronic forms where they can be stored and manipulated by a computer. It has the potential to transform the entire higher education system by making teaching, research and the provision of community service more efficient and fast. It is an education that is anchored on teaching, researching and community services. The primary goals of higher education in Nigeria are to foster the acquisition, development, and internalization of proper value systems necessary for the well-being of individuals and societies. The digitization initiative in Nigerian higher education is now facing challenges, despite the implementation of laws and programmes aimed at integrating digital education into the system. This study therefore, examined the concepts of digitalization, higher education, digitalization of higher education, and benefits of digitization and challenges. It concluded by identifying insufficient funding for digital education, inadequate digital facilities, unstable power supply, limited internet coverage, expensive digital equipment and maintenance, shortage of digital personnel, lack of digital skills and knowledge among lecturers and students, resistance to change, high cost of internet services, and ineffective implementation of digital policies as factors that hinder digitization of education in Nigeria. The study suggested that adequate funding should be provided for higher education with specific allocation to digital education development in all the higher institutions in the country.

Keywords: *Education, Digitization, Higher Education*

Introduction

Contemporary educational resources are highly important and widely favoured in the digital era. A contemporary educational system utilises technology to disseminate knowledge. The digitization of the education system presents an opportunity to enhance learners' cognitive resources and improve their skills, as well as promote lifetime learning and ongoing education. Digitization generates data that can be communicated through many means. It fosters a democratic distribution of knowledge, transforming education into a cooperative and self-directed endeavour. Currently, there are tools accessible that can convert the process of learning from a purely academic activity into an interactive experience through the use of gamification and collaborative learning.

Higher education refers to the educational level that follows post-secondary education. Higher education is an educational system that focuses on the instruction, investigation, and engagement with the community. As per the National Policy on Education (FRN, 2014), Higher Education refers to the section of the National education system that comes after secondary education. It is provided by universities, polytechnics, and colleges of technology, as well as institutions such as colleges of education, advanced teachers training colleges, correspondence colleges, and related institutions.

The higher education sector has consistently served as the foundation for the entire advancement of society. While it facilitates the transformation of young individuals into fully integrated members of society, it also serves as a fertile environment for fostering creativity, innovation, and scientific inquiry. To improve an educational system, it is important to thoroughly evaluate its functioning, including its organizational structure, processes, teaching methods, and curriculum. This evaluation should also consider the incorporation of advanced technological tools that are aligned with current and high-quality content, in order to establish a clear standard of educational excellence. Many advanced and developing countries are working together to incorporate advanced technology and digital teaching methods into their education systems.

This strategic objective seeks to enhance the effectiveness and efficiency of educational processes, while also promoting students' proficiency in using modern information and communication technology. This strategic measure is implemented with the aim of increasing production and providing students with the necessary skills for their future careers.

The primary goals of higher education in Nigeria are to foster the acquisition, development, and internalization of proper value systems necessary for the well-being of individuals and societies. Additionally, higher education aims to enhance individuals' intellectual capacities to comprehend and value their surroundings, as well as to equip them with both physical and intellectual skills that will enable them to contribute effectively to their communities. Lastly, higher education seeks to provide students with a comprehensive understanding of both local and global contexts. The National Policy on Education reiterates that higher educational institutions should strive to achieve these objectives through Teaching, Research, the transmission of both existing and new information, the provision of community service, and serving as a repository of knowledge (FRN, 2014).

The process of digitization has the capacity to revolutionize the entire higher education system by enhancing the efficiency and speed of teaching, research, and community service. The process of digitizing higher education in Nigeria has the potential to expand opportunities for teaching and learning, provide greater flexibility, and enhance the overall quality of higher education. The digitization initiative in Nigerian higher education is now facing challenges, despite the implementation of laws and programmes aimed at integrating digital education into the system. This research aims to examine the obstacles that are impeding the process of digitizing higher education in Nigeria.

Internationally, the curriculum and initiatives of higher education revolve around the use of information and communication technology and the process of digitalization. The higher education sector has been significantly influenced by the process of digital transformation. The advent of digital transformation has had a profound impact on classrooms and the methods by which lecturers engage with their pupils. The COVID-19 pandemic expedited these developments, resulting in the closure of schools nationwide in 2020. In order to facilitate ongoing learning for students, numerous higher education institutions worldwide have used technology-based and digital education methods to address the learning deficit.

Conceptualization

Concept of digitalization

The notion of digitalization of education, as described by Akinyemi et al. (2022), involves the integration of current technology and digital tools to enhance the process of teaching and learning, as well as to facilitate remote learning. Digitization, as described by Micheal and Jacob (2017), is the conversion of educational resources from physical formats to electronic formats, enabling their storage and manipulation by a computer. The conversion of information from analogue to digital format is considered a vital catalyst for advancement in the field of education, as stated by Gillpatrick (2020). Jagboro et al. (2012) defined digitization as the complete set of actions required to make historical and

other collections accessible on the internet. Digitization refers to the conversion of manual information or data into a digital format, enabling a more significant and insightful interpretation.

Digitalization in education refers to the conversion of traditional teaching and learning materials, such as online learning platforms, educational apps, and multimedia resources, into electronic formats for use in schools. This process involves the transfer of online courses, online assessments, and web seminars/conferences or workshops to an electronic model. According to Bejinaru (2019), digitalization refers to the process of converting text, photographs, video, and music into a digital format using various technologies such as laptops, the internet, mobile devices, scanners, digital cameras, projectors, and printers. These digital files can be accessed and played on a computer.

Machekhina (2017) defined digitalization as the process of converting various forms of information, including text, audio, images, video, and other data, into a digital format. Digitization refers to the use of electronic platforms to convert teaching and learning activities into online courses, online evaluations, and web seminars/conferences or workshops.

Digitalization refers to the conversion of physical teaching and learning resources into electronic formats, such as packages or platforms' that can be stored and manipulated by a computer. This allows for the deployment of teaching and learning programmes in schools.

Digitization in higher education will consist of support according to Panji o'g'li (2023);

1. A comprehensive manual covering numbers, mathematics, and statistics courses
2. Enabling research and data analysis for teachers and students involved in digitization. Numbers stimulate the imagination.
3. One can acquire the skills to recognize and categorize information through the process of transformation, as well as numerical data.
4. Digitization facilitates the acquisition of skills in handling qualitative data for pupils. In this educational style, students will have access to high-quality knowledge that is directly applicable to their job.

Higher Education

Refer to postgraduate education, which follows college education and is based on the Western model. The Ministries of Education establish and execute rules and regulations. Government formulates policies to provide guidance and direction to institutions. The Higher Education laws contain regulations pertaining to various aspects of educational institutions, such as the specifications for buildings, facilities, and equipment required, the entry qualifications and age requirements for students, the curriculum, rules governing student movement, the qualifications and workload of teachers, their terms of employment, and the certification and graduation of students. In Nigeria, the task of ensuring quality control lies with the universities and the National Universities Commission (NUC).

Tertiary education Refer to all formal educational activities conducted at the post-secondary level. The National Policy on Education (2014) provides a comprehensive definition of postsecondary education, encompassing universities, colleges of education, polytechnics, and monotechnics. Tertiary education has two main objectives:

a) To provide advanced and specialized training to generate highly skilled professionals who can contribute to the overall progress of the nation.
b) To foster the cultivation of ethical values and principles that are essential for the well-being and sustainability of both individuals and society as a whole.
c) To enhance the cognitive capacity of individuals to comprehend and value their immediate and global surroundings. d) To develop a comprehensive set of physical and intellectual abilities that empower individuals to be self-sufficient and valuable contributors to society.
e) To foster and incentivize academic excellence and civic engagement.
f) To establish and strengthen national cohesion.

g) To foster national and international comprehension and engagement.

The purpose of establishing Higher Institutions was to educate and prepare individuals from diverse backgrounds. Nigeria currently possesses a group of highly educated graduates, notwithstanding the much criticized decline in educational standards. And they are actively and significantly contributing to all areas of the country's development.

Digitalization of Higher Education

Digital technology for education refers to the utilization of digital equipment, such as personal computers, laptops, tablets, MP3 players, or consoles, by teachers or learners to access digital tools, such as learning platforms and virtual learning environments (VLEs), with the aim of enhancing their knowledge and skills. The Learning with Digital Technology encompasses several ICT products, including teleconferencing, email, audio, television classes, radio broadcasts, and interactive voice response systems (Bikas & Sanyal, 2001). Every day, digitalization is progressing worldwide and having a good impact on economies. One area with great potential for increased digitization is our education system. Currently, the process of digitization is causing significant changes in society. It is leading to the emergence of new skills required for employment, generating modern cultural conditions, and introducing creative tools for communication and entrepreneurship (Newell & Marabelli, 2015).

In a knowledge-based economy, where knowledge is a valuable resource, digitalization plays a role in enhancing intellectual capital (Bejinaru, 2017b), services, and states. It facilitates business processes, partnerships, and interaction, ultimately leading to the formation of intricate networks through the utilization of digital tools (Pînzaru, 2015). The digitization of education is a prominent trend in the transformation and modernization of the worldwide educational landscape. Digitalization tools in education encompass many technological devices such as computers, the internet, smartphones, scanners, digital cameras, projectors, printers, and more. The methods of digitalization encompass various aspects such as online admission procedures, online examinations, the dissemination of web-based knowledge, digital learning resources, online communities, and digital publications. When examining the phenomenon of digitalization, it is important to acknowledge that various analysts and forecasters, particularly those from Britain, such as Tim Berners-Lee, one of the creators of the World Wide Web, view the shift of education into the digital realm as a pivotal moment in the history of education (Stuart, 2014).

Researchers and politicians have shown great interest in the digital divide phenomena due to the significant impact of information and communication technology (ICT) on economic development and education (Billon et al., 2010). The purpose of digitalizing the management processes in higher education is to enhance the efficiency and effectiveness of the delivery system. Viljoen (1994) distinguishes between efficiency and effectiveness. Efficiency refers to the level of performance in carrying out an activity or operation, while effectiveness refers to the ability to do the correct activity or operation. Efficiency refers to the extent to which an organization performs its tasks effectively, whereas effectiveness pertains to the evaluation of the worth and appropriateness of the organization's activities. Hence, effectiveness is focused on achieving the aims and objectives of any organization.

Benefits of Digitalization in Higher Education

Integrating digital technologies into higher institutions offers numerous advantages. Ding (2000) observed that digitization has several benefits, such as eliminating the need for new infrastructure, enhancing information sharing, and reducing the duplication of collections. Digitization fosters the growth of the Internet in institutions that have adopted digital technologies. Digital materials can be efficiently transmitted, organized, and retrieved with ease and speed. Accessing electronic information is more cost-effective than accessing print information when using an electronic device with relevant facilities and equipment for file storage. Digital texts can be hyperlinked and enhanced with interactive elements, which enhances the process of retrieving additional information.

Also, Panji o'g'li (2023) outlined the benefits of digitization in Higher Education including;

1. **Teaching Transformation:** The use of digital technologies in higher education has the capacity to revolutionize the methods and processes of teaching and learning. Digitization offers a significant advantage by expanding the availability of education. Online learning systems offer students the opportunity to access educational resources from any location worldwide.

2. **Personalise Learning Experiences:** Another advantage of digitalization is the capacity to tailor learning experiences to meet individual requirements. Digital technologies enable students to receive customized learning experiences, enabling them to concentrate on areas where they require the most assistance and push themselves in areas where they shine. For instance, educational applications can offer students interactive and captivating learning encounters that are customized to their specific requirements and interests. Furthermore, digitization has the potential to improve the caliber of education.

3. **The emergence of online testing:** With the rise of online education, online testing has become highly advantageous for a variety of reasons. One of the primary reasons is that online testing is unbiased and completely equitable. If a machine is grading the test and automatically rectifying incorrect answers, it is inherently incapable of exhibiting any indications of bias. Moreover, online testing can serve as a superb remedy for individuals who have test anxiety and are agitated by the act of taking examinations in a communal setting.

4. **Enhanced Capacity to Address Unique Requirements:** Previously, the realm of education was characterized by a strict classroom framework. Every learner received a same experience, regardless of their varying requirements or talents. While several pupils were able to thrive in this setting, others had unresolved needs. Technology enhances a school's capacity to cater to the diverse demands of students. Now, students who have hearing, speaking, or visual impairments, or those who are mostly confined to their homes, can nevertheless obtain a high-quality education.

Problems of Higher Education Digitalization in Nigeria

There are many problems militating against the digitalization of higher education in Nigeria. Some of these problems include;

1. **Inadequate Funding of Digital Education:** The insufficient allocation of funds towards digital education in Nigerian higher education has impeded the progress of this sector. The funding for higher education in Nigeria is insufficient, which has a negative impact on all activities, including the digitalization project within the sector. Dada et al. (2022) observed that poor funding and allocation for digital technology in university education have led to a shortage of digital facilities, equipment, and materials. According to Orunaboka and Nwachukwu (2012), Abdullah et al. (2017), and Akinyemi et al. (2022), funding is crucial in education to reduce the expenses of running educational institutions, compensating teachers with salaries, allowances, and pensions, and acquiring teaching and learning resources like textbooks, laboratories, multimedia, and computer equipment, among other necessities.

2. **Insufficient Digital Infrastructure:** The progress of digital education in higher institutions relies on the presence of ample digital facilities and adequate financial resources. The presence of digital infrastructure facilitates the process of digitization, making it efficient and rapid. A survey conducted by A4AI and reported by The Guardian in 2022 found that PC ownership rates in Nigeria are at 68.7%, in Ghana at 58.6%, in Kenya at 50.4%, in Mozambique at 46.3%, in Rwanda at 31.5%, and in South Africa at 64.8%. According to the Guardian (2022), the percentage of people living in poverty in

Colombia is 60.4%, in India it is 21.8%, and in Indonesia it is 51.6%. In addition, Ogunode et al. (2021b) have noted that numerous higher education institutions are experiencing a deficiency of digital resources, hindering their complete integration into digitalization initiatives within the country.

3. Inadequate Power Supply: Insufficient and inconsistent distribution of power around the country has hindered the implementation of the digitization initiative in numerous higher education institutions. The current state of power generation and distribution in Nigeria is inadequate. Ogunode et al. (2021) have noted that numerous higher education institutions are situated in communities with inadequate electricity generation and distribution. The energy issue is a significant obstacle in Africa, particularly in Nigeria. According to a report by Thisday in 2022, West Africa has a very low rate of electricity access compared to other regions in the world. Only approximately 42% of the entire population and 8% of rural dwellers have access to electricity. Surprisingly, only three nations in the region are projected to achieve universal energy access by 2030. "At this sluggish rate, a total of 263 million individuals in the region will be devoid of access to electricity within a decade."

4. Insufficient Internet Coverage: The availability of reliable internet connection is crucial for achieving digitalization objectives in Nigeria. The provision of internet service is essential for the functioning of digital education. The provision of internet service is crucial for the process of digitization. The presence of reliable and consistent internet services enhances the efficiency and effectiveness of digital instruction in educational institutions. Regrettably, internet coverage and accessibility remain problematic in Nigeria. Africa, particularly Nigeria, frequently has the issue of inadequate internet connectivity.

The government's failure to secure a reliable internet connection throughout Nigeria has hindered the process of digitizing educational institutions. According to a report by Guardian (2022), just 12.1 percent of the Nigerian population now has access to high-quality internet services, which is referred to as "Meaningful Connectivity" in the country. This information is based on extensive study conducted by the Alliance for Affordable Internet (A4AI). A4AI reported that Nigeria has an 81% meaningful connection gap, with only 6.6% of the rural population and 16.4% of the urban population having access to reliable internet service.

5. Exorbitant cost of internet data and electronic services: One obstacle to implementing digital facilities in Nigerian higher institutions is the exorbitant cost of internet data and electronic services. This cost directly affects the adoption and effectiveness of digital technology (Tongia, 2004). The current iteration of the internet originated in the United States of America and was then presented to the global population. The United States maintains a dominant position of control, as many developing nations pay substantial sums of money to the US Government for the provision of a few megabits per year (ibid.). This hinders the implementation and complete utilization of information and communication technology in these developing nations, including Nigeria.

6. Expensive upkeep: Advanced digital facilities require ongoing upkeep. The long-term viability and continued existence of digital infrastructures rely on a strong culture of diligent upkeep by users. The upkeep of these sophisticated infrastructure incurs significant costs. Ogunode (2020) argued that the financial burden associated with maintaining ICT facilities is substantial, leading many administrators to restrict the amount of time allocated for internet services in university settings. This measure restricts the ability of students and academics to utilize computers for school-related tasks.

7. Insufficiency of Digital Personnel: A significant obstacle to the progress of digital development in higher institutions in Nigeria is the scarcity of experts in digital technologies. Nigeria is facing a scarcity of digital experts due to inadequate manpower planning and a limited number of

higher education institutions offering technology courses. The country has a small number of digital personnel, primarily concentrated in the financial sector and oil and gas industry. A small number of persons at different higher institutions are emigrating to industrialized countries as a result of inadequate motivation and the numerous issues that have afflicted these institutions. The scarcity of digital professionals in higher institutions has impeded the progress of digital education in these institutions.

8. **Lack of digital skills among lecturers:** One of the challenges of digital education in higher institutions in Nigeria is the lack of digital skills among lecturers. Proficiency in digital skills is essential for implementing digital resources in educational institutions. When professors lack proficiency in using these facilities, it poses an issue and can impede their utilization. Titus (2018) said that digital education has become an integral component of higher education institutions. At a typical university, digital technologies are essential for various tasks such as: students' university applications; processing and registering a large number of student applications; creating a database to store students' records for both students and university staff; designing and developing the university website; conducting research by faculty and students; managing university administration; and managing students' assessments, exams, and records. Regrettably, a significant number of lecturers lack proficiency in digital literacy. Oyedokun et al. (2018) conducted a study. Olatunde-Aiyedun et al. (2021) and Livinus (2013) have contended that the inadequate digital skills and knowledge possessed by professors in Nigerian higher institutions have impeded the progress of digitalization.

9. Insufficient Digital Skills among Underprivileged Students: The lack of adequate digital knowledge and skills among students in higher education institutions is a significant challenge to digital education in Nigeria. Ogunode (2020) contended that a major challenge in digital education is the pupils' insufficient proficiency and understanding of digital abilities. A significant number of students face challenges in effectively utilizing digital tools and engaging with their instructors via digital platforms due to a deficiency in skills and knowledge required to operate the devices.

10. Resistance to Change: The digitalization of educational institutions in Nigeria faces the obstacle of opposition to change from those involved in the field. A significant number of influential individuals at educational institutions nationwide harbour apprehensions about transitioning from traditional practices to contemporary and innovative approaches. It is typical for individuals to exhibit a preference for familiar methods and resist embracing new approaches in all aspects of human endeavours and biological functions.

11. Cost of internet Service: The exorbitant cost of Internet services in Nigeria has hindered the process of digitalizing educational institutions. Babatunde and Paschal (2016) asserted that in Nigeria, the exorbitant cost of internet data and the steep tariffs imposed by internet providers, particularly overseas corporations operating in the country only for profit-making purposes, pose significant obstacles to the implementation of ICT. Despite the government's responsibility to oversee the cost and speed of internet distribution by providers, the regulatory agencies often prioritize taxation and their own organizational welfare, neglecting the quality of services offered to the public. This is significantly impeding the implementation of ICT in Nigerian universities.

12. Inadequate Execution of Digital Policies: The insufficient execution of digital policies has hindered the process of digitizing higher education in Nigeria. In order to achieve the global objectives of digital education and the domestic objectives of digitizing education in Nigeria, the federal government has formulated various ICT and digital policies to facilitate the advancement of digital education in the country. The Nigerian Federal Government, as outlined in the Nigeria Digital Economy Policy and Strategy (NDEPS) paper, has established a goal of attaining a 95 percent digital literacy rate

by 2030 (NITDA, 2021). The strategy aims to provide Nigerians with essential digital literacy skills, enabling them to stay updated with the latest global practices. This will prepare current workers, youths, and professionals for potential opportunities both within and outside Nigeria.

Conclusions

This study examined the process of digitalizing higher education in Nigeria, focusing on its advantages and challenges. It identified several factors that hinder the development of digitalization in higher institutions in Nigeria. These include insufficient funding for digital education, inadequate digital facilities, unstable power supply, limited internet coverage, expensive digital equipment and maintenance, shortage of digital personnel, lack of digital skills and knowledge among lecturers and students, resistance to change, high cost of internet services, and ineffective implementation of digital policies.

Suggestions

Here are few recommendations for the digitalization of higher education in Nigeria:

- Sufficient resources should be allocated to higher education, specifically for the growth of digital education in all higher institutions in the country.
- Ensure that all public tertiary institutions are equipped with ICT facilities so that they may effectively utilize these facilities for educational purposes in the classroom.
- Secure a consistent and uninterrupted supply of energy to educational institutions, particularly higher institutions, in order to guarantee a continuous provision of power and internet services.
- Ensure nationwide provision of internet services in order to facilitate unimpeded adoption of ICT by Nigerian universities.
- Subsidizing internet data and establishing a minimum tariff speed for internet providers would facilitate the adoption of ICT in Nigerian colleges.
- All higher institutions should hire additional digital professionals to facilitate the advancement of digital development.
- Regular training programmes should be implemented for students, lecturers, administrative staff, and school administrators to alleviate apprehension and enhance their digital proficiency.
- The implementation of digitization policy should extend beyond mere policy pronouncements.

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