

INTEGRATING ARTIFICIAL INTELLIGENCE FOR 21ST CENTURY SKILLS ACQUISITION IN BUSINESS EDUCATION: OPPORTUNITIES AND CHALLENGES

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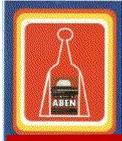
Abstract

Due to the growing presence of artificial intelligence in developed countries, this paper looks at integration of artificial intelligence for effective 21st century skill acquisition in business education programmes in Nigeria. This paper aims to explore the complexities of integrating Generative AI into business education programme practices while navigating challenges and opportunities. Drawing on theoretical frameworks, and practical insights, it seeks to provide a comprehensive understanding of AI's transformative potential in business education. Academic knowledge content alone is no longer sufficient to prepare business education students for the world of work. With increasing global competitiveness, undergraduates in business education need the energetic drive for skills that are challenging and inspiring to thrive in today's world. The study examined integrating artificial intelligence for 21st century skills acquisition for sustainable lifelong learning in business education programme. It further examines the opportunities and challenges associated with integrating Generative Artificial Intelligence (AI) into business educational programmes. This paper has made a modest attempt to clarify the concept of artificial intelligence, meaning of business education, 21st-century skills acquisition, opportunities in AI for business education and ultimately the challenges in implementing AI in Business education programme. The paper finally advocates AI for business education despite its numerous challenges in implementing it in business education programme, draws conclusion and offers key recommendations.

Keywords: Harnessing Artificial Intelligence (AI), Business Education, 21st Century Skills Acquisition, Opportunities, and Challenges

Introduction

Artificial Intelligence is one of the trending concepts in contemporary literature. In other words, Artificial Intelligence is a subject matter that scholars in different fields of endeavor are currently trying to harness its importance and applicability in their unique fields of endeavor. Artificial intelligence (AI) however, is not a new concept or phenomenon. Much of the theory that underpins AI was developed by computer scientists such as Alan Turing, Marvin Minsky and John McCarthy as far back as seventy years ago, and AI has been used for some time now in industries such as finance and in STEM fields. What has changed



dramatically over the past decade is access, speed and availability (Kelly,2021). Digitalization and artificial intelligence (AI) are fast-changing the way we live, communicate, learn and work. Whether people are conscious of this fact or not, individuals are increasingly encountering advanced technologies such as AI in their daily lives. AI has the potential to improve people's lives, but it also raises a number of important policy, ethical and social issues, including job creation and job obsolescence. It represents a source of social and political tension, and risks exacerbating inequalities within and across countries. AI is also transforming the landscape of labour markets. A report by the McKinsey Global Institute suggested that about half the work tasks performed by people could be automated through current technology by 2055 (Manyika et al., 2017).

According to Benhamou and Janin (2018) Artificial Intelligence involves a collection of technologies that enable machines to act with a very high level of intelligence similar to humans. Ralph and George (2010) described artificial intelligence as a cluster of technologies, and various computing science approaches to make flexible rational decisions that align with unpredictable environmental conditions. Current iterations of AI therefore, are largely industry-driven, created with the utmost goals of enabling new businesses and improving on the efficiency of existing fields. Artificial intelligence is gradually transforming every facet of our economy, such as the healthcare, energy, agriculture, finance, manufacturing, education sector etc. Artificial Intelligence can be used to play a major role in shaping the growth of some core sectors in Nigeria economy. The adoption of Artificial Intelligence in business education will help the universities meet up with global digitalization faster. Artificial Intelligence is considered a tool for sustainable development (Ralph and George, 2010).

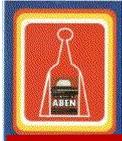
In this dynamic context, the key to guaranteeing an inclusive society lies in the ability to accurately identify and even predict shifts in skills requirements and systemic 'pressure points', such as demographics with limited access and opportunities, and in providing timely responses along the education value chain. While a number of policy responses have so far focused on developing or attracting the limited pool of high-level talent in AI, there is a need for education and training institutions, particularly those that focus on intermediate skills, to acknowledge and embrace their share of the transformation effort.

AI augments human skills in the workplace (Nuseir, Basheer and Aljumah, 2020) and serves as an educational partner, enhancing content and competencies (Tan, 2020). Elhajjar, Karam and Borna (2021) advocate integrating AI into education to equip students with skills essential for future jobs and digital society's demands, such as innovation, creativity, and design thinking. AI in education employs diverse tools, techniques, and systems in educational activities. Investing in human capital to embrace AIEd tools is vital for societal development, despite widespread distrust and misconceptions about AI's role in human activities, especially in education (Antonenko and Abramowitz, 2023).

AI technology in education is expected to grow significantly in the coming decades, presenting new opportunities and challenges (Khosravi, 2022). Researchers, policymakers, and practitioners are integrating AIEd to enhance teaching, personalised learning, assessments, and administrative services (Chiu et al., 2023). AI represents progress in education, offering benefits on multiple levels, and stimulates the evolution of teaching and learning through technologies like chatbots, robots, automated assessment, digitised artefacts, and intelligent tutoring systems, despite occasional organisational challenges (Chiu et al., 2023).

The demand for adaptive digital learning with AI support has surged in the past decade, driven by challenges like the Covid-19 pandemic and social conflicts in contemporary societies (Matzavela & Alepis, 2021). Online and blended learning are now prevalent in modern communities and emerging economies as they strive to integrate these methods into the educational system. AIEd provides feasible solutions to complex societal problems, enabling students to engage closely with global challenges and develop real-life problem-solving skills.

Business education, according to Alabi (2021) is part of the total educational programme. It is an aspect of vocational education. It is the acquisition and development of skills and competencies, attribute and attitudes that are essential for an effective economic system. This position was backed up by the national policy on education which emphasized the acquisition and development of appropriate skills and the development of mental, physical and social abilities and competencies as attributes for individuals to live in



and contribute to the development of the society (Federal Republic of Nigeria, 2004). Business education also focuses on the retraining of workers who find their skills outdated as technology changes. In all, the recipient will be equipped with the appropriate attitude, knowledge and skills to contribute in the labour market (Koko, 2011). The aims of business students according to Koko, 2011 are the following;

- a. to introduce students to the world of business
- b. to expose students to key business topics
- c. to enlighten students with numerous activities that take place in the Nigerian business sector
- d. to provide students with a wide understanding of various business ideas in connection to science and technology
- e. to strengthen the student's capacity to improve his or her business management skills

Based on the definition of business education and its objectives, artificial intelligence is highly needed to stimulate the effective acquisition of 21st-century skills and help its recipient to realise their full potentials and excel in the competitive corporate world. Therefore, the adoption of artificial intelligence in business education is long overdue.

Artificial Intelligence Clarified

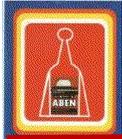
As noted by Calo (2017), there is no universal consensus concerning the standard definition of AI and what it constitutes. AI actually refers to a variety of techniques that vary in complexity and share a common outcome that is the imitation of human cognition or decision-making. Artificial Intelligence is sometimes called Machine Intelligence, it is an Intelligence displayed by machine as opposed to natural Intelligence demonstrated by humans and animals (Mc Corduck,2004). This means machines perform tasks like intelligent beings and animals. Artificial Intelligence is an area of Computer Science with the help of digital electronics that emphasizes the creation of Intelligent machines that work and react like humans. Artificial Intelligence is embedded with the ability to reason, make meaning, generalize or learn from past experiences. According to Benhamou and Janin (2018), Artificial Intelligence involves a collection of technologies that enable machines to act with a very high level of intelligence similar to humans. Merriam-Webster English Dictionary (2018) stated that artificial intelligence is "a part of computer science that deals with giving the ability to the machines to look as if they have natural human intelligence". It has been noticed that computers can be programmed to handle very complex tasks since it was developed in the 1940s. it helps in discovering proofs for mathematics theorems and playing chess with great proficiency. Artificial Intelligence has been studied for years and it is still seen as one of the most challenging subjects in digital computers. Nevertheless, it has created waves all over the world. The main goal of artificial intelligence is to create technology that allows computers and machines to function in an Intelligent manner.

According to McCorduck (2004) the intelligence of artificial intelligence has been broken down to particular traits, which as learning, reasoning, problem-solving, perception, translation between languages, planning and speech recognition. The aforementioned traits have received the most attention in Artificial Intelligence technology. Artificial Intelligence in the educational sector has influenced students, administrative staff and lecturers. Artificial Intelligence application is in wide use by educators and learner from nursery to tertiary education level. Some of the tools and technologies used are teaching robots, Intelligent tutoring systems, and adaptive learning system and such applications are adaptive skill building, scheduling career education and many other.

Branches of Artificial Intelligence

According to Ralph and George (2010), Artificial Intelligence has several specialty areas, such as (1) expert system (2) robotics (3) vision system (4) natural language processing and voice recognition (5) learning systems and (6) neural networks.

1) Expert Systems: An expert system consists of hardware and software that stores knowledge and makes



inferences, similar to those of a human expert. Expert system can do the following:

- a. Provide expertise needed for training and development to share the wisdom and experience of human experts with many people. An expert system will be an easy way to get across many students in the teaching and learning process. Expert systems provide suggestions for spelling and error in google search engine.
- b. Develop solutions faster than human experts.
- c. Provide rare expertise.
- d. Capture and preserve irreplaceable human expertise.
- e. Develop system more consistently than human expertise.
- f. Solve a problem that is not easily solved when using traditional programming technologies.

2) Robotics: Robotics is an interdisciplinary field of science and engineering with mechanical engineering, Computer Science and many others. Robots are deployed to conduct tasks that might be laborious for humans to perform steadily. Robotic has many applications.

3) Vision Systems: Another area of Artificial Intelligence is Vision System. Vision System includes hardware and software that permit computers to capture, store, and manipulate visual images. This feature can search huge database of fingerprints in very high speed. It performs fingerprints analysis with almost the sample Vision level of precision as human experts. Vision System are also effective at identifying people, based on facial features. Visual System save time and cost.

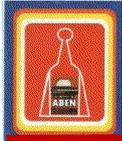
4) Natural Language Processing and Voice Recognition: Natural language processing allows computer to understand and react to statements and commands made in a natural language such as English. For example, google has service called Google Voice Local Search that allows one to dial a toll-free number and search for local business using voice commands and statements. Natural language processing system corrects spelling mistakes, convert abbreviations into words and commands, and allows people to ask question in English. In some instances, voice recognition is used with natural language processing. Voice recognition involves converting sound waves into words. After converting sounds into words, natural language processing systems react to the words or commands by performing a variety of tasks.

5) Learning System: learning System is another branch of Artificial Intelligence; it is a combination of software and hardware that allows a computer to change how it functions or reacts to situations based on feedback it receives. For example, some computerize games have learning abilities. If the computer does not win a game, it remembers not to make the same move under the same condition again. Learning System software requires feedback on results of actions or decisions.

6) Neural Network: Neural Network is an increasingly important aspect of Artificial Intelligence. Neural Networks is also called Neural Net. Neural network is a computer system that can act like or simulate the functioning of a human brain. It uses parallel processors in a structure that is based on the human brain. Furthermore, neural networks can process many pieces of data at the same time and learn to recognize patterns. This branch of artificial intelligence can help in the payment of fees in schools that have high population of students. So that their names will not be entered each time they want to make payment or register for things continuously in the school rather password or pins will be used.

Business Education

Business education according to Iwu (2016) is a programme of study that equips the individual with the occupational skills and knowledge that will enable him/her fit into, and finds job satisfaction in the labour market. Business education as a component of vocational education prepares individuals for career in business and also to be intelligent consumers of economic goods and services. It is a programme that is designed to prepare its recipients with skills and competencies needed for self-reliance and employment. Agbionu as cited in Nwogu (2015), averred business education as that form of instruction that both directly and indirectly prepares the businessman for his calling. This definition aligned with the vocational nature of business education. Afolabi (2003) opined business education as a type of training with the main goal of making people ready for entrance into a business career, and on having entered upon such a career making



them capable of rendering efficient services therein, with the ability to advance their present levels of employment to high levels. Udo and Babangida (2017) business education is that aspect of vocational education which provides skills, knowledge, competencies and attitudes necessary for effective employment in any specific business occupations. Business education therefore, can be summarily defined as education for the development of skills/competencies, attitudes and attributes which are necessary for the efficiency of the economic system

21st Century Skill Acquisition

Skill acquisition is the natural estate of business education programme with self-reliance and more of employability motives. Omidiji and Ogwu (2019) defined skill acquisition as a systematic and sequential development of skills that promotes efficiency and effectiveness in the performance of a specified job. Skill acquisition is the process of developing capacities through all levels of education and training, occurring in formal, non-formal, and on-the-job settings, which enable individuals in all areas of the economy to be fully and productively engaged in livelihoods and to have the capacity to adapt their skills to meet the changing demands and opportunities of the economy and labour market especially in the e-world (Enang and Okute, 2019). Skill acquisition is the ability to be trained on a particular task or function and become expert in it. Some of the needed skills in business education for one to be self-reliant include communication skills, reading skills, and manipulative skills. Skill acquisition has been described by many as the recipe for eradicating extreme poverty and hunger by creating avenue for employment, thereby creating job opportunities and wealth creation. Gumbari in Mshelia (2019) asserts that skill acquisition in Nigeria should be perceived as a catalyst to increase the rate of economic growth, create job opportunities, reduce import of manufactured goods and decrease trade deficits that result from such import.

Ezeji and Okorie as cited in Nwanaka and Amaehule (2011) assert that while stressing the importance of skill acquisition in the national growth, emphatically contended, "that Nigeria's social and economic problems will drastically reduce if people are given adequate vocational training in skills, raw materials, machineries and equipment". It is only with skilled men that materials can be harnessed, manipulated and transformed into products with quality skill acquisition programme.

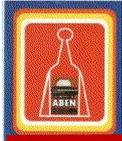
21st century skills are abilities, learning dispositions and competencies required for success in the 21st century society and workplace. With the unprecedented level of unemployment in the labour market and changing job markets, there is an increasing pressure for universities to produce graduates sufficiently exposed to a curriculum that is relevant to the workplace, equipped with related skills, and most importantly skills for survival and lifelong learning. 21st Century skills are essential for individuals to thrive in the modern workplace and they are becoming increasingly important as technology, particularly AI continue 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).

American Association of Colleges of Teacher Education (AACTE-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.

Despite 21st-century skills' great opportunities, a wide gap still exists in the knowledge-deployment of these skills among students in Nigeria's tertiary institutions.

Opportunities of Artificial Intelligence in Business Education

Reducing the workload of Lecturers

One major opportunity for Artificial Intelligence in education is the role that Artificial Intelligence can play in solving workload-related problems experienced by lecturers. In recent years, the lecturers have often shown dissatisfaction with the high workload experienced in education. This increased workload is partly due to the additional administrative tasks that lecturers have been given with the existing range of tasks as well as due to the reduction of new teachers entering the workforce. Artificial Intelligence can support the lecturer by automating (administrative) tasks to reduce the workload. Tasks that we expect Artificial Intelligence to be able to automate and/or facilitate shortly are mainly related to proofreading (e.g., highlighting strengths and weaknesses in an essay, after which the instructor primarily assesses these points) and the composition of the course material (with the help of automatic classification of content).

Personalized learning

The application of Artificial Intelligence in personalized learning is considered a great opportunity. Lecturers have limited time and attention and therefore cannot teach each student individually. Artificial Intelligence does not have this limitation. This allows an Artificial Intelligence to better align education with the wishes of the students. As a result, the teacher is better able to focus his or her attention on 'problem students', and the student goes through the curriculum at his or her own pace and level. The automation of tasks will proceed steadily. We expect that it will start with performing small tasks such as selecting and practicing course material. Improvements within adaptive learning systems through the implementation of deep learning algorithms could aid in these tasks.

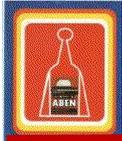
Supporting the teacher with data-driven insights (learning analytics)

Artificial Intelligence can support the lecturer by combining data and making it interpretable. With these learning analytics, the teacher can gain holistic and well-founded insights into students. Artificial Intelligence can expose cognitive biases and thus make education fairer with regards to ethnicity or gender for example. Artificial Intelligence which is not aware of ethnicity or gender cannot take these variables into account in the school advice. It is known that students with a non-western migration background generally receive lower school advice than native-born students. Artificial Intelligence can correct possible (unconscious) prejudices of a lecturer

Improved assessment

In the field of assessment, Artificial Intelligence can enable a shift from periodic assessment to continuous assessment. One major criticism of standardized tests is that they are merely snapshots and not a good representation of a student's knowledge. With Artificial Intelligence, the knowledge level of a student can be continuously monitored without the necessity of periodic tests. Synergy with other digital learning applications

Finally, Artificial Intelligence can increase the effectiveness of existing digital learning resources by replacing a manually programmed rule with rules learned by Artificial Intelligence. In combination with new technologies, such as virtual reality (VR), augmented reality (AR) and serious games, synergy can take place through the application of Artificial Intelligence. These technologies create a virtual space that can be fully controlled so that the learning outcomes can be optimized. A possible risk here is that knowledge gained in a



virtual environment is generalized to a limited extent to 'the real world', and that other, less formalized knowledge acquired by a student at school (for example on a social level) gets less attention.

Challenges of Artificial Intelligence Utilization in Business Education in Nigeria

The utilization of artificial intelligence (AI) in business education in Nigeria is a subject of growing concern. It is often said that Nigeria may take at least eleven years to catch up with the global advancements in AI integration, as highlighted by experts (Olanrewaju, 2018). This lag in AI adoption can be attributed to various pressing challenges and barriers inherent in the Nigerian context. One of the most fundamental challenges faced by business education in Nigeria is the erratic supply of electricity (Nnamdi, & Nwanyanwu, 2021). The consistent power supply is critical for effectively powering of the AI applications that are becoming increasingly essential in modern business education. AI relies heavily on computational processes, and frequent power outages disrupt the seamless operation of AI tools, making them unreliable in a classroom setting or lab.

Furthermore, there is a dearth of adequate infrastructure to support the integration of AI into business education. AI systems require substantial computing power, storage, and network capabilities. Without the necessary infrastructure, implementing AI tools becomes a daunting task. The lack of investment in these critical areas hinders the progress of AI adoption. (Nnamdi, & Nwanyanwu, 2021)

Financial constraints are another significant roadblock to the incorporation of AI in business education in Nigeria. Purchasing and maintaining AI equipment, including hardware and software, can be expensive. For many media organizations in Nigeria, allocating the required funds for such investments is a significant challenge, especially given the already strained financial conditions they often operate under (Olanrewaju, 2018).

Cultural and socio-economic factors also play a substantial role in inhibiting the adoption of AI in business education. These factors can encompass resistance to change, traditional work practices, and the perception that AI might replace human jobs. This resistance to change can further slowdown the integration of AI tools into the journalistic process (Nnamdi, & Nwanyanwu, 2021).

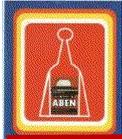
The cost of internet connection poses yet another obstacle. AI often requires a high-speed and stable internet connection for data retrieval, analysis, and sharing (Ndiomewese, 2017). In Nigeria, where internet infrastructure is still developing and access can be costly, this poses a significant challenge. Moreover, there is a shortage of skilled individuals who can effectively handle AI tools. The training of personnel in business education who can handle AI is expensive and can be challenging to find professionals with the necessary expertise in AI and journalism

Integrating AI in Business Education and Skill Acquisition of Business Education Students

Integrating AI into learning business education courses will help students develop the knowledge and skills needed to pursue careers in business, technology, data science and other in-demand industries. It is also essential for developing digital literacy, critical thinking skills, personalized learning skills and preparing students for future academic and career success. According to Ibrahim, (2023), using AI can inspire students to generate ideas and solutions, fostering creativity and innovation, which are essential 21st century skills necessary in today's competitive and evolving job market through the following skills:

Personalized Learning: AI-powered educational platform can tailor learning experiences to the individual needs and learning style of business education students allowing them to progress at their own pace and focus on with additional support.

Critical Thinking and Problem Solving: AI can create interactive simulations and scenarios that require students to analyse, evaluate and solve complex problems thus fostering critical thinking and problem-solving skills.



Collaborative and Communication: AI can facilitate collaboration among students by providing a virtual environment for group work as well as enabling communication and feedback through chatGPT, chatbots and virtual assistants.

Creativity and Innovation: AI tools can stimulate creativity by providing students with resources for generating new ideas, designing solutions, and experimenting with various forms of expression, such as creative writing or visual arts.

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. These are many more reasons for the advocacy of AI integration in business education programme in Nigeria

Conclusion

Artificial intelligence has influenced many sectors and education is one of them. It is a contemporary method of tutoring or teaching and learning, which can address and resolve many issues related to learning in business education. It can resolve issues, such as content accessibility, teacher deficiency where a student can learn without stress or impacting others. Artificial Intelligence implementation and adoption is unavoidable in business education. This paper provides a strong argument for the adoption and use of artificial intelligence application in business education. It also offers the policymakers in education guidance about the opportunities and challenges of artificial intelligence application in business education and how many issues can be addressed through it.

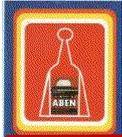
Recommendations

Following the issues raised and conclusion of the study and in line with best practices, recommendations were made that:

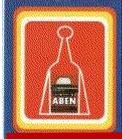
1. Government should invest in the comprehensive training programs for business educators to enhance their digital literacy, data literacy, and understanding of ethical considerations in AI integration. This will empower them to effectively utilize AI tools and navigate ethical challenges.
2. Collaboration and transparency should be encouraged among stakeholders, including business educators, policymakers, technologists, and students, to ensure a holistic approach to AI integration. This collaboration can lead to better-informed decisions and strategies
3. Government should intensify efforts in the provision of ICT facilities and resources, as well as the improvement of power supply in the universities.
4. Business educators should organize lessons and other activities bothering on the use of AIs to keep students abreast of, raise awareness, improve skills and knowledge in the utilization of these emergent technologies.
5. Universities should create awareness and utilization of the different AI technologies in teaching and learning business education courses. University authorities should put into practice user education programmes for students to encourage them learn how to use AI and other technologies for academic purposes and other activities.
6. Business education curriculum should be reviewed, so that 21st century skills be adequately integrated into the curriculum to prepare business education undergraduate students for the world of work and lifelong learning.

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