

ADOPTION OF ARTIFICIAL INTELLIGENCE FOR 21ST CENTURY SKILLS ACQUISITION IN BUSINESS EDUCATION PROGRAMME IN NIGERIA

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Abstract: *This paper examined adoption of artificial intelligence for 21st century skills in business education programme in Nigeria. There is no gain saying that academic knowledge content alone is sufficient to prepare students for the world of work. With increasing global competitiveness, undergraduates in business education need energetic drive for skills that are challenging and inspiring to thrive in today's world. Business education programme is known for producing middle level skilled graduates. It is a herculean task for us at the moment since intermediate skill jobs are fast disappearing as their tasks are systematically automated like voice over phone or system, and individuals are increasingly likely to encounter AI technology in their everyday lives. In fact, most organizations worldwide are using some forms of AI in their operations. An understanding of artificial intelligence on education is vital for guiding business educators in developing educational tools. But the irony of this trend is that most business educators may not be conversant with the use of Artificial intelligence tools in education. Finding the proper tools to incorporate AI into the learning framework represents a test for current and future generations of business educators. Even if most students acknowledged AI as a valuable tool, their interaction with AI in educational activities seems more limited than expected. It is against this backdrop this paper examines 21st century skills and undergraduates' preparation in business education programme and adoption of artificial intelligence in business education programme. The proposed possible solutions to the whole scenario is to organize training and development programmes for business educators, provision of AI tools and environment for teaching and learning business education courses, business educators should organize lessons and other activities bothering on the use of AIs to keep students abreast of, raise awareness and improve skills and knowledge in the utilization of these emergent technologies, tertiary institutions should create awareness and utilization of the different AI technologies in teaching and learning activities and the curriculum should be reviewed, so that 21st century skills be adequately integrated into the curriculum.*

Keywords: *Adoption, Artificial Intelligence, 21st Century Skill Acquisition, Business Education Programme.*

INTRODUCTION

There is no glamour saying that Nigeria is going through hard times at the moment and one possible way that seems to be a bailout for students is skill acquisition that is relevant to

21st century demands. Skill acquisition is the hub of business education. Business education provides its recipients with desirable business competencies necessary for self-employment or

being gainfully employed with a view to making the recipient self-reliant. Business Education is a branch of vocational education which prepares students for the world of work. It is a system of education with occupational identity in accounting, office technology and management, entrepreneurship and commerce/marketing.

Business Education is that aspect of the total education programme that provides the knowledge, skills, understanding and attitudes needed to perform in the business world as a producer and consumer of goods and services (Okoro, 2014). It represents a broad and diverse discipline that is included in all types of educational delivery system – primary, secondary and post-secondary. Njoku (2006) defined business education as an educational programme that equips an individual with functional and suitable skills, knowledge, attitude and value that would help him/her operates in the environment he/she finds himself/herself. Business Education graduates are expected to have relevant competence in office information technology that can enable them interact efficiently with artificial intelligence tools.

Technology supports students' academic activities such as electronic records, videotaped instruction and multimedia portfolios of student work. To sum up, this research has been founded on John Dewey's "learning by doing" (experiential learning) and complemented by Gardner's Theory of Multiple Intelligences. Students can learn best when their particular preferences are tapped so that learning becomes interactive and motivating. Specifically, students learn best when they have hands-on experience on the lesson, which can be achieved by using artificial intelligence tools.

The introduction of artificial intelligence in teaching and learning is a current phenomenon. These marvels are marvelous in skills development in this 21st century. Technicians and educators have used artificial intelligence to address challenges in education like differentiated learning, teaching quality and teaching strategies. AI has been used in some countries to support learning and learning assessment with respect to assessment of students' competencies. Technology offers tools for thinking more deeply, pursuing curiosity, and exploring and expanding intelligence as students build "mental models" with which they can visualize connections between ideas on any topic. Adopting AI technology for 21st century skills acquisition makes education more accessible and interesting by providing equal opportunities for learners and meeting the needs of learners irrespective of gender. According to Aina, et al., (2023) AI is human intelligence or behaviour demonstrated by machines, an innovative technical framework that encompasses the creation of computer systems with the ability to execute activities that usually need human intellect. In practice, artificial intelligence is a computer programme-software that is used in any field of study, including business education (IDRA, 2018).

Business education programme offered in tertiary institutions in Nigeria is still faced with the traditional strategy of teaching and learning, where lectures are delivered face-to-face. Most lecturers and students do not have access to AI tools and awareness for the use of artificial intelligence tools for learning is poor (Alimi et al, 2021). This adumbrates the fact that AI is a new concept in teaching and learning environment in Nigeria. However, the use of internet and other ICT related platforms that encourage digital learning have been

utilized in business education programme, but the integration of artificial intelligence in teaching and learning business education courses for skill acquisition is relatively low in Nigeria. Emefiele (2022), noted that despite how beneficial current technology is to the corporate world, degree holders of business education in Nigeria do not seem to possess the necessary skills for using and utilizing these innovations since some of them were probably not schooled using them. Degree holders of business programs are experiencing a high level of joblessness as a result of this circumstance. In order to revamp this ugly situation, it is necessary to identify the 21st century skills required in business education programme.

21st Century skills are essential for individuals to thrive in the modern workplace and they are becoming increasingly important as technology, particularly AI continues to advance. AI impacts on the types of skills that are most valued in the 21st century as it automates routine tasks, there is increasing demand for skills such as critical thinking, problem-solving, creativity, emotional intelligence and adaptability (United Nation, 2021). It has been envisaged that due to labour market demands and curriculum renewal, most professionals will become obsolete with time as a result of changes in technology. Therefore, there is need for business educators to constantly update their knowledge by familiarizing with artificial intelligence tools for lifelong learning.

UNESCO (2016) stated that vocational and technical education (VTE) forms part of lifelong learning which take place in secondary and tertiary institutions with emphasis on work-based continuing education and professional development. Business education is an aspect of VTE that addresses a wide range of skills and

play a central role in meeting the demand for low and intermediate level skills. Due to changes in technology and the demands of labour market, business education programme need to be re-evaluated to focus on new skills required for the new forms of work. Therefore, it is clearly obvious that there is need for human machine collaboration for long life learning and sustainable development. Again, UNESCO (2019) published the Beijing Consensus on artificial intelligence and education, on how best to harness AI technologies for achieving Education 2030 agenda. The consensus states that the systematic integration of AI in education has the potential of addressing some of the biggest challenges in education today; it has become very innovative in the teaching and learning practices and ultimately accelerates the progress towards Sustainable Development Goal-4 (Shiohira & Kevvy, 2019).

Sustainable development goal-4 (SDG-4) focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all by the development of skills to ensure that individuals can continue learning throughout their lives, as well as address inequality and gender disparities in education. The agreement called for support to use AI technologies for education and training. Use AI tools to offer lifelong education which enables personalized learning anytime, anywhere for anyone. Ensures that AI technologies are used to empower teachers and develop appropriate capacity building programmes for teachers to work alongside AI systems. Prepare the next generation of existing workforce with values and skills for life and work most relevant in this AI and 21st century skills era, as well as promote equitable use of AI irrespective of the gender (Dhara et al., 2022).

21st Century Skills and Undergraduates preparation in Business Education Programme

Concerns about the skills required in this 21st century for business education students to remain relevant in labour market have been a major concern of stakeholders in recent time. This is so because, the objective of business education is to develop in all students the practical way of understanding, appreciating the actual functioning of our economic system and for students to acquire basic skills in business occupations. In this context, there is a great deal of focus on skills development in order to perform certain jobs in accounting, marketing, office technology and management and entrepreneurship education. However, strategies aimed at strengthening jobs requiring lower and intermediate skill levels like business education have received little attention. But with the unprecedented level of unemployment in the labour market and changing job markets, there is an increasing pressure for tertiary institutions to produce graduates sufficiently exposed to a curriculum that is relevant to the workplace, equipped with related skills, and most importantly skills for survival. 21st century skills are abilities, learning dispositions and competencies required for success in the 21st century business world and workplace. American Association of Colleges of Teacher Education (2010) categorized these skills into three groups;

- **Learning Skills:** They are skills for critical thinking, highly required for problem solving, creativity and innovation, collaboration and communication. These are skills that help students to adapt and improve upon a modern work environment. (Joshua, 2017).
- **Literacy Skills:** These skills are concerned with elements in digital comprehension. They include; Information literacy (helps students

understand facts, figures, statistics and data), Media literacy (methods and outlets in which information is published) and Technology Literacy (machines involved in the information age with examples as computers, cloud programming and mobile devices).

- **Life Skills (FLIPS):** Flexibility (one's ability to adapt to changing circumstances). Leadership (motivating a team or others to accomplish a goal), Initiative (self-starters and persist along the line of activities), Productivity (the drive and ambition needed to sustain lifelong learning. Students' ability to complete work in an appropriate amount of time) and Social skills (this has to do with meeting and networking with others for mutual benefits. Business is done through the connections one person makes with the others around them. In spite of the great opportunities 21st century skills present, a wide gap still exists in knowledge-deployment of these skills among students in Nigeria's tertiary institutions. Akpan, Oyakhirome and Udoh, (2024) and Winda, Randi and Levandra (2023) categorized these skills into the following;
- **Critical Thinking Skill:** Critical thinking skills refer to the ability to apply the mental processes of collecting, conceptualizing, analyzing, summarizing, and/or evaluating information obtained or generated through observation, experience, reflection, reasoning, or communication. This is reflected in the use of information of various kinds to plan activities, achieve goals, solve problems, address issues, and perform complex tasks in routine and novel ways. AI can create interactive simulations and scenarios that require students to analyze, evaluate situations. Recent studies show that specific types of thinking skills may become more relevant when working with AI systems.

Analytical, critical, and quick thinking enables employees to understand the data and insights generated by the AI system and use this information to make informed decisions (Delanoy & Kasztelnik, 2020). AI can help organizations automate some processes, but employees still need to use their creativity to come up with new ideas, think outside the box, and solve problems that AI systems cannot. Von Richthofen and colleagues (2022) found that introducing AI systems to automate repetitive tasks allows employees to focus on more complex and customer-facing tasks. This leads to employees developing problem-solving skills to effectively resolve such situations. AI systems can also be used to solve complex problem.

- **Social and Communication Skills:** Social and communication skills refer to the ability to interact positively and productively with others. This is demonstrated by communicating ideas effectively and empathetically, aligning one's goals and actions with those of others, seeking solutions to disagreements, building trust, and resolving conflicts, as well as caring for the welfare and progress of others, managing activities, and offering leadership. Effective and empathetic communication can enable employees to share information and ideas effectively with colleagues and other stakeholders. AI systems are often complex and can be difficult to understand. Effective communication can help ensure that all stakeholders are on the same page and working towards the same goals (Kalogiannidis, 2020). First, innovative AI systems can help managers and employees improve their social and communication skills by providing feedback on their online interactions, helping them identify potential communication gaps or problems, and giving them tools to improve communication

(Ryan et al., 2019). Some AI systems are designed to provide employees with communication-oriented games and activities to help them practice their communication skills and change their communication strategies (Butow & Hoque, 2020). In addition, an AI system can facilitate communication between employees and customers by providing automatic responses and intelligent support. AI can also be used to automate customer service processes through the use of chatbots that can answer customers' questions or provide them with information. AI can facilitate collaboration among students by providing virtual environment for group work as well as enabling communication and feedback through chatGPT, Chabot and virtual assistants.

- **Creativity and Innovation:** AI tools can stimulate creativity by providing students resources for generating new ideas, design solutions and experimenting with various forms of expressions, such as through creative writing or visual arts.
- **Problem Solving:** AI can create interactive simulations and scenarios that require students to analyze, evaluate and solve complex problems thus fostering critical thinking and problem- solving skills.
- **Physical and Manual Skills:** Physical and manual skills refer to the ability to perform tasks and activities that require manual dexterity, agility, and/or physical strength. They can be performed in difficult or dangerous environments that require endurance or strength. These tasks and activities may be performed by hand, with other direct physical interventions, or by using equipment, tools, or technologies that require guidance, movement, or strength, such as ICT devices, machines, hand tools, or musical instruments. Recent studies have highlighted several reasons why employees should enhance their physical and

manual skills in the era of AI integration. There is some evidence in the literature about the impact of AI on workers' physical and manual skills. For example, according to Parker and Grote (2022), AI tools can automate some tasks that require physical and manual skills, allowing workers to focus on more complex and demanding tasks. This can help workers improve their skills in more valuable areas of the business and increase their overall productivity. In addition, AI tools can also improve the accuracy and precision of physical and manual tasks, helping employees to work more efficiently and effectively. AI-controlled robots and machines, for example, can be programmed to perform tasks with a high degree of accuracy and repeatability, reducing the risk of error and improving overall quality (Tong et al., 2021).

- **Information Literacy:** AI can assist students in navigating and evaluating vast amount of information, teaching them how to discern credible sources, validate information and think critically about the content they encounter.

Adoption of Artificial Intelligence in Business Education

Artificial intelligence tools have proven firmly and vastly helpful in various fields, in education or business education. Amongst them, there are intelligent learning or teaching systems, learning analytics (Ley et al., 2023), computer vision, prediction systems, data mining, facial recognition systems, voice or speech recognition systems, virtual labs, virtual reality, hearing and sensing technologies, edge computing, virtual personalized assistants, real-time analysis, AI chatbot, image recognition, personalized learning approach, academic analytics, and adaptive learning method (Park & Lee, 2022). To effectively adopt AI tools, teachers should update their educational practices and embrace the challenges of

technology in teaching (Surugiu, Cătălin & Marius-Răzvan, 2024). Areas in which AI can transform teaching and learning in business education was stated by Winda, Randi, and Levandra (2023) to include the following;

- It provides learning tools which help students with instruction and guidance outside operating hours like chatbot: It promotes personalized learning, adaptive learning, special needs education, bilingual education, gamification, ideation, virtual tutor and immersive learning.
- To reduce teachers administrative workload and to assist with grading and feedback of students. AI has been given two primary responsibilities: predicting students' performance and providing automatic marking. Predicting students' performance appears to have been made easier by AI technologies, especially in online education (Yu, Huang & Chang, 2021). By looking at how much and how well students participate in learning activities like discussion forums, they have demonstrated that they can predict how well students will do in online courses. Because there are no teachers in distance education, this functionality is very important.
- Providing human-machine conversations: AI Chabot's and interactive books were used in the majority of studies, allowing students to converse with machines about their learning. Using structures that contain the expertise and knowledge of human experts, AI techniques mimic the processes of human thought. These methods have been used to create AI Chabot's and language learning books that help students improve their communication skills through ongoing dialogue (Chew & Chua, 2020). Using a question-and-answer format, students interacted with AI agents. The majority of students thought this was a useful and fun way to get answers to simple questions.

- Analyzing student work for feedback: Giving students timely guidance and feedback by analyzing their work and learning process is another common use of AI (Fu et al., 2020). An AI notebook application was used by Bonneton-Botte et al. (2020) to identify and acquire the handwriting of kindergarten students before analyzing its spatiotemporal characteristics (the shape, order, and direction of the segments). At the conclusion of each writing session, the application provided the students with feedback. Vahabzadeh et al (2018) monitored the socially aware emotions and behaviour of autistic students using AI-enabled smart glasses to improve their attention.
- Increasing adaptability and interactivity in digital environments: in order to create digital environments that are more adaptable, AI technologies have been used to collect data on student learning and make interactions easier. Samarakou et al (2015) created an advanced environment for e-learning for engineering students. Westera et al (2020) used techniques like automatic difficulty adaptation, stealth assessment, and facial emotion recognition to profile students. Additionally, they used techniques like nonverbal bodily motion and lip-synchronized speech to create non-playing characters. The adaptability and interactivity of learning were enhanced by the student characters. However, the effects of AI-supported digital environments on student learning outcomes were not addressed in these studies that focused on their creation and implementation.
- Assigning tasks based on individual competence means that tasks for student learning have been customized using AI-based environments. The most significant obstacle to the personalized learning offered by AI technologies is a lack of appropriate learning resources, both in terms of technology and implementation (Hiranker & Kittisunthonphisarn, 2020).
- using of AI in teaching: AI has been given the three responsibilities of supporting teacher professional development, enhancing teachers' ability to teach, and providing adaptive teaching strategies in the classroom (Chiu et al, 2023). Not only have AI technologies been used to support teaching, but also teachers' professional development (Gunawan et al., 2021; Lampos et al., 2021). AI agents that analyzed real-time classroom data, such as teachers' responses to diagnostic tests of their pedagogical content knowledge and their behaviour and questioning skills, provided teachers with suggestions and comments on their teaching. Teaching data have also been used to create models for teaching evaluation (Hu, 2021). Teachers are less likely to be offended by criticism and are encouraged to consider their teaching methods as a result of the objectivity of AI evaluators. Enhancing teachers' ability to teach mean AI and computer-assisted instruction have been used to assist teachers in managing their classroom instruction (Jaiswal & Arun, 2021). By efficiently uploading, assigning, and distributing learning materials and assignments, as well as by speaking out text-based problems, AI technologies have been used to support teaching in various subject classrooms. Teachers' ability to effectively manage their classrooms has been greatly enhanced by these applications (Jarke & Macgilchrist, 2021).
- using of AI in administration: AI's three primary functions in administration are to (i) enhance the performance of management platforms, (ii) provide convenient and individualized services, and (iii) provide evidence-based support for educational

decision-making (Chiu et al, 2023). Enhance the performance of management platforms Assigning AI-enabled routines to tasks like scheduling courses and managing personnel data made these platforms more efficient for administrators and made them more secure by adding a facial authentication function for portal management and examinations Provide convenient and individualized services mean personalized academic and non-academic recommendations made by AI technologies have improved staff productivity and quality. Some administrative tasks can be done by AI technologies instead of staff.

- It is used for plagiarism check for publication and assignments.
- It helps to facilitate smart classrooms which enable lecturers to monitor students' behaviour and character.

Conclusion

The era of artificial intelligence has already come to stay and there are noticeable changes in the way people interact with each other and their environment. AI uses will continue to grow and astonish. However, this paper contends that business education programme in tertiary institutions' engagement with AI must be immediate and multidimensional. As the demands of the labour force continue to shift, business educators must be prepared and equipped to promptly respond to job-specific skills required to navigate new ways of working in labour market. Therefore, students training in business education programme must include the organized synergy of human and practical exposure of students to artificial intelligence tools which are extremely vital for the acquisition of 21st century skills in business education.

Way forward

1. Tertiary institutions should organize training and development programmes for business educators.
2. There should be adequate provision of AI tools and environment for teaching and learning business education courses.
3. Business educators should organize conferences and other activities bothering on the use of artificial intelligence to keep abreast and raise awareness on the utilization of these emergent technologies.
4. Tertiary institutions should create awareness and utilization of the different AI technologies in teaching and learning activities and the curriculum should be reviewed, so that 21st century skills are adequately integrated into the curriculum.

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