



Perceived Need of Computer-Based Testing (CBT) as a Correlate of Effective School Administration in Alvan Ikoku Federal University of Education, Owerri

¹Ekwuru Rose Kalu, ²Jombo-Umeh, N. O, ³Oguguo, Basil C. E, ⁴Anyiam, Lasbrey I.

^{1,4}Alvan Ikoku Federal University of Education, Owerri

²Enugu State University of Science and Technology (ESUT), Enugu State

³University of Nigeria, Nsukka

Corresponding author: lasbrey.anyiam@alvanikoku.edu.ng

Abstract

Computer-Based Testing (CBT) has become an essential tool in enhancing test and test administration. It supplies quick and accurate data that help in innovations. This study therefore examined the perceived need of Computer-Based Testing (CBT) as a correlate of effective school administration at Alvan Ikoku Federal University of Education, Owerri. The study used a descriptive correlation survey research design. A sample of 303 academic staff and students was used for the study. The sample was drawn using a multistage sampling procedure. Researchers used questionnaire was the instrument used for data collection. The instrument was validated by experts and the internal consistency reliability of the instrument was determined using Cronbach's alpha. Cronbach's alpha coefficient of 0.76 was obtained which makes the instrument suitable for data collection. The instrument was administered to 303 students and academic staff of Alvan Ikoku Federal College of Education, Owerri. The filled copies of the instrument were returned on the spot, which ensured a high return rate of the instrument. The data obtained were analysed using Pearson Product Moment Correlation Coefficient, and Mean and standard deviation for the research questions 1 and 2 respectively, while linear regression and t-test were used to test hypotheses 1 and 2 respectively. The result of the study revealed that Computer-Based Testing (CBT) can contribute to the efficiency of school administration, and there was a significant relationship between Computer-Based Testing (CBT) and the efficiency of school administration. Among all recommendations, the researchers recommended that higher institutions of learning should install and improve technological infrastructure and accessibility that will provide robust internet connectivity, user-friendly CBT platforms, and adequate computer facilities to staff and students.

Keywords: Computer-Based Testing, School Administration, Tertiary Institution, Academic Staff and Students

Introduction

Computer-Based Testing (CBT) has been known to be a digital platform used for administering, scoring, and managing examinations. Kayode (2019) defined CBT as a form of test taking process that involves the use of electronic devices such as desktop, laptops, cell phones and electronic pen. It encourages faster examination process through automated marking which reduces the workload on examiners and speeds up result publication (Mseteka, Phiri, & Tembo, 2019). It also encourages efficient record management.

Impact due to proliferation of technology cannot be overemphasised in educational assessment approaches globally. Many Nigerian universities, polytechnics and colleges have increasingly adopted Computer-Based Testing (CBT) as a means of improving examination efficiency, security, and

administrative effectiveness (Mudi, Musa, & Ezekiel, 2024). Paper and pencil form of educational

assessment in Nigeria has been challenged with issues such as logistical difficulties, delayed results processing, and examination malpractices (Chukwuma-Nosike, & Chukwuma, 2023). CBT addresses these issues by automating test administration, grading, and record management, thereby reducing administrative burdens and enhancing institutional credibility especially at the level of higher education.

In a higher education institution such as Alvan Ikoku Federal University of Education, Owerri, known as teacher-training institution in Nigeria, there needs to be best assessment practice for smooth administration. This is because every school requires a robust assessment system to maintain academic integrity and streamline administrative processes (Butler-Henderson, & Crawford, 2020). CBT as a form of assessment which was introduced with expectations to overhaul the assessment systems especially in Nigeria is known to ensure accurate

grading, minimizing human errors, and promoting fairness in examinations (Chinta, Wang, Yin, Hoang, Gonzalez, Quy, & Zhang, 2024, Owan, Abang, Idika, Etta & Bassey, 2023). Studies have shown that CBT can improve the efficiency of school administration by enabling quick results processing and enhancing data accuracy (Owan et al., 2023). A high relationship has also been established between efficiency of CBT and effective school administration (Smith et al., 2022). Nworgu, (2015) posited that a valid test can be used for effective school administration as well for guidance purposes. This valid test can be ensured with the use of CBT. However, there is persistence in lack of readiness of institutions in acquiring digital facilities and infrastructures. Despite the potential benefits of CBT, students' lack in digital literacy, and the administrators lack in harnessing the effectiveness of CBT in school administration. Therefore, it behoves the researchers to explore the perceived need of CBT in promoting efficient school administration in Alvan Ikoku Federal University of Education, Owerri.

Statement of the Problem

In recent times, the advent of efficient technological tools for examination administration has rendered the use of paper and pencil assessment format inefficient for timely school administration. Challenges such as delays in the release of examination results, examination malpractices, human errors in grading, and logistical difficulties have been identified to be issues negatively impacting administrators' ability to manage schools effectively. To rectify these issues, many Nigerian universities have adopted CBT to enable effective test administration, check examination malpractice, speed up grading for timely feedback, and improve administrative workflow. CBT can foster efficiency and transparency that assist administrative activities in any academic environment. Despite the efficiency of CBT such as immediate feedback and accuracy in result output, Alvan Ikoku Federal University of Education (AIFUE), Owerri, is yet to adopt CBT in conduction of semester examinations. There is neither a single faculty nor department/ programme using CBT in conducting any semester examinations in AIFUE, Owerri. However, there are few empirical researches assessing the perceived need for CBT in the university's school administration, especially in AIFUE. The researchers therefore, studied the perceptions of students and lecturers on need of CBT as correlate of effective school administration in order to end the unsatisfactory state of affair in Alvan Ikoku Federal University of Education, Owerri.

Research Questions

1. What is the relationship between the need of Computer-Based Testing (CBT) and the efficiency of school administration?
2. What are students' and lecturers' perceptions on need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri?

Hypothesis

1. There is no significant relationship between the need of Computer-Based Testing (CBT) and the efficiency of school administration
2. There is no significant difference in the mean scores of students and lecturers on the need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri

Method

This study adopted a descriptive correlational survey research design to examine lecturers and students perceived need of Computer-Based Testing (CBT) for effective school administration in Alvan Ikoku Federal University of Education (AIFUE), Owerri. This design is appropriate because it describes the relationship between the independent variable (predictor, X) and dependent variable (criterion, Y) (Nworgu, 2015). The Population of the study consisted of all academic staff and students of Alvan Ikoku Federal University of Education, Owerri. Purposive sampling was used to draw a sample of 306 academic staff and students in the departments in AIFUE, Owerri. Sample was drawn using the multistage sample procedure. A simple random sampling technique was used to draw 73 academic staff and 233 students. Garrido, Abad and Ponsoda (2013) posited that a sample size of 300 was good for a correlation study to achieve meaningful results.

Researchers structured four-point rating scale was used as an instrument for data collection. The 14-items instrument was used for data collection on the perceptions of Needs of CBT's for effective school administration in AIFUE, Owerri. The instrument was categorised into section A and B. Section A elicited categorical data from the lecturers and students who formed the sample. Section B contains items relevant to the specific objectives of the study. Section B has two clusters. Cluster one (1) was used to collect data on the need of CBT, while cluster two (2) was used to collect data on the efficiency of school administration due to introduction of CBT. The item statements in the four point-rating scales were responded using; Strongly disagree (SD) (1),

Disagree (D) (2), Agree (A) (3), Strongly agree (SA) (4).

The instrument was face validated to ensure the relevance of the purpose of the study, clarity, usability, and suitability by three experts. One of the experts was in Educational Administration and Planning and two in Measurement and Evaluation. All of the experts are from faculty of education, AIFUE, Owerri. Corrections, suggestions, and comments made by the experts were used to improve the final version of the instrument.

To determine the reliability of the instrument, it was trial tested with 30 respondents; 15 lecturers and 15 students outside AIFUE, Owerri. The data collected from the trial testing were used to ascertain the internal consistency of the instrument. Cronbach's Alpha reliability coefficient of 0.76 was obtained. The instrument therefore was appropriate for the study.

The researcher personally administered copies of the questionnaire face-to-face to the respondents. The respondents were briefed on the

objectives of the study and were assured that any information given will be confidentially used for the study. The researcher adopted "return on the spot" procedure to avoid loss of questionnaires. However, 3 questionnaires were not completely filled. A total of 303 (73 academic staff and 230 students) questionnaires were returned completely filled.

The research questions one was analysed using Pearson Product Moment Correlation Coefficient, while mean and standard deviation were used to answer research question two. The hypotheses were tested using linear regression for hypothesis one, and t-test was used to test hypotheses two at 0.05 level of significance. In answering the research questions, respondents' mean within 2.50 and above indicates acceptance while any below indicates objection to the item statements in the questionnaire. The analysis was done using a computer software called Statistical Packages for the Social Sciences (SPSS) version 25.

Result

Table 1

Result on Pearson Product Moment Correlation coefficient and test of significance relationship between the need of Computer-Based Testing (CBT) and the efficiency of school administration in Alvan Ikoku Federal University of Education, Owerri

Model	n	R	R ²	Adjusted R ²
1	303	0.496	0.246	0.244

Result presented in table 1 revealed the relationship between the need of Computer-Based Testing (CBT) and the efficiency of school administration in Alvan Ikoku Federal University of Education, Owerri. The table revealed a moderate positive relationship with a Pearson correlation coefficient (R) of 0.496. However, an associated coefficient of determination (R²) of 0.246 indicated

that 24.6% of Computer-Based Testing (CBT) can contribute to the efficiency of school administration in AIFUE, Owerri. This perception of academic staff and students also implied that 75.4% of other factors unknown contributed to school administration in Alvan Ikoku Federal University of Education, Owerri.

Table 2:

Regression ANOVA of the relationship between the need of Computer-Based Testing (CBT) and the efficiency of school administration in Alvan Ikoku Federal University of Education, Owerri

Model	Sum of Square	df	Mean Square	F	Sig.
Regression	225.858	1	225.858	98.364	0.000
Residual	691.139	301	2.296		
Total	916.997	302			

$\alpha = 0.05$

Result presented in table 2 revealed an F-ratio of 98.364 and associated probability value of 0.000. In determining the significance of the test, the probability values of 0.000 was compared against 0.05 a priori constant. The comparison revealed that there was a significant relationship. This means that

the null hypothesis was rejected. Therefore, statistical inference was drawn that, there was a significant relationship between the need of Computer-Based Testing (CBT) and the efficiency of school administration.



Table 3

Mean response score of students' and Academic Staff perceptions on need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri

S/N	ITEM STATEMENT	STUDENTS n=230		ACADEMIC STAFF n=73	
		X	SD	X	SD
1.	The use of CBT ensures faster examination processes, including automated marking and instant result generation, reducing the workload on lecturers and administrators	3.53	.52	3.54	.50
2.	CBT minimizes exam malpractice by implementing question randomization, secure logins, and restricted access to examination materials	3.57	.58	3.63	.49
3.	The adoption of CBT reduces the cost of printing exam papers, hiring invigilators, and managing physical exam scripts	3.55	.52	3.54	.49
4.	CBT allows students to take exams in different locations within the university, reducing overcrowding in examination halls	3.57	.55	3.58	.51
5.	CBT provides an interactive and user-friendly exam environment that helps students develop digital literacy skills essential for the modern workforce.	3.52	.55	3.66	.47
6.	With automated scoring systems, CBT eliminates human errors and bias in grading, ensuring fairness and accuracy in students' results	3.56	.52	3.61	.52
7.	The convenience of CBT promotes better students' participation and reduces absenteeism	3.52	.52	3.56	.49
8.	The burden on school administrators with regards to manual marking and scoring can be minimised using CBT	3.67	.50	3.57	.50
9.	Automated grading from CBT can encourage quicker academic decision-making	3.57	.49	3.62	.50
10.	CBT reduces cases of exam malpractice by implementing secure login systems, question randomization, and restricted access	3.52	.52	3.53	.50
11.	The reduction in paper-based exams saves costs on printing, logistics, and storage, optimizing the university's budget allocation	3.52	.50	3.46	.50
12.	CBT provides administrators with detailed analytics on student performance, helping them make informed academic and policy decisions	3.61	.51	3.54	.51
13.	CBT reduces administrative bottlenecks where staff can focus on more critical academic and research tasks, while students spend less time waiting for results	3.53	.52	3.51	.51
14.	CBT ensures that universities can efficiently handle growing student populations and transition smoothly to digital learning environments	3.65	.50	3.60	.49
GRAND MEAN		3.56	.18	3.58	.16
N= 303, MEAN OF MEANS= X= 3.57, SD= .17					

The result presented in table 4 revealed mean response of lecturers and students on the need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri. The fourteen (items) received mean above 2.50 which indicates acceptance of the items in addressing the need of CBT for effective school administration in AIFUE, Owerri. However, the lecturers and students got grand means and standard deviation of $3.58 \pm .16$ and $3.56 \pm .18$ respectively. Therefore, mean of means of 3.57 and standard deviation of .17 indicates that both lecturers and students agreed that computer-

based testing (CBT) can encourage effective administration by providing administrators with detailed analytics on student performance, helping them make informed academic and policy decisions. Again, it is perceived that CBT removes paper-based exams thereby saves costs on printing, logistics, and storage, optimizing any schools budget allocation. CBT also can ensure that universities can efficiently handle growing student populations and transition smoothly to digital learning environment, which optimises the administration of any level of education.

Table 4:
independent sample t-test on mean response score of students' and lecturers on the need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri

Source of Variation	n	X	SD	dft	Sig.	
ACADEMIC STAFF	73	49.90	2.61	301	.69	0.494
STUDENTS	230	50.12	2.34			
N	303					

$\alpha = 0.05$

Result presented in table 4 reveals the mean response scores of students' and academic staff on the need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri. It also reveals the tested hypothesis of no difference between the response score of students and academic staff using t-test. The student with a study sample of 230 have mean score of 50.12 and standard deviation of 2.34, while academic staff with a study sample of 73 have mean score of 49.90 and standard deviation of 2.61. However, to test for further variation in their mean response scores, independent sample t-test was conducted which revealed a degree of freedom of 301 and a probability value of 0.494. Hence, the Sig. value which is above 0.05 level of significance indicated that, "there was no significant difference in the mean response scores of students' and academic staff on the need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri. Therefore, the hypothesis of no difference was accepted.

Discussion of Findings

The results of the study revealed that 24.6% of Computer-Based Testing (CBT) can contribute to the efficiency of school administration in AIFUE, Owerri. Statistically, inference was drawn that, there was a significant relationship between Computer-Based Testing (CBT) and the efficiency of school administration. However, average means of 3.57 and standard deviation of .17 indicate that both lecturers and students agreed that computer-based testing

(CBT) can encourage effective administration by providing administrators with detailed analytics on student performance, helping them make informed academic and policy decisions. It was also perceived that CBT removes paper-based exams thereby saves costs on printing, logistics, and storage, optimizing schools budget allocation. And there was no significant difference in the mean response scores of both students' and academic staff on the need of CBT for effective school administration in Alvan Ikoku Federal University of Education, Owerri. It can reduce time and stress on supervision of exams.

The above findings agree with Mudi, Musa, and Ezekiel, (2024) who posited that Nigerian universities, polytechnics and colleges have increasingly adopted Computer-Based Testing (CBT) as a means of improving examination efficiency, security, and administrative effectiveness. Therefore, there is quest for effective use of technology in institutions of learning especially in examinations, which has been revealed. If CBT has strong relationship with school administration, it becomes pertinent that CBT should be encouraged as a means of conducting examination in any higher institution of learning. This study's finding is in-line with Smith, Almirall, Choi, Koschmann, Rusch, Bilek, and Kilbourne, (2022) who opined that a high relationship has also been established between efficiency of CBT and effective school administration. The study also supports that CBT can improve the efficiency of school administration by enabling quick results processing and enhancing data accuracy (Owan et al.,

2023). This is because CBT ensures accurate grading, minimizing human errors, and promoting fairness in examinations (Chinta et al., 2023).

Conclusion

Owing to the results of this investigation, the following conclusions were made. The researchers concluded that Computer-Based Testing (CBT) can contribute to the efficiency of school administration. It is also statistically proven in this study that, there was a significant relationship between Computer-Based Testing (CBT) and the efficiency of school administration. Computer-based testing (CBT) can encourage effective administration by providing administrators with detailed analytics on student performance, helping them make informed academic and policy decisions as quick as possible, to promote teaching and learning at all levels of educations.

Recommendations

The following recommendations were made based on the result of the study,

1. Higher institutions of learning should install and improve technological infrastructure and accessibility that will provide robust internet connectivity, user-friendly CBT platforms, and adequate computer facilities to staff and students. This will enable staff to be conversant with CBT platforms to help them be effective in test designing, administration and grading. This will also enable students to navigate CBT systems which will help them complete assessments without technical difficulties.
2. Computer-based testing (CBT) should be initiated for examinations in higher institutions of learning to provide real-time analytics on students' performance across departments. This will allow administrators to track academic progress of students, learning gaps, and to assist decision makers to make decisions for curriculum improvement and resource allocation.

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