The Impact of It Infrastructure on the Success Rate of Students During Computer-Based Examinations At Auchi Polytechnic

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ABSTRACT

The CBE is a screening examination conducted by most tertiary institutions in Nigeria, and this exercise is the second stage of admitting students to the institutes of the student choice. This is one of several options used by most schools to test whether a student is qualified or not for admission. This is based on the test scores obtained. Students' failure, particularly during Post UME CB exams, is continuous. Machine learning models, namely, Logistic Regression and Random Forest Classifier, were adopted to understand the relationship between IT adoption in these exams and the success or failure rates.The research studied the impact of computer-based tests on students' academic performance at Auchi Polytechnic. The research used a descriptive survey. The study focused on two issues. The survey included 1,225students and teachers from the Polytechnic, Schools of ICT and Polytechnic. The researchers created a systematic questionnaire to collect data. The instrument's dependability was assessed using Cronbach Alpha. The instrument's dependability was 0.78, regarded as adequate for the investigation. A lack of qualified ICT officers attached to the CBT centre and poor network caused several students to be unable to finish their CBT exams. The study also found the benefits of CBT exams on the academic performance of Nigerian students. According to the study, academic lecturers should emulate external examinations by exposing students to CBT in internal exams to reduce exam anxiety.

Keywords: Investigation, Academic Performance, Computer-Based-Test, Screening Examination

INTRODUCTION

In a developing country like Nigeria, where around 30% of students are illiterate, parents may exploit their children's academic achievement to evaluate schools and lecturers (Nwagwu, 2002). Numerous factors influence university students' academic progress, according to Alabi et al (2012). Emunemu (2000) agrees that all experiences, whether inside or outside the university system, are educational and impact students' academic progress. Socio-economic studies shows that parental motivation and socio-economic status positively affect student academic performance. Thus, intake quality affects output and performance of university students. Other factors affecting student academic progress include school location (Adepoju 2001), student age, and human, physical, and financial resources (Egoigwe et al., 2020).

A computer-based test (CBT) is an assessment method that uses a computer to deliver, store, mark, or report results from a test or activity (Whittington, Bull & Danson, 2000). It might be a multiple-choice question-based assessment system that is straightforward to use to test students. The major goal of a computer-based test is to give all necessary functionality with a user-friendly interface (Baddi, 2010). The two major components of CBT computer systems are to supply examination questions stored and allow students to retrieve the questions. (Williams) The Standard Internet Protocol Suite (SIPS) allows users link interconnected computer networks for computer-based test examination.

Theorists such as Newhouse (2013) proposed that computer-based testing may be delivered via stand-

alone computers, LANs, or online technologies such as web pages. The author also highlighted two sorts of CBT Exams: Linear Test and Random Test. Adaptive Test: The computer selects questions based on an individual's performance. It is a selection of questions grouped by substance and difficulty (Alabi, Issa&Oyekunle,2012). However, effective computer-based testing depends on uniformity, security, testing settings, testing administration, and cost. According to Al-Amri (2007), one of the advantages of CBT is the standardization of test administration circumstances. The CBT examination allows test developers set the same test settings for all participants, regardless of size. Moreso, Bodmann, and Robinson (2004) found that students finish computer-based text exams faster than paper exams.

According to Jamila, Tariqb, and Shamic (2008), CBT allows for the measurement of sophisticated knowledge and reasoning that is difficult to engage and analyze using traditional approaches. Alabi, Issa, and Oyekunle (2012) concluded that using a CBT could remove human errors and exam malpractice. Like Akunyili (2010), he asserted that manually marked scripts were more prone to errors than computer marked scripts. Bennett (2015) argues that administering computer-based tests requires a safe testing environment that prevents students from searching for answers on their computers, texting or messaging friends, or surfing the web. According to Fagbola (2013), the lack of institutionalized CBT.

The re-examination stage for continual reception and by is undermined by improvement exhibit alone. The online evaluation may not be able to examine imagination, critical thinking, consideration, reflection, or actual adaptability (Fluck, 2009). According to Obioma (2013), Oye et al. (2011), Ilesanmi and Lasisi (2015), issues militating against CBT examination in Nigerian higher institutions include insufficient ICT infrastructure, unpredictable power supply, students' lack of ICT skills and examination managers' honesty.

Daramola (2018) claims that computer-based tests have minimal advantages over paper-based tests. However, innovation-based evaluation can identify complicated learning and thinking that cannot be connected to standard methods (Alabi, Isaa, &Oyekunle, 2012). Computers and related advancements help handle new challenges of defining and implementing appraisal approaches that go beyond conventional practices and encourage a larger collection of psychological abilities and data (Mubashrah, Tariq &Shami, 2012). By using Internet and other electronic systems administration tools, several offices now administer inclination exams to job seekers electronically. So do the West African Examination Council (WAEC), NECO, NABTEB, NTI, JAMB, and Post-UTME (Post-Unified Tertiary Matriculation Examination) among others (Olawale &Shafii, 2010).

However, computer-based testing can help enhance evaluations and provide opportunities for professional growth and direct feedback (Mubashrah, Tariq & Shami, 2012). Changing the education business, for example, has made the separation illusions a reality. In addition to the convenience for students and others who use the test scores, Daramola (2018) claims that electronic testing is better than paper-based testing in terms of measurement precision and efficiency, and that it is faster and better than paper-based testing.

Among the other advantages of CBT exams cited by Alabi, Issa, and Oyekunle (2012) are quick results, databank generation for admitted and registered students, quiet and comfortable test centers, secure test items, unbiased test administration and scoring, faster decision making, reduced cases of impersonation, and adequate syllabus coverage. With strong scoring, reporting, and real-time feedback mechanisms, CBT examinations today provide numerous new chances for innovation in Nigerian tertiary institutions. One potential limitation for realizing the benefits of computer-based Tests in large-scale testing is designing questions and tasks with which computer scan effectively interface(i.e.,forscoring and score reporting purposes) while still gathering meaningful measurement evidence. Other benefits of CBT examination towards enhancingthe academic performance of students

in Nigerian tertiary institutions, as stated by Okoronkwo (2015), include the creation of digitalrecords of student growth and development, which can quickly be passed along from grade to grade; greater flexibility concerning location and timing of examinations; improved reliability because machine marking is much more reliable than human marking; computerized marking doesnot'know' the students and son either favournor witch-hunt any candidate; greater storage efficiency; enhanced question styles which incorporate interactivity andmultimedia; question banks,randomization of questions and response orders to reduce cheating; immediate feedback can be given to the examinee;improvedtestsecurityduetoelectronictransmissionandencryption;andsavestimeandhuman resources forthetestadministration.

The computer-based test marks a fundamental qualitative change away from traditional examination methods such as paper-based tests, according to Daramola (2018). Despite these advantages, CBTs are not intrinsically superior to paper-and-pencil assessments. Researchers discovered that testing format has no effect on test scores, making CBT a viable and acceptable testing approach. As CBT became more widely utilized to measure students' academic achievement, comparing CBT results to paper-based assessments became critical.

Statement of the Problem:

They have seen the relevance and unproblematic of carrying out CBT examinations without regard for the issues students confront during CBT assessments in first years, general courses, and final exams. The researcher feels that students' poor performance during or after CBT exams is alarming, since students tend to question the reason behind utilizing CBT software to conduct exams or gain admission into Nigerian academic institutions. Insufficient ICT facilities, power supply issues, students' inability to operate computers effectively, distance of CBT centres from student departments or faculties, examination malpractices by the web-content manager who manages the database and lack of paper-pencil for some tasks, according to the researchers. The study intends to assess the impact of computer-based tests on polytechnic students' academic performance in Nigeria.

Purpose of the Study:

The general purpose of the study is to examine the influence of the Computer Based Test (CBT) examination on the academic performance of polytechnic students in Nigerian Tertiary institutions. Specifically, the study soughtto:

- Examine the challenges militating against CBT examination on academic performance of polytechnic students in Nigerian Tertiary institutions?
- Determinethebenefitsofthe CBTExaminationonthe academicperformanceof Auchipolytechnicstudents.

ResearchQuestions

Thefollowingresearchquestionsguidedthestudy:

- WhatarethechallengesmilitatingagainstCBTexaminationonthe academicperformanceofpolytechnicstudents?
- Whatarethebenefitsofthe CBTExaminationon t h e academicperformanceofpolytechnicstudentsin?

MATERIALSAND METHODS

This study adopteda descriptivesurvey design.This study was carriedoutat theAuchi Polytechnic, Auchi, Edo State, Nigeria. The study population comprised 1225 Polytechnic students and academic lecturers in the school of ICT and Engineering ofthe Polytechnic. The study sampled 20% of the total population, 245, comprising 160students and 85 academic lecturers selected through a random

sampling technique. The instrument for data collection was a structured questionnaire developed by the researchers. The instrument was structured in a 4 point rating scaleofStrongly Disagree (SD) = 1, Disagree (D) = 2, Agree (A) = 3, and Strongly Agree (SA) = 4. The instrument's reliability was 0.78, which was considered reliable enough for the study. Mean, and standard deviation wasused to analyze the research questions. Cronbach Alpha techniques were used to determine the internal consistency of theinstrument. The criterion means a score of 2.50 and above was used as a benchmark for acceptance since the questionnaire itemswere placed on the four-point rating scale. By this, any response with a mean value of 2.50 and above was considered acceptable,whileanymeanvaluebelow2.50wasconsidered rejected.

RESULTSANDDISCUSSIONS

Research Question One: What are the challenges militating against CBT examination on the academic performance ofpolytechnic studentsinNigerianTertiary institutions?

Table 1: Mean Ratings and Standard Deviation of Responses on Challenges Militating against CBTExaminationonAcademicPerformanceofPolytechnicStudents

S/N	ItemsStatement	Students N=160			Academic LecturersN= 85		
		Mean	SD	Decision	M	SD	Decision
1	IrregularpowersupplyduringCBT. examination	2.84	0.57	A	2.66	0.80	A
2	Somestudentsarenotcomputerliterate	2.59	0.59	A	2.73	0.79	A
3	Examinationbatchingaffectsperformance inCBT exams	2.55	0.59	A	2.51	0.81	A
4	Irregulartime-tableforCBTexams	2.78	0.57	A	2.68	0.79	A
5	Timedurationsaffectsomestudentswho arenotcomputerliterate	2.81	0.57	A	2.59	0.80	A
6	LackofqualifiedICT officersattachedto theCBT centre	2.73	0.57	A	2.57	0.81	A
7	Latenesstoexaminationcentrebythestudents	2.60	0.59	A	2.77	0.78	A
8	Usingoffaultycomputers	2.58	0.59	A	2.84	0.78	A
9	PoorlightingofCBT centres	2.83	0.57	A	2.63	0.80	A
10	PoorlocationofCBTcentres	2.53	0.59	A	2.78	0.78	A
11	Poornetworkleads tosomestudent's inabilitytofinishtheirCBTexams	2.63	0.58	A	2.90	0.77	A
12	The attitudeofexaminationsupervisorsand invigilators	2.72	0.58	A	2.82	0.78	A
13	InadequateICTinfrastructurefacilities	2.89	0.56	A	2.77	0.78	A
14	Subjectivescoringandplausible manipulationofresults	2.66	0.58	A	2.55	0.81	A
15	The latereleaseofresultsand missinggrades	2.50	0.59	A	2.82	0.78	**A**
	ClusterMean	**2.68**	**0.58**		**2.71**	**0.79**	**A**

Table1showsthatin items1to15, bothstudentsandlecturershavemeanscoresmore significantthantheset benchmark mean score value of 2.50 (criterion mean). Students and instructors also scored higher than the criterion mean of 2.50 on issues militating against CBT assessment on Academic performance of polytechnic students in Nigerian Tertiary institutions. This suggests that instructors and students agree that the difficulties highlighted in the table impact negatively on polytechnic students' academic performance in Nigerian tertiary institutions. Also, although students selected item 13 as the most challenging issue affecting CBT examination on polytechnic students' academic performance in Nigerian tertiary institutions, lecturers rated item 11 as the most challenging factor. It is also evident from the similarity in the overall standard deviation scores of both the lecturers' and students' scores on the issues militating against CBT examination on the academic performance of polytechnic students at Nigerian tertiary institutions.

Research Question Two: What are the benefits of CBT examination on the academic performance of polytechnicstudentsinNigerianTertiary institutions?

Table 2: Mean Ratings and Standard Deviation of Responses on Benefits of CBT Examination on AcademicPerformanceof PolytechnicStudents

S/N	ItemsStatement	Students N=160			Academic LecturersN=85		
		Mean	SD	Decion	M	SD	Decion
16	CBTincreaseconvenienceforstudentsandthosewho usethetestscores	2.61	0.58	A	2.58	0.80	A
17	CBTisself-administering	2.70	0.58	A	2.61	0.80	A
18	CBTprovideimmediatescoringafterexamination	2.82	0.57	A	2.73	0.79	A
19	CBTintegrateimmediateinformationintothedatabasewithoutstress	2.76	0.57	A	2.84	0.78	A
20	CBT isquickerandbetterthanpaperandpencilTest methods	2.68	0.58	A	2.88	0.77	A
21	CBT isquickinthe releaseofresults	2.85	0.57	A	2.90	0.77	A
22	CBThelps togeneratedatabankforadmittedand registeredstudents	2.79	0.57	A	2.67	0.80	A
23	CBTunbiasedtestadministrationandscoring	2.63	0.58	A	2.83	0.78	A
24	CBThelps tosecuretestitems	2.69	0.58	A	2.71	0.79	A
25	CBTisfasterindecisionmaking	2.90	0.57	A	2.56	0.81	A
26	CBT helptoreducecasesofimpersonationand adequate coverage of course syllabus in examinationquestions	2.52	0.59	A	2.56	0.78	A
27	CBThelps toscorereportingpurpose	2.57	0.59	A	2.94	0.77	A
28	CBT createdigitalrecordsofstudentgrowthand development	2.64	0.58	A	2.68	0.79	A
29	CBTprovidegreaterflexibilityconcerning thelocationand timingofexaminations	2.83	0.57	A	2.74	0.79	A
30	CBTimprovedreliabilityover humanmarking	2.84	0.57	A	2.82	0.78	A
31	CBTprovidegreaterstorageefficiency	2.91	0.56	A	2.88	0.77	A
32	CBTproviderandomizationofquestionsandresponse orderstoreducecheating	2.77	0.57	A	2.61	0.80	A
33	CBTprovideimmediatefeedbacktotheexaminee	2.82	0.57	A	2.57	0.81	A
34	CBTsavestimeandhuman resources fortheTest administration	2.90	0.56	A	2.93	0.77	A
	ClusterMean	**2.75**	**0.57**	**A**	**2.75**	**0.79**	A

Data presented in table 2 shows that items 16 to 34 of both students and lecturers have mean scores greater thantheset benchmarkmean score value of 2.50. In addition, the overallmean score ratings of students and lecturers onthe benefits of the CBT Examination on academic performance of polytechnic students are also greaterthan the criterion mean of 2.50. This implies that lecturers and students agree that the items listed in the table are allbenefitsofthe CBT examinationandhowitenhances theacademic performanceofpolytechnicstudentsinNigerianTertiary institutions.

DISCUSSIONS

The findings of the study revealed the challenges militating against CBTexamination on academic performanceofpolytechnic students in Nigerian Tertiary institutions, such as irregular power supply during CBT examination, irregular time-table for CBT exams,time durations affect some students who are not computer literate, lack of qualified ICT officer sattachedto the CBT centre and poor network leading to some student's inability to finish their CBT exams. The findings of the studyare in agreement with the findings of Obioma (2013); Oye, Mazleena & Iahad (2011); and Ilesanmi & Lasisi (2015), whopostulated different challenges militating against CBT examination in Nigerian tertiary

institutions, which include inadequate ICTinfrastructurefacilities**;** irregularpowersupply;student'sinadequateskillsinICT;andintegrityofexaminationmanagers.

The study's findings revealed the justifications benefits of CBT examination on the academic performance ofpolytechnic students in Nigerian Tertiary institutions. These findings align with the findings of Daramola (2018), whopositedthatthe CBTexaminationhad takenthepositionofpaperandpencilexaminationtoanextent; the examinationisnolonger constrained to paper and pen organizers. Instead, it has gone a long way to improve measurement precision andefficiency;increaseconvenienceforstudentsandthosewhousethetestscores;self-administering;provisionsimmediate scoring after examination; Integrate immediate information to the databasewithout stress; and, above all,quicker and better than paper and pencil test methods. The findings are also in line with the findings of Bodmann &Robinson (2004), who opined that undergraduate students complete computer-based text examinations faster than paper-based test examinations. The findings are also in agreement with Alabi, Issa & Oyekunle (2012), who posited benefits of CBTexamination for undergraduate students, which include the quick release of results; generation of databank for admitted andregistered students; quiet and comfortable test centres; secured test items; unbiased test administration and scoring; fasterdecisionmaking;reductionincasesofimpersonation;andadequatecoverageofcourse syllabusinexaminationquestions.

CONCLUSIONS

The findings from the research study have merely drawn attention that Computer Based Test (CBT) examination is a meansof scrutinizing the academic performance of undergraduate students in Nigerian Tertiary institutions is not well footed, thus, calling forurgent attention in the challenge areas that were critically discussed in the study. With the above findings, it is not apparent that the potentialandprospects for improving InformationandCommunicationTechnologysoftwareinNigeriantertiary institutions' educational system are perhaps centre on computer and internet facilities. Therefore, thesechallenges result from a lack of technological equipment and a lack of qualified resource persons in polytechnic, computer science, polytechnic, and other related areas. Therefore, the university authorities, policymakers, andstakeholdersarethus likelytoinvalidate orreversethepositionofInformationandCommunicationTechnology(ICT) to enhancecomputer-based testexaminations inNigerianTertiary institutions.

RECOMMENDATIONS

Based on the findings of the study,the following recommendations were made:
- LecturersshouldtakeupthepatternoftheexternalexaminationsbyexposingthestudentstoCBTinthei nternalexaminationstolessenexaminationanxiety.
- Polytechnic authoritiesshouldrecruithighlyskilledcomputeranalysts and computerengineersinstructorstohelpimprovestudents' computer skillsinvarioustertiary institutionsinNigeria.
- GovernmentshouldprovideICTfacilitiesin allNigeriantertiary institutionstoenhanceteaching andlearning amongthestudents.
- Academiclecturersshouldbemorecommittedto using ICTtools,givingtheimportanceofpracticalknowledgeinit.
- AdequatefundsshouldbeaccessibletoprovideICT toolsinNigeriantertiary institutions.

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