

Influential factors on students' artificial intelligence skill acquisition as perceived by business education lecturers in tertiary institutions in Anambra state

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ARTICLE INFO

Keywords: Artificial Intelligence, Skills, Skill Acquisition, Business Education Lecturers.

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Abstract

This study investigated influential factors on students' acquisition of artificial intelligence (AI) skills acquisition as perceived by business education lecturers in tertiary institutions in Anambra State. Guided by two research questions and two null hypotheses, the study employed a survey design with 112 lecturers in public tertiary institutions offering business education programme in the Anambra State. Data were collected using a validated 16-item structured questionnaire, with reliability coefficients of .89 and .87 obtained for clusters B1 to B2, and overall value of .88 established through Cronbach Alpha. The researcher with the help of three research assistants was involved in direct method of data collection. Mean, standard deviation, and t-test were used for analysis. Findings revealed that both institutional-related and lecturer-related factors significantly affect students' AI skill acquisition, while teaching experience had no significant impact on lecturers' perceptions. The study concluded that inadequate institutional support, limited resources, and insufficient lecturer preparedness hinder effective integration of AI skills into business education programs. It recommended that tertiary institution administrators invest in modern computing resources, update business education curricula with current AI concepts, provide access to relevant learning materials, and encourage collaboration between business and technology-related departments to enhance curriculum relevance and resource sharing.

Introduction

Artificial Intelligence (AI) is a new innovation that is already altering many industries through the use of technology to carry out office tasks without human involvement. The advent of AI into offices has led to an unprecedented improvement in how office data are analyzed and managed, hence; boosting job performance. AI is a set of computers that allow systems to accomplish activities that would normally require human intelligence, such as visual perception, speech recognition, decision-making and language translation. Marsden (2017) defined AI as a set of technologies that allow computers to see, learn, reason and act on their own. It is active, proactive, computerized, and flexible, allowing it to respond to change and deal with new conditions. The ability to adapt to change through knowledge acquisition and application is an indicator of intelligence. In the current age of rapid technological advancement, AI technologies such as machine learning, natural language processing, and intelligent tutoring systems are already revolutionizing the way knowledge is delivered, decisions are made, and business operations are executed (Chukwuedo, 2022).

Many developed nations have integrated AI technologies to improve efficiency, however, adoption in developing countries, particularly Nigeria, is low (Okafor & Nwafor, 2021). Tertiary institutions in Nigeria are under pressure to equip students with AI skills to increase their

employability potential. Dallasega, Rauch and Linder (2020) stated that the development of AI technologies requires tertiary institutions to equip students with the necessary knowledge and skills for the 21st-century digital economy. Business education, which combines theoretical and practical knowledge, is designed to produce graduates with managerial and technological skills (Nwokike & Eze, 2021). The ability of business education lecturers to understand, apply and teach AI-related skills is crucial. Skills are knowledge and abilities acquired through learning, practice, and experience (Jordan & Mitchell, 2017). Also, Ogunleye and Ayodele (2020) saw AI skills as specialized technical abilities required for developing, deploying, and managing AI technologies. They are crucial in today's labor market, as AI-driven technologies enhance efficiency, productivity, and innovation. Recent graduates need AI skills to fit into modern organizations (Jobin, Ienca & Vayena, 2019). Skills acquisition involves formal education, training programs, practice, and hands-on experience, ensuring individuals possess the necessary skills to perform activities efficiently.

Business Education in Nigerian tertiary institutions should focus on enhancing students' acquisition of AI skills for future career advancement and adaptability to technological changes (FRN, 2013). This is part of the business education programme, which includes computer-related courses in ICT applications like Office Application, Web Page Design, and Database Management. However, Nwagwu (2020) noted that factors such as infrastructural, educational, economic, and policy-related issues can affect students' ability to acquire AI skills. Inadequate ICT infrastructure, limited funding, lack of skilled personnel, outdated curriculum, digital divide, socio-economic barriers, inconsistent government policies, resistance to change by educators, and inadequate professional development are some of the influencing factors. Additionally, institutional-related and lecturer-related factors could hinder the acquisition of AI skills in Nigerian tertiary institutions.

Institutional factors, such as infrastructure, access to AI resources, and industry collaboration, influence the capacity of institutions to provide necessary resources, curriculum, and training for effective AI skills development. Adeyemi (2021) stated that many Nigerian tertiary institutions lack adequate infrastructure for teaching and learning AI, leading to students lacking hands-on experience with AI technologies. Additionally, Nwankwo and Ogbonnaya (2020) disclosed that outdated or non-existent AI-related curricula result in students graduating without relevant skills for the AI-driven job market. Furthermore, Eze and Okoli (2021) asserted that many institutions face a shortage of qualified lecturers with expertise in AI technologies, causing students to struggle to understand the complexities of AI systems.

Lecturer-related factors in AI education include AI expertise, attitudes towards adopting new technologies, professional development opportunities, access to AI tools and resources, overloaded curriculum, motivation, incentives, and institutional support. Chimezie and Onuoha (2021) stated that familiarity with AI technologies and their application in instructional processes is crucial for effective teaching. Lack of up-to-date knowledge can limit students' exposure to modern AI tools and hinder effective teaching. Continuous professional development is essential for business education lecturers to effectively teach AI concepts and integrate them into the curriculum. Obasi and Okoro (2021) noted that many Nigerian tertiary institutions lack access to regular professional development programs or workshops, making it difficult for lecturers to stay current with advancements and transfer skills effectively. Akpan and Alade (2021) found that the pedagogical approach of lecturers, including hands-on learning and real-world AI applications, significantly impacts students' understanding of AI concepts. Traditional lecture formats can hinder AI skills acquisition, while resistance to change and reluctance to adopt new technologies can hinder AI integration. Business education lecturers' attitudes towards AI technology and willingness to promote its use can influence students' perception and engagement with AI learning.

The debate between employers and policymakers in Nigeria revolves around whether business education programme in tertiary institutions have failed to develop employment-ready graduates with relevant digital skills. The issue is heightened due to dwindling job opportunities and labour market

uncertainty. Many business education graduates in Nigeria are unemployable because they lack high level digital skills (Okeke-Ezeanyanwu & Nweke, 2021).

The perception of business education lecturers as regards factors influencing to students' acquisition of AI could differ based on years of teaching experience. Lecturers with fewer years of teaching experience (five years and below) might be more recently exposed to the growing emphasis on AI skills in various disciplines, including business compared to those with longer years of experience (six years and above). They may have encountered this during their own recent studies or through newer professional development initiatives. Consequently, they might have a fresher perspective on the urgency and importance of AI skills and be more attuned to the institutional and lecturer-related factors that either facilitate or hinder AI skills acquisition. Conversely, more experienced lecturers might have established teaching methodologies and perspectives that predate the current AI focus in business education, potentially leading to a different appraisal of the influencing factors. They might also compare the current situation to past technological integrations in education, framing their perceptions through that historical lens. Ike and Achor (2022) reported that business education lecturers had varied perceptions regarding the relevance and applicability of AI in their field. While some view AI as a vital tool for enhancing productivity and decision-making, others may perceive it as complex, abstract, or incompatible with traditional business teaching models. This study, therefore, examined influential factors on students' AI skill acquisition as perceived by business education lecturers in tertiary institutions in Anambra State.

Aims and Objectives

The main objective of this study was to examine influential factors on students' AI skill acquisition as perceived by business education lecturers in tertiary institutions in Anambra State. Specifically, this study determined business education lecturers' perceived;

1. institutional-related factors affecting students' acquisition of AI skills in Anambra State tertiary institutions.
2. lecturer-related factors affecting students' acquisition of AI skills in Anambra State tertiary institutions.

Statement of the Problem

The rapid advancement and increasing integration of AI across various sectors of the global economy have underscored the critical need for future business professionals to possess a foundational understanding and practical skills in this transformative technology. Consequently, tertiary institutions offering business education programs face the significant challenge of equipping their students with the requisite AI skills to ensure their relevance and competitiveness in the evolving job market. In Nigeria, especially Anambra State, tertiary institutions play a crucial role in shaping the human capital necessary for economic growth and development. Business education programs within these institutions are expected to provide students with core AI skills. However, the integration of AI into these curricula and the development of students' AI skills are relatively nascent areas. Understanding the factors that influence the acquisition of these crucial skills is paramount for effective curriculum design, resource allocation, and pedagogical strategies within these institutions.

The acquisition of AI skills by business education students is a multifaceted process influenced by a variety of elements. These factors could stem from the institutional environment, including the availability of adequate technological infrastructure, the relevance and integration of AI content within the curriculum, and the support provided for AI-related learning. Furthermore, the characteristics and pedagogical approaches of the lecturers themselves, such as their AI knowledge, teaching methodologies, and ability to connect AI concepts to business applications, play a pivotal role in students' learning outcomes. While the need for AI literacy in business is increasingly recognized globally and nationally, there is a potential gap in understanding the specific challenges

and opportunities within the context of tertiary institutions in Anambra State. The perceptions of the business education lecturers at the forefront of delivering business education are particularly critical. Their insights into the factors that either facilitate or impede students' AI skill acquisition can provide valuable information for policymakers, curriculum developers, and institutional administrators. To look into these problems identified is why this research is conducted.

Research Questions

The following research questions guided the study;

1. What is the business education lecturers' perceived institutional-related factors affecting students' acquisition of AI skills in Anambra State tertiary institutions?
2. What are the perceived lecturer-related factors affecting students' acquisition of AI skills in Anambra State tertiary institutions?

Null Hypotheses

The following null hypotheses were tested at 0.05 level of significance;

1. There is no significant difference in the mean perception of business education lecturers perceived institutional-related factors affecting students' acquisition of AI skills in Anambra State tertiary institutions based on years of teaching experience.
2. There is no significant difference in the mean perception of business education lecturers on lecturer-related factors affecting students' acquisition of AI skills in Anambra State tertiary institutions based on years of teaching experience.

Methods

This study adopted survey research design. It was carried out in Anambra State, South East, Nigeria. The population of the study consisted of 112 business education lecturers in public tertiary institutions offering business education programme in the Anambra State. The tertiary institutions include Nnamdi Azikiwe University (22); Chukwuemeka Odumegwu Ojukwu University (6); Nwafor Orizu College of Education (17) and Federal College of Education (Technical) Umunze (67). There was no sampling since the population was manageable and accessible to the researcher. Structured questionnaire titled "Perceived Influential Factors Affecting Students' AI Skill Acquisition Questionnaire (PIFASAIISA) and has two sections A and B. Section A contained demographic information of the respondents such as years of teaching experience while section B had 18 items in clusters B1 to B2. The instrument was structured on a four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). Face and content validity of the instrument were ascertained using three experts, two from the field of Business Education and one expert from Measurement and Evaluation.

The reliability of the instrument was carried out using trial-testing method, and data collected calculated with Cronbach Alpha formula to determine the internal consistency of the instrument and correlation coefficients of .89 and .87 was obtained for clusters B1 to B2 respectively with an overall value of .88 obtained. The researcher with the help of three research assistants who were adequately briefed on the method of administration and collection of the questionnaire distributed the copies to the respondents in their institutions. Direct method of administration was employed but those who did not fill their copies immediately were revisited on another agreed date for retrieval. Out of 112 copies of the questionnaire distributed, 105 (94%) were correctly filled and returned which were used for data analysis. Mean and standard deviation were used to answer the research questions and determine the homogeneity of the respondents' ratings while t-test was used to test the null hypotheses at 0.05 level of significance. A null hypothesis was rejected where the p-value is less than the significant level; otherwise the null hypothesis was accepted. The analysis was carried out using Statistical Package for Social Sciences (SPSS) version 25.0.

Results

Research Question1:

What is the business education lecturers’ perceived institutional-related factors affecting students’ acquisition of AI skills in Anambra State tertiary institutions?

Table 1: Respondents’ Mean Ratings and Standard Deviation on Perceived Institutional-Related Factors Affecting Students’ Acquisition of AI Skills

S/N	Item on institutional-related factors	\bar{X}	SD	Remarks
1	My institution provides sufficient computing resources (e.g., hardware, software) necessary for learning AI skills	2.03	.81	Disagree
2	The curriculum of my business education programme adequately integrates relevant AI concepts and applications	2.16	.76	Disagree
3	There are enough qualified instructors in my institution who possess the expertise to teach AI skills effectively to business students	1.54	.77	Disagree
4	My institution offers sufficient opportunities for hands-on AI projects and practical exercises.	1.31	.70	Strongly Disagree
5	The teaching methods employed by lecturers in AI-related courses are effective for business education students	1.81	.81	Disagree
6	There is sufficient collaboration between the business and computer science/IT departments to facilitate AI skill acquisition.	2.18	.64	Disagree
7	My institution encourages participation in AI-related workshops, seminars, and competitions	2.16	.68	Disagree
8	My institution provides adequate support and guidance for students interested in pursuing AI skills within the context of business.	2.00	.87	Disagree
Cluster Mean		1.90		Disagree

Data in table 1 shows that respondents rated one 1 out of the eight items listed with mean score of 1.31. The remaining seven items are rated disagree with mean scores ranging from 1.54 to 2.18. The cluster mean score of 1.90 shows that on the whole, respondents rated majority of the listed items disagree which implies that they are institutional-related factors affecting students’ AI skills acquisition in Anambra State tertiary institutions. The standard deviation for all the items ranges from .64 to .87 indicating that the respondents are not far apart in their mean perceptions.

Null Hypothesis 2

There is no significant difference in the mean perception of business education lecturers on lecturer-related factors affecting students’ acquisition of AI skills in Anambra State tertiary institutions based on years of teaching experience.

Table 4: T-test Analysis of Significant Difference in the Mean Perception of Business Education lecturers on Lecturer-Related Factors Affecting Students’ Acquisition of AI Skills Based on Years of Experience

Years of Experience	N	\bar{X}	SD	df	t-value	P-value	Decision
Below 5 years	39	2.16	.68	103	1.10	.10	Not Significant
6 and above years	662	.14	.74				

Table 4 show that t-value of 1.10 at 103 degree of freedom with a p-value of .10 which is greater than the alpha value of 0.05 ($.10 > 0.05$). Since the p-value is greater than the significant value, the null hypothesis is therefore accepted. This means that there is no significant difference in the mean perception of business education lecturers on lecturer-related factors affecting students’ acquisition of AI skills in Anambra State tertiary institutions based on years of teaching experience.

Summary of Findings

Findings of the study revealed that business education lecturers perceived that institutional-related factors are affecting students’ acquisition of AI skills in Anambra State tertiary institutions. Findings of the study agrees with that of Adeyemi (2021) which revealed that many Nigerian tertiary institutions lack adequate infrastructure for teaching and learning ICT skills including computers, high-speed internet, AI laboratories, and access to cloud computing resources. Ogu and Aliu (2022) found that collaboration between tertiary institutions and industries in Nigeria is often weak, limiting students' exposure to real-world AI applications. In addition, Adebayo and Owolabi (2021) observed that insufficient funding is a major institutional factor that affects the ability of tertiary institutions in Nigeria to invest in students’ AI skill development. Findings of the study revealed that there was no significant difference in the mean perception of business education lecturers on institutional-related factors affecting students’ acquisition of AI skills in Anambra State tertiary institutions based on years of teaching experience. It could be that business education lecturers within Anambra State tertiary institutions may be facing a relatively uniform set of institutional challenges and limitations regarding the integration of AI skills into their programme regardless of teaching experience.

In addition, findings of the study revealed that respondents perceived that lecturer-related factors are affecting students’ AI skills acquisition in Anambra State tertiary institutions. In agreement, Chimezie, and Onuoha (2021) found that many lecturers in Nigerian tertiary institutions lack adequate training and expertise in AI technologies. Since AI is a rapidly evolving field, some business education lecturers do not have adequate technical skills or in-depth knowledge required to train students in AI skills. Udoh and Amadi (2022) in agreement reported that business education curricula in Nigerian tertiary institutions leave little room for inclusion of AI-focused courses. This limitation, combined with business education lecturers’ busy schedules, prevent them from incorporating AI topics and contents into their teaching, despite its growing importance in modern world. Furthermore, Eze and Onyekachi (2021) disclosed that some lecturers in Nigerian tertiary institutions lack motivation to teach AI skills due to insufficient incentives from the institution. Eze and Onyekachi noted that without institutional support, promotion or financial incentives for integrating AI into their courses, business education lecturers do not see the value in teaching AI, especially if it requires extra effort. Findings of the study showed that there was no significant difference in the mean perception of business education lecturers on lecturer-related factors affecting students’ acquisition of AI skills in Anambra State tertiary institutions based on years of teaching

experience. It could be that business education lecturers in Anambra State tertiary institutions share a common understanding of challenges and opportunities in teaching AI skills, regardless of experience level. This shared reality may have led to a convergence in their perceptions of lecturer-related factors, overcoming potential differences from varying experience levels.

Conclusion

The findings of the study indicated that business education lecturers in Anambra State tertiary institutions indicated that institutional-related and lecturer-related factors are significantly affecting students' acquisition of AI skills in tertiary institutions in Anambra State. Based on the findings of the study, the researcher concludes that the effective integration of AI skills into business education programs in Anambra State tertiary institutions is being significantly hindered by shortcomings in both the support and resources provided by the institutions themselves and the preparedness and pedagogical approaches of the business education lecturers.

Recommendations

Based on the findings of the study, the researcher makes the following recommendations;

1. Administrators of tertiary institutions in Nigeria should prioritize investment in essential computing resources (hardware and software), update business education curricula to meaningfully integrate relevant and current AI concepts and applications, and ensure access to up-to-date learning materials and online resources. This includes fostering collaboration between business and technology-related departments to ensure curriculum relevance and resource sharing.
2. Administrators of tertiary institutions in Anambra State should implement continuous professional development programs focused on equipping business education lecturers with the necessary AI knowledge, pedagogical skills, and practical application abilities relevant to their field. This could involve workshops, seminars, collaborative projects with industry experts, and opportunities for further study in AI-related areas.
3. Heads of Department (HODs) of tertiary institutions in Anambra State should create more opportunities for business education students to engage in hands-on AI projects, case studies, and simulations relevant to business contexts. Furthermore, establishing stronger linkages within information technology industries that utilize AI can provide students with real-world exposure, mentorship opportunities, and potential internships, enhancing their practical AI skill acquisition.
4. Educational policymakers and institutional administrators should develop clear policies that support the integration of AI skills into business education programme. This includes establishing guidelines for curriculum development, resource allocation, and faculty training. Furthermore, assessment methods should be designed to effectively evaluate business education students' understanding and application of AI skills in business contexts, moving beyond purely theoretical evaluations.

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