COMPUTER-BASED TESTING AND QUALITY ASSURANCE IN UNIVERSITY EXAMINATIONS: STUDENTS' PERCEPTIONS FROM NNAMDI AZIKIWE UNIVERSITY

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Abstract

This study investigated the perception of science education students on the use of computer-based test (CBT) mode of examination in Nnamdi Azikiwe University, Awka. Three research questions were raised and answered to achieve the purpose of the study and one hypothesis was formulated. Descriptive survey research design was used to carry out this study. The population of the study consists of all the 1016 Science Education Regular Students in Nnamdi Azikiwe University, Awka in 2023/2024 session. Using simple random sampling, a sample size of 50 students from each level was used for the study making a total sample size of 200 students. The instrument used for collection of data was a structured questionnaire developed by the researchers. The questionnaire contained 30 item questions. The instrument was validated by two experts from the Faculty of Education. To determine the internal consistency of the instrument, Cronbach alpha method was used and the reliability was found to be 0.83. Data for the study was collected by the researchers themselves. Data collected were analyzed using arithmetic mean and standard deviation. The mean was used to answer the research questions. Results revealed that CBT influences the academic performance of science education students in Nnamdi Azikiwe University. It also revealed that CBT influences the credibility of examinations in Nnamdi Azikiwe University, Awka by making it easier to track and analyze data about student performance which can help to improve the quality of exam. It was then recommended among others that educators should implement computer-based test mode of examination across different level of the school system, so as to continue fostering acceptance among students of these different levels.

Keywords: Computer-based Testing, Quality Assurance, University Examinations

Introduction

The search for adequate and appropriate methods of conducting tests in schools has continued to pose challenges to stakeholders of the education sector. Conducting examinations in tertiary institutions of the country has always been a major course for worry as the process is characterized by examination malpractices, poor time management by the examiners, inadequate invigilators, and poor condition of examination venues, bias in marking examination scripts by the lecturers, delay in the release of results, problem of managing large number of students, among others (Chala & Agago, 2022). Cases of missing scripts are also common in the tertiary institutions due to the method of assessment (Abdulraheem, 2013; Kiprono & Gichuhi, 2021).

These problems most times retard the students from graduating at the stipulated time thereby leading to educational wastages (Nwaka, 2015). Some students might become demoralized as a result of delay in the computation of their results (Maymon *et. al.,* 2018). Alteration of result score and illegal upgrading of results may have characterized the practice of many tertiary institutions in Nigeria which further reduces the authenticity of the certificates awarded in these institutions (Nnam & Inah, 2015). Thus, an appropriate implementation of test needed to be looked into; and then came Computer Based Test (CBT). Computer-Based Testing (CBT) refers to the administration of examinations using digital platforms, where candidates respond to test items via computers rather than paper-and-pencil formats (Iderima, 2023). In Nigeria, CBT has become an integral component of the educational assessment landscape, particularly in large-scale standardized examinations, due to its potential to enhance efficiency, security, and credibility in testing processes (Okah-Tim, 2023).

The history of CBT in Nigeria can be traced to the early 2000s, when examination bodies and higher education institutions began exploring digital solutions to address persistent challenges associated with traditional paper-based testing, including examination malpractice, logistical constraints, result delays, and high administrative costs (Azor & Ogwu, 2019). A major milestone occurred in 2013, when the Joint Admissions and Matriculation Board (JAMB) formally introduced Computer-Based Testing on a pilot basis for the Unified Tertiary Matriculation Examination (UTME) (Abubakar, 2014; Kayode, 2019). By 2015, JAMB had fully transitioned to CBT for UTME nationwide, marking a turning point in the adoption of technology-driven assessment in the country (Kayode, 2019). Following JAMB's implementation, other examination bodies and institutions (such as universities, polytechnics, colleges of education, and professional certification agencies) gradually adopted CBT for entrance examinations, semester

assessments, and aptitude tests. Despite infrastructural, technical, and equity-related challenges, the expansion of CBT in Nigeria reflects a broader national shift toward digitalization in education and aligns with global trends in assessment modernization (Ndema, 2025).

The benefits of Computer-based tests are enormous ranging from flexibility in timing, immediate scoring, security and ensuring examination integrity amongst other benefits (Okocha, 2022) and is viewed as a solution to the major challenges facing testing in the world (Leloudas, 2023). However, despite these benefits, developing countries still lag behind in the implementation of computer-based testing (Utoikamanu, 2019), prompting students to have some reservations. Thus, this study investigated the perception of science education students on Computer Based Test mode of examination in Nnamdi Azikiwe University. This was achieved through looking into purposes formulating as the following research questions;

1. What is the perception of science education students on the influence of CBT mode of examination on their academic performance in Nnamdi Azikiwe University?
2. What is the perception of science education students on the influence of CBT on the credibility of examination in Nnamdi Azikiwe University?
3. What is the difference between the mean scores of male and female students' responses to the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University?

Hypothesis

One hypothesis was formulated and tested at 0.05 level of significance:

1. There is no significant difference between the mean scores of male and female students' responses to the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University.

Method

The study was carried out in Nnamdi Azikiwe University in Anambra State, and adopted a descriptive survey design. The population of the study consisted of all the 1016 science education regular students of Nnamdi Azikiwe University, Awka as at 2023/2024 session. All four (4) levels of students in the department were selected, and two hundred (200) students were randomly selected from these levels to make up the research participants. The instrument for data collection was questionnaire titled “Questionnaire on perception of science education students on the use of computer-based test (CBT) mode of examination in Nnamdi Azikiwe University”. The instrument was validated by two experts from the Departments of Science Education and Economics Education for accuracy, appropriateness and

clarity to provide the necessary result for the research. To ascertain the reliability of the instrument, 20 copies of the questionnaire was administered to science education students in Chukwuemeka Odumegwu Ojukwu University, Igbariam. The data obtained from the administered questionnaire was analysed using Cronbach Alpha Co-efficient. The results of the analysis yielded a coefficient of 0.83 which indicated that the instrument was reliable. The data were collected through questionnaire; which was administered by the researchers face-to-face to the respondents and collected on the spot. Each item on the questionnaire was responded to by the research participants according to the 4 – point Likert scale of strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). The data collected were analysed using mean and standard deviation to answer the research questions. The decision rule on the result is that any mean below 2.50 is rejected while any mean higher than 2.50 is accepted.

Results

Table 1: **Mean and standard deviation of how CBT influence the academic performance of science education students in Nnamdi Azikiwe University, Awka**

S/N	Statement	Mean	SD	Remark
1.	CBT mode of exams is easier	3.50	0.58	Accepted
2.	The fast release of results makes CBT mode of exams my favorite	3.24	0.79	Accepted
3.	I am sure of my grades when the exam is computer based	2.90	0.88	Accepted
4.	CBT mode of exams provides the room to explore all the topics in a course content, which widens knowledge	3.08	0.87	Accepted
5.	CBT mode of exams is faster to take	3.40	0.66	Accepted
6.	CBT mode of exams is not easy to take	2.38	0.80	Rejected
7.	The fast release of results makes CBT mode of exam traumatizing	2.66	0.86	Accepted
8.	There's uncertainty of grades when exam is computer based	2.40	0.90	Rejected
9.	The high content of topics covered in CBT makes it impossible to pass	2.56	0.90	Accepted
10.	CBT mode of exams is time consuming and slow	1.92	1.06	Rejected
	Overall mean and Standard Deviation	**2.80**	**0.25**	**Accepted**

The result in Table 1 shows that items 1, 2, 3, 4, 5, 7 and 9 were accepted since there mean scores were above the mean cut-off points of 2.50, whereas, items 6, 8 and 10 were rejected because there mean scores were below the mean cut-off points of 2.50. Moreover, 2.80 and 0.25 were obtained as the overall mean score and standard deviation respectively. This indicates that CBT influences the academic performance of science education students in Nnamdi Azikiwe University, Awka.

Table 2: Mean and standard deviation of how CBT influence the credibility of examinations in Nnamdi Azikiwe University, Awka

S/N	Statement	Mean	SD	Remark
1.	Grades released from CBT mode of exams are more authentic	3.30	0.78	Accepted
2.	Grades released from CBT mode of exams may not be authentic	2.54	0.88	Accepted
3.	Exam-malpractice is limited in CBT mode of exams	2.96	0.85	Accepted
4.	Exam-malpractice still prevails in CBT mode of exams	2.62	0.82	Accepted
5.	I believe that there is no bias in grading CBT mode of exams	2.74	0.85	Accepted
6.	There could still be manipulation in grading CBT exams	2.68	0.99	Accepted
7.	Students' scores are unanimous and not known by the grader	2.76	0.77	Accepted
8.	Grader could still know students' grade before release of result	2.72	0.90	Accepted
9.	The CBT exam is confusing	2.48	0.88	Rejected
10.	Sometimes the hardware and software used to deliver CBT exam is not robust as failure becomes unavoidable	2.96	0.75	Accepted
	Overall mean and Standard Deviation	**2.78**	**0.30**	**Accepted**

The result in Table 2 shows that all the items 1, 2, 3, 4, 5, 6, 7, 8 and 10 were accepted since their mean scores were above the mean cut-off points of 2.50, while, items 9 was rejected because the mean score was below the mean cut-off points of 2.50. Moreover, 2.78 and 0.30 were obtained as the overall mean score and standard deviation respectively. This indicates that CBT influences the credibility of examinations in Nnamdi Azikiwe University, Awka.

Table 3: Mean and Standard Deviation of the difference between male and female students' responses on the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University, Awka

Gender	N	Mean	SD
Male	79	27.82	2.81
Female	121	28.18	2.25

The result in Table 3 shows that male students have a mean score of 27.82 while the female students have a mean score of 28.18. This implies that the female science education students have a slightly higher mean score on the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University, Awka than the male students. However, to confirm if the difference is significant, hypothesis one was test as shown below.

Table 4: Summary of t-test statistics of the significant difference between the mean scores of male and female students' responses on the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University, Awka

Gender	N	Mean	SD	Std. Error Mean	df	T	Sig.	Decision
Male	79	27.82	2.81	.31657	198	-.998	.320	Not Sig.
Female	121	28.25	2.25	.20463				

The result in Table 4 shows that the mean score of the male students on the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University, Awka ($\bar{x}$ = 27.82, SD = 2.81) was not significantly different from that of the female science education students ($\bar{x}$ = 28.25, SD = 2.25); t (198) = -.998, p = .320.

Therefore, the hypothesis was not rejected. This indicates that there is no significant difference between the mean scores of male and female students' responses on the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University, Awka. Hence, both the male and female science education students agree that CBT influences their academic performance in Nnamdi Azikiwe

University, Awka.

Discussion of the Findings

This study investigated the perception of science education students on Computer Based Test mode of examination in Nnamdi Azikiwe University. The findings of the study showed that CBT influences the academic performance of science education students in Nnamdi Azikiwe University, Awka. This is in line with Bolanta (2024) who stated that the result of the study showed that Science Education student's perception on the use of CBT mode of examination had higher mean ratings. The finding is also in line with the findings of Jamil *et. al.,* (2012) who opined that undergraduate students' complete computer-based test examination faster than paper-based examination.

The findings of the study showed that CBT influences the credibility of examinations in Nnamdi Azikiwe University, Awka**.** This is in line with findings of Umar *et. al.,* (2022), who posited the benefits of CBT based examination for undergraduate students, which include quick release of results, generation of databank for admitted students and registered students, secured test items, unbiased test administration and scoring, faster decision making, reduction in cases of impersonation and adequate covering of syllabus in examination question.

The findings of the study showed that the female science education students have a slightly higher mean score on the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University, Awka than the male students. However, further analysis showed that there is no significant difference between the mean scores of male and female students' responses on the influence of CBT on science education students' academic performance in Nnamdi Azikiwe University, Awka. Therefore, both the male and female science education students agree that CBT influences their academic performance in Nnamdi Azikiwe University, Awka. This is contrary to the findings of Okon & Durojaye (2014), which revealed that gender has significant influence on students' views of computer-based testing in favour of the male students.

Conclusion

The study concludes that Computer Based Test was perceived to influence the academic performance of science education students in Nnamdi Azikiwe University, Awka. The data obtained from the students in the department of science education of Nnamdi Azikiwe University, Awka, showed that CBT mode of examination influences their academic performance, and they generally perceived CBT to be a good form of administering tests. These influences unveiled by CBT on academic performance was seen to be of a moderate influence. The students also believe that CBT influences the credibility of examination in Nnamdi Azikiwe

University, Awka. Thus, indicating that students of science education in Nnamdi Azikiwe University, Awka feel confident and assured with the CBT mode of examination, as they consider it a credible means of examination.

Recommendations

Based on the findings, the study offers the following recommendations:

1. Educators should implement computer-based test mode of examination across different level of the school system, so as to continue fostering acceptance among students of these different levels.
2. School administration should follow the example of so many different standard exam bodies and implement computer-based test as a standard means of test.
3. Parents should get involved and supportive in their child's academic journey by providing a conducive environment at home for a child to learn skills they are being assessed at home.
4. Professional bodies, e.g., NERDC, should organize seminars and workshop to enlighten teachers and students on more effective of using CBT as a mode of examination.

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