

## ADOPTION AND UTILIZATION OF ARTIFICIAL INTELLIGENCE (AI) IN TEACHING BUSINESS EDUCATION CONTENT IN THE 21<sup>ST</sup> CENTURY

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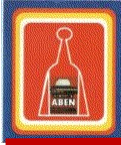
### Abstract

*The study assessed the extent of adoption and utilization of artificial intelligence (AI) in teaching business education content in the 21<sup>st</sup> century. Two research questions and two hypotheses guided the study. The study adopted a descriptive survey research design. The population of the study comprised one hundred and twenty-five (125) business education lecturers in all the federal universities in the south-south geopolitical zone of Nigeria. The entire population was studied since the population size was manageable. The instrument for data collection was a structured questionnaire titled Adoption and Utilization of Artificial Intelligence (AUAIQ) on a 4-point rating scale. The instrument yielded a reliability confidence of 0.87 indexed using Cronbach Alpha testing. The researchers administered and retrieved all 125 copies of the instrument, which was used for data analysis. The collected data were analyzed using the mean and standard deviation to answer the research questions, while an independent t-test was used to test the null hypotheses at 0.05 level of significance. The findings of the study revealed that there is a low extent of adoption and utilization of artificial intelligence (AI) in teaching business education content in the 21<sup>st</sup> century. It was concluded that the world is migrating from analog to digital, and there is an urgent need for university education, especially business education lecturers, to migrate the classroom from the traditional way to a digital classroom to meet the global standard. The study recommended, among other things, that educational policymakers should frequently make rooms for seminars and workshops where business education lecturers could be adequately trained and retrained regularly on the use of artificial intelligence (AI) in teaching business education course content in the twenty-first century.*

**Keywords:** Adoption, Utilization, Artificial Intelligence, Teaching, Business Education and Content.

### Introduction

There is global change in recent time affecting every sector due to simulation of human intelligence processes by machine, especially the computer systems, which is termed artificial intelligence. Artificial intelligence, known as a system-based algorithm capable of generating intelligent behavior, imitating human mental processes and actions, and recognizing trends, is establishing itself as an intriguing instrument for changing how business education lecturers demonstrate their teaching and learning processes (Luckin et al., 2016; Wardat et al., 2023). Artificial intelligence (AI), with its numerous tools or innovations such as machine learning, data analytics, and processing of natural languages (Mohamed et al., 2022), is thought to be capable of handling several activities previously performed by humans, including teaching and learning, data analysis, and interpretation. As institutions continue to incorporate AI into the methods of instruction and learning, the use of artificial intelligence in the teaching and learning of business education content becomes not only necessary but also crucial for reaching global standards (Farrokhnia et al., 2023). The premise revolves around the hyperlinks between AI and business education lecturers' content delivery, which provides novel possibilities for gaining a comprehensive

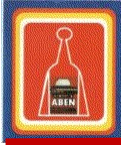


understanding of the dynamic learning system, optimizing teaching tactics, and making decisions based on evidence (Whalen et al., 2023).

According to Firat (2023), artificial intelligence (AI) is an era of teaching and learning that studies how machines may solve complicated problems in a more human-like way. It is also a branch of computer science concerned with the analysis and development of intelligent systems and applications where machines mimic human cognitive procedures and behaviors while recognizing trends. Bessong et al. (2022) opined that AI is the science of making a machine think and behave like an intelligent person. Artificial intelligence is derived from the words "artificial" and "intelligence." The phrase "artificial" refers to anything mimicked but not false in the sense of being fake (Ahmet, 2018). According to Mehrotra (2019) Artificial Intelligence (AI), utilizing various instruments or gadgets that encompass machine learning, data visualization, and processing of natural languages that is capable of handling several tasks previously performed by humans, such as virtual classrooms, Automatic Grading Systems, analysis of information, web-based teaching and learning platforms that use methods such as augmented and virtual reality, ramification, animation, video-on-demand, experiments, automation, teleconferencing, multimedia files, 3-D technological advances, virtual labs, computer programs, systems for recognizing faces, social media-social network sites, blogging via micro blogging systems, and smart phone applications. Marr (2020). Despite that, such AI technologies have the potential to revolutionize the teaching of business education by changing the way students learn and enhancing the efficiency of business educators. According to Olasunkanmi (2020), the use of artificial intelligence in education originated more than a decade ago in countries with advanced economies and has progressed through many developmental phases, and there is clear evidence of the various advantages that administrators, educators, and learners are reaping from its implementation.

Relatively, Adiguzel et al. (2023) stated that the present landscape of business education is comparable to the regulations and procedures of traditional teaching methods, despite one of the issues being the teaching and learning of business education content in the age of digital technology. The current business education curriculum content should be programmed to use internet-based platforms, which necessitate advanced analytical instruments capable of handling enormous amounts of information (Elbanna et al., 2023); it is therefore important to employ innovative approaches that can eliminate the disparities across the conventional method, which had been deemed to be frequently laborious, restricted scaling, stretched time frames, and costly in terms of resources and the demands of modern education, where business education is inclusive. This study intends to address this essential issue by diving into AI's unexplored possibilities for teaching business education curriculum in the twenty-first century.

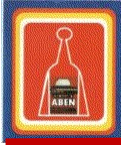
Huang (2023) observed that, in today educational system, education has evolved beyond the typical classroom environment in which the teacher imparts knowledge to the pupils while the students receive it. In view of this, Atah et al. (2023) asserted that there is an urgent need for university administrators to continue to incorporate AI into the teaching and learning process. The use of AI in business education becomes not only vital but also relevant for fulfilling global standards (Onwubuya et al., 2023). The rationale is that the connections between AI and the teaching and learning of business education programs open new avenues for gaining a comprehensive understanding of the adaptive learning system, optimizing instructional tactics, and making evidence-based judgments. Teaching is the conscious and deliberate effort by an advanced or experienced person to impact knowledge about expertise, abilities, and consequently upon an undeveloped or barely experienced individual, with the goal in mind that the latter will learn or come to believe that which has been taught. Teaching includes the various principles and methods of education or instruction that an educator uses to influence the abilities and expertise of students.



According to Marr (2020), artificial intelligence (AI) in business education allows for a consistent and global learning environment: with AI, education is placed on the internet and made web-based, making learning accessible to all, overcoming social, physical, race, gender, and international boundaries. Virtual reality, for example, extends the process of learning beyond the learning environment by establishing a global classroom since AI can link students to the virtual classroom. Business educators are aided in developing effective lesson plans and preparations, as well as being provided with relevant learning materials to maximize learning outcomes (Lynch, 2019). Additionally, artificial intelligence could enable students and learners to accomplish interactive and tailored instruction in shorter periods of time. AI improves learners' involvement and interaction with educational resources, which makes it especially useful for making business education courses more realistic. Students can also have hands-on learning through simulated laboratories, activities, an interactive teacher, and a computerized grading system, which increases their educational experiences and, ultimately, learning (Gera et al., 2021). Akib et al. (2019) asserted that several nations are currently worried about the use of artificial intelligence (AI) in education, specifically how to make technology helpful to all communities. Inevitably, Nigeria has not benefited much from it, particularly in terms of employing artificial intelligence to teach business education. This is because knowledge of artificial intelligence has not been adequately localized and applied (Olasunkanmi, 2020). Thus, the employment of artificial intelligence in business education at several higher education universities is still in its early stages. However, as time passes, the advancement of artificial intelligence in education is unavoidable, and more artificial intelligence high-way technologies are expected to be utilized in education in the coming years (Atah et al., 2023).

Interestingly, Ukah et al. (2022) viewed that Nigerians are living in a time of globalization, and the use of artificial intelligence has a good effect on university students' academic performance as well as the expansion of business education programs to keep up with international standards. In a study by Atah et al. (2023), university lecturers have not adopted or used artificial intelligence tools, and school facilities for enhancing artificial intelligence and most business education programs fall short of the necessary minimum academic standards. Because the world is moving away from traditional classroom settings and toward digital learning environments, our university administration must acquire the tools required to improve the adaptation and utilization of artificial intelligence (AI) in Nigerian universities. Nigerian universities cannot fall behind in this global movement of artificial intelligence in the teaching and learning process. Olasunkanmi (2020) claimed that Nigeria has not profited greatly from the use of artificial intelligence (AI) tools, especially when it comes to integrating AI into the process of teaching and learning. According to Akeke et al. (2023), their inability to use electronic infrastructure is the reason for their inability to adapt and make use of artificial intelligence. Artificial intelligence is not well-accepted or utilized at Nigerian tertiary institutions due to the instructors' basic incompetence with electronic gadgets.

The teaching of business education in universities is meant to generate students and graduates capable of solving both their own and society's challenges. These people are additionally anticipated to be self-sufficient, assured, and self-sufficient. Unfortunately, that is not the case. According to Akeke et al. (2023), there is a problem with successful business education teaching in Nigerian tertiary institutions since most teachers place an excessive focus on material and adopt the "chalk and talk" style. In other words, this neglectful attitude of not using practical and activity-oriented methods of teaching business education curriculum has resulted in abstraction, making students fewer participants as well as more inclined to memorization. Furthermore, personalized help from lecturers to students is virtually unattainable, thereby rendering it harder for business education students to consistently engage in productive learning. This issue has become a critical



worry for Nigerian education planners and policymakers. As a result, there is a pressing need to investigate more effective teaching approaches. Against this backdrop, this study sought to assess the adoption and utilization of artificial intelligence (AI) in teaching business education content in the 21st century.

### Research Questions

The following research questions guided the study:

1. To what extent is artificial intelligence (AI) adopted and utilized in the virtual classroom for the teaching of business education content in the 21<sup>st</sup> century?
2. To what extent is the Automatic Grading System (AGS) adopted and utilized in teaching business education content in the 21<sup>st</sup> century?

### Hypotheses

The following null hypotheses were stated and tested at the 0.05 level of significance.

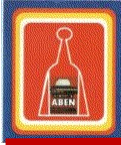
1. There is no significant difference in the mean ratings of male and female business education lecturers on the extent to which artificial intelligence (AI) is adopted and utilized for virtual classroom teaching of business education content in the 21<sup>st</sup> century.
2. There is no significant difference in the mean ratings of business education lecturers on the extent to which the Automatic Grading System (AGS) is adopted and utilized in the teaching of business education in the 21<sup>st</sup> century based on the year of lecturers' service.

### Methodology

This study adopted the descriptive survey research design. The population of the study comprised one hundred and twenty-five (125) business education lecturers in seven universities in the south-south geopolitical zone of Nigeria. Since the population was sizeable and manageable, the entire population was studied. Census sampling procedure was more appropriate. A researcher-developed questionnaire titled "Adoption and Utilization of Artificial Intelligence in Teaching Questionnaire (AUAIQ)" with twelve items was used for data collection. The questionnaire was structured using a four-point response scale with options: very high extent (VHE), high extent (HE), low extent (LE), and very low extent (VLE). To ascertain the validity of the instrument, two experts from the Department of Business Education at Ebonyi State University validated the instrument. The researchers administered 125 copies of the instrument, and the same 125 copies were retrieved, which were used for data analysis. The collected data were analyzed using the mean and standard deviation to answer the research questions, while an independent t-test was used to test the null hypotheses at the 0.05 level of significance. For the research questions, the decision was based on the following decision bounce mark:

|            |   |             |            |   |             |
|------------|---|-------------|------------|---|-------------|
| <b>VHE</b> | = | 3.01 - 4.00 | <b>HE</b>  | = | 2.01 - 3.00 |
| <b>LE</b>  | = | 1.01 - 2.00 | <b>VLE</b> | = | 0.01 - 1.00 |

This implies that any item with a mean score from 3.01 to 4.00 shows that business education lecturers have adopted and utilized AI for Very High Extent (VHE) in teaching business education content in the 21<sup>st</sup> century. Perhaps any item with a mean score between 2.01 and 3.00 indicates that the business education lecturers have adopted and utilized AI to a high extent (HE), meaning that any item with a mean score of 1.01 to 2.00 shows that the institutions have had a low extent (LE) in the adoption and utilization of AI in teaching business education content in the 21<sup>st</sup> century. And lastly, any items with a mean score ranging from 0.01 to 1.00 signify that the institutions have a very low extent (VLE) in adaptation and the utilization of artificial intelligence. For the hypotheses, if the calculated value of (t-cal) is greater than the table value of (t-crit), the hypothesis was rejected, whereas if the calculated value of (t-cal) is less than the table or critical



value (t-crit), the hypothesis was accepted. The population of the study is shown in Fig. 1 using a bar graph, respectively.

### Ethical consideration

In line with global best practices, the study adhered to ethical principles by ensuring that the study protocol was submitted to an institutional review board. After a careful perusal and study of the protocol by the board, ethical approval was obtained (see IRC/UNICAL/024/5732). The researchers thus concluded that, first, the respondents were informed of the purpose of the work. This was to ensure that all respondents were aware of what the study sought to achieve, and those who were willing to participate were given forms to provide their consent. The researchers ensured that all those who signed up to participate in the work were the ones used for the study. More so, the researchers ensured that the respondents were informed of how the data collected for the study would be used. Similarly, they were also assured that third parties would not have access to the data provided unless they were approved. This was carried out by encrypting the system with a password that no other researcher could use.

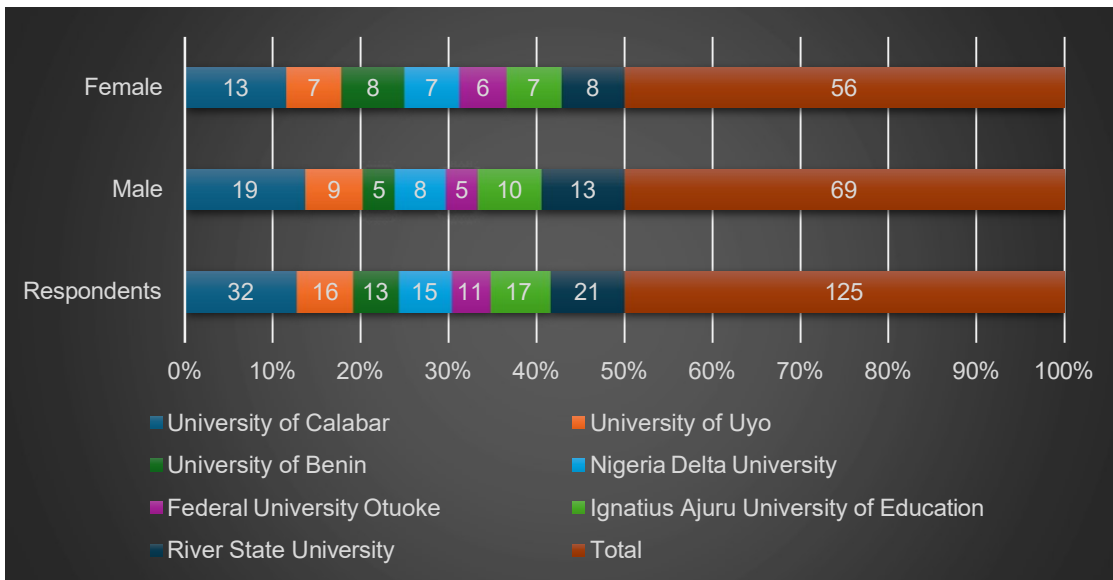


Figure 1: Bar graph showing the study population

### Result of the Findings

#### Research Question One

To what extent is artificial intelligence (AI) adopted and utilized in the virtual classroom for the teaching of business education content in the 21<sup>st</sup> century?

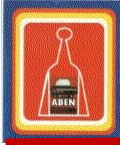


Table 1: The mean rating of responses on artificial intelligence (AI) adopted and the utilization of virtual classrooms for teaching business education content in the 21<sup>st</sup> century.

| S/N | Business Education Lecturers used Artificial Intelligence to: | N   | Mean        | SD          | Decision          |
|-----|---|-----|-------------|-------------|-------------------|
| 1   | Enhance online discussion                                     | 125 | 1.54        | .72         | Low Extent        |
| 2   | Enhance learning management system                            | 125 | 1.51        | .62         | Low Extent        |
| 3   | Transcript Business Education content                         | 125 | 1.58        | .65         | Low Extent        |
| 4   | Enhance lesson planning                                       | 125 | 1.83        | .94         | Low Extent        |
| 5   | Enhance tutoring  | 125 | 1.75        | .91         | Low Extent        |
| 6   | Enhance classroom management                                  | 125 | 1.70        | .90         | Low Extent        |
|     | <b>Grand Mean</b>   | 125 | <b>1.65</b> | <b>0.97</b> | <b>Low Extent</b> |

The result in Table 1 reveals that the mean scores range from 1.51 to 1.83. This shows that the respondents rated all the item statements from 1 to 6. The grand mean of 1.65 equally falls within the response opinion of low extent. This implies that business education lecturers have lowly adopted and utilized artificial intelligence (AI) in the teaching and learning of business education content in the 21<sup>st</sup> century. This could be because the management of the universities has not implemented the virtualization of the AI used in curriculum content delivery. However, some developed countries have migrated from traditional classroom delivery to digital lectures' delivery. Thus, there is an urgent need for business education lecturers and the universities' management to adopt and utilize artificial intelligence in the teaching and learning of business education content in the 21<sup>st</sup> century classroom environment. The standard deviation score of 0.97 indicates that the respondents were homogenous in their responses. The result is further shown in Figure 2 using a bar graph.

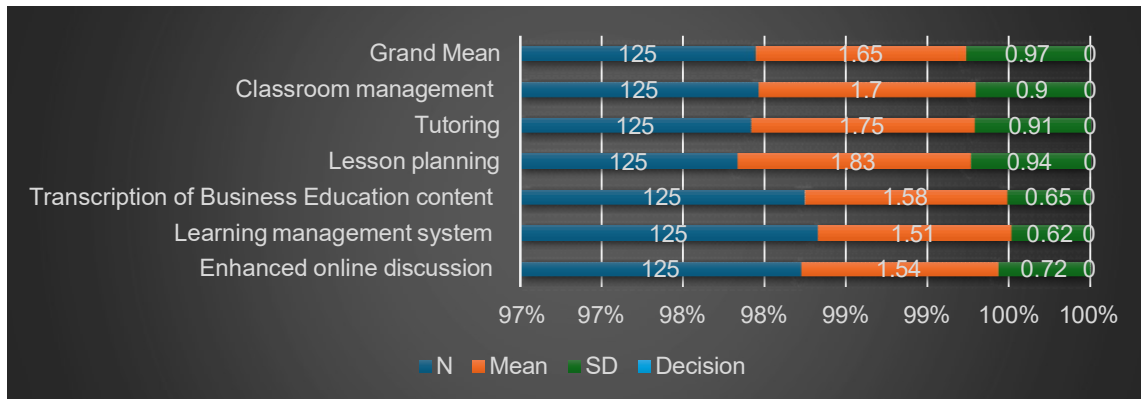
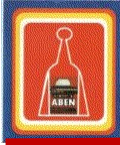


Figure 2: Bar graph shown respondents decision on the adaptation and utilization of AI

Research Question Two

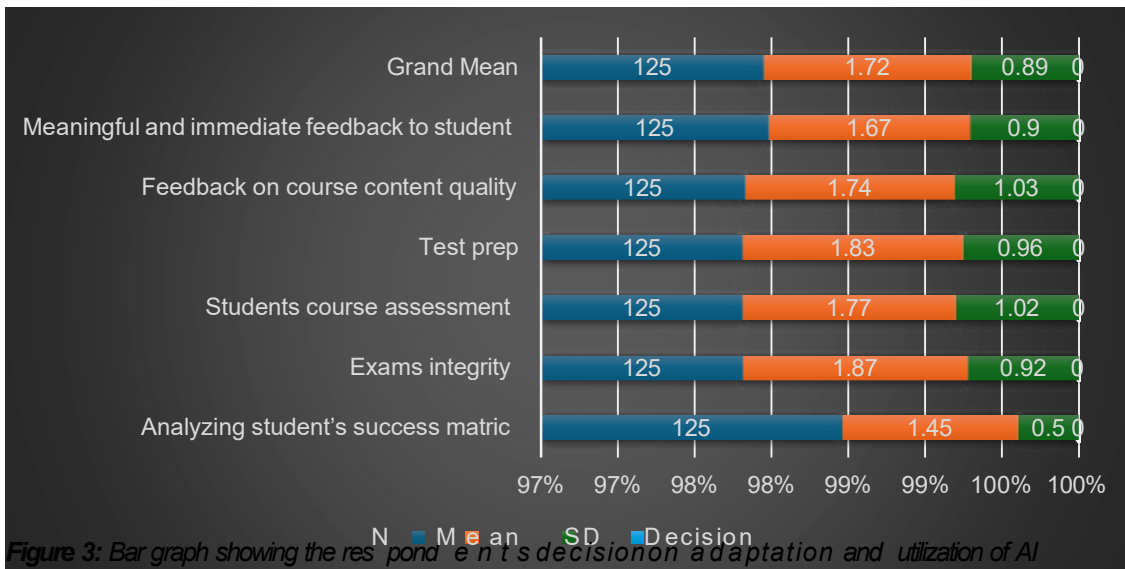
To what extent is the Automatic Grading System (AGS) adopted and utilized in teaching business education content in the 21<sup>st</sup> century?



**Table 2: The mean rating of respondents’ responses on the Automatic Grading System (AGS) is adopted and utilized in teaching business education content in the 21<sup>st</sup> century.**

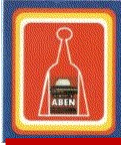
| S/N | Business Education Lecturers adopt and utilized Alternative Grading System to: | N   | Mean        | SD          | Decision   |
|-----|--|-----|-------------|-------------|------------|
| 7   | Analyzing student’s success matric   | 125 | 1.45        | .50         | Low Extent |
| 8   | Enhance Examinations integrity   | 125 | 1.87        | .92         | Low Extent |
| 9   | Students course assessment   | 125 | 1.77        | 1.02        | Low Extent |
| 10  | Enhance test prep  | 125 | 1.83        | .96         | Low Extent |
| 11  | Obtain feedback on course content quality                                      | 125 | 1.74        | 1.03        | Low Extent |
| 12  | Ascertain meaningful and immediate feedback to student                         | 125 | 1.67        | .90         | Low Extent |
|     | <b>Grand Mean</b>  | 125 | <b>1.72</b> | <b>0.89</b> | Low Extent |

Analyses in Table 2 reveal that the mean scores range from 1.45 to 1.87. This signified that the respondents rated all the items to a low extent, from 7 to 12. The grand mean of 1.72 falls within the respondent’s opinion, with evidence of low extent in the respondent’s decision. This implies that business education lecturers have poorly adopted and utilized the automatic grading system in the teaching and learning of business education content in the 21<sup>st</sup> century. The standard deviation score of 0.89 indicates that the respondents were homogenous in their responses. The result is equally shown in Fig. 3 using a bar graph.



**Hypothesis One**

There is no significant difference in the mean ratings of male and female business education lecturers on the extent to which virtual classrooms were adopted and utilized in teaching business education content in the 21<sup>st</sup> century.



**Table 3: Independent t-test comparison of male and female business education lecturers on the extents to which virtual classrooms were adopted and utilized in teaching business education content in the 21<sup>st</sup> century (N =125)**

| Items | Category of Respondents | N  | Mean          | SD             | df        | t-cal    | Alpha       | t-crit.      | Decision |
|-------|-------------------------|----|---------------|----------------|-----------|----------|-------------|--------------|----------|
| 1     | Male Lecturers          | 69 | 1.7368        | .80568         | 123       | 1.905    | 0.05        | .117         | S        |
|       | Female Lecturers        | 56 | 1.2500        | .45227         |           |          |             |              |          |
| 2     | Male Lecturers          | 69 | 1.2632        | .65338         | 123       | 3.882    | 0.05        | .000         | S        |
|       | Female Lecturers        | 56 | 2.0000        | 0.00000        |           |          |             |              |          |
| 3     | Male Lecturers          | 69 | 1.6316        | .59726         | 123       | .569     | 0.05        | .596         | NS       |
|       | Female Lecturers        | 56 | 1.5000        | .67420         |           |          |             |              |          |
| 4     | Male Lecturers          | 69 | 2.0526        | 1.02598        | 123       | .134     | 0.05        | .657         | NS       |
|       | Female Lecturers        | 56 | 2.0000        | 1.12815        |           |          |             |              |          |
| 5     | Male Lecturers          | 69 | 1.6316        | .95513         | 123       | -.600    | 0.05        | .429         | S        |
|       | Female Lecturers        | 56 | 1.8333        | .83485         |           |          |             |              |          |
| 6     | Male Lecturers          | 69 | 1.6316        | .83070         | 29        | -.600    | 0.05        | .372         | S        |
|       | Female Lecturers        | 56 | 1.8333        | 1.02986        |           |          |             |              |          |
|       | <b>Male Lecturers</b>   | 69 | <b>9.9474</b> | <b>4.86813</b> | <b>29</b> | <b>-</b> | <b>0.05</b> | <b>0.361</b> | <b>S</b> |
|       | <b>Female Lecturers</b> | 56 | <b>10.416</b> | <b>4.11932</b> |           |          |             |              |          |

The result of the independent t-test in Table 3 revealed that the t-cal value at the 0.05 level of significance and 123 degrees of freedom for items 1–6 is -0.412 with a significant t-crit value of 0.361. This implies that the significant t-crit value of 0.361 is greater than the 0.05 level of significance. This means the null hypothesis, which states that there is no significant difference in the mean ratings of male and female business education lecturers on the extent to which virtual classrooms were adopted and utilized in teaching business education content in the 21<sup>st</sup> century, was accepted. This could be because both male and female business education lecturers are expected to adopt and utilize artificial intelligence in the teaching and learning process of developing the university’s graduates in Nigerian universities. The result is also demonstrated in Figure 4 using a radar graph.

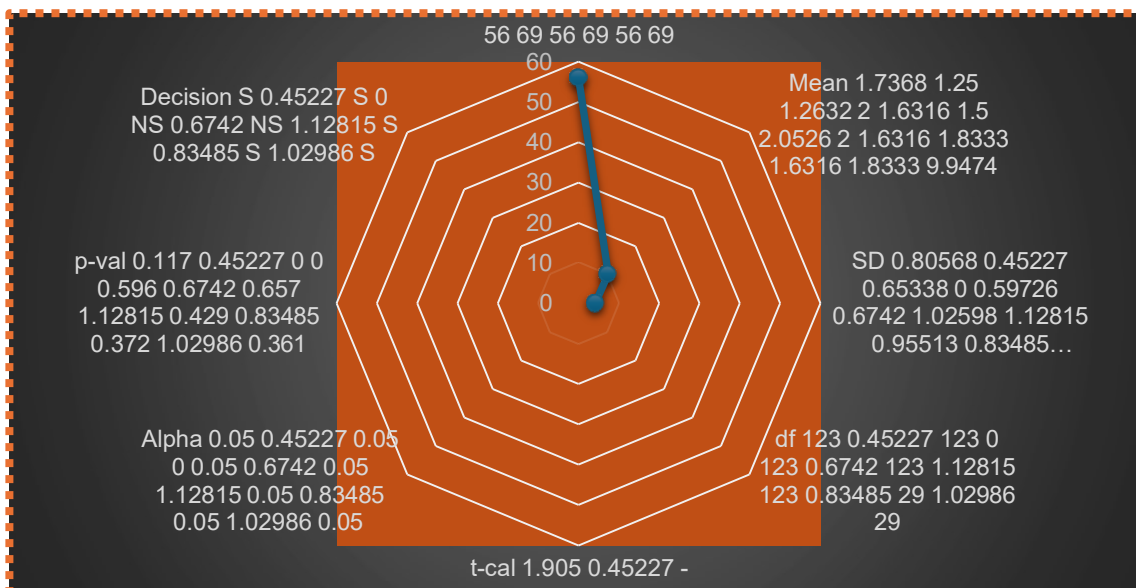
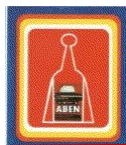


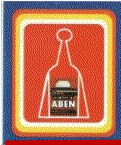
Figure 4: Radar graph showing respondents decision on the adaptation and the utilization of Artificial Intelligence (AI) in teaching and learning of business education content in the 21<sup>st</sup> century

**Hypothesis Two**

There is no significant difference in the mean ratings of business education lecturers on the extent to which the Automatic Grading System (AGS) is adopted in teaching business education in the 21<sup>st</sup> century based on the year of service.

**Table 4: Independent t-test comparison of business education lecturers on the extent to which the automatic grading system (AGS) is adopted in teaching business education in the 21<sup>st</sup> century based on the year of service (N = 125).**

| Items | Category of Respondents | N  | Mean   | SD      | df  | t-cal  | Alpha | t-crit | Decision |
|-------|-------------------------|----|--------|---------|-----|--------|-------|--------|----------|
| 7     | Below 10 years          | 54 | 1.7857 | .42582  | 123 | 4.137  | 0.05  | .613   | NS       |
|       | 10 years and above      | 71 | 1.1765 | .39295  |     |        |       |        |          |
| 8     | Below 10 years          | 54 | 1.6429 | .74495  | 123 | -1.263 | 0.05  | .846   | NS       |
|       | 10 years and above      | 71 | 2.0588 | 1.02899 |     |        |       |        |          |
| 9     | Below 10 years          | 54 | 2.3571 | 1.21574 | 123 | 3.326  | 0.05  | .000   | S        |
|       | 10 years and above      | 71 | 1.2941 | .46967  |     |        |       |        |          |
| 10    | Below 10 years          | 54 | 1.7857 | 1.05090 | 123 | -.272  | 0.05  | .504   | NS       |
|       | 10 years and above      | 71 | 1.8824 | .92752  |     |        |       |        |          |



|    |                           |    |                |                |            |               |             |              |          |
|----|---------------------------|----|----------------|----------------|------------|---------------|-------------|--------------|----------|
| 11 | Below 10 years            | 54 | 1.4286         | .51355         | 123        | -1.572        |             | .003         | S        |
|    | 10 years and above        | 71 | 2.0000         | 1.27475        |            |               | 0.05        |              |          |
| 12 | Below 10 years            | 54 | 1.5714         | .75593         | 123        | -.583         |             | .396         | S        |
|    | 10 years and above        | 71 | 1.7647         | 1.03256        |            |               | 0.05        |              |          |
|    | <b>Below 10 years</b>     | 54 |                |                |            |               |             |              |          |
|    | <b>10 years and above</b> | 71 | <b>10.5714</b> | <b>4.70688</b> | <b>123</b> | <b>-1.258</b> | <b>0.05</b> | <b>0.393</b> | <b>S</b> |
|    |                           |    | <b>10.1764</b> | <b>5.12644</b> |            |               |             |              |          |

The analyzed data in Table 4 shows that the t-cal value of -1.258 was less than the t-crit of 0.393 at the 0.05 level of significance and 123 degrees of freedom. As a result, the null hypothesis is accepted. This demonstrates that there is no significant difference in the mean ratings of business education lecturers on the extent to which the Automatic Grading System (AGS) is adopted in teaching business education in the 21<sup>st</sup> century based on the year of service. This could be because all categories of business education lecturers are expected to adopt artificial intelligence in the teaching and learning process in the 21<sup>st</sup> century classroom. Figure 5 further indicates the respondent's decision using a radar graph.

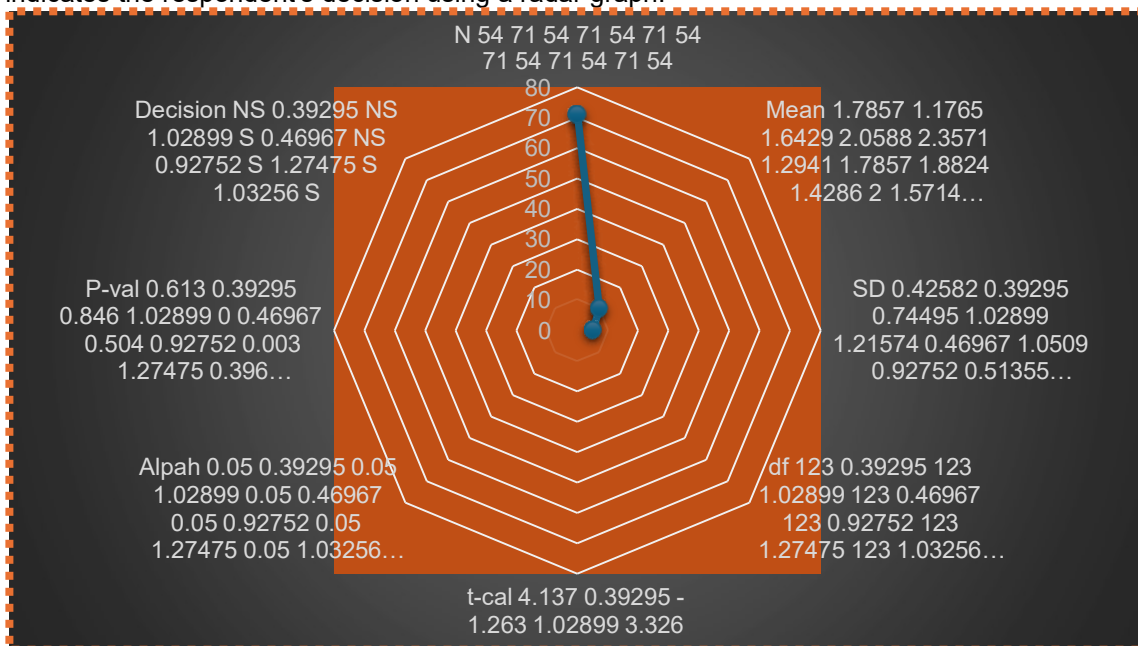
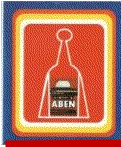


Figure 5: Radar graph shows the respondents decision on the adaptation and utilization AI in teaching and learning process.

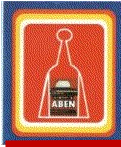


## **Discussion**

The first research question revealed that artificial intelligence (AI) adopted and utilized for virtual classrooms in teaching business education content in the 21<sup>st</sup> century, particularly in the South-South Geopolitical Zone of Nigeria, is of low extent. This could be that university management and business education lecturers have lowly adopted artificial intelligence (AI) tools to enhance lectures, online teaching, learning management systems, transcription of business education content, lesson planning, student tutoring, and classroom management. The findings of the first hypothesis found no significant difference in the mean ratings of male and female business education lecturers on the extent to which virtual classrooms were adopted in teaching business education content in the 21<sup>st</sup> century. This implies that both male and female business education lecturers did not differ in their decisions about adaptation and the utilization of artificial intelligence in the teaching and learning process. The findings of the investigation correspond with Marr's (2020) findings, which determined that the use of artificial intelligence for teaching business education in some higher education institutions is currently in its early stages. The author went on to say that, as time passes, the development of artificial intelligence in education is unavoidable, and more artificial intelligence technologies are likely to be used in education soon, and that university communities should be encouraged to engage in the adaptation and utilization of artificial intelligence in the teaching and learning process. The findings are also in accordance with those of Ugochukwu et al. (2017), who believe that business education lecturers are currently relying on non-electronic traditional classroom seating and that traditional materials have the potential to make the teaching and learning process boring for students. However, the authors argued that there is an urgent need for business education lecturers to transition from traditional delivery methods to the use of artificial intelligence to involve students in the world of digitalization. This is because artificial intelligence simplifies teaching and learning in the twenty-first century and reduces costs for both teachers and students.

In the same vein, Ugochukwu et al. (2017) agreed that we are living in a globalization era, and the adoption of artificial intelligence encompasses a positive impact on the academic achievements of university students as well as the continued growth of business education programs to meet global standards. In consonance with the resultant evidence, Atah et al. (2023) found that school facilities for enhancing artificial intelligence and most business education programs fall below the required minimum academic standards. This may be the reason why business education lecturers haven't embraced or utilized artificial intelligence tools for teaching and learning in the 21<sup>st</sup> century, as they have been adopted by the development community. And the implication of this could be the non-implementation and adaptation of artificial intelligence for the teaching and learning of business education programs in Nigerian universities. The need for our university administration to acquire the necessary facilities to enhance the adaptation and utilization of artificial intelligence (AI) in Nigerian universities is because the world is shifting from traditional classroom sitting to digital ways of learning, and Nigerian universities must not be left behind in the global movement of artificial intelligence in the teaching and learning process. To achieve this golden opportunity, Onwubuya et al. (2023) asserted that digitalizing business education curriculum is crucial for integrating artificial intelligence in the classroom, particularly during this era of technology.

The research question two findings revealed that business education lecturers in universities, particularly in the South-South Geopolitical Zone of Nigeria, believed the Automatic Grading System (AGS) tools of artificial intelligence were poorly adopted for their utilization in teaching business education content in the 21<sup>st</sup> century. The findings show that artificial intelligence is rarely utilized in analyzing students' success matrix, exam integrity, students course assessment,

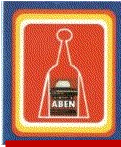


test prep, feedback on course content quality, and meaningful and immediate feedback to students. The implication of this result could be that business education graduates from universities in Nigeria may be lacking in the global standard of the utilization of artificial intelligence in their educational day-to-day activities. The result of hypothesis two shows there is no significant difference in the mean ratings of business education lecturers on the extent to which the Automatic Grading System (AGS) is adopted in teaching business education in the 21<sup>st</sup> century based on the year of service. This could be because all categories of business education lecturers are expected to adopt and utilize artificial intelligence in the teaching and learning process in the 21<sup>st</sup> century classroom. This finding is consistent with Olasunkanmi (2020), who states that Nigeria has not benefited significantly from artificial intelligence (AI) tools, particularly in the field of employing AI to teach business education material and grade students' progress and achievement. According to Akeke et al. (2023), their failure to adapt and exploit artificial intelligence can be attributed to their incapacity to use electronic infrastructure. The lecturers lack of fundamental proficiency in the usage of electronic devices has resulted in poor acceptance and exploitation of artificial intelligence in Nigerian universities. Based on this, the researchers believe that there is a pressing requirement for university management to make provisions to train business education lecturers on the use of electronic facilities to improve university lecturers adaptation of artificial intelligence and its use in Nigerian universities to strengthen global practices.

### **Conclusion**

In the modern era, one of the most notable advantages of artificial intelligence in education is its capacity to tailor the educational experience to each learner. Conventional classroom arrangements frequently fail to meet the many learning styles and demands of individual learners. With artificial intelligence (AI), instructional software can be customized to suit every student's interest and velocity, making the process of education more successful and fun. In today's fast-paced world, the role of artificial intelligence (AI) in education is becoming increasingly important, and universities in Nigeria, particularly those in the South-South Geopolitical Zone, ought to investigate its considerable influence. When introducing artificial intelligence into higher education, we can close the accessibility and quality divide, guaranteeing that learners have a tailored, successful, and enjoyable educational encounter. Notwithstanding the significant advantages of artificial intelligence, business education lecturers continue to find it challenging to transition from traditional lecturer delivery to digital techniques in teaching and learning through the adoption and use of artificial intelligence. These traditional lecture delivery methods have had a negative influence on business education academic programs in terms of preparing graduates to compete with other business education graduates from other developed countries across the world.

Notwithstanding this, this study demonstrated a poor level of acceptance and implementation of artificial intelligence to teach business education curriculum content in the twenty-first century. The upshot of this might indicate that business education lecturers are not globally conversant with the present state of artificial intelligence, and the impact of this could result in graduates of business education falling behind other graduates throughout the world. The world is migrating from conventional to digital, and there is an urgent need for university education, particularly business education lecturers, to transition from conventional teaching to a digital classroom to meet global standards by implementing artificial intelligence in the teaching and learning process.



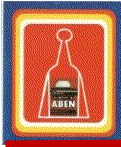
### Recommendations

Based on the study's findings, the following recommendations are offered:

1. The university management and educational policy makers should frequently make rooms for seminars and workshops where business education lecturers could be adequately trained and retrained regularly on the use of artificial intelligence (AI) in teaching business education course content.
2. The university management and government agencies should ensure adequate awareness is created to ensure university lecturers are informed about the use of artificial intelligence in the teaching and learning process.

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