

APPLICATION OF ARTIFICIAL INTELLIGENCE IN BUSINESS EDUCATION PROGRAMME AND ENTREPRENEURSHIP PRACTICE: ISSUES AND CHALLENGES

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Abstract

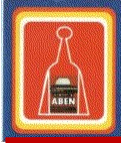
The study assessed the application of artificial intelligence in the Business Education programme and Entrepreneurship practices: issues and challenges. Two research questions and two null hypotheses guided the study. A descriptive survey research design was adopted by the study. The population of this study consisted of all the lecturers from the department of Vocational and Technical Education, Faculty of Education, in the University of Delta, Agbor, Delta State, Nigeria in the 2023/2024 academic session. The total population of lecturers both male and female, was thirty (30). Due to the manageable size, the entire population was used for the study. Therefore, there was no sampling. The instrument for data collection in the study was a structured questionnaire called Application of Artificial Intelligence in Business Education Programme and Entrepreneurship Practices: Issues and Challenges (AAIBEPEPIC). The study found that the application of artificial intelligence in business education and entrepreneurship practices in the University of Delta, Agbor, Delta State was hindered by some issues, ranging from inclusion and equity, cost of maintenance and preparing teachers for AI-powered education. Based on the findings of the study, it was concluded and recommended amongst others: that the proportion should include all business educators irrespective of the digital divide.

Keywords: Artificial Intelligence, Entrepreneurship, Digital Divide, Business Education

Introduction

Business educators bear a significant responsibility to prepare students for success in a constantly changing and fast-paced world of work. It is crucial for Business Educators to persistently adjust to the most recent trends and changes in the world of work, ensuring that their curricula stay relevant and aligned with the ever-changing fluctuations. Business educators should ensure that their graduates are equipped with the essential knowledge, competencies, and mentality to thrive in the dynamic realm of the world of work by keeping up with new trends and advances and emphasizing practical, hands-on learning, business education programme and entrepreneurship practices play a crucial role in shaping the future for self-reliance and propelling the accomplishments of their graduates.

Celik et al. (2022), stated that the term artificial intelligence was first mentioned in 1956 by John McCarthy. Baker and Smith (2019) in Celik et al. (2022), pointed out that Artificial Intelligence does not refer to a single technology but is defined as “computers [that] perform cognitive tasks, usually associated with human minds, particularly learning and problem-solving” (p. 10). AI is a



general term that refers to diverse systematic methods. These methods can be classified as machine learning, neural networks, and deep learning.

To Bailey (2023), artificial intelligence is a branch of computer science that focuses on creating software capable of mimicking behaviours and processes we would consider “intelligent” if exhibited by humans, including reasoning, learning, problem-solving, and exercising creativity. AI systems can be applied to an extensive range of tasks, including language translation, image recognition and generative AI, producing content and knowledge rather than simply searching for and retrieving it.

Furthermore, Koniayev and Gray (2024), observed that the advent of Artificial Intelligence in Education indicates a new era of instructional design and delivery. AI’s integration into the academic sphere is not just about technological adoption but about reimagining the educational landscape to enhance learning experiences, improve operational efficiencies, and equip students with the skills required for the contemporary world of works.

Theoretical Foundations of AI in Education. The application of AI in education is grounded in several critical theories that elucidate its potential and direction. Firstly, the Theory of Computation provides a lens through which we can understand the capabilities and limitations of what computers can achieve, setting the stage for AI’s role in education. It delineates the boundaries of computational logic and algorithms, forming the backbone of AI applications designed to support educational objectives (Razia et al., 2022) in Koniayev and Gray (2024).

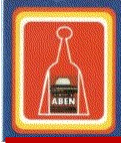
Secondly, Machine Learning (ML), a subset of AI, emphasises the development of algorithms that enable computers to learn and make decisions based on data (Song et al., 2022), in Koniayev and Gray (2024). In an educational context, ML algorithms are instrumental in creating adaptive learning systems that tailor educational content to individual students’ needs and learning pace, fostering a more personalized learning environment.

Lastly, Natural Language Processing (NLP) allows machines to interpret and respond to human language. NLP technologies can automate responses to recipient inquiries, grade open-ended responses, and provide feedback, making the learning experience more engaging and efficient (Kačamakovic & Lokaj, 2021), Elhajjar, Karam & Borna (2021), sensed that, the craving for creative and innovative lecturers coming to terms and embracing change, incorporating contemporary methods and materials and fostering the interaction of students and artificial intelligence is growing in leaps and bounds.

Babu (2023) saw that the swift progress of artificial intelligence (AI) has triggered a transformative influence on all aspects of life, this is necessitating business education to adapt and confront the rising issues and challenges. Business Educators are mostly the major stakeholders to nation building by enlightening and imparting to prospective future generations of youths that will eventually become self-reliant. Tan (2020) opines that the lecturer functions in a variety of roles, and this includes: “content creator and content expert”, a dispenser of knowledge, and “an ethical spiritual guide” with wisdom.

According to Nuseir, Basheer and Aljumah, (2020) Artificial intelligence encapsulates the requisite skills and competencies to function effectively and efficiently in a work environment. Artificial intelligence also serves as a partner in enhancing the quality and delivery of business education, thereby improving content and skills. Similarly, Elhajjar, Karam and Borna (2021) clamoured for the incorporation of artificial intelligence to equip students with skills needed for prospective job opportunities as well as meeting the job requirements in a digitalized world like ours.

Artificial intelligence signifies a growth in business education providing advantages on a variety of phases that accelerates the growth of instructional delivery through OpenAI like ChatGPT 3.5.



which is the free version of ChatGPT released by OpenAI in November 2022. It was trained on data only up to 2021, and while it is very fast, it is prone to inaccuracies.

ChatGPT 4.0. introduced a year later after ChatGPT 3.5 is the newest version of ChatGPT, which is more powerful and accurate than ChatGPT 3.5 but also slower, and it requires a paid account. It also has extended capabilities through plug-ins that give it the ability to interface with content from websites, perform more sophisticated mathematical functions, and access other services. A new Code Interpreter feature gives ChatGPT the ability to analyse data, create charts, solve math problems, edit files, and even develop hypotheses to explain data trends.

Microsoft Bing Chat. An iteration of Microsoft's Bing search engine that is enhanced with OpenAI's ChatGPT technology. It can browse websites and offers source citations with its results.

Google Bard. Google's AI generates text, translates languages, writes different kinds of creative content, and writes and debugs code in more than 20 different programming languages. The tone and style of Bard's replies can be fine-tuned to be simple, long, short, professional, or casual. Bard also leverages Google Lens to analyze images uploaded with prompts.

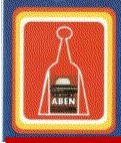
Anthropic Claude 2. A chatbot that can generate text, summarize content, and perform other tasks, Claude 2 can analyze texts of roughly 75,000 words—about the length of *The Great Gatsby*—and generate responses of more than 3,000 words. The model was built using a set of principles that serve as a sort of “constitution” for AI systems, to make them more helpful, honest, and harmless.

Challenges are defined as cumulative, purposeful, or random changes in social development that can lead to both negative and positive synergetic effects. They encompass new ideas, projects, transformation processes, threats, and opportunities that impact on the essential interests of various actors, necessitating urgent responses. The concept of challenges plays a crucial role in understanding the genesis of emerging threats and dangers, forming the scientific foundations for ensuring security. Stepanov (2018). Curtis (2015), defined challenges as a tasks or problems that involve uncertainty and require the skills, abilities, motivations, and knowledge of the person performing it.

In the context of this study, challenges are hindrances and limitations to the application of artificial intelligence in the University of Delta, Agbor, Delta State. The perceived challenges hindering the effective application of artificial intelligence in tertiary institutions include but not limited to: Inclusion and Equity, Preparing teachers for AI-powered education, as well as the High cost of implementation of application of artificial intelligence. Shama (2023).

Challenges of inclusion and equity: Artificial intelligence may increase the existing disparities and divides; this is due to the disadvantaged populations that might get excluded from AI-powered education because of the digital divide. Equity and inclusion should become the main values when designing policies. E.g. close the educational gap between economically rich and poor teachers as well as gender gaps, and Internet unreliability. It is essential to consider the internet as a human right and create multiple international alliances to build basic infrastructure in even the poorest sectors of the developing world. The data we have is irregular and unequally distributed, and limited. However, the technologies covered for capturing data might prove costly for low- and middle-income business educators. The costs need to be weighed carefully against the benefits.

Challenges of High Cost of Maintenance : The maintenance of technological devices can be very expensive. The implication of integrating AI into the educational system means that the education budget of the institution will rise. The expenditure on schools will also be on the high side. Institutions that cannot adapt to innovation will end up lagging. AI education comes at a high price. As new technology emerges, budgets will have to be increased to cover the expenses. Besides the installation of AI software, schools will also need to consider the cost of maintaining the software. Ali et al (2024).



In Ali (2024), reality brings to the forefront the challenges of universal AI adoption. Expertise: Developing the AI model requires expertise in NLP, machine learning, and data science, meaning finding expert intelligence is expensive. Training data: The input training data is fundamental to the functioning of ChatGPT, which, if derived from quality sources, can be expensive to acquire and maintain. Some of the challenges associated with the cost of maintenance in ChatGPT include *Technical* maintenance: The model requires ongoing maintenance, especially software updates, bug fixes, performance, and optimization issues. Data maintenance: The model requires continuous data maintenance, such as data cleaning, data annotation, and data quality monitoring. Thus, technical maintenance costs could be exorbitant within specific educational settings.

Preparing teachers for AI-powered education: Additionally, the integration of AI into the educational system will mean that Business Educators will need to be adequately trained and well-prepared for the purpose to be actualized. However, this will not be as easy as it seems; some demands will have to be met. Also, unifying the system means it will have to be adopted nationally. Consequently, the educational systems of many tertiary institutions will not be able to accommodate this development.

Business educators remain at the forefront of business education programme. They need to possess the know-how on how AI-enabled systems can facilitate learning in such areas as research and data analytical skills to interpret data provided by AI-enabled systems, new skills to manage human and AI resources at their disposal, critical perception on how AI technologies affect human lives, win over repetitive tasks and achieve new skills and competencies (that cannot be replaced by machines provision to make value judgments).

Based on the current advancement and complexity in technologies, the way business and entrepreneurship education are being delivered through the adoption of the conventional lecture method of teaching without the adoption of artificial intelligence as an accelerator and enhancer seems to be a major hindrance. This seems to have led to the perceived production of half-baked business and entrepreneurship education graduates that are not well groomed in the use of artificial intelligence tools. The quantity of graduates in the labour market seems to be on the rise because they seem to be deficient with the basic requisite skills to be employed or to be self-reliant.

It is the wish of the researchers therefore, to investigate the constraints in the use of artificial intelligence for teaching and learning business and entrepreneurship education in tertiary institutions in University of Delta, Agbor, Delta State taking into cognizance the possibilities of general challenges of artificial intelligence in Nigerian schools, such as Inclusion and Equity, Preparing teachers for AI-powered education as well as High cost of maintenance. It is therefore believed that answers to these pertinent questions will help to bridge these information gaps in knowledge.

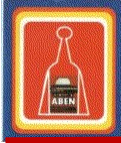
Research Questions:

The following research questions were raised to guide the study.

1. To what extent do challenges of inclusion and equity hinder the application of artificial intelligence in the teaching and learning of Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State, Nigeria?
2. To what extent do challenges of high cost of maintenance hinder the application of artificial intelligence in Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State, Nigeria?

Hypotheses

The following null hypotheses guided the study at a 0.05 level of significance:



Ho1: There is no significant difference in the mean responses of male and female Business educators in University of Delta, Agbor on the challenges of inclusion and equity hindering the application of AI in teaching and learning of Business Education and Entrepreneurship practices.

Ho2: There is no significant difference in the mean responses of young and old Business educators in University of Delta, Agbor on the challenges of high cost of maintenance of AI as a hinderance in the application of AI in Business Education and Entrepreneurship practices.

Methodology

A descriptive survey research design, according to Nworgu (2018), is one in which a group of people or items are considered by collecting and analyzing data in a systematic manner from only a few people or items considered to be the representative of the entire group. The researcher adopted this design because of the study in relation to the population. The population of this study consisted of all the lecturers from the department of Vocational and Technical Education, Faculty of Education, in the University of Delta, Agbor, Delta State in the 2023/2024 academic session. The total population of lecturers both male and female was found to be thirty (30). Due to the manageable size, the entire population was used for the study. Therefore, there was no sampling. The instrument for data collection in the study was a structured questionnaire called Application of Artificial Intelligence in Business Education Programme and Entrepreneurship Practice: Issues and Challenges (AAIBEPEPIC)

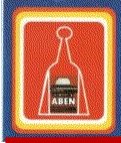
Descriptive statistics such as mean and standard deviation were used to answer research questions. The null hypotheses were tested using t-test statistic. The hypothesis of no significant difference was upheld for items whose P- values are greater than 0.05 level of significance and at the obtained degree of freedom.

Results

Research Question 1: to what extent do challenges of inclusion and equity hinder the use of artificial intelligence in Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State, Nigeria?

Table 1: Mean ratings of the respondents' male and female business educators' challenges of inclusion and equity's application of artificial intelligence in Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State. (N = 30).

S/N	Statement	N	Mean Score	Std .D	Decision
1	the existing inequalities and divides due to the disadvantaged populations might get excluded from AI-powered education because of the digital divide.	30	3.65	0.49	Agree
2	the technologies covered for capturing data might prove costly for low- and middle-income earners.	30	3.59	0.49	Agree
3	Inclusion and equality close the educational gap between economically rich and poor teachers	30	3.75	0.44	Agree



4	Frequent cases of Internet unreliability in teaching and learning Business Education and Entrepreneurship practices.	30	3.52	0.51	Agree
5	Inclusion and equality close the educational gap between genders teachers	30	3.68	0.48	Agree

Source: Field Survey (2024).

The data presented in Table 1 above showed that, the mean ratings of the responses of the respondents on the five (5) items relating to challenges of inclusion and equity hindering application of artificial intelligence in Business Education and Entrepreneurship practices in University of Delta, Agbor, Delta State had mean values ranging from 3.52 to 3.75 are all greater than the cut-off point value of 2.50 on a 4-point rating scale. The above findings revealed that the business educators agreed that all the identified 5 items on challenges of inclusion and equity hinders the application of artificial intelligence in Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State, Nigeria.

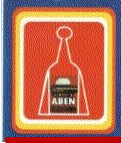
Research Question 2: to what extent do young and old business educators experience challenges of high cost of maintenance in the application of artificial intelligence in Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State

Table 2: Mean ratings of the respondents of young and old business educators who experience challenges of high cost of maintenance of artificial intelligence in Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State, Nigeria.

S/N	Statement		Mean Score	SD	Decision
1	Some of the challenges associated with the cost of maintenance in ChatGPT include ongoing maintenance, especially software updates		3.28	0.74	Agree
2	Technical maintenance costs could be exorbitant within specific educational settings.		3.36	0.67	Agree
3	The AI model requires continuous data maintenance, such as data cleaning, data annotation, and data quality monitoring		3.47	0.60	Agree
4.	The expenditure on schools will also be on the high side. Schools that cannot adapt to innovation will end up lagging.		3.31	0.65	Agree
5	AI education comes at a high price. As new technology emerges, budgets will have to increase to cover the expenses.	30	3.51	0.50	Agree

Source: Field Survey (2024)

Data presented in Table 2 above revealed that, the mean ratings of the responses of the respondents on all five (5) items relating to extent to which young and old business educators experienced challenges of high cost of maintenance of artificial intelligence in Business Education



and Entrepreneurship practices in University of Delta, Agbor, Delta State had mean values that ranged between 3.25 to 3.51 are all greater than the cut-off point value of 2.50 on a 4-point rating scale. The above findings revealed that, business educators agreed that all the identified five (5) items, which relate to the extent to which young and old business educators experienced challenges of high cost of maintenance of artificial intelligence in Business Education and Entrepreneurship practices in the University of Delta, Agbor, Delta State, Nigeria. The values of the standard deviation for all 5 items, as revealed in the table, ranged between 0.83 to 0.94; this showed that the responses of the respondents are close to one another and to the mean.

Test of Hypotheses

Null Hypothesis 1:

There is no significant difference in the mean responses of male and female Business educators in University of Delta, Agbor on the challenges of inclusion and equity hindering the application of AI in teaching and learning of Business Education and Entrepreneurship practices

The t-test of the Mean Ratings of the Responses of Male and Female Business lecturers on the on the Extent to which challenges of inclusion and equity hinders the teaching and learning of Business Education and Entrepreneurship practices.

category	x	SD	N	DF	t-value	P-value	Level of significance
Male	3.55	0.51	12	28	0.944	.3532	0.05
Female	3.72	0.45	18				

The data analysis on table 1 reveals that P-value of .3532 is greater than the significance level of 0.05. This means that we do not have enough evidence to reject the null hypothesis. This means that there is no significant difference in the mean responses of male and female Business educators in the University of Delta, Agbor, on the challenges of inclusion and equity hindering the application of AI in teaching and learning of Business Education and Entrepreneurship practices... Therefore, the null hypothesis of no significant difference for Hypothesis One is upheld.

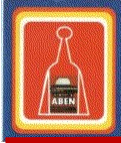
Null Hypothesis 2:

There is no significant difference in the mean responses of young and old Business educators in University of Delta, Agbor on the challenges of high cost of maintenance of AI as a hinderance in the application of AI in Business Education and Entrepreneurship practices.

The t-test of the Mean Ratings of the Responses of young and old Business lecturers on the challenges associated with high cost of maintenance in Business Education and Entrepreneurship practices.

category	x	SD	N	DF	t-value	P-value	Level of significance
Young	3.36	0.62	12	28	0.144	.886532	0.05
Old	3.39	0.63	18				

The data analysis on table 2 reveals that P-value of .886532 is greater than the significance level of 0.05. This means that we do not have enough evidence to reject the null hypothesis., There is no significant difference in the mean responses of young and old Business educators in University



of Delta, Agbor, on the challenges of high cost of maintenance of AI as a hindrance in the application of AI in Business Education and Entrepreneurship practices. Therefore, the null hypothesis of no significant difference for Hypothesis one is upheld.

Discussion and findings

The findings of this study as regards to research question one revealed that challenges of inclusion and equity hindered application of artificial intelligence in Business Education and Entrepreneurship practices in University of Delta, Agbor, Delta State, Nigeria is affected by five identified constraints of challenges of inclusion and equity that hindered application of artificial intelligence in Business Education and Entrepreneurship practices.

The findings of this study with respect to research question two showed that the use of artificial intelligence in business education and entrepreneurship in the University of Agbor, Delta State, is challenged by five identified items. In support of this finding, Asiabaka (2008) observed that an aspect of school management that is generally overlooked is facilities management and maintenance. Okafor (2008) stated that AI tools are damaged by power surges that usually accompany epileptic power supply and are consequently not repaired or replaced where necessary.

The findings of this study with respect to research question three showed that the application of artificial intelligence in business education and entrepreneurship practices in the University of Delta, Agbor, Delta State is challenged by five identified challenges of preparing teachers for AI-powered. The findings agreed with Smith (2018) and Massis (2019), who in their separate findings stated that academic staff currently need to be equipped with knowledge and skills for operating virtually in the latest search engines and fluent internet searching.

Conclusion

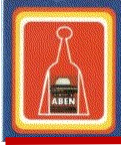
The level of productivity and performance of business education and entrepreneurship practices is heavily reliant on the quality of knowledge imparted on them by lecturers through the application of artificial intelligence as the requisite and appropriate instructional resources and pedagogical techniques. This has seemingly resulted in the production of half-baked business education and entrepreneurship practices of which most of which are not adequately equipped with skills and proficiencies, and have a negative perception on the adoption of artificial intelligence.

It is believed that the issues and challenges are the hindrances in the application of artificial intelligence in business education and entrepreneurship practices in the University of Agbor, Delta State. Based on the findings of the study, it was revealed that the application of artificial intelligence in business education and entrepreneurship practices in the University of Agbor, Delta State, were hindered by some issues ranging from inclusion and equity, cost of maintenance and AI-powered teachers in university of Agbor, Delta State.

Recommendations

Based on the findings made and conclusions drawn from the study, the following recommendations were made:

1. That school management in the University of Agbor, Delta State, Nigeria should imbibe good maintenance culture of school facilities to ensure prolonged usage of the available Artificial Intelligence facilities in the area.
2. Artificial Intelligence capacity building programmes should be constantly organized to upgrade digital skills and competence of the business educators through in-service training, conferences, seminars and workshops.
3. The government should liaise with necessary agencies such as Education Tax Fund (ETF) for procuring tools of Artificial Intelligence for University of Agbor, Delta State.



References

- Ali, O., Murray, P. A., Momin, M., Yogesh, K., Dwivedi, & Malik, T. (2024). The effects of artificial intelligence applications in educational settings: Challenges and strategies. *Technological Forecasting and Social Change*, 199, 123076. <https://doi.org/10.1016/j.techfore.2023.123076>
- Asiabaka, I. P. (2008). The need for effective facility management in schools in Nigeria. *New York Science Journal*, 10–21. <http://www.sciencepub.org>
- Babu, G. M. (2023). The implications of ICT and NKS for science teaching: Whither Nigeria. *Complex Systems*, 17, 113–124.
- Bailey, J. (2023). AI in education: The leap into a new era of machine intelligence carries risks and challenges, but also plenty of promise. *Education Next*, 23(4), 28–35.
- Celik, I., Dindar, M., Muukkonen, H., & et 'al. (2022). The promises and challenges of artificial intelligence for teachers: A systematic review of research. *TechTrends*, 66, 616–630. <https://doi.org/10.1007/s11528-022-00715-y>
- Curtis, F. (2015). What is the definition of challenges? Typeset. <https://typeset.io/questions/what-is-the-definition-of-challenges-33qhx07tzc>
- Elhajjar, X., Karam, S., & Borna, S. (2021). Artificial intelligence in marketing education programs. *Marketing Education Review*, 31(1), 2–13. <https://doi.org/10.1080/10528008.2020.1835492>
- Eyitayo, R. (2018). *Principle and practice of teaching*. George Allen and Unwin Ltd.
- Kaçamaković, S. U., & Lokaj, T. I. (2021). Authoring intelligent tutoring systems: An analysis of the state of the art. *International Journal of Artificial Intelligence in Education*, 10, 98–129.
- Koniayev, K., & Gray, A. (2024). Leveraging artificial intelligence to transform higher education: Opportunities and challenges. London School of Science & Technology. <https://www.lsst.ac/blogs/leveraging-artificial-intelligence-to-transform-higher-education-opportunities-and-challenges/>
- Massis, J. E. (2019). *Learning*. LearningDA. <http://www.learningda.org/>
- McGrath, C., Pargman, T. C., Juth, N., & Palmgren, P. (2023). University teachers' perceptions of responsibility and artificial intelligence in higher education: An experimental philosophical study. *Computers and Education: Artificial Intelligence*, 4, Article 100139. <https://doi.org/10.1016/j.caeai.2023.100139>
- Nuseir, M., Basheer, M. F., & Aljumah, A. (2020). Antecedents of entrepreneurial intentions in smart city of Neom, Saudi Arabia: Does entrepreneurial education on artificial intelligence matter? *Cogent Business & Management*, 7(1), 1–16. <https://doi.org/10.1080/23311975.2020.1825041>
- Nworgu, L. K. (2018). *Research methodology and statistics in behavioural sciences*. Global Journals. <https://globaljournals.org>
- Okafor, E. E. (2008). Development crisis of power supply and implications for industrial sector in Nigeria. *Studies of Tribes and Tribals*, 6(2), 83–92.
- Sharma, L. (2023, April 19). Artificial intelligence challenges in education. *The Financial Express*. <https://www.financialexpress.com/jobs-career/education-artificial-intelligence-challenges-in-business-education-2975506/>
- Smith, B. B. (2018). Pedagogy and curriculum. Center for Media in Community, EDC. www.digitaldivide.net/news
- Stepanov, V. N. (2018). "Challenge" as a fundamental category of the national security and riskology. *Elektrotechnik und Informationstechnik*. <https://typeset.io/journals/elektrotechnik-und-informationstechnik-oqb4mfkh>