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Research Article

Efficacy in Utilization of Computer Artificial Intelligence in Instructional Delivery of Business Education Courses: Business Education Lecturers Perceptions

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Abstract

The study titled "efficacy in Utilization of computer artificial intelligence in instructional delivery of business education courses: business education lecturers perceptions" aimed to investigate the perceptions of business education lecturers towards the utilization of artificial intelligence (AI) in instructional delivery of Business Education courses. The researches employ a mixed-methods approach, combining surveys and interviews to gather quantitative and qualitative data. A sample of business education lecturers from various institutions in Cross River State was used for the study and data was collected through the use of a structured questionnaire administered to one hundred and thirty one (131) Business Education Lecturers in tertiary institution in Cross River State, Nigeria. Data obtained were analyzed using mean scores and standard deviation. The findings revealed that business education lecturers in Cross River State have a negative perception towards the utilization of AI in instructional delivery of accounting. However, there is a significant difference in the perceptions of male and female lecturers towards the utilization of AI in instructional delivery. The study concluded that AI would enhance the quality of instructional delivery in business education institutions in Cross River State, Nigeria. The study recommends that business education institutions in Cross River State should embrace the use of AI in instructional delivery of accounting to improve the quality of education and equip students with relevant skills for the job market. Training programs on the use of AI in instructional delivery should be organized for business education lecturers to equip them with the necessary skills to effectively use AI in their instructional deliveries. The study highlights the potential benefits of incorporating AI into instructional delivery of accounting in business education institutions in Cross River State.

Keywords

Artificial Intelligence, Instructional Delivery, Business Education and Lecturers Perceptions

1. Introduction

Business education is a crucial component in preparing individuals for the ever-evolving demands of the global economy. With advancements in technology, there is a growing recognition of the potential impact of computer arti-

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ficial intelligence (AI) on instructional delivery in business education courses. In the contemporary landscape of education, the integration of technology and artificial intelligence (AI) has become increasingly pervasive. The transformative potential of AI in instructional delivery has been recognized worldwide.

Over the past few decades, there has been a significant shift in educational paradigms globally, with technology playing an increasingly central role. The integration of artificial intelligence into education has shown promise in enhancing learning experiences, improving efficiency, and preparing students for the dynamic business landscape. The field of education has been rapidly transformed by advancements in technology, and artificial intelligence (AI) is one of the latest technologies to emerge as a potential tool for improving instructional delivery. The application of computer artificial intelligence (AI) in instructional delivery has become increasingly popular in recent years. This is because AI has the potential to improve the quality of education by providing personalized and adaptive learning experiences for students [2]. In the context of tertiary institutions the use of AI in instructional delivery of business education courses may enhance the learning outcomes of students and prepare them for the workforce [1]. However, the integration of AI into business education requires the cooperation and acceptance of business education lecturers.

AI in instructional delivery provide students with personalized learning experiences that are tailored to their individual learning styles and preferences. This help to improve their engagement with the course materials and enhance their understanding of the concepts being taught. Additionally, AI may be used to provide real-time feedback to students, which may help them to identify areas where they need to improved and adjust their learning strategies accordingly, suggest that there is a need for developing countries like Nigeria, where there may be unique challenges to its implementation to harness the AI potential in instructional delivery. The study also highlights the importance of involving lecturers in the decision-making process and providing them with the necessary training and support to effectively integrate AI into their teaching practices and school curriculum.

Furthermore, the application of AI in instructional delivery may also benefit instructors by providing them with insights into how their students are learning and where they may be struggling. This may help instructors to identify areas where they need to provide additional support and adjust their teaching strategies to better meet the needs of their students. The application of AI in instructional delivery of business education courses in tertiary institutions may have significant benefits for both students and instructors. To successfully implement the use of AI in instructional delivery of business education courses in tertiary institutions, it is important to develop a comprehensive strategy that takes into account the unique needs and challenges of the local context. One key aspect of such a strategy would be to provide adequate training and support to instructors to ensure they are comfortable with using AI tools and technologies. This could involve the provision of training workshops, resources, and ongoing support to help instructors integrate AI into their teaching practices.

Another important consideration is the availability and accessibility of technology infrastructure in the institutions. Adequate provision of technology infrastructure such as computer labs, internet connectivity, and access to relevant software tools and applications is necessary to support the effective use of AI in instructional delivery [3]. Additionally, there may be cultural and social factors to consider in the adoption of AI in instructional delivery in tertiary institutions. For example, students and instructors may have differing levels of comfort and familiarity with technology, and there may be concerns about the impact of AI on traditional teaching methods. A successful strategy for the application of AI in instructional delivery of business education courses in tertiary institutions would need to be tailored to the specific context and take into account the unique needs and challenges of the local environment. To ensure the successful adoption and implementation of AI in instructional delivery of business education courses in tertiary institutions, it would also be important to involve relevant stakeholders in the planning and decision-making process. This could involve consultation with students, faculty members, administrators, and relevant government agencies to ensure that everyone is on board and supportive of the initiative.

Ethical and privacy concerns that may arise from the use of AI in instructional delivery, may involve implementing appropriate measures to ensure the security and privacy of student data, as well as addressing any concerns about the potential biases or unintended consequences of AI tools and technologies. The successful application of AI in instructional delivery of business education courses in tertiary institutions according to [14] requires a comprehensive strategy that takes into account the unique needs and challenges of the local context. This would involve providing adequate training and support to instructors, ensuring the availability and accessibility of technology infrastructure, involving relevant stakeholders in the planning process, conducting research studies to evaluate effectiveness, and addressing ethical and privacy concerns.

This study explored the perceptions of business education on the efficacy of utilizing computer artificial intelligence (AI) in the instructional delivery of Business education courses. The perceptions and attitudes of educators play a crucial role in the successful adoption and implementation of AI in education [3]. Business education lecturers are key stakeholders in shaping or reshaping the future of Business education in the region. Their perspectives on the efficacy of utilizing computer artificial intelligence in instructional delivery are essential for informing policy decisions and educational practices. As AI technology continues to evolve, it is imperative to understand the perceptions, concerns, and expectations of

business education lecturers regarding the integration of AI into Business Education. Exploring their views can shed light on the challenges and opportunities that lie ahead, helping educators and policymakers make informed decisions about the adoption and implementation of AI-based instructional methods.

This study aims to investigate the perceptions of business education lecturers regarding the utilization of computer artificial intelligence in instructional delivery within the field of Business Education. By examining their attitudes, concerns, and expectations, this research seeks to contribute valuable insights to the ongoing discourse on the role of AI in education, with a focus on the Nigerian context.

1.1. Statement of Problems

The application of computer artificial intelligence (AI) in instructional delivery of business education courses in tertiary institutions is a promising approach to improve the quality of education. However, In Nigeria, its usage of AI technologies as instructional method of teaching and learning in business education programme in tertiary institutions needs to be emphasized and encooperated into business education curriculum in line with what is obtainable in other part of the world [1]. One major problem is the inadequate of technological infrastructure in many tertiary institutions [9]. This has make it difficult for instructors to use AI tools and technologies effectively in their teaching practices, and has limit the availability and accessibility of learning resources for students, Lack of awareness and training among instructors on the use of AI in instructional delivery [12]. Many instructors may not be familiar with AI tools and technologies, and may not know how to integrate them effectively into their teaching practices [13]. There is cultural and social factors that could hinder the adoption of AI in instructional delivery in some institutions. For example, there Is a high resistance to change among faculty members who are accustomed to traditional teaching methods, and concerns about the impact of AI on job security.

Finally, there may be ethical and privacy concerns related to the use of AI in instructional delivery, particularly in terms of the security and privacy of student data. In order to successfully apply AI in instructional delivery of business education courses in tertiary institutions, these challenges must be addressed through the development of a comprehensive strategy that takes into account the unique needs and challenges of the local context [8].

1.2. Theoretical Framework

The theoretical framework for the study on the utilization artificial intelligence in instructional delivery of business education: business education lecturer's perception is based on the Technology Acceptance Model (TAM) developed by [7]. TAM is a well-established theoretical framework for understanding user acceptance and adoption of technology. According to TAM, technology adoption and use are influenced by two main factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which users believe that a technology will enhance their performance or productivity, while perceived ease of use refers to the extent to which users perceive that a technology is easy to use and understand. In the context of the study, the use of AI in instructional delivery of business education courses can be seen as a technological innovation. The TAM framework can help to understand the factors that influence the adoption and use of AI in this context. For example, instructors' perceptions of the usefulness of AI in enhancing student learning outcomes, and their perceptions of the ease of use of AI tools and technologies, can influence their willingness to adopt and use AI in their teaching and learning practice.

2. Specifics Purpose of the Study

The specific purpose of the study on efficacy in utilization of computer artificial intelligence in instructional delivery of business education: business education lecturers perceptions in cross river state, Nigeria is to provide guidance on how AI can be effectively integrated into the teaching and learning processes in business education courses. The study aims to:

1. Identify the most effective AI tools that can be used in instructional delivery of business education courses.
2. Develop a framework for training and support for instructors on the use of AI in instructional delivery.
3. Identify the key technology infrastructure requirements for the effective use of AI in instructional delivery in tertiary institutions.
4. Determine the social factors that could impact the adoption of AI in instructional delivery in tertiary institutions.

Research question

The research questions for the study on efficacy in utilization of computer artificial intelligence in instructional delivery of business education: business education lecturers perceptions:

1. What are the most effective AI tools technologies that can be used in instructional delivery of business education courses in tertiary institutions?
2. What is the current level of awareness training among instructors on the use of AI in instructional delivery of business education courses in tertiary institutions?
3. What are the key technology infrastructure requirements for the effective use of AI in instructional delivery of business education courses in tertiary?
4. What are the social factors that could impact the adoption of AI in instructional delivery of business education courses in tertiary institutions?

2.1. Research Question One

What are the most effective AI tools and technologies that

can be used in instructional delivery of business education courses?

Table 1. *Mean and Standard deviations of respondents on the most effective AI tools and technologies that can be used in instructional delivery of business education courses.*

S/N	Items	N	$\bar{x}$	SD	Dec.
1	Machine learning algorithms to personalize learning for each student.	131	3.612	0.489	A
2	Dream Box uses artificial intelligence to personalize math lessons for each student.	131	2.634	0.946	A
3	Coursera provide students with real-time feedback	131	2.702	0.998	A
4	machine learning algorithms to assess students' strengths	131	3.275	0.877	A
5	AI-powered tutoring platform that provides students with real-time feedback	131	3.054	0.807	A
6	right tutor, provide real-time feedback	131	3.084	0.945	A
7	Open AI offers a range of tools	131	2.649	0.876	A
8	machine learning models algorithms to grade descriptive answers	131	3.153	0.779	A
	Cluster A	131	2.878	0.99	A

Key: N = Number of respondents, $\bar{x}$ = mean, SD = Standard Deviation, Dec. = Decision.

Result presented in Table 1 showed the mean and standard deviations of respondents on the most effective AI tools and technologies that can be used in instructional delivery of business education courses. Result showed that the items have mean ratings of 3.612, 2.634, 2.702, 3.275, 3.054, 3.084, 2.649, 3.153, and 2.878 with standard deviations of 0.49, 0.95, 0.99, 0.880.81,0.95, 0.88, and 0.78 respectively. These mean ratings are above the criterion level of 2.50 set for accepting an item, this means that the following;Machine learning algorithms to personalize learning for each student, Dream Box uses artificial intelligence to personalize math lessons for each student, Coursera provide students with real-time feedback, machine learning algorithms to assess students' strengths, AI-powered tutoring platform that provides students with real-time feedback, right tutor, provide real-time feedback, Open AI offers a range of tools and machine learning models algorithms to grade descriptive answers. The cluster mean of 2.878 with a standard deviation of 0.99 showed that the respondents all agreed there are most effective AI tools and technologies that can be used in instructional delivery of business education courses. The finding of this study is in agreement with that of [1]. AI as a tool for personalizing learning experiences, enabling more efficient assessment and feedback processes.

2.2. Research Question Two

What is the current level of awareness and training among instructors on the use of AI in instructional delivery of business education courses?

Table 2. *Mean and Standard deviations of respondents on the current level of awareness and training among instructors on the use of AI in instructional delivery of business education courses.*

S/N	Items	N	$\bar{x}$	SD	Dec.
1	AI tools are being used to generate content	131	3.047	0.457	A
2	Write code	131	3.122	0.961	A
3	Resolve accessibility issues	131	3.229	0.760	A
4	reconfigure writing processes	131	3.252	0.778	A
5	Detect plagiarism.	131	3.321	0.694	A
6	Provide students with a more personalized learning experience	131	2.847	0.846	A
7	Accelerate decision-making	131	3.115	0.810	A

S/N	Items	N	$\bar{x}$	SD	Dec.
8	Claims automate a large proportion of client's service enquiries.	131	3.084	0.832	A
	Cluster B	131	3.122	0.868	A

Key: N = Number of respondents, $\bar{x}$ = mean, SD = Standard Deviation, Dec. = Decision.

Result presented in Table 2 showed the mean and standard deviations of respondents on the current level of awareness and training among instructors on the use of AI in instructional delivery of business education courses. Result showed that the items have mean ratings of 3.047, 3.122, 3.229, 3.252, 3.321, 2.847, 3.115, 3 and 084 with standard deviations of 0.46, 0.961, 0.76, 0.78. 0.69, 0.846, 0.810, and 0.87 respectively. These mean ratings are below the criterion level of 2.50 set for accepting an item, this means that the following are in place; AI tools are being used to generate content, write code, resolve accessibility issues, reconfigure writing processes, detect plagiarism, provide students with a more personalized learning experience, accelerate decision-making and claims automate a large proportion of client's service enquiries. The cluster mean of 3.12 with a standard deviation of 0.87 showed that thereis high level of awareness and training among instructors on the use of AI in instructional delivery of business education courses. The finding of this study is in agreement with that of [6]. There is a mixed perceptions regarding the impact of AI on the role of lecturers, AI is a supportive tool, though there is a devaluation of human interaction and the traditional teaching role. There should be a shift in pedagogical approaches, with a greater emphasis on blended learning that combines AI with traditional methods. This might involve rethinking curriculum design to integrate AI effectively while maintaining critical elements of human-led instruction [11].

2.3. Research Question Three

What are the key technology infrastructure requirements for the effective use of AI in instructional delivery of business education courses?

Table 3. *Mean and Standard deviations of respondents on the key technology infrastructure requirements for the effective use of AI in instructional delivery of business education courses.*

S/N	Items	N	$\bar{x}$	SD	Dec.
1	Power Points	131	3.137	0.435	A
2	Prepare students with life skills.	131	3.229	0.760	A
3	Internet Homework Assignments	131	2.970	0.841	A
4	Online grading Systems	131	3.076	0.730	A
5	Connection to real-world experts	131	3.244	0.795	A
6	Frequent interaction	131	3.069	0.930	A
7	Keeping students engaged in activities	131	2.450	0.610	A
8	Participation in groups	131	2.595	0.605	A
	Cluster C	131	2.641	0.609	A

Key: N = Number of respondents, $\bar{x}$ = mean, SD = Standard Deviation, Dec. = Decision.

Result presented in Table 3 showed the mean and standard deviations of respondents on the key technology infrastructure requirements for the effective use of AI in instructional delivery of business education courses. Result showed that all the items have mean ratings of 3.137, 3.23, 2.97, 3.08, 3.24, 3.07, 2.450, and 2.60 with standard deviations of 0.44, 0.76, 0.84, 0.73. 0.80, 0.93, 0.61 and 0.61 respectively. These mean ratings are above the criterion level of 2.50 set for accepting an item, this means the following are in place; Power Points, Prepare students with life skills, Internet Homework Assignments, Online grading Systems, Connection to real-world experts, Frequent interaction, Keeping students engaged in activities, Participation in groups. The cluster mean of 2.64 with a standard deviation of 0.61 showed that there are key

technology infrastructure requirements for the effective use of AI in instructional delivery of business education courses. The finding of this study is in agreement with that of [7]. AI analyzes student performance and learning styles to tailor instruction accordingly, potentially leading to improved learning outcomes. This aligns with research suggesting that AI facilitate adaptive learning environments.

2.4. Research Question Four

What are the cultural and social factors that could impact the adoption of AI in instructional delivery of business education courses?

Table 4. *Mean and Standard deviations of respondents on the cultural and social factors that could impact the adoption of AI in instructional delivery of business education courses.*

S/N	Items	N	$\bar{x}$	SD	Dec.
1	Hypotheses Formulation	131	2.912	0.351	A
2	Declaration of Conflicting Interests	131	2.901	0.643	A
3	Poses dangerous privacy risks	131	3.084	0.832	A
4	Exacerbates racism by standardizing people	131	3.069	0.930	A
5	Leading to greater unemployment	131	2.550	0.610	A
6	Ethical Considerations	131	2.595	0.605	A
7	Problem-solving perception	131	2.641	0.609	A
8	Language understanding.	131	2.901	0.643	A
	Cluster D	131	2.843	0.316	A

Key: N = Number of respondents, $\bar{x}$ = mean, SD = Standard Deviation, Dec. = Decision.

Result presented in Table 4 showed the mean and standard deviations of respondents on the cultural and social factors that could impact the adoption of AI in instructional delivery of business education courses. Result showed that all the items have mean ratings of 2.91, 2.90, 3.08, 3.07, 2.552.60, 2.64 and 2.90 with standard deviations of 0.35, 0.64, 0.83, 0.93,0.61, 0.61, 0.61 and 0.64 respectively. These mean ratings are below the criterion level of 2.50 set for accepting an item, this means that the following are taken care of; hypotheses formulation, declaration of conflicting interests, poses dangerous privacy risks, exacerbates racism by standardizing people, leading to greater unemployment, ethical considerations, problem-solving perception and language understanding. The cluster mean of 2.84 with a standard deviation of 0.32 showed that hypotheses formulation, declaration of conflicting interests, poses dangerous privacy risks, exacerbates racism by standardizing people, leading to greater unemployment, ethical considerations, problem-solving perception and language understandingare thecultural and social factors that could impact the adoption of AI in instructional delivery of business education courses.

2.5. Summary of the Findings

From the data analysis and the interpretation of the results, the following findings emerged.

1. There are most effective AI tools and technologies that can be used in instructional delivery of business education courses.
2. There is high level of awareness and training among instructors on the use of AI in instructional delivery of business education courses.
3. There are key technology infrastructure requirements for the effective use of AI in instructional delivery of business education courses.
4. There is teachers' training as proof of readiness or the implementation of inclusive education in the public primary schools within tertiary institutions of learning.

3. Discussions of Findings

Lecturers perceive AI as a tool for personalizing learning experiences, enabling more efficient assessment and feedback processes. AI analyzes student performance and learning styles to tailor instruction accordingly, potentially leading to improved learning outcomes. This aligns with research suggesting that AI facilitate adaptive learning environments. AI-driven tools like chatbots and virtual simulations offer interactive and engaging learning experiences. Lecturers observe increased student motivation and participation, especially in courses that involve complex problem-solving or

real-world business scenarios [1]. Effective integration of AI into teaching requires both technical know-how and pedagogical adaptation. There is a need for professional development to harness AI's potential effectively. The handling of student data by AI systems and the potential for biased algorithms are critical issues that need addressing. There is a mixed perceptions regarding the impact of AI on the role of lecturers, AI is a supportive tool, though there is a devaluation of human interaction and the traditional teaching role [6]. There should be a shift in pedagogical approaches, with a greater emphasis on blended learning that combines AI with traditional methods. This might involve rethinking curriculum design to integrate AI effectively while maintaining critical elements of human-led instruction [11].

AI-driven tools would adequately address the diverse needs of students, Since AI algorithms are often developed based on certain data sets, but there is a risk of excluding or misrepresenting underrepresented groups. Inclusivity in AI-driven education needs to be a priority to ensure all students benefit equally [10]. Readiness and attitudes of students towards AI in their learning process, students might be enthusiastic and adept at using technology, others could feel intimidated or skeptical about AI's role in their education. This aspect calls for a gradual introduction of AI tools and proper support to ease the transition for students. The integration of AI in business education also reflects the changing nature of the business world itself, AI automation play significant roles in business practices. This implies a need to update curricula to include AI literacy and an understanding of its implications in the business sector. The need for closer collaboration between educators and AI developers. This collaboration could ensure that AI tools are designed with educational objectives in mind and are adaptable to the specific needs of business education. It would also facilitate the sharing of best practices and the development of more effective AI teaching tools.

Recommendations

On the basis of the findings of this study, the following recommendations are made with a view of improving Utilization of computer artificial intelligence in instructional delivery of business education courses.

1. Since there are most effective AI tools and technologies that can be used in instructional delivery of business education courses, there should be effort to sustain the utilization of computer artificial intelligence in instructional delivery of business education courses
2. Since there is high level of awareness and training among instructors on the use of AI in instructional delivery of business education courses, there should be proper implementation computer artificial intelligence in instructional delivery of business education courses
3. Since there are key technology infrastructure requirements for the effective use of AI in instructional delivery of business education courses, there should be effort towards providing the needed infrastructure
4. l requirement for the utilization of computer artificial intelligence in instructional delivery of business education courses

4. Conclusion

The study on " efficacy in utilization of computer artificial intelligence in instructional delivery of business education: business education lecturers perceptions" has provided insights into the perceptions of business education lecturers on the use of computer artificial intelligence in business education.

Based on the findings of the study, it can be concluded that there is a need to promote the integration of computer AI in business education curriculum to enhance instructional delivery and bridge the gap between theoretical knowledge and practical skills required in the workforce [4]. Business education lecturers, have shown a positive perception towards the use of AI in instructional delivery [5]. However, there is a need for more training and awareness programs to improve their knowledge and skills in implementing AI in business education, including lack of infrastructure and resources, resistance to change, and inadequate support from policymakers. Therefore, there is a need for collaborative efforts between the educational sector, industry, and policymakers to address these challenges and promote the adoption of computer AI into business education curriculum.

Abbreviations

AI	Artificial Intelligence
TAM	Technology Acceptance Model

Author Contributions

Odey Clement Afo: Conceptualization, Formal Analysis, Funding acquisition, Validation, Methodology, Writing – original draft, Project administration, Writing – review & editing

Okanazo Oliver.: Conceptualization, Investigation, Visualization, Methodology, Writing – review & editing

Akubue Nwanneka Gladys: Data curation, Supervision, Validation, Investigation, Visualization, Methodology, Writing – review & editing

Ediongsenyene Akpan Ekanem: Conceptualization, Formal Analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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