

## DIGITALIZATION AND EMERGING ISSUES IN ADULT AND NON-FORMAL EDUCATION FOR SUSTAINABLE DEVELOPMENT

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### Abstract

*This paper examines digitalization and emerging issues in adult education for sustainable development. Digitalization in adult education encompasses all processes of transferring traditional teaching and learning materials to online learning platforms, educational apps, multimedia resources, online courses, online assessments, and web seminars/conferences or workshops, transitioning to an electronic model for deployment in educational centers. This transformation has thus far been considered a progressive change in the field of academia. The paper identified challenges that affect the digitalization of adult education; these include inadequate funding, inadequate digital facilities, epileptic power supply, poor internet connectivity, increased costs of digital facilities, lack of digital skills, lack of professionalism, implementation challenges, resistance to change, and systemic corruption. Findings recommend the provision of adequate funding, robust digital infrastructural facilities in all adult education centers, effective power generation and distribution across the country, increased investment in digital technology, subsidized prices for digital facilities for teachers and students, and the provision of tax incentives/reliefs for telecommunications companies to enable them to reduce the costs of digital tools for both teachers and learners.*

**Keywords:** Digitalization, Emerging Issues, Adult Education & Sustainable Development

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### Introduction

The concept of digitalization of education is broad, encompassing various definitions and applications across numerous facets of life. In the context of the educational system, particularly adult education, digitalization can be defined as the process of converting educational resources from material to electronic formats, enabling their storage and manipulation by computers. It encompasses an individual's ability to effectively utilize digital technology to access, process, evaluate, create, and communicate information through various digital platforms (Rubble & Bailey, 2007). This signifies a significant benefit of the 21st-century breakthrough in Information and Communication Technology (ICT), leading to the increased use of technological devices such as computers, mobile phones, televisions, and DVDs, as well as the internet, for the creation, management, and distribution of information. This ICT revolution has significantly impacted various sectors of the economy, including education. Technological advancements have ushered in an era where internet-based learning is a reality. In education, increased internet access and improved availability of learning materials and technological gadgets have broken the constraints of place and time that previously limited both students and instructors in the pre-ICT era. This development within the educational system, facilitated by the internet and the availability of digital outlets like audio and video CDs, has undoubtedly simplified the learning process for both teachers and students. However, its implementation across various institutions has yielded varying degrees of success, largely dependent on the specific challenges and peculiarities associated with each geographical location.

Digitalization in adult education has revolutionized the educational process, enabling learning and teaching to occur conveniently for both learners and facilitators, regardless of time and location. It enhances accessibility to the internet, increases the flexibility of study, fosters diverse interactions between teachers and students, facilitates online testing, improves the ability to cater to special needs, and makes online learning content more readily available. Furthermore, it promotes adaptability and personalization within the learning experience. However, digitalization also presents challenges that can impede effective learning delivery. These issues include inadequate funding, insufficient digital facilities, unreliable power supply, poor internet connectivity, the high cost of digital facilities, a lack of digital skills, a lack of professionalism, implementation challenges, resistance to change, and systemic corruption. These emerging issues pose significant obstacles to achieving sustainable development in adult education.

Sustainable development is a cornerstone of contemporary Nigerian society, extensively discussed in academic literature. It represents a holistic approach that aims to balance social, economic, and environmental goals for long-term prosperity. Essentially, it acts as a framework for ensuring the nation's future. According to Nwaokugha (2006), sustainable development has emerged as a central concept across all disciplines within today's knowledge-based society. He contends that it possesses "omnipotent capacities" to address the multifaceted challenges facing individuals and society. While development can be hindered by factors such as inadequate funding, insufficient digital facilities, unreliable power supply, poor internet connectivity, the high cost of digital facilities, a lack of digital skills, a lack of professionalism, implementation challenges, resistance to change, and systemic corruption, adult education remains pivotal to achieving sustainable development.

### **Concept of Adult Education**

Adult education encompasses all forms of learning that address the educational needs of adults at any level, time, and circumstance (Otty, Opara & Izekor, 2022). It serves as an umbrella term for all educational programs or services designed for adults within formal, non-formal, and informal sectors of society. It involves a systematic and sustained process of self-directed learning aimed at acquiring new knowledge, skills, attitudes, or values (Olasupo, 2015). Wami, Nwafor, and Deekor (2019) contend that adult education is the process through which individuals, either independently or within group or institutional settings, strive to enhance themselves or their society by expanding their skills, knowledge, or awareness. Houle, as cited by Wami et al. (2019), defines it as any process that assists individuals, groups, or institutions in improving their skills and knowledge.

Townsend-Coles, as cited by Kobani (2018), asserts that adult education encompasses all educative experiences that cater to the diverse interests and requirements of adults, considering their varying levels of comprehension and evolving roles and responsibilities throughout their lives. It is any form of education tailored to the cultural and socio-economic needs of adults, enabling them to effectively adapt to life's challenges and societal changes (Nzeneri in Otty et al., 2022). Adult education involves systematic and sustained self-directed learning activities undertaken by adults to acquire new knowledge, skills, attitudes, or values. It encompasses all forms of learning

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pursued by adults beyond traditional schooling, ranging from basic literacy to personal fulfillment as lifelong learners (Wami & Egumah, 2021).

### **Concept of Digitalization**

Digitalization is a broad concept with multifaceted implications within the academic sphere. According to Akinyemi, Amaechi, and Etoh (2022), digitalization involves the innovative integration of modern technology and digital tools to enhance teaching and learning processes and facilitate remote learning. Micheal and Jacob (2017) define digitalization as the process of converting educational resources from material to electronic formats for computer-based storage and manipulation. Gillpatrick (2020) emphasizes that the transition from analog to digital data is a crucial driver of innovation in teaching and learning. Similarly, Jagboro, Omotayo, and Aboyade (2012) view digitization as the comprehensive process of making historical and other materials accessible online. Azuh and Melody (2014) define digitization as the process of converting manual information or data into a digital format for more effective interpretation.

In the context of education, Titus (2018), Olatunde-Aiyedun, Eyiolorunse-Aiyedun, and Ogunode (2021) conceptualize digitalization as the process of transitioning traditional teaching and learning materials to online platforms, including educational apps, multimedia resources, online courses, online assessments, and web seminars/conferences or workshops, for electronic delivery within educational institutions. Bejinaru (2019) observes that digitalization involves the conversion of text, pictures, video, and music into digital formats using technologies such as laptops, the internet, mobile devices, scanners, digital cameras, projectors, and printers. Machekhina (2017) views digitalization as the translation of all types of information, including text, audio, pictures, video, and other data from diverse sources, into digital language.

Based on these definitions, digitalization can be broadly understood as the utilization of technologies to facilitate the conversion of teaching and learning processes into online platforms, such as online courses, online assessments, and web seminars/conferences or workshops. In the context of adult education, digitalization refers to the process of transforming physical teaching and learning resources into digital formats, enabling their storage and manipulation by computers for the effective implementation of adult education programs. The primary objective of digitalization in adult education is to enhance the learning experience for both teachers and adult learners.

### **Concept of Sustainable Development**

Sustainable development has been defined in various ways. According to Udaudoh, Omame, and Adamu (2019), it is the "ability to make development sustainable, that is, to ensure that it meets the needs of the present generation without compromising the ability of future generations to meet their own needs." <sup>1</sup> Adejumo and Adejumo (2014, cited in Udoudoh et al., 2019) describe sustainable development as the responsible exploitation of resources that does not harm the ability of future generations to meet their needs. Udoudoh et al. (2019) provide a concise definition: "not using up resources faster than the planet can replenish or restock, maintaining a better quality of life now

and for generations to come." Oyebamiji and Ezeala (2024) define sustainable development as development that meets the present needs of current generations, particularly the essential needs of the world's poor, while ensuring that future generations can also meet their own needs. This definition emphasizes the limitations imposed by the state of technology and social organization on the environment's capacity to meet present and future needs.

In simpler terms, sustainable development involves meeting the present needs of society while simultaneously ensuring the availability of resources for future generations.

### **Emerging Issues in Adult Education for Sustainable Development**

Several factors have hindered the digitalization of adult education programs in Nigeria. These challenges include, but are not limited to: inadequate funding, insufficient digital facilities, unreliable power supply, poor internet connectivity, the high cost of digital facilities, a lack of digital skills, a lack of professionalism, implementation challenges, resistance to change, and systemic corruption.

#### **Inadequate Funding**

One of the most significant obstacles to the development of digital adult education in Nigeria is a severe shortage of public funding. Dwindling public funding, coupled with rising educational costs and increasing demand, poses a major challenge. This funding shortage hinders the installation of essential digital infrastructure within educational centers. Without adequate funding, institutions cannot effectively implement their digitalization programs. Government funding for the purchase and maintenance of modern and state-of-the-art digital equipment remains a critical constraint (Asogwa, 2011).

#### **Inadequate Digital Facilities**

The lack of adequate digital resources and facilities presents a significant barrier to the successful digitalization of adult education in Nigeria and globally. E-learning platforms are crucial for the effective integration of adult education centers into the digital education system (Ogunode, Jegede & Musa, 2020). However, in reality, many adult education centers lack these essential facilities, hindering the development of digital education across the country. Abubakar (2018) observed that most schools lack sufficient computer systems, and those available are often infected with viruses, rendering them unsuitable for digitalization projects. Additionally, e-libraries are often inadequate to meet the growing needs of the local community (Ogunode & Dahir, 2021). Other critical challenges include a shortage of essential learning resources such as multimedia systems, magnetic boards, computers, printers, plotters, etc. Many adult education centers operate within schools to reduce costs, and if these schools lack the necessary digital infrastructure, the adult learning programs within those schools are similarly affected.

### **Epileptic Power Supply**

Unreliable power supply poses a significant challenge to the development of digital education in Nigeria. Energy shortages are a pervasive issue in Africa, particularly in Nigeria. According to Thisday (2022), West Africa has one of the lowest rates of electricity access globally, with only about 42% of the total population and 8% of rural residents having access to electricity. Only three countries are on track to achieve universal electricity access by 2030.

Many adult learning centers, particularly in rural areas, remain unconnected to the national electricity grid. This lack of reliable power severely limits their ability to offer computer-based instruction (Mungai, 2011). Mohammed and Yarinchi (2013) emphasize that inadequate power supply significantly disrupts teaching and learning processes, particularly those involving computers, leading to disruptions, delays, and ultimately, the failure to achieve desired learning outcomes. Electricity is essential for the operation of all ICT appliances, and without a stable power supply, their effectiveness is severely compromised (Osakwe, 2012).

### **Problem of Poor Internet Connection**

Poor internet connectivity is a prevalent challenge, particularly in Nigeria. The government's failure to ensure reliable and widespread internet access across the country significantly hinders the digitalization of educational institutions. For instance, the Guardian (2022) reported that only 12.1% of the Nigerian population currently enjoys meaningful internet connectivity. Olatunde-Aiyedun, Ogunode, and Eyiolorunse-Aiyedun (2021) identified poor power supply as a significant barrier to the integration of educational institutions into e-learning programs.

### **Increased Cost of Digital Facilities**

The rising cost of digital facilities presents a significant barrier to the development of digital education in Nigeria. Many teachers and students cannot afford to purchase the necessary digital resources to support their learning. Yinka (2018) concluded that cost is a major factor influencing the provision and use of digital services, emphasizing that the cost of digital facilities is prohibitive for many. Abdull (2017) observed that monthly internet rates are exorbitant, and the cost of satellite television is unaffordable for most Nigerians due to widespread poverty.

### **Lack of Digital Skills**

Digital literacy is crucial for navigating the modern world, and educational institutions and Nigerian students are increasingly engaging with digital technologies and media for learning purposes. Globally, digital literacy is essential for all students and teachers, whether for communication within the school, academic work, online examinations, or research. It is imperative for all education stakeholders to possess digital literacy skills to contribute meaningfully to the development of education. Unfortunately, many school administrators, teachers, and students, particularly in basic education, lack adequate digital literacy skills, hindering the progress of digital education at that level.

### **Lack of Professionalism**

Qualified digital professionals are essential for achieving the goals and objectives of digital education in any nation. Skilled and effective digital experts are the cornerstone of any technologically advanced education system. Abu (2017) observed that Information and Communication Technology (ICT) not only constitutes a vital input to education but also plays a crucial role in the educational production process and in determining the quality of educational outcomes. ICT is a relatively recent development in the Nigerian education system, and it plays a critical role in teacher education and capacity building. One of the most significant barriers to the successful implementation of digital education in adult education centers is a shortage of trained digital personnel. Therefore, it is crucial to provide staff with the necessary training to effectively utilize digital facilities.

### **Problem of Implementation**

The poor implementation of education policies, such as the digital literacy policy, has significantly impacted the development of digital education within adult education centers across Nigeria. The Nigerian government, through agencies like the National Information Technology Development Agency (NITDA), the Federal Ministry of Science & Technology, and the Federal Ministry of Education, has set ambitious targets: 95% national literacy by 2030 and 60% digital literacy for youths and adults by 2025 (NITDA, 2021). While these initiatives are intended to benefit all levels of education, including adult education, their full implementation remains elusive.

### **Resistance to Change**

Resistance to change from traditional pedagogical methods to more innovative, digital-based teaching and learning approaches poses a significant challenge. This resistance stems from the attitudes of both teachers and students. A reluctance to embrace change and the perceived benefits of digital literacy hinders the promotion of digital literacy within the education system.

### **Corruption of the System**

Corruption within the Nigerian education system has severely hampered the digitalization of basic schools. Funds allocated for capital and recurrent expenditures in schools are often diverted by government officials. Similarly, funds earmarked for the development of digital education programs are frequently misappropriated. Widespread corruption in the allocation and management of public funds intended for school infrastructure development is a significant concern. Osunyikanmi (2018) observed that Nigeria experiences underwhelming development amidst pervasive corruption.

### **Benefits of Digitalization of Education**

Digitalization of education significantly enhances access to learning resources. As Pandy and Misra (2014) point out, traditional education required physical co-location of students and teachers. However, digitalization facilitates instant and convenient communication across vast distances with a single click. Technology has revolutionized

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education, enabling the emergence of online degree programs (Conrad & Salisu, 2024). Many established institutions in Nigeria now offer online courses, while entirely online institutions have emerged, connecting students and teachers virtually.

Digitalization significantly increases the flexibility of learning. Online learning liberates students from the constraints of fixed schedules, often necessitated by work or family commitments. Online courses provide access to learning materials 24/7, allowing students to study and complete assignments at their own pace.

Digitalization has transformed the nature of teacher-student interaction. While some argue that online interactions are less effective, it's crucial to acknowledge both the benefits and drawbacks. Online platforms facilitate communication beyond traditional classroom hours, providing greater flexibility and convenience for both teachers and students.

Digitalization enables the implementation of online assessments, offering several advantages. Online testing can be more objective and impartial as automated systems can grade exams and eliminate human bias. Online testing can also alleviate test anxiety for some students who may feel more comfortable taking exams in a less-pressured environment. Furthermore, online testing accommodates the schedules of busy students who may find it challenging to attend in-person.

Digitalization enhances the ability to cater to the diverse learning needs of students. In the past, traditional classrooms often failed to adequately address the unique needs of all learners. Technology empowers educators to provide more personalized learning experiences for students with disabilities, such as hearing, speech, or visual impairments, or those with limited mobility.

Digitalization has significantly increased the accessibility and availability of learning resources. Previously, learning was primarily confined to the classroom, relying heavily on textbooks and limited audiovisual materials. The internet has empowered individuals to share their knowledge globally through blogs, e-books, and online videos. This democratization of knowledge facilitates learning opportunities for everyone.

Digitalization enables more personalized and adaptive learning experiences. Recognizing that each student learns differently, educators can leverage technology to provide a wider range of tools and learning approaches. This allows students to engage with learning in ways that best suit their individual learning styles.

## **Conclusion**

Digitalization of adult education is a crucial pathway towards success in the 21st-century economy. It has brought about a significant transformation within the educational system, enhancing the learning experience for both teachers and adult learners. While digitalization offers substantial benefits, it is essential to recognize the continued value of traditional classroom learning. The most effective approach often lies in a blended learning model that combines both classroom and online learning methods. This synergistic approach creates a more robust and comprehensive learning environment, empowering adult learners to excel in their pursuit of knowledge, skills, and training.

Furthermore, digitalization in adult education aligns with sustainable development goals. Online examination platforms, for instance, significantly reduce paper consumption, contributing to environmental conservation. With continued growth and refinement, the digitalization of adult education has the potential to significantly contribute to societal technological advancement.

However, like any significant societal transformation, the digitalization of adult education faces several challenges. These include inadequate funding, insufficient digital infrastructure, unreliable power supply, poor internet connectivity, the high cost of digital facilities, a lack of digital skills among both educators and learners, a lack of professional expertise in digital education, implementation challenges, resistance to change, and systemic corruption.

### **Recommendations**

Based on the findings of this paper, some recommendations must be put to place to manage the challenges of digitalization of adult:

1. The government, through the Ministry of Education, should significantly increase funding for adult education in Nigeria, with a strong emphasis on the development of digital education programs.
2. The government should ensure the provision of adequate digital infrastructure, including high-speed internet access, in all adult education centers to facilitate accessibility and usability. The establishment of digital hubs/clusters in underserved areas is crucial to address regional disparities. Existing hubs should collaborate with civil society organizations to foster capacity-building programs in digital education.
3. The government must address the critical issue of power generation and distribution across the country. Reliable and affordable alternative power sources, such as solar energy, should be explored to mitigate the impact of epileptic power supply on digital infrastructure.
4. The government should significantly increase investment in Information and Communication Technology (ICT) infrastructure to improve internet connectivity across the country. The persistent challenge of inadequate internet access and data affordability must be urgently addressed.
5. The government should subsidize the cost of digital facilities, such as laptops, tablets, and internet access, for both teachers and students. This will enhance affordability and enable greater access to digital learning resources.
6. The government should provide tax incentives and reliefs to telecommunications companies to encourage them to reduce the cost of digital tools and services for both teachers and learners.



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