

THE PERCEPTIONS OF STUDENTS TOWARDS THE USE OF COMPUTER BASED TEST (CBT) MODE OF EXAMINATION IN HIGHER INSTITUTION IN ANAMBRA STATE

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Abstract: The study examined the perceptions of students towards the use of computer-based test (CBT) mode of examination in the universities in Anambra State. The study was a descriptive study which adopted a descriptive survey research design. Three research questions guided the study. Descriptive survey research design was used in the study. The population for the study consists all the 4000 level students from the Faculty of Education Nnamdi Azikiwe University, Awka and ChukwuEmeka Odomegwu Ojukwu University, Uli. Simple random sampling technique was used in selecting 100 students from each of the schools that made up the population. This gave a sample size of 200 students. The research instrument was structured questionnaire on four-point Likert scale adapted from Olafera et al. The research instrument was validated. The instrument was trial tested and the reliability coefficient of 0.76 was obtained using Cronbach Alpha. The data collected was analyzed using mean and standard deviation. Based on results obtained from the study it was concluded that computer-based test in Universities in Anambra State is useful, computer-based test in Universities in Anambra State is easy to use and credible. The following recommendations among others were made: government should from time to time help in supporting the procurement of ICT equipment in the universities in Nigeria and there is the need of employment of software engineer, computer engineer and computer lecturers to facilitate the development, usage and maintenance of CBT software in the universities.

Keywords: Computed-based test, perception, mode, examination.

Introduction

Examination is one of the most widely used means of assessing learning and capability of students (Usman & Olaleye, 2022). Examinations have been statutorily positioned in Nigeria as an avenue for the assessment of learner understanding, attainment and level of competence to display academic attainment after a given period of a student's exposure to learning experiences (Okoye & Duru, 2019). Nwoke, Osuji and Agi (2017) posited that examinations constitute the process of assessing understanding, knowledge and academic ability of an individual within a given period. Also, it is an important part of the teaching and learning process of education that allows lecturers to evaluate their students after teaching (Usman & Olaleye, 2022). Examination is used to determine the extent to which course objectives are achieved (Abdulkareem & Nathan, 2018, Bassey, 2020)). According to Nnam & Inah (2015), examination is a criterion upon which students can be properly measured or appraised in the school.

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Teaching and learning can become more efficient when students sit for examination or test in order to measure the extent students have understood the instruction given and also the lecturer can as well assess himself or herself based on the performance of the students (Usman & Olaleye, 2022). Nowadays, there are numerous ways of examining students (Usman & Olaleye (2022). According to Ajinaja (2017) various methods of examining students are pencil-written examination, projects, assignments, presentations, oral examinations and computer-based testing (CBT)

Computer Based Testing (CBT) is defined as a form of Information Communication Technology (ICT) for test administration or assessment whereby examinee responses are electronically coded, assessed and recorded, with the prompt publication of results (Okoye, 2019). Suleiman and Nachandiya cited in Okoye and Duru (2019) defined Computer based testing as tests and assessments conducted through the use of organized systems on computers. Computer based tests can also be referred to as any form of assessment in which the computer is an integral part of question paper delivery, responses storage, marking of responses or reporting of results from a test or exercise (Olutunu, 2018). Therefore, computer-based testing is the process of administering and answering examination questions through the use of computers (Okoye & Duru, 2019).

Ajinaja (2017) stated that CBT permits efficiency in result accuracy and computation. Sanni and Mohammad (2015) also added that the benefit of CBT in the conduct of examination goes beyond accuracy in result computation but also cut across economy. Thus, according to them, CBT ensure low administrative cost and saves time. In addition, Onyibe, et al, (2015) averred that the use of CBT helps to ensure impartial assessment, ensures efficiency in data storage, gives immediate feed-back to the examinee and improves result reliability. Similarly, Kuyoro et al (2016) maintained that CBT ensure easy result tabulation. Laying credence to these points, in their different studies, Nwoke, et al (2017) and Busayo (2018) concluded that the benefits of CBT in the Nigeria education assessment culminate in its unique role in checkmating examination malpractices among Nigerian students in different public examination.

Despite the importance of CBT, several studies have shown that the use of CBT in conducting examination in Nigeria has a lot of weaknesses/challenges that question its desirability for use (Azor & Ogwu, 2019). For instance, lack of access to internet facilities, activities of hackers, technical difficulties (Sanni & Mohammad, 2015; Nkwocha, Akanwa & Nkwocha, 2015); computer illiteracy among students (Onyibe, et al, 2015) and poor education funding in Nigeria (Onyibe, et al, 2015) have continued to be stumbling blocks towards the effective utilization of CBT in assessment of learning in Nigeria. More so, students also complain about some issues in ICT, issues such as inability to navigate back to network problems, easier and quicker reading on paper than on a computer screen, students' lack of prior knowledge, liability of computer to hanging or crashing, etc. On the bases of the above challenges the researcher deemed it fit to carry out this study, focusing on the student's perception about the use of CBT.

Specifically, the researcher sought to investigate the perceptions of students towards the use of computer-based test (CBT) mode of examination in the universities in Anambra State.

Statement of the Problem

In Nigeria, students are examined using paper and pen written examinations on cognitive abilities. This process is characterized by different forms of problems such as tedious process in the conduct of the exam, marking scripts, result publication and examination malpractices. Bala (2018) rightly pointed out that examination bodies like Unified Tertiary Matriculation Examination (UTME), NUC (National Universities Commission) and Teachers Registration Council of Nigeria (TRCN) embraced the use of CBT in assessment of candidates as an innovative mode of examination as against the old pencil and paper mode. Despite the successful adoption of

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CBT by JAMB in conduct of UTME, it is still faced with some challenges, some of which are mostly poor power supplies, technical difficulties, poor education funding, among others. This therefore affects the way different individuals see this mode of examination. The success or otherwise of a laudable innovation like CBT depend in part on students disposition towards it. Disposition of individuals generally depend on perception. In the case of CBT, the perception of the students is yet not well understood. Hence, the problem of this study is to conduct a research on the perceptions of students towards the use of computer based test (CBT) mode of examination in the universities in Anambra State.

Purpose of the Study

The main purpose of this study was to investigate “the perceptions of students towards the use of computer based test (CBT) mode of examination in the universities in Anambra State”. Specifically, the study aimed at determining the perception

1. Usefulness of computer-based test in the Universities in Anambra State.
2. Ease of use of computer-based test in the Universities in Anambra State.
3. Credibility of computer-based test Universities in the universities in Anambra State.

Research Questions

The following research questions were formulated to guide the study:

1. What is the perception of students on the usefulness of computer-based test in the Universities in Anambra State?
2. What is the perception of students on the use of computer-based test in the Universities in Anambra State?
3. What is the perception of students on the credibility of computer-based test in the Universities in Anambra State?

Method

This study adopted a descriptive survey design. A survey design aims at collecting and describing data in a systematic manner on the characteristics, features or facts about a given population to look at similarities or differences between them at any particular time. (Nworgu, 2015). The population for this study was 4000 undergraduate students from the faculty of education in government owned universities in Anambra State, Nigeria. Purposive sampling techniques was used to select two government owned universities from the state (Nnamdi Azikiwe University, Awka and ChukwuEmeka Odomegwu Ojukwu University, Uli) The reason for choosing these 4000 students is because they have written CBT examinations from 100 level to 400 level and they can give more information on the use of CBT mode of examination in the university. A balloting simple random sampling technique was used to select 100 students each from faculty of education of both universities. Numbers 1 to 200 were written, folded and put inside a ballot box, the students who picked from 1 to 100 were selected. This was done in two different universities to make up the sample size of 200 students. The instrument used for collection of data was a structured questionnaire. This was adapted from Olafare, et al. (2017). The questionnaire was modified in such a way that it would help in reaching reasonable conclusion through information gathered from students’ opinions. The Likert-type of rating scale was used: (strongly agree (SA) -4 points, agree (A)-3 points, disagree (D)-2 points, strongly disagree (SD)-1point). The instrument for the study was validated by two lecturers in the Department of Science Education, Nnamdi Azikiwe University, Awka and one lecturer from measurement and evaluation of the same University. To establish the reliability of the instrument, 20 copies of the questionnaire were given to undergraduate students of National Open University, Anambra State. The data obtained from the administered questionnaire was analysed using Cronbach Alpha reliability technique. The result of the analysis yielded a co-efficient of 0.76. The co-efficient was considered

high and positive which was an indication that the instrument was reliable enough for measuring what it purports to measure in a consistent manner. Two research assistants were employed by and instructed on what to do by the researcher for data collection. The research assistants helped to administer the questionnaire to respondents. The researcher monitored the whole data collection exercise. The questionnaire was retrieved from the respondents by the research assistants immediately after completion and was collected by the researcher for data analysis.

Method of Data Analysis

The data collected were analyzed using mean and standard deviation in answering the research questions. According to the values assigned the weighted mean of 2.5 stands as a critical value upon which acceptance and rejection of the responses are determined. Any item with mean value equal to 2.5 and above was interpreted as “Agreed” (Accepted) while that below 2.5 was interpreted as Disagreed” (Rejected).

Results

The data collected were summarized, analyzed and presented as follows:

Research Question 1

What is the perception of students on the usefulness of computer-based test in Universities in Anambra State?

Table 1: mean and standard deviation of the perception of students on the usefulness of computer-based test in Universities in Anambra State.

S/N	ITEM	N	\bar{X}	Standard Deviation	Decision
1	CBT improves my academic performance	200	3.40	.621	Agree
2	My use of CBT is not voluntary.	200	3.39	.664	Agree
3	CBT gives me more confidence during examination	200	2.88	.763	Agree
4	There are usually no distractions that constitute a nuisance when using CBT for examination	200	3.62	.561	Agree
5	The speed of using CBT for examination is satisfactory	200	3.28	.688	Agree
6	CBT gives me greater control over my academics.	200	3.44	.638	Agree
7	I find CBT useful for my examinations.	200	2.65	.727	Agree
8	CBT enhances my effectiveness in academics	200	3.60	.630	Agree
9	CBT makes examination easier for me	200	3.33	.593	Agree
10	I am not comfortable to take CBT.	200	2.47	.546	Disagree
Grand \bar{X}			3.20		

Table 1 shows that item 1, 2, 3, 4, 5, 6, 7, 8 and 9 have mean above 2.50. This indicates that the respondents all accepted that; CBT improves their academic performance, their use of CBT is not voluntary, CBT gives them more confidence during examination. There are usually no distractions that constitute a nuisance when using CBT for examination, The speed of using CBT for examination is satisfactory, CBT gives them greater control over their academics, they find CBT useful for their examinations and CBT makes examination easier for them. Table 1 also shows that item 10 has mean below 2.50. This indicates that the respondents did not accept that they are not comfortable to take CBT. The grand mean of 3.20 also indicates that the respondents agree that all the items in the table are the perception of students on the usefulness of computer-based test in Universities in Anambra State

Research Question 2

What is the perception of students on the ease of use of computer-based test in Universities in Anambra State?

Table 2: mean and standard deviation of the perception of students on the ease of use of computer-based test in Universities in Anambra State

S/N	ITEMS	N	\bar{X}	Standard Deviation	Decision
1	CBT is easy to use	200	2.54	.675	Agree
2	CBT is user friendly	200	2.96	.609	Agree
3	Compared to paper- based test, CBT is easy for testing	200	3.25	.619	Agree
4	I believe that CBT questions are too cumbersome.	200	2.42	.746	Disagree
5	My using CBT require a lot of mental effort.	200	2.28	.789	Disagree
6	Using CBT is often frustrating.	200	2.27	.752	Disagree
7	It is very conducive to be examined with CBT	200	2.96	.609	Agree
8	I rarely become confused when I use CBT	200	3.12	.604	Agree
9	CBT is not compatible with other test method I use	200	2.03	.744	Disagree
10	Technical problems like power outage, server problem with CBT is controllable.	200	2.54	.675	Agree
Grand \bar{X}		200	2.63		

Table 2 shows that item 1, 2, 3, 7, 8 and 10 have mean above 2.50. This indicates that the respondents all accepted that; CBT is easy to use, CBT is user friendly, compared to paper- based test, CBT is easy for testing, it is very conducive to be examined with CBT, they rarely become confused when I use CBT, technical problems like power outage, server problem with CBT are controllable. Table 2 also shows that item 4, 5, 6 and 9 has mean below 2.50. This indicates that the respondents did not accept that; CBT questions are too cumbersome, using CBT require a lot of mental effort, Using CBT is often frustrating and CBT is not compatible with other test method they use. The grand mean of 2.63 also indicates that the respondents agree that all the items in the table are the perception of students on the ease of use of computer-based test in Universities in Anambra State

Research Question 3:

What is the perception of students on the credibility of computer-based test in Universities in Anambra State?

Table 3: Mean and standard deviation of the perception of students on the credibility of computer-based test in Universities in Anambra State.

S/N	ITEMS	N	\bar{X}	Standard Deviation	Decision
1	CBT gives the opportunity for reusing questions	200	2.54	.675	Agree
2	CBT allows guessing	200	2.96	.609	Agree
3	Compared to paper-based test, CBT does not allow for test plagiarism.	200	3.12	.604	Agree
4	CBT gives room for restarting questions when a problem occurs.	200	3.28	.589	Agree
5	CBT test items are randomized to prevent students working at adjacent computers from cheating.	200	3.52	.546	Agree
6	CBT prevents planned sequencing of items.	200	3.25	.619	Agree
7	CBT allows assessment of the appropriateness of the examination content.	200	3.28	.688	Agree
8	CBT allows feedback during, or immediately after, a test.	200	2.87	.761	Agree
9	CBT time limits for test are unfair.	200	2.45	.612	Agree
10	CBT environments are conducive for examination.	200	3.52	.546	Agree
11	CBT does not give the true test of knowledge	200	3.33	.593	Agree
12	CBT creates a lazy attitude to learning	200	2.39	.744	Disagree
Grand \bar{X}		200	2.96		

Table 3 shows that item 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 have mean above 2.50. This indicates that the respondents all accepted that; CBT gives the opportunity for reusing questions, CBT allows guessing, Compared to paper-based test, CBT does not allow for test plagiarism, CBT gives room for restarting questions when a problem occurs, CBT test items are randomized to prevent students working at adjacent computers from cheating, CBT prevents planned sequencing of items, CBT allows assessment of the appropriateness of the examination content, CBT allows feedback during, or immediately after, a test, CBT time limits for test are unfair, CBT environments are conducive for examination and CBT does not give the true test of knowledge. Table 3 also shows that item 12 has mean below 2.50. This indicates that the respondents did not accept that CBT creates a lazy attitude to learning. The grand mean of 2.96 also indicates that the respondents agree that all the items in the table are the perception of students on the credibility of computer-based test in Universities in Anambra State

Discussions of the Findings

Based on the findings, the respondents agreed that computer-based test in Universities in Anambra State is useful. This is in agreement with Burns (2018) who stated fifteen uses of CBT to teachers and students which are: multiple test administrations, dynamic and individualized assessments, immediate grading, helps with open ended assessments, immediate feedback, vertically and horizontally aligned assessments, value added growth measures, uncover student thinking, engaging, analytics for the instructor and student, greater amount of test items, help students with disabilities, incorporate other types of technology, improves writing and can secure testing. The respondents equally agreed that computer-based test in Universities in Anambra State is easy to use. The findings are in not conformity with Oladimeji and Mwuese (2018) study that revealed loss of

Dr. Enebechi, Regina Ijeamasi, Okoye, Grace Nwakaego and Arisokwu Ezinne Juliet (2023) network connection, computer malfunctioning during examination and insufficient time allocated for CBT examination as challenges observed in the conduct of students CBT examination. In addition, the findings of this study are contrary to that of Ebimgbo, Igwe, Okafor (2021) who mentioned insufficient time and system or software failure as observable challenges facing the use of CBT for examining students in higher institutions in Nigeria. Finally, the respondents agreed that the credibility of computer-based test in Universities in Anambra State is credible. These findings are consistent and in agreement with the findings of Ojerinde (2015) that CBT can eradicate examination malpractices. IT is also in line with Ejim (2018) who opined that CBT has many advantages compared to the traditional pen-paper test (examination) such as immediate scoring and feedback for multiple choice questions. Egoigwe, Maduchioma, Mamah, Edward (2020) also affirms that CBT provides immediate feedback and is a good means of assessing students in university.

Conclusion of the findings

After the analyses, the following findings were made:

1. Computer based test (CBT) has been found to be very useful. It provides students with opportunities to write exams with ease and be able to answer questions without being confused.
2. It allows feedback during, or immediately after a test and ensures that examination malpractice is eradicated. It gives room for more students to pass to because it has options, therefore, it allows guessing of answers.
3. For lecturers setting the questions and conducting the exams, CBT gives the opportunity for reusing questions and it allows assessment of the appropriateness of the examination content. This study therefore concludes that CBT is useful, easy to use and credible for conducting examinations in the University.

Recommendations

Based on the findings, the following recommendations are made:

1. Lecturers to supervise CBT examination should be practically good in the use of computers in order to be able to attend to minor issues that may arise during the examination.
2. CBT software developed for CBT examination should be updated from time to time based on observable challenges.
3. ICT infrastructures should be maintained regularly and replaced every six years.
4. There is the need for adequate students training in ICT prior to CBT examination in the universities.
5. There is the need for installation of high capacity solar system because of the erratic power supply in Nigeria and high cost of diesel.
6. Government should from time to time help in supporting the procurement of ICT equipment in the universities in Nigeria.
7. There is the need of employment of software engineer, computer engineer and computer lecturers to facilitate the development, usage and maintenance of CBT software in the universities.

References

- Abdulkareem, S. & Nathan, N. (2018). Computer based test (CBT) system for GST exams in Adamawa state university. Mubi, *Asian Journal of Research in Computer Science*, 2 (1), 1-11.
- Ajinaja, M. (2017). The design and implementation of a computer-based testing system using component-based software engineering. *International Journal of Computer Science and Technology*, 8 (1), 58-65

- Alabi, A. T., Issa, A. O., & Oyekunle, R. A. (2012). The Use of Computer Based Testing Method for the Conduct of Examinations at the University of Ilorin. *International Journal of Learning & Development*, 2(3): 68– 80.
- Azor, R., O. & Ogwu, E. N. (2019). Computer-Based Test (CBT), Innovative Assessment Of Learning: Prospects And Constraints Among Undergraduates In University Of Nigeria, Nsukka.
- Bassey, A. B. N. (2020). Factors influencing students' performance in computer-based testing in Cross River state, Nigeria (power supply & inadequate computer). *International Journal of Quantitative and Qualitative Research Methods*, 8 (2), 25-33.
- Burns, M. (2018). 15 benefits of computer-based test. Retrieved from www.elearningindustry.com/15-benefits-of-computer-based-testing.
- Busayo, T. (2018). The need to embrace computer base testing in Nigeria. Retrieved from: <https://lifelearners.ng/the-need-to-embrace-c-b-t-in-nigeria>.
- Ebimgbo, S. O., Igwe, N. J. & Okafor, A. E. (2021). Perceived effectiveness of computer-based test examination mode for large classes among undergraduates of Nigerian universities: Implications for social work. *Journal of Social Work in Developing Societies*, 3 (1), 62-77.
- Egoigwe, S. V., Maduchioma, V., Mamah, N. V. & Edward, C. A. (2020). Influence of computer-based test (CBT) examination on academic performance of engineering students in Nigerian universities. *International Journal of Mechanical and Production Engineering Research and Development*, 10 (3), 5053-5062.
- Ejim, S. (2018). An overview of computer-based test. Retrieved from <https://doi.org/10.13140/RG.2.2.32040.88326>
- Kuyoro, S. O., Maminor, G. U., Kanu, R. U., & Akande, O. (2016). The design and implementation of a computer based testing system. *Journal of Applied Computation*, 1(1), 1-7.
- Nworgu, B. G. (2015). *Educational Research: Basic Issues and Methodology* (3rd edition). Nsukka University Trust; 372 .
- Nkwocha, P. C., Akanwa, U. N., & Nkwocha N. C. (2015). Challenges encountered using cbt by 2015 UTME candidates in Owerri zone one, Nigeria: Test validity implications. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 5(5), 28-35. DOI: 10.9790/7388-05512835.
- Nnam, M. U. & Inah, A. F. (2015). Empirical investigation into the causes, forms and consequences of examination malpractice in Nigeria institutions of higher learning. *International Journal of Novel Research in Humanity and Social Sciences*, 2 (1), 52-62.
- Nwoke, B. I., Osuji, C. U. & Agi, U. K. (2017). Influence of computer-based test on examination malpractice in public examinations. *IOSR Journal of Research & Method in Education*, 7(2), 80- 84. Doi: 10.9790/7388-0702028084.
- Ojerinde, D. (2015). Reducing examination malpractice through computer-based testing. <http://www.guardianonline.com>
- Okoye, F. O. (2019). Challenges of 2018 computer based test JAMB examination for senior secondary school students' academic performance in Anambra state, Nigeria. *European Journal of Education Studies*, 6 (3) 266 – 277.
- Okoye, F. O. & Duru, D. C. (2019). Assessment of the effectiveness of computer based testing in the conduct of the 2019 joint admissions and matriculation board examination in Anambra State, *National Journal of Educational Leadership (NJOEL)*, 5(1), 122 – 127.
- Oladimeji, O. F. & Mwuese, B. C. H. (2018). Computer based test: Panacea to undergraduate students' performance in Olabisi Onabanjo University, Ogun State, Nigeria. *Educational Research*, 9 (3), 50-57. <http://dx.doi.org/10.14303/er.2018.219>.
- Olutunu, D.F. (2018). Impact of computer based test in Nigeria Tertiary Institutions: A theoretical view, *International Journal for Innovative Technology Integration in Education*, 2(1), 109 -116.

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- Onyibe, C. O., Nwachi-Ikpor J. O., & Abdulhakim, A. A. (2015). Computer based testing technique in Nigeria: Prospects and challenges. *Journal of Information Engineering and Applications*, 5(10), 17-21.
- Sanni, A. A., & Mohammad, M. F. (2015). Computer based testing (CBT): An assessment of student perception of JAMB UTME in Nigeria. *Computing, Information Systems, Development Informatics & Allied Research Journal*, 6(2), 13-28.
- Usman, K., O. & Olaleye S., B. (2022). Effect of Computer Based Test (CBT) Examination on Learning Outcome of Colleges of Education Students in Nigeria. *Mathematics and Computer Science*, 7(3), 53-58. doi: 10.11648/j.mcs.20220703.14