DIGITALIZATION OF HIGHER EDUCATION SYSTEM: IMPLICATION FOR MANAGEMENT OF QUALITY EDUCATION

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Abstract

Digitization is the process of taking traditional learning materials that are in book form and papers and converting them to the electronic form where they can be stored and manipulated by a computer. This paper focused on digitalization of higher education system: implication for management of quality education. It highlighted the ***concept of digitization,*** *digitalization of higher education system, implication for the digitalization of higher education system, management of quality higher education system and challenges militating against the digitalization of higher education system. The paper concluded that, quality systems in higher education have been important for decades and had helped to improve professional standards by comparing them with international educational qualifications. Recommendations were also made which include: Government should increase the funding of higher education with specific allocation to digital education development in all the higher institutions in the country, provide adequate ICT facilities to all the public tertiary institutions to enable the institutions to deploy ICT facilities for teaching and learning in the classroom and ensure that higher institutions in the country are provided with constant power supply and internet services.*

Key words: *Digitalization, higher education, system, management, quality, education.*

Introduction

Digital technologies have brought changes to the nature and scope of education and led education systems worldwide to adopt strategies and policies for ICT integration. The latter brought about issues regarding the quality of teaching and learning with ICTs, especially concerning the understanding, adaptation, and design of the education systems in accordance with current technological trends. Today, higher institutions are challenged by the accelerated process of digitalization which among other things becomes manifest in a pervasive use of information technology for the support of some delivery processes such as teaching and learning, administrative processes, curriculum processes and financial processes. Oliver and Jorre de St Jorre (2018) reiterated that in as much as Information and Communication Technology (ICT) are becoming increasingly relevant in every context, especially in the workplace, the University system should therefore be going digital as learning activities, resources, and assessment are predominantly done online in order to meet the needs of the society.

Specifically, many schools demonstrated a lack of experience and low digital capacity, which had resulted in widening gaps, inequalities and learning losses. Such results have engendered the need for schools

to learn and build upon the experience to enhance their digital capacity and preparedness, increase their digitalization levels, and achieve a successful digital transformation. Modern teaching materials are very crucial and most preferred in the digitalize world. A modern education system uses technology to impart knowledge. Digitization of education system is an opportunity to develop a cognitive resource-based mechanism in learners and improve the skills, lifelong learning and continuous education (Bikas & Sanyal, 2021). Digitization produces information that can be conveyed in many different methods and it brings about democracy of knowledge where education becomes a collaborative and self-driven enterprise. Nowadays, there are tools available to transform learning from an academic exercise to an engaging experience gratification and technological gains. Digitization is the trending term describing the 21st century in the most precise manner as possible. We are in the era where unprecedented ideas are unfolding in our education sector and creating the advancement that can't be matched by lagging behind in terms of technology.

Concept of Digitization

Akinyemi, Amaechi and Etoh (2022) defined digitization as the process of taking traditional learning materials that are in book form and papers and converting them to the electronic form where they can be stored and manipulated by a computer. Titus (2018) stated that, digitization refers to the conversion of materials created in another format into an electronic form; this definition excludes materials that were initially created digitally, such as email communication. Similarly, Jagboro, Omotayo and Aboyade (2012) defined digitization as all the steps involved in the process of making collections of historical and other materials available online. Pandey and Misra (2014) described digitization as the course of converting analog information to a digital format. Digitization implies the creation of digital surrogates for an original copy or physical object. Digitalization of education according to Akinyemi, Amaechi and Etoh (2022) is a concept adopted to ensure the innovative incorporation of modern technology and digital tools to assist the progress of teaching and learning and to create more room for remote learning. Micheal and Jacob (2017) defined digitization as the process of converting educational resources from material forms to electronic forms where they can be stored and manipulated by a computer. The transfer of data from analogue to digital is viewed as a crucial driver of innovation in teaching and learning (Ogunode & Ndayebom, 2023).

Similarly, Jagboro et al. (2012) viewed digitization as all the steps involved in the process of making collections of historical and other materials available online. Digitization is the process of converting manual information or data to a digital format for a more meaningful interpretation. Digitalization in education is conceptualized by Titus (2018) and Olatunde-Aiyedun, Eyiolorunse-Aiyedun and Ogunode, (2021) as the process of transferring traditional teaching and learning materials such as online learning platforms, educational apps, and multimedia resources online courses, online assessments, and web seminars/conferences or workshops to electronic model for deployment in the school. Bejinaru (2019) observed digitalization is the conversion of text, pictures, video, and music into digital format utilizing technologies such as a laptop computer, the internet, mobile devices, a scanner, a digital camera, a projector, and printer, among others, that may be played by a computer. Machekhina (2017) viewed digitalization as the translation of all information kinds, such as text, audio, pictures, video, and other data from multiple sources into digital language. From the above, digitization can be conceptualized as those facilities that aid the conversion of teaching and learning into platforms like online courses, online assessments, and web seminars/conferences or workshops through the use of electronic platforms. Digitalization is the process of transforming physical teaching and learning resources into packages or platforms or electronic forms where they can be stored and manipulated by a computer for the implementation of teaching and learning programmes in school.

Digitalization of Higher Education System

Digital Technology for education is defined as any process where the teacher or learner uses digital equipment such as a personal computer, a Laptop, tablet, MP3 player, or console to access digital tools such as learning platforms and virtual learning environments (VLEs) to improve their knowledge and skills. The Learning with Digital Technology comprises of ICT products such as teleconferencing, email, audio, television lessons, radio broadcasts, interactive voice response system (Bikas & Sanyal, 2021). Day by day all over the world, digitalization is advancing and positively affecting economies and our education system is one of the biggest fields where we can introduce more digitalization. Recently, digitalization is changing the whole society, creating new working skills, modern cultural conditions, and innovative tools for communication and entrepreneurship (Newell & Marabelli, 2015). In a knowledge economy where knowledge becomes a strategic

resource, digitalization contributes to the intellectual capital, services and states facilitating business processes, partnerships, interaction and leading to the creation of complex networks through the use of digital tools (Pînzaru, 2015). The digitalization processes in education is a strong trend in terms of reforming and modernizing the global educational environment.

Digitalization tools in the education involves computer, the internet, the Smartphone, the scanner, the digital camera, the projector, the printer, etc. The means of digitalization includes online admission process, the online exam, the sharing of online / web knowledge, digital support materials, social groups, digital publications, etc. Given that the use of information and communication technology (ICT) has proved to have a significant impact both on the economic development and education, digital divide phenomenon has become a matter of great interest to researchers and policymakers (Billon, Lera-Lopez, & Marco, 2016). Higher education is a labor intensive industry, producing the manpower that every nation needs. Therefore, as in other sectors of the economy, information and communication technology has been depicted as a way of increasing efficiency and effectiveness. However, in as much as higher education has several stakeholders which are the government, industry, professional bodies, staff and students, each type of stakeholder has its own perspective on what is valuable in higher education. In other words, digitalization of higher education should be a priority for all the stakeholders.

There are many benefits of integrating digital technologies into higher institutions. Ding (2020) noted that the advantages of digitization include; no new buildings are required; improvement in information sharing and the redundancy of collections reduced. Digitization leads to the development of the Internet in digitalized-based institutions. Digital materials can be transmitted, sorted and retrieved easily and quickly. It is cheaper to access electronic information than its print counterpart when storing files in an electronic device with compatible facilities and equipment. Digital texts can be linked and made interactively and improves the retrieval of more information. The implementation of digital technologies in higher education has the potential to transform the way we teach and learn. Online learning platforms, for example, can provide students with access to educational resources from anywhere in the world. This can be particularly beneficial for students who are unable to attend traditional brick-and-mortar institutions due to financial, geographical, or personal constraints. Online learning can also provide students with more flexible learning opportunities, allowing them to study at their own pace and on their schedule. Digitization has the ability to customize learning experiences to suit individual needs (Ogunode & Ndayebom, 2023). Digital technologies can provide students with personalized learning experiences, allowing them to focus on areas where they need the most support and challenge themselves in areas where they excel. For example, educational apps can provide students with interactive and engaging learning experiences that are tailored to their individual needs and interests.

Implication for the Digitalization of Higher Education System

Digitization can also enhance the quality of education and multimedia resources, for example, can provide students with access to a wide range of educational materials, including videos, podcasts, and interactive simulations. These resources can help to bring complex concepts to life and make learning more engaging and interactive (Micheal & Jacob, 2017). In the past, a rigid classroom structure defined the world of academia. Each student had the same experience, no matter their differing needs or abilities. While some students could function well in this environment, others had unmet needs. Technology improves a school's ability to meet the needs of all types of students. Now, students with hearing, speaking or seeing impairments, or those who are largely housebound, can still receive a quality education. Technological advancements can also meet the needs of students with intellectual, social, or developmental disabilities. No matter what a student's unique needs may be, technology affects education for the better by improving our ability to create learning environments that work for all. In addition, Bikas & Sanyal (2021) opined that curricula that are delivered in digitalized environment improve learning and innovation skills, information, media and technology skills, and life and career skills. Whereas, curricula taught in non-digitized contexts cover cognitive skills such as critical thinking, problem solving and creativity because it is possible to teach and learn these skills without having access to digital tools and environments.

As a result, the digitization of education provides a chance for learners to establish a cognitive resource-based mechanism and enhance their abilities, as well as to engage in lifetime learning and continuous education (Abdullahi & Tijani, 2019). In today's digitalized environment, modern instructional materials are critical and desirable. Technology is used in modern schooling to impart knowledge. Education becomes a collaborative and self-driven business in which instructors, students, and other stakeholders are involved as a

result of digitalization, which provides information that may be transmitted in a variety of ways, for instance, teacher-directed, joint teacher-and-learner-directed, and learner-directed. Digitization makes it possible for nearly all hand-copy textbooks, journals and other literary works to be converted into soft copy and stored on the World Wide Web for easy access. With just a click one may have access not only to books written by our nationals but other international authors. Therefore, it bridges the gap in access to international books. Books with high costs may be affordable in soft copies. Digitization interconnects students from different schools, even internationally in the discussion of academic-related matters which widens the research of many students. E-libraries are available in many varieties. The world is increasingly becoming a global village, due to interconnectivity among nations. This is made possible through digitization. Development in technology is gradually creeping into the academic system in Nigeria.

Management of Quality Higher Education System

Education quality is a key factor for improving the business quality and therefore strengthening competitive advantage. Access to education and quality education are to be regarded as mutually dependent and indivisible needs and rights. Intellectual workers are becoming a major tool in increasing productivity, and knowledge is becoming the main resource. However, the education system is a new challenge in the acquirement of better quality, manageability, mobility and response to the requirements and changes in our environment (Pandy & Misra, 2014). Differences between modern and traditional educational systems are evident in different educational goals, teaching approaches and roles of all participants in the educational process. Efficiency and quality are the key parameters that determine the socio-economic importance of the field of education.

Management is the art of organizing and carrying out activities to achieve predetermined goals. Higher education should be organized using flexible ICT skills and dynamic management principles to enable each tertiary institution to develop in accordance with its respective potential and the external demands it faces. Tongia (2014) said that, management is a science because management is seen as a field of knowledge that systematically tries to understand why and how people work together. Quality management is a part of management aimed at achieving quality goals through planning, monitoring, assuring and improving quality. Education quality is a dynamic, multi-dimensional concept that refers not only to the educational model, but also to the institutional mission and its goals, as well as to the specific standards of the system, facility, program or event. In education it is only possible to determine the quality by comparing the results with the given goal, or by comparing it with previously established standards. Any human activity is identified by the quality of its product. The same rule applies to education. The quality of education is therefore responsible for the quality of its "product" students.

Quality management systems in Higher Education have been developed for a number of years to improve professional standards. Education is looking for a management concept that would direct the collective efforts of all managers and employers toward satisfying customer expectations by continually improving activities. A quality assurance system in higher education has to incorporate several elements such as the formation of an independent agency, internal evaluations on the level of institutions or programmes, external evaluations from experts' commissions, involvement of students in internal and external evaluations and publishing of the results of evaluations to be harmonized with the higher education system (Dada, Atobauka, & Ogunode, 2022). Quality systems in higher education have been important for decades and had helped to improve professional standards by comparing them with international educational qualifications. To maintain and improve quality, higher education institutions have to evaluate themselves which is the first step in the evaluation process. Once self-evaluation has been conducted, the institution has to analyze the condition and search for weak areas. Quality results will not just come, it all goes through a long process starting from providing quality resources and the process must also be of quality. Quality standards are a reflection of the conditions of expectations of relevant stakeholders, especially users who are graduates of the university concerned. Digital Technology (ICT) plays a vital role in supporting powerful, efficient management and administration in education sector (Bejinaru, 2019).

Challenges Militating Against the Digitalization of Higher Education System

There are many problems militating against the digitalization of higher education in Nigeria. Some of these problems include poor funding of digital education, non availability of digital facilities, and poor supply of power distribution, high cost of internet data and electronic services and shortage of professionals in digital

technologies. Poor funding of digital education in Nigerian higher education has hampered the development of digital education in the sector. Higher education is underfunded in Nigeria and this affects all programmes including the digitalization programme in the sector. Dada et al., (2022) noted that inadequate financing and allocation for digital technology at university education have resulted in an insufficient supply of digital facilities, equipment, and materials. As a result, government education spending is primarily reliant on federal account allocation, making its educational aims vulnerable to national mobilization and expenditure management issues (Okwuosa & Modibbo, 2021). The annual allocation for the administration and management of higher institutions in Nigeria is small and is affecting the development of infrastructural facilities like ICT in various institutions (Ogunode, 2020).

Consequently, the development of digital education in higher institutions hinges on the availability of adequate digital facilities. The availability of digital facilities makes the digitalization process easy and fast. However, it has been observed that, many higher institutions are faced with a shortage of digital facilities limiting them to fully integrate into digitalization programmes in the country (Ogunode, Adamu & Ajape, 2021). The non-availability of these digital facilities has prevented lecturers, researchers and students in higher institutions from fully deploying the facilities for teaching, researching and carrying out academic activities in the various institutions. Ogunode et al. (2021) noted that facilities like computers, printers, faxing machines, photocopiers, binders, projectors etc. are not adequately supplied in many higher institutions in the country.

Poor power supply distribution across the federation has hampered the digitalization programme in many higher institutions. Power generation and distribution in Nigeria as of today is poor. It has been observed that many higher institutions are located in communities where power generation and distribution are poor (Ogunode et al., 2021). The energy problem is a major challenge in Africa and especially in Nigeria. However, the problem of energy in Nigeria has affected the development of digital education at all levels. Internet service is very important for the attainment of digitalization goals in Nigeria. Internet service is critical for the operation of digital education. Internet service is the life wire of digitalization. Availability and stable internet services make digital education efficient and effective in educational institutions. It is unfortunate that in Nigeria, internet coverage and accessibility are still a problem. Poor internet connection is a common problem in Africa especially in Nigeria. The inability of the government to ensure a meaningful internet connection across Nigeria has affected the digitalization of educational institutions. Many communities and cities in Nigeria still do not have access to quality and reliable internet service to carry out various services including educational services. This problem has limited the opportunities of many higher institutions from enjoying digital education services in their respective institutions.

One of the challenges of deploying digital facilities in Nigerian higher institutions is the high cost of internet data and electronic services, which is the determinant of digital technology usage and value (Tongia, 2014). The internet as we know it today was created in the United States of America and introduced to the rest of the world. America still has a stronghold of control, as most developing countries pay huge amounts of dollars to the US Government for the connection of a few megabits per annum (Machekhina, 2017). This affects the deployment and full utilization of information and communication technologies in these growing countries, of which Nigeria is one. In Nigeria, the high cost of digital facilities, internet data and fast tariffs set by internet providers, mostly international companies doing business in the country with the main interest of making profits. Higher institutions cannot afford to make ICT available to the whole university which includes staff and students, unless they have sponsors or government funding to embark on such projects. High-tech digital facilities need maintenance always. The sustainability and survival of digital facilities depend on high maintenance culture from users. The maintenance of these technological facilities is very expensive to carry out (Ogunode , 2020).

One of the challenges of digital development in higher institutions in Nigeria is the shortage of professionals in digital technologies. Digital professionals are in short supply in Nigeria due to poor manpower planning and a shortage of higher institutions offering technological courses. The limited digital personnel produced in the country are found in the banking sector and oil and gas. The few individuals in the various higher institutions are leaving for developed countries due to poor motivation and the various challenges that have befallen the higher institutions. A poor shortage of digital personnel in higher institutions has hampered the development of digital education in higher institutions. Without adequate support, faculty members may be hesitant to adopt digital technologies, or they may use them ineffectively, which can negatively impact student learning outcomes. Digital illiteracy is another challenge of digital education in higher institutions in Nigeria. Digital literacy is the key to the deployment of digital facilities in the schools.

When lecturers who are supposed to use these facilities are not literate in them, it becomes a problem and may hinder the usage of the facilities. Titus (2018) observed that digital education has become part and parcel of the higher institution. In an average university, digital technologies are needed for numerous tasks which includes: students‟ application to universities; processing and registration of large application of students; creation of students‟ records in a database for students and university staff; design and development of university website; conduct of research by members of the academic and students; university administration for managerial purposes; students‟ assessments, exams and records. Unfortunately, many lecturers are not digitally literate.

Conclusion

Today, higher institutions are challenged by the accelerated process of digitalization which among other things becomes manifest in a pervasive use of information technology for the support of some delivery processes such as teaching and learning, administrative processes, curriculum processes and financial processes. However, many schools demonstrated a lack of experience and low digital capacity, which had resulted in widening gaps, inequalities and learning losses. Such results have engendered the need for higher institutions to learn and build upon the experience to enhance their digital capacity and preparedness, increase their digitalization levels, and achieve a successful digital transformation. Digitalization is advancing and positively affecting economies and our education system is one of the biggest fields where we can introduce more digitalization. In a knowledge economy where knowledge becomes a strategic resource, digitalization contributes to the intellectual capital, services and states facilitating business processes, partnerships, interaction and leading to the creation of complex networks through the use of digital tools. Quality systems in higher education have been important for decades and had helped to improve professional standards by comparing them with international educational qualifications. To maintain and improve quality, higher education institutions have to evaluate themselves which is the first step in the evaluation process.

Recommendations

1. Government should increase the funding of higher education with specific allocation to digital education development in all the higher institutions in the country.
2. Government should provide adequate ICT facilities to all the public tertiary institutions to enable the institutions to deploy ICT facilities for teaching and learning in the classroom;
3. Government should ensure that higher institutions in the country are provided with constant power supply and internet services.
4. Government should subsidize internet data costs and set a minimum tariff speed for internet providers.
5. Government should employ more digital professionals in higher institutions to support the development of digital development.
6. Government should organize constant training and retraining programme for students and lecturers, administrative staff and school administrators to reduce the tension and fear of digital facilities.

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