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RELEVANCE OF COMPUTER-BASED TESTING (CBT) USAGE ON ACADEMIC PERFORMANCE OF BUSINESS EDUCATION STUDENTS IN EBONYI STATE UNIVERSITY.

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Abstract
This study examined the relevance of Computer-Based Testing (CBT) usage on academic performance of Business Education students at Ebonyi State University. Two purposes of study and research questions guided the study. A descriptive survey research design was adopted, with a population of 216 respondents. No sampling was employed as the researchers used census population. Data were collected using a researcher instrument titled "Relevance of Computer Based Testing on Academic Performance" (RCBTAP), which was validated and yielded a index reliability coefficient of 0.81 using Cronbach Alpha. Mean and standard deviation were used to answer research questions. Findings revealed that respondents agreed on all seven identified benefits of Computer Based Testing including enhanced security, instant scoring, administrative efficiency, and innovative assessment items. Additionally, all twelve identified challenges such as inadequate funding, poor power supply, unstable internet connectivity, computer illiteracy, and psychological stress were affirmed as obstacles to effective Computer Based Testing implementation. The study concluded that while Computer Based Testing holds significant potential for improving academic performance in Business Education, addressing infrastructural deficits and capacity building is essential for optimal implementation. Recommendations included increased funding for CBT infrastructure, integration of computer literacy training, and provision of technical support.

Keywords: *Academic Performance Business Education, Computer-Based Testing*

Introduction

The global educational landscape has undergone profound transformation over the past two decades, driven primarily by rapid advancements in information and communication technology. This technological revolution has fundamentally altered traditional conceptions of teaching, learning, and assessment, compelling educational institutions worldwide to re-evaluate their pedagogical practices and embrace innovative approaches that align with the demands of the digital age. Among the most significant manifestations of this transformation is the progressive shift from conventional paper-based assessment methods to technology-enhanced evaluation systems, particularly Computer-Based Testing (CBT).

Ogunleye and Adebayo (2021) defined Computer Based Testing (CBT) as the administration of tests and assessments using digital devices, allowing for automated delivery, scoring and reporting. Computer-Based Testing (CBT) is a method of administering tests in which the responses are electronically recorded and assessed (Umar, Sani and Nura, 2022). It is a form of assessment and evaluation in which questions are delivered to students on a computer screen based on the subject picked by the students. Ediabgonya (2023), Computer-Based Test (CBT) has emerged as a prominent and innovative assessment strategy, promising greater efficiency, enhanced security, and improved overall effectiveness in measuring student achievement. The integration of such technologies into educational assessment is not merely a trend but a necessary evolution to meet the demands of a digital age and ensure the credibility of the certification process.

Nevertheless, in an age where technology perpetually reshapes the boundaries of teaching and learning, the integration of Computer Based Testing (CBT) emerges not merely as a technological upgrade, but as a pedagogically relevant tool with profound implications for academic performance.

In this line, York et al (2015) explained that educational assessment has been profoundly shaped by technological advancements, leading to the widespread adoption of Computer Based Testing (CBT) as a contemporary alternative to traditional paper-based evaluation methods. According to Umar, Sani and Nura (2022), Computer Based Testing (CBT) has a number of importances when compared to Paper & Pencil (P&P) Testing. Umar, et al identified such advantages to include efficiency, immediate scoring and feedback in the case of multiple-choice questions. Umar, et al further explained that Computer Based Testing (CBT) allow more innovative and authentic assessments due to more advanced technological capacities. Examples are the use of video clips and slide shows to assess students in practical oriented courses or the use of computer-based case simulations in assessing students' social skills. Umar, et al also identified no missing of script, environment is controlled, secure test environment, consistency, and innovation as the benefits associated with the use of Computer Based Testing (CBT). The implementation of computer-based testing offers multiple advantages. Walker and Delius (2004) identified speed of delivery, administration and scoring efficiency, improved test security, consistency and reliability, faster response rate among others as benefits of Computer Based Testing (CBT) over traditional paper-and-pencil. Daniels and Gierl (2017) posed that Computer Based Testing (CBT) provides communication opportunities and immediate feedback in educational contexts. The shift into Computer Based Testing (CBT) is especially critical in discipline like business education, whose core mandate is to produce graduates that are equipped with analytical, strategic and technological competencies required in the world of work.

Business Education is a branch of education that involves teaching the skills and operations of the business industry for sustainable development. Osun State University's programme philosophy (2024) defines Business Education as a programme designed to provide individuals with relevant knowledge, skills and competencies to be self-reliant and economically self-sufficient for gainful employment, meaningful living, and to contribute to the development of the society. Udo (2015), Business Education is a vital component of technical and vocational education in Nigeria with the mandate of equipping students with the practical skills, knowledge, and attitudes required for success in modern business occupations. Similarly, Ademiluyi and Ademiluyi (2018), stated that this field is inherently work-focused, skill-based, and technology-driven, encompassing areas from accounting and management to office technology and information communication. Therefore, the methods used to assess Business Education students must be robust enough to evaluate not only theoretical knowledge but also the practical competencies that are central to the programme's goals. The assessment practice is a critical determinant of academic performance, which remains a key indicator of a graduate's readiness for the competitive labour market (Ademiluyi and Akinlabi, 2022).

Academic performance can be defined as the extent to which an institution, a teacher, or a student achieves long or short-term educational goals. Academic performance is usually measured by continuous assessments and overall cumulative grade point average (CGPA) achieved by the student (Hellas et al., 2018). Academic performance is crucial as it provides insight into students' success in learning within a specific period. Ramoni (2023) emphasizes that academic performance represents the learning outcomes of students in terms of the level of skills, knowledge, and ideas necessary for gainful employment in related occupations. Ramoni further stated that academic performance of Business Education students has emerged as a critical concern for educators, policymakers, and stakeholders across Nigeria's educational landscape. Business Education, as a vital component of technical and vocational education, aims to equip students with the knowledge, skills, and competencies necessary for successful participation in office occupations, entrepreneurial ventures, and the broader business environment (Mamman, Chado, & Mohammed 2025). However, evidence from multiple studies suggests that many Business Education students are not achieving the desired level of academic success, raising fundamental questions about the quality of graduates being produced and their readiness for the workforce. The persistent challenge of poor academic performance among Business Education students in Nigeria has prompted educators, researchers, and policymakers to seek innovative solutions that can enhance learning outcomes and assessment validity. Computer Based Testing (CBT) has emerged as a transformative technology with the potential to address multiple factors contributing to underperformance while simultaneously improving the assessment experience for both students and educators (Upula and Ekpo-Eloma, 2020). The adoption

of Computer Based Testing offers a range of potential benefits over the conventional PPT. Computer Based Testing tends to reduce the expense of printing test questions and answer sheets, which is a feature of the traditional assessment method (Okocha, 2022). In an increasingly digital business environment, the computer skills developed through Computer Based Testing exposure directly enhance students' professional competencies and, consequently, their academic performance in technology-integrated Business Education programs (Ramoni, 2023). Okeke and Dikeocha, (2024) identified the benefits of computer Based Testing such as improved content Retention through technology-enhanced Learning. The integration of CBT with broader technology-enhanced learning creates synergies that improve content retention and academic performance. It is also credited with reducing the long-term costs associated with printing and logistics, increasing test security, minimizing examination malpractices like impersonation, and offering greater flexibility in test scheduling (Okocha, 2022). For Business Education students, the regular use of Computer Based Testing could also serve to reinforce their computer skills, a core competency area within their field of study (Ediabgonya, 2023). These advantages suggest that Computer Based Testing, when effectively implemented, could positively influence students' academic performance by creating a more secure, efficient, and motivating assessment environment.

However, the implementation of Computer Based Testing is not without its challenges. Studies have consistently identified significant hurdles, particularly within the Nigerian context. Olumese (2019) identified the challenges to include inadequate funding, a lack of sufficient computer facilities and reliable infrastructure, an erratic power supply, unstable internet connectivity, and a shortage of technical personnel to manage the systems. These challenges reflect broader systemic issues within Nigerian higher education, including underfunding, infrastructure deficits, and limited technological capacity. This study therefore, examines the relevance of Computer Based Testing on academic performance of Business Education students, with specific focus on identifying the benefits of computer Based Testing and the challenges associated with its implementation in assessing academic performance of Business Education student.

Statement of the Problem

Although technological integration into Business Education curricula is advancing, many Nigerian tertiary institutions still rely predominantly on conventional, paper-based assessment methods. These traditional approaches are often inadequate for evaluating digital competencies, practical skills, and higher-order thinking abilities that are essential for success in today's fast-paced business environments (Ogundele, Akinola and Eze, 2019). Moreover, they frequently lack the capacity to provide immediate feedback, adapt to individual learning paces, or effectively assess analytical and problem-solving skills. This discrepancy between the digital skill demands of the contemporary business world and the assessment strategies employed in Business Education programmes raises concerns about how adequately students are being prepared for professional roles. While Computer Based Testing (CBT) has been adopted in various educational settings, its specific impact on the academic performance of Business Education students' remains underexplored. There is a notable gap in evidence-based studies examining whether Computer Based Testing CBT improves learning outcomes, motivation, and skill mastery in this discipline. Consequently, this study aims to investigate the relevance of Computer Based Testing (CBT) on academic performance of Business Education students.

Purpose of the Study

The main purpose of the study was to determine the relevance of Computer Based Testing (CBT) on academic performance of Business Education students. Specifically, the study determined;

1. The benefits of Computer Based Testing (CBT) usage on academic performance of Business Education Students.

2. The challenges associated with implementing Computer Based Testing in Business Education assessments.

Research Questions

The following research questions guided the study.

1. What are the benefits of Computer Based Testing (CBT) usage on academic performance of Business Education Students?
2. What are the challenges associated with implementing CBT in Business Education assessments?

Methodology

The study adopted descriptive survey research design. The area of the study was Ebonyi State University Abakaliki. The population of the study consisted of 260 Business Educators and Business Education students in Ebonyi State University. The instrument used for collection of data was titled Relevance of Computer Based Testing on Academic Performance (RCBTAP). The instrument was of two sections A and B. Section A elicited information of the respondents while section B sought to collect data relating to research questions. The instrument was on 4 - point rating scale of (Strongly Agree - 4, Agree - 3, Disagree – 2, and Strongly Disagree - 1). Reliability of the instrument was determined using Cronbach Alpha statistical method which produced 0.81 coefficients. The instrument was considered reliable. A total of 260 copies of the instrument were administered to the respondents and 216 were correctly filled and returned Mean was used to answer the two research questions while standard deviation was employed to determine the homogeneity of the respondents' opinions. Mean scores from 3.5 and above were deemed to be Strongly Agree (SA), 2.5-3.49 were deemed to be Agree (A), 1.5-2.49 were deemed to be Disagree (D) and 1.49 and below were deemed to be Strongly Disagree (SD).

Results

Research Question 1: What are the benefits of Computer Based Testing (CBT) usage on academic performance of Business Education Students?

Table 1: *Business educators' mean rating on the benefits of Computer Based Testing (CBT) in improving academic performance of Business Education Students.*

S/N	Benefits of CBT	N	Mean	SD	Remarks
1	Increased efficiency in exam administration	216	3.67	1.06	Strongly Agree
2	Computer-based testing enables instant scoring	216	3.80	1.01	Strongly Agree
3	computer-based testing increase standardization	216	2.87	1.11	Agree
4	Improved students experience	216	2.80	1.10	Agree
5	Enhanced security and integrity	216	3.89	1.03	Strongly Agree
6	It promotes environmental sustainability	216	3.68	1.08	Strongly Agree
7	Computer-based assessment enables the use of vative item	216	3.75	1.07	Strongly Agree
	Grand	216	**3.49**	**1.06**	**AGREE**

From the results displayed in Table 1, the grand mean of 3.49 revealed that respondents agreed to all the seven items analyzed (items 1 - 7) as they obtained mean scores ranging from 2.87 to 3.89. This indicates that business educators agreed that Computer Based Testing improves academic performance of business education students at Ebonyi State University. The standard deviations for all the items are within the same range, indicating that respondents are homogenous in their mean ratings from 1.01 to 1.10.

Research Question 2: What are the challenges associated with implementing CBT in Business Education assessments?

Table 2: *Business educators' mean rating on the challenges associated with implementing CBT in Business Education assessments.*

S/N	Challenges of implementing CBT	N	MEAN	SD	REMARK
1	Inadequate funding.	216	3.71	1.06	Strongly Agree
2	Insufficient computer facilities	216	3.21	1.13	Agree
3	Poor power supply	216	3.68	1.08	Strongly Agree
4	Unstable internet connectivity	216	3.30	1.14	Agree
5	Shortage of technical personnel	216	3.69	1.09	Strongly Agree
6	Software glitches	216	3.76	1.06	Agree
7	Limited evaluation methods	216	2.73	1.14	Strongly Agree
8	Psychological stress	216	3.90	0.98	Strongly Agree
9	Computer illiteracy	216	3.88	0.97	Strongly Agree
10	Vulnerability of system to hacking	216	3.70	1.01	Strongly Agree
11	Integrity of examination manager	216	2.89	1.08	Agree
12	Poor government policy on the implementing of CBT	216	3.29	1.04	Agree
	Grand		**3.48**	**1.07**	**Agree**

From the results displayed in Table 2, the grand mean of 3.48 revealed that respondents agreed that the items are the challenges associated with implementing CBT in Business Education assessments. This indicates that business educators agreed that all items are challenges associated with implementing Computer Based Testing in Business Education Department at Ebonyi State University. The standard deviations for all the items are within the same range, indicating that respondents are homogenous in their mean ratings from 0.97 to 1.14.

Discussion

The findings from Table 1 revealed that respondents agreed on all seven identified benefits of Computer Based Testing, indicating that Computer Based Testing positively influences academic performance of students in Business Education. This finding aligns with the assertions of Umar et al., (2022), who noted that Computer Based Testing minimizes examination malpractices such as impersonation and script theft. This perception of fairness and security can positively influence students' focus and confidence during assessments, potentially leading to performance that more accurately reflects their true abilities. In the same vein, this corroborates the work of Walker and Delius (2004), who emphasized efficiency and immediate feedback as key advantages. The homogeneity of responses, as indicated by standard deviations ranging from 1.01 to 1.10, demonstrates consistency in the respondents' perceptions.

The results presented in table 2 showed that respondents agreed on all twelve identified challenges associated with implementing Computer Based Test in Business Education. This is in line with the views of Olumese (2019) who stressed that in spite of the benefit of Computer Based Testing, inadequate funding, lack of sufficient computer facilities and reliable infrastructure, an erratic power

supply, unstable internet connectivity, and a shortage of technical personnel to manage the systems are challenges affecting the implementation of Computer Based Testing. The standard deviations for all items (ranging from 0.97 to 1.14) indicate homogeneity in respondents' opinions, suggesting consensus among respondents regarding these challenges. The consistency in responses strengthens the reliability of these findings.

Implication of the study

The following are some of the implications of the finding for government and educational policymakers**,** institutional administrators and examination bodies**,** lecturers and students **in** Business Education.

The findings of this study have important implications for government and educational policymakers**.** The positive influence of Computer Based Testing (CBT) on students' academic performance suggests the need for policy support in the adoption and expansion of CBT in Business Education programmes. However, the identified challenges such as inadequate funding, poor infrastructure, erratic power supply, and unstable internet connectivity imply that policymakers must intensify efforts toward improving educational infrastructure and providing sustainable funding to ensure effective implementation of CBT across institutions.

The study also has implications for **institutional administrators and examination bodies**. The agreement among respondents on the benefits of CBT indicates that its adoption can enhance the credibility, efficiency, and security of examinations. Nevertheless, the presence of significant implementation challenges implies that school management must invest in adequate computer facilities, ensure regular maintenance of systems, and engage competent technical personnel. This will help to maximize the benefits of CBT while minimizing disruptions during examinations.

Furthermore, the findings have implications for **lecturers and students** in Business Education. The positive perception of CBT suggests that it can improve students' confidence and academic performance through timely feedback and a more secure testing environment. However, the challenges identified imply that both lecturers and students need to develop adequate digital literacy and technical skills to effectively utilize CBT platforms. This calls for continuous training and orientation programmes to enhance their competence and adaptability in technology-driven assessment systems.

Conclusion

This study investigated the relevance of Computer-Based Testing (CBT) on academic performance of Business Education students in Ebonyi State University. The findings reveal a dual reality, while respondents unanimously acknowledge the substantial benefits of Computer Based Testing including enhanced security, instant scoring, innovative assessment items, administrative efficiency, and environmental sustainability, they equally recognize the formidable challenges that impede its effective implementation.

However, the challenges identified in this study are substantial and cannot be overlooked. The prevalence of psychological stress, computer illiteracy, software glitches, inadequate funding, system vulnerabilities, technical personnel shortages, and poor infrastructure collectively threaten the successful implementation of Computer Based Testing. Nevertheless, the consensus among respondents that Computer Based Testing can improve academic performance, despite these challenges, is encouraging. It suggests that educators recognize the transformative potential of technology in assessment and are willing to embrace innovation when adequately supported. The challenge, therefore, lies not in questioning the relevance of Computer Based Testing, but in addressing the systemic barriers that prevent its optimal implementation.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Government and educational stakeholders should provide adequate funding and invest in the necessary infrastructure, including reliable electricity supply, functional computer laboratories,

and stable internet connectivity, to ensure the effective implementation of Computer Based Testing in Business Education programmes.

2. Institutional administrators should organize regular training programmes for lecturers, students, and technical staff to enhance their digital competencies and ensure the efficient use and management of Computer Based Testing systems.

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