Integration of Artificial Intelligence (AI) in the Implementation of Business Education Curriculum in Tertiary Institutions in Delta State

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Abstract

The study was executed to investigate the integration of AI-driven tools in the implementation of the curriculum of business education in higher institutions in Delta State. In order to attain the objectives of the study, two research questions and two null hypotheses were formulated to guide the study. The descriptive survey research design was adopted by the study. The population of the study comprised of sixty-three (63) business education lecturers (made up of 21 males and 42 females) in three selected higher institutions in Delta State. There was no sample for the study as the entire population of the study was small and manageable. A structured questionnaire titled: Integration of Artificial Intelligence in the Implementation of Business Education Curriculum in Tertiary Institutions (TEBACIIQ) was used for data collection. The research instrument was validated by an expert in the Department of Business Education, University of Delta, Agbor. The Cronbach Alpha statistic reliability technique was used to determine the reliability of the research instrument which yielded a co-efficient of 0.81. The descriptive statistics of mean and standard deviation were adopted to analyze the research questions raised in the study while the Pearson r statistic was used to test the null hypotheses at 0.05 level of significance. The findings of the study revealed that business education lecturers were knowledgeable about AI-driven tools, the degree of availability of AI-driven technologies were abysmally low at higher institutions and the degree of the use of AI-driven tools in the implementation of the curriculum of Business Education. Additionally, the obstacles bedeviling the use of AI-technologies in the implementation of the curriculum of business education were: exorbitant prices of AI-technologies, erratic digital development in Nigeria, insufficiency of AI-driven proficiency among lecturers, insufficient training and development of lecturers on AI-driven tools, resistant to change and negative perception among lecturers about AI. Based on the findings, it was recommended among others that there is need for adequate training and development of lecturers on the integration of AI in Business Education instructional activities in tertiary institutions in Delta State for global competiveness.

Keywords: Artificial Intelligence (AI), Business Education, Implementation, Curriculum and Tertiary Institutions

Introduction

The history of AI could be linked to 1956, when Jon McCarthy in an academic seminar at Dartmouth College in Hanover, New Hampshire coined the concept "artificial intelligence".

Therefore, investment and interest in AI came into limelight in the first quarter of the 21 century, when machine learning was successfully appropriated to many problems in academia and industry as a result of the presence of influential computer hardware (Reagan, 2018). AI commonly referred to as machine intelligence, is intelligence appropriated by machines in contrast to natural intelligence demonstrated by individuals and other animals. It is a human operating systems that is traditionally founded on human intelligence and is expected to demonstrate huge cognitive function to human intelligence like learning, comprehending, inferring, thinking and communicating (Ulaşan, 2023). Additionally, AI is a technology that fosters the resolution of issues and copies the thinking processes of humans, based on the concept of imitating human cognitive functions (Sağlamtunç, 2020).

In this present era, AI is appropriated in numerous fields like defence industry, public administration, justice system, health sector, business, accounting and education, both in pedagogical activities and delivery of the curriculum at the nursery and higher level of education. Therefore, curriculum is described as stipulated and structured initiative which students must cover comprehensively for the purpose of passing a specific phase of education. It is also defined as learning experience that comprises a specific topic of discourse in system of education. Additionally, curriculum is an academic plan that enunciate the aims and objectives to be attained, which topics to be taught, and which techniques are to be utilized for teaching, learning and assessment.

However, if the core curriculum is not executed, all efforts put in place in the designing and structuring of the curriculum are voided. Curriculum implementation could be defined as the practical application of the core curriculum or document in the instructional process. Curriculum implementation is designed and orchestrated in variety of phases in attaining the expected core curriculum of the goals of the curriculum. This entails that for the purpose of achieving the objectives of the curriculum, emphasis must be revolved around the quality content and delivery of the educational programmes implemented as well as the quality and qualification of the lecturers who use the curriculum of a variety of topic of discourses (subject area), business education inclusive.

Ezeabii (2017), defined Business Education as a component of vocational education which impart learners with the requisite skills and theoretical knowledge required for productivity in the world of work either for employment or self-dependent. Business education is dispensed through four distinct routes: Accounting Education, Office Technology and Management Education (OTME), Entrepreneurship Education and Marketing Education in line with the National Policy on Education. These programme is geared towards the impartation of the requisite skills for emerging jobs and technologies, inspiring them to function effectively in the labour market or self employment. The medium of instruction is dynamic, inspired by the cravings of the ever-evolving labour market. The overarching objectives of business education programme are to produce competent graduates skilled and proficient in teaching courses on business education. In relation to that, business education programmme encapsulates the vocational spirit, cultivates the entrepreneurial skills of students and assist them to be imparted with the business initiatives to flourish in the labour market as employees or in their private businesses as self-employed.

To attain these objectives, specific entry steps, vital resources, sophisticated technology is needed in the attainment of the aims and objectives of higher institutions in Nigeria tertiary institutions. In line with

the definition of National Policy on Education, higher institution is the education acquired after secondary schools in universities, colleges of education, polytechnics, monotechnics, just to mention but a few (FRN, 2014). Higher institutions are created to solidify the production of middle and higher phase personnel in variety of national priority. However, Colleges of Education in line with the assertion of Tsojon and Gidado (2017) is mainly a teacher training institution created to manufacture teachers to teach at the secondary schools. They are higher educational institutions that train and equip intermediate teachers for a minimum duration of three years to enable them to be competent to teach their respective subjects. In Nigeria, colleges of education serve an essential role in transforming the lives of prospective teachers and professional in numerous field of study. Therefore, incorporation of digital tools like AI-driven technologies in the implementation of any curriculum such as Business Education remain sacrosanct in colleges of education (Ezeh, 2018).

Edidiong and Jude (2022), enumerated on the AI-driven technologies for implementation of any curriculum encompasses the following: AI personal computer and search engines/Chatbots used as virtual assistants, AI audiopen and Eduaide AI lesson development tool among others. The researcher maintained that through the use of AI-driven technologies, the problem of paucity/lack of laboratory apparatus and resources could be hijacked by AI application. Virtual workshops or laboratories may be utilized to strengthen dilapidated workshop and laboratories for vocational skills development of business education students so that the students could be equipped with practical experience of all business education vocational components taught and this would make the learning of the course easy and meaningful and saleable skills may be dispensed in the process (Livetile, 2021). Additionally, Savaş (2021), asserted that AI-driven tools could help lecturers in dispatching assessment on lessons and topics, and could ascertain whether students comprehend the lesson and topics and report back to the lecturers. It also assists lecturers enhance the quality and delivery of their profession and supply missing information. They could also strengthen lecturers with sophisticated information. It assists lecturers dissect examinations. In academic settings, AI could automate classification and assist schools with data management.

Niyogisubizo (2022), asserted that AI assists lecturers save time and limit mistakes by helping them with exercises like grading, lesson planning, and attendance taking. Simultaneously, AI could regulate their actions and thus mistakes could be eliminated. Additionally, AI-driven tools could assist lecturers with the requisite information about which courses students are unproductive in and structure the class accordingly. In relation to that, lecturers could identify remarkable and sound students and their skills could be unraveled earlier. AI could forecast the prospects of students dropping out of schools. AI gathers students' data and efficiently alerts lecturers about students at the prospects of dropping off. Sound and accurate prediction also assist lecturers for quick intervention of unregulated and unchecked behaviours which stimulate dropping off and sound preventive measures (Niyogisubizo, 2022). However, with all the advantages of AI to the technological progress of the nation, Nigeria has not really enjoyed much of it particularly in the implementation of curriculum in business education. This may be characterized by slow speed digital growth in less developed nations and low degree of knowledge among the lecturers in higher institutions on the integration of AI for sound implementation of curriculum (Edidiong & Jude, 2022).

Additionally, Savaş (2021), affirmed that the use of AI for curriculum implementation among lecturers are hindered by some obstacles like: exorbitant prices of AI-technologies, erratic digital development in Nigeria, insufficiency of AI-driven proficiency among lecturers, insufficient training and development of lecturers on AI-driven tools, resistant to change and negative perception among lecturers about AI

among others and these challenges affect both genders of the lecturers (male and female) on the adoption of AI for curriculum implementation (Stone, 2017).

This entails that the obstacles bedeviling the application of AI in business education curriculum implementation in higher institutions are appropriated to both male and female lecturers. Thus, it is therefore on this background, the researchers sought to assess the integration of artificial intelligence (AI) in the implementation of business education curriculum in tertiary institutions in Delta State.

Statement of the Problem

The application of AI sound delivery and effective implementation in Nigeria and the important role AI plays in the digital development of the nation cannot be overemphasized. It offers platforms for lecturers to be exposed to variety of methodologies of pedagogical delivery, assessment of students' proficiency and evaluation, lesson note preparation, content delivery proficiency and grading. With all the benefits of AI to the digital development of the nation, Nigeria seemed not take advantage of it, particularly in the area of incorporating of AI for business education curriculum implementation. This may be blamed on the fact that knowledge of AI has not been comprehensively localized and used. Application of AI for teaching and learning of business education in higher institutions seems to be remote at the moment. Hence, many lecturers seem not to be knowledgeable added with the insufficient availability of AI-driven tools in higher institutions which also influence the degree of the application of AI for pedagogical activities. This has accelerated the poor delivery of curriculum in higher institutions and poor learning outcomes on the side of students where numerous graduates do not seem to be imparted with sufficient skills and knowledge on the courses they read.

Consequently, it is on this backdrop it became imperative to assessed with empirical evidence the integration of artificial intelligence (AI) in the implementation of business Education curriculum in tertiary institutions in Delta State.

Purpose of Study

The main purpose of the study is to investigate the integration of Artificial Intelligence (AI) in the implementation of business education curriculum in tertiary institutions in Delta State.

Specifically, the study sought to:

1. investigate the level of implementation of AI in business education curriculum by business education lecturers in tertiary institutions in Delta State.

2. know the challenges confronting the integration of AI in business education curriculum implementation by business education lecturers in tertiary institutions in Delta State.

Research Questions

The following research questions guided the study:

1. What is the level of the integration of AI in the implementation of business education curriculum in tertiary by business education lecturers in tertiary institutions in Delta State?
2. What are the challenges confronting the integration of AI in business education curriculum implementation by business education lecturers in tertiary institutions in Delta State?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

Ho1: There is no significant difference between the mean ratings of male and female business education lecturers on the implementation of AI in business education curriculum in tertiary institutions in Delta State.

Ho2: There is no significant difference between the mean ratings of male and female business education lecturers on the challenges confronting the integration of AI in business education curriculum implementation in tertiary institutions in Delta State.

Methods

The study adopted descriptive survey research design. The population of the study was 63 business education lecturers comprising 21 males and 42 females in three tertiary institutions in Delta State. They are Delta State University Abraka, University of Delta, Aghor and Southern Delta University, Ozoro. The entire population of the study was adopted because of its manageable size. The instrument for data collection was a structured questionnaire titled: Integration of Artificial Intelligence (AI) in the Implementation of Business Education Curriculum

Questionnaire (IAIIBECQ). It was validated by an expert in the Department of Business Education, Delta State University, Abraka. The reliability of the instrument was 0.81 obtained using Cronbach Alpha statistic. The research questions were answered using mean and standard deviation while the hypotheses were tested at 0.05 level of significance using Pearson r statistic. Therefore, the mean cut-off mark of 2.50 and above was considered as agreed while the mean cut off below 2.50 was considered

as disagreed. With respect to the hypotheses, the hypotheses of no significant difference was upheld for items since t-calculated value are less then t-table value and rejected on the contrary.

Results Research Question 1

What is the level of the integration of AI in implementation of business education curriculum by business education lecturers in tertiary institutions in Delta State? The data for answering the research question two is presented in Table 1 below.

Table 1: Mean ratings of the respondents on the integration of AI in implementation of business education curriculum by business education lecturers in tertiary institutions in Delta State?

S/N	Item Statements	X	SD	Remarks
1.	AI is used for lesson planning and preparation in business education	1.54	0.60	**NS**
2.	AI is used for the development of business education instructional content	1.43	0.75	**NS**
3.	AI is used as virtual platform to provide students with firsthand information in business education	1.30	0.84	**NS**
4.	AI is used in teaching students different skills	1.38	0.78	**NS**
5.	AI is used to access information on particular subject in business education.	1.49	0.64	**NS**
6.	AI is used to enhance communication in the classroom by lecturers	1.39	0.73	**NS**
7.	AI is used as self-support for extra tutorials for study clarification in business education subject matter.	3.53	0.62	**NS**
8.	AI keeps the instructors updated with new skills on the subject area.	3.47	0.70	**NS**
9.	AI is used to identify curriculum gaps	3.49	0.59	**NS**
10.	Evaluation of students' performance	3.37	0.71	**NS**

Grand Mean	**3.29**	**0.69**	**NS**

Note: X = Mean.

SD = Standard Deviation.

N = Number of Respondents.

The data presented in Table 1 above showed that the mean responses of the respondents in all the 10 items ranged between 1.62 and 1.74 indicating that AI tools were used on low extent in the implementation of business education curriculum in tertiary institutions in Delta State. The standard deviation of all the 9 items also ranged between 0.42 and 0.48 which shows that the respondents were close to one another in their responses.

Research Question Two: What are the challenges confronting the integration of AI in business education curriculum implementation by business education lecturers in tertiary institutions Delta State?

Table 2: Mean and Standard Deviation on the challenges confronting the adoption of AI in Business Education curriculum implementation by business education lecturers in tertiary institutions in Delta State

S/N	Item Statements	X	SD	Remarks
1.	Poor technological development in Nigeria	3.54	0.60	**Agree**
2.	Inadequate technical know-how among lecturers	3.43	0,75	**Agree**
3.	High cost of AI tools	3.30	0.84	**Agree**
4.	Inadequate training and development of lecturers on utilization of AI	3.38	0.78	**Agree**
5.	High cost of AI tools	3.30	0.84	**Agree**
6.	Resistance to change by some lecturers	3.49	0.64	Agree
7.	Technological phobia among lecturers	3.39	0.73	**Agree**
8.	Inability of power supply in tertiary institutions	3.53	0.62	**Agree**
9.	High cost of subscription for some AI application	3.47	070	**Agree**
10.	Poor funding of education	3.49	0.59	**Agree**
11.	Capital intensive nature of maintaining steady supply in an academic environment constitutes a			

	problem in school	3.37	0.75	**Agree**
12.	Unstable supply of electricity affects effective maintenance of artificial intelligence facilities in school.	3.29	0.69	**Agree**
	Grand Mean	3.26	0.70	Agree

Note: X = Mean.

SD = Standard Deviation.

N = Number of Respondents.

The data presented in Table 2 above showed that, the mean ratings of the responses of the respondents on all the eleven (11) items relating to challenges confronting the adoption of AI in Business Education curriculum implementation in tertiary institutions had mean values ranging from 3.29 to 3.54 which 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 lecturers agreed that all the identified 11 items are challenges confronting the adoption of AI in business education curriculum implementation in tertiary institutions. The values of the standard deviation for all the 11 items in the table ranged between 0.59 to 0.85; this implied that the responses of the respondents are close to one another and to the mean.

Testing of Hypotheses

Hypothesis One

There is no significant difference between the mean ratings of male and female business education lecturers on the integration of AI in implementation of business education curriculum in tertiary institutions in Delta State.

Table 3: Person r Result of the mean ratings of male and female business education lecturers on the integration of AI in implementation of business education curriculum in tertiary institutions in Delta State.

Variable	N	Pearson r	Pearson 2	2-Score critical	Decision
Male	37	-186			Not
Female	26		-0.11	significant ± 1.96	

Table 3 displayed that Pearson r of -.186 is a very weak and negative relationship extent of the used of AI in implementation of business education curriculum in tertiary institutions. It was also shown that a small or weak strength of Pearson r correlation of -0.11 existed in the level of frustration. Since there were two groups, their Pearson r was transposed to z-scores to test the hypothesis. The result indicated a non -significant relationship since -1.96>z observed of 0<1.96. The hypothesis is retained. It implies that nature of pedagogical tasks did not indicate any difference on the extent of the integration of AI in implementation of business education curriculum by business education lecturers in tertiary institutions in Delta State.

Hypothesis Two

There is no significant difference between the mean ratings of male and female business education lecturers on the challenges confronting the integration of AI in business education curriculum implementation by business education lecturers in tertiary institutions in Delta State.

Table 4: Pearson r Analysis Result of the mean ratings of male and female business education lecturers on the challenges confronting the integration of AI in business education curriculum implementation in tertiary institutions in Delta State.

Variable	N	Pearson r	Pearson r2	Sig.	Decision
Male	37	-0.67	0.0045	.226	
Female	26		.032	,759	

The result of the t-test analysis as contained in table 4, which indicated that Pearson correlation r is -0.67 and a table value of .226. The result shows that Pearson correlation r of -0.67. The correlation co-efficient r of .032 is a very weak positive relationship. The table value of.759 is greater than .05 significant level (P>0.05). Therefore, there is no significant relationship on the challenges confronting the integration of AI in business education curriculum by business education lecturers in tertiary institutions in Delta State.

Discussions of the Findings

The findings were discussed in accordance with the research questions and hypotheses that guided the study as follows:

The findings of the study on research question three showed that AI tools were used on low extent in the implementation of Business Education curriculum in tertiary institutions. Meanwhile, the corresponding hypothesis tested revealed that there is no significant difference between the mean ratings of male and female Business Education lecturers on the extent of the used of AI in implementation of Business Education curriculum in tertiary institutions. Thus, the findings align with the study of Umoh (2024) that the extent of the applications of artificial intelligence gadgets for teaching and learning business education in colleges of education was on low extent. The findings also relate with the study of Chassignol, Khoroshavin, Klimova, and Bilyatdinova, (2018) that the level of the used of AI tools for instructional tasks in schools are on a low extent.

From the findings of the study on research question two it was revealed that the challenges confronting the adoption of AI in Business Education curriculum implementation in tertiary institutions include: Poor technological development in Nigeria, inadequate technical know-how among lecturers, high cost of AI tools, inadequate training and development of lecturers on utilization of AI, resistance to change by some lecturers, technological phobia among lecturers and poor funding of education. Also, the corresponding hypothesis tested revealed that mean ratings of male and female Business Education lecturers on the challenges confronting the adoption of AI in business education curriculum implementation in tertiary institutions. Thus, the study is in tandem with Savaş (2021) who found out that the utilization of AI for curriculum implementation among lecturers are retard by some challenges such as: high cost of AI support devices, poor technological development in Nigeria, poor technical know-how among lecturers, poor technical support and infrastructure, inadequate training and development of lecturers on AI technical know-how among others. The findings also align with the study of Edidiong and Jude (2022) that Nigeria has not really enjoyed much of the benefits of AI in the implementation of curriculum due to slow speed technological advancement in developing countries and low level of awareness among the lecturers in tertiary institutions on the integration of AI for effective implementation of curriculum.

Conclusion

From the findings of the study, it was concluded that AI tools were used on low extent in the implementation of Business Education curriculum in tertiary institutions. Meanwhile, the challenges confronting the adoption of AI in business education curriculum implementation in tertiary institutions include: poor technological development in Nigeria, inadequate technical know-how among lecturers, high cost of AI tools, inadequate training and development of lecturers on utilization of AI, resistance to change by some lecturers, technological phobia among lecturers and poor funding of education.

Recommendations

Based on the findings and conclusion drawn from the study, it was recommended that:

1. There is need for lecturers in tertiary institutions to show more interest on AI adoption for instructional purposes so as to ensure AI are used on a very high extent in the implementation of Business Education curriculum in tertiary institutions for students' acquisition of relevant knowledge and employability skills for sustainable livelihood.

2. The federal government of Nigeria together with the State should prioritize adequate funding of education to ensure that the needed infrastructural facilities are provided with AI tools to enhance effective implementation of business education curriculum in tertiary institutions in Delta State.

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