

Perceived Effectiveness of Computer-Based Test in Curbing Examination Malpractices and Revitalizing Quality Control by Undergraduates of Federal Universities in Southwestern Nigeria

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ABSTRACT

The study investigated the perceived effectiveness of computer-based test in curbing examination malpractices and revitalizing quality at the Federal Universities in Southwestern Nigeria. A descriptive survey research design was adopted. The population for the study consisted of all undergraduates at the Federal universities in Southwestern Nigeria. Multistage sampling technique was used to select 1,200 samples for the study. A questionnaire titled “Perceived Effectiveness of Computer-based Test in Curbing Examination Malpractices and Revitalizing Quality (PECBTCEMRQ) was used to gather data. Data collected were analyzed using frequency count, mean and standard deviation. The results showed that the paper pencil test is highly susceptible to different kinds of malpractices (81.3%). The result also showed the CBT effectiveness in curbing examination malpractices is very high (87.5%). Again, the result showed the CBT effectiveness in revitalizing quality is also attested to be high (73.6%). The study concludes that Computer-based test is more effective and preferred to Paper-pencil Test at ensuring reduction in examination malpractices and revitalizing quality of graduates in Southwestern Nigeria. Nevertheless, inadequate facilities, poor network failure among many were identified to have impede the effectiveness of CBT at controlling examination malpractices and revitalizing quality control. The study recommends that the management of education at all level should endeavor to improve on identified deficient facilities and infrastructures for the full potentials of CBT to materialize.

BACKGROUND TO THE STUDY

In recent years, the prevalence of examination malpractices has posed a significant challenge to the integrity and credibility of academic assessments in Federal Universities. The rampant cases of cheating, collusion, and other forms of academic dishonesty not only undermine the educational system but also erode the trust and confidence in the quality of graduates produced by these institutions. In response to this pressing issue, there has been a growing interest in exploring innovative strategies to curb examination malpractices and revitalize quality control measures.

One such strategy that has gained prominence is the utilization of computer-based testing (CBT) as a means of conducting examinations. CBT involves the administration of tests or assessments using computer technology, wherein students interact with the examination interface to answer questions and submit their responses electronically. This departure from traditional pen-and-paper examinations is seen as a potential solution to the vulnerabilities associated with conventional testing methods.

An examination is the process of testing and evaluating an individual's comprehension, knowledge, and academic aptitude over a period of time. Exams are held to assess students' academic performance and determine if they have met a certain level of academic learning and understanding (Suleman, Gul, Ambrin & Kamran, 2015). Paper-pencil tests were the sole choice for evaluating students at all levels of education in Nigeria in years past. Paper-pencil test (PPT) refers to a classic method of examination in which pupils use pencils to fill in bubbles on a scannable response sheet. Although most standardized exams are now given on computers, most classroom assessments still need students to submit written answers on paper. Paper-pencil exams are frequently used in the classroom to refer to objectively scored examinations that are used to evaluate memorized information and

lower levels of comprehension, as opposed to performance-based assessment, which is used to assess deeper understanding via skills and abilities.

Examination conducted by the West Africa Examination Council, the National Examination Council, and the Joint Admission and Matriculation Board have undoubtedly been plagued with allegations of serious anomalies. Because of these threats, the quality of Nigerian university graduates has been assumed to drop precipitously. In his study "Trends in Examination Malpractices," Anzene (2014) stated that examinations conducted by the West African Examination Council (WAEC), the National Examination Council (NECO), and the Joint Admission Matriculation Board (JAMB) have been plagued by complaints of examination malpractices as well as numerous organisational, administrative, and bureaucratic irregularities. Anzene (2014) went on to say that these issues have grown in severity, resulting in a steady deterioration in the quality of Nigeria's educational system. Students undergo a set of tests to determine their intellectual capacity and ability, in accordance with the United Nations' Sustainable Development Goals (SDGs) number four, which emphasises the importance of access to higher education (United Nations, 2015).

The conventional way of evaluating pupils' learning capacity is the Paper-and-Pencil Test (PPT) approach in many nations (Samuel, Ngozi & Agnes, 2021). PPT method of assessment, which is prevalent in many Nigerian institutions, has many problems (Khoshsima & Hashemi, 2017; Nwoke et al., 2017; Oladimeji & Mwuese, 2018; Simin & Heidari, 2013). For the most part, anomalies connected with the PPT exam are capable of delaying the progress and ambitions of students by denying them of possible marks and results, among other things. Late results are also an issue. Nigerian secondary and postsecondary education has recently caught the attention of numerous academics because to an increase in examination malpractices (EMs). The increasing participation of students in EMs has been studied extensively (Anzene, 2014; Furo, 2015), but just a few research have proposed creative solutions to Nigerian schools' notoriously high incidence of examination fraud. The high incidence of EMs in Nigerian secondary and postsecondary institutions has alarmed policymakers, governments, and educational experts since it has a detrimental impact on Nigeria's annual output of incompetent graduates (Oyedeki, 2015).

This incidence has led to the public outcry about the negative consequences of PPT approach. In the past decade, computer usage in education has grown in popularity. Of particular concern was how to utilise computers and the internet to enhance educational assessment competence and effectiveness (Chua & Don 2013). Schools, institutions, and testing agencies have relied on computer-based tests (CBT) since the advent of information and communications technology (ICT). A computer-based test (CBT) according to Sadiq (2011), is an internet-based test or evaluation that is given through computer or other technical devices. There are two possible forms for this: The first kind necessitates the use of paper forms, which are subsequently input into an optical mark reader by the student. This is where the paper is read, scored, and a reliability report is generated. Students use an assessment interface on the computers to enter their responses and get instant feedback is the second type

According to Davey (2016), the practice of education is not complete without assessment. If education is a society's lifeline, then evaluation should be education's lifeline. Teachers and schools benefit from excellent student performance because their knowledge and perception of high stakes assessments opens doors to further educational possibilities and jobs, and it demonstrates their own and the institutions' success. A coin, however, has two sides. It does not matter whether there are fundamental benefits to this method of evaluation or not; we need to develop a way of reducing examination malpractices in our system of education. Given this, further research on the efficacy of CBT in reducing test malpractices and as a quality control tool is needed.

Statement of the Problem

Examination conducted by the examining bodies have undoubtedly been plagued by allegations of serious malpractices. As a consequence of these anomalies, the quality of Nigerian graduates is assumed to have dropped precipitously. The public outcry about the negative consequences of this irregularities and the rapidity with which new candidates are being absorbed and initiated led to the adoption of computer-based tests (CBT). As an evaluation tool for admitting or screening students, institutions and testing bodies have adopted CBT as an essential part of their examination administration. However, it is prudent to examine the perceptions of CBT of

how effective this new evaluation technique has been in addressing the irregularities of the previous (PPT) assessment process and in enhancing the quality of graduates, hence this study.

Objectives of the Study

The main objective of this study is to assess Perceived Effectiveness of Computer-Based test in curbing examination malpractices and revitalizing quality of graduates at Federal Universities in Southwestern Nigeria. The specific objectives of the study are to:

- i. identify the perceived irregularities associated with Paper-Pencil Test by undergraduates of Federal Universities in Southwestern Nigeria;
- ii. ascertain the perceived effectiveness of computer-based test (CBT) in curbing examination malpractices by undergraduates of Federal Universities in Southwestern Nigeria;
- iii. determine the perceived effectiveness of computer-based test (CBT) in revitalizing quality control by undergraduates of Federal Universities in Southwestern Nigeria; and
- iv. identify the perceived challenges facing the computer-based test (CBT) in curbing examination malpractices and revitalizing quality control by undergraduates of Federal Universities in Southwestern Nigeria.

Research Questions

This research provided answers to the following questions

- i. What are the perceived irregularities associated with Paper-Pencil Test by undergraduates of Federal Universities in Southwestern Nigeria?
- ii. What is the perceived effectiveness level of computer-based test (CBT) in curbing examination malpractices by undergraduates of Federal Universities in Southwestern Nigeria?
- iii. What is the perceived effectiveness level of CBT in revitalizing quality control by undergraduates of Federal Universities in Southwestern Nigeria?
- iv. What are the perceived challenges facing computer-based-test in curbing examination malpractices and revitalizing quality control by undergraduates of Federal Universities in Southwestern Nigeria?

METHODOLOGY

The study adopted a survey research design. The population of the study comprised all undergraduates at the Federal universities in Southwestern Nigeria. The study sample comprised 1,200 undergraduates selected using multistage sampling procedure. Firstly, all the Federal Universities in Southwestern Nigeria were purposively selected, three universities were then randomly selected using simple random sampling technique by fish bowling. Stratified random sampling technique was used to select three faculties within each university. These are the faculties of Education, Sciences, and Technology and a total of 400 students were randomly selected within each university. Each faculty was further stratified into department and level. Four department each were selected and from each of the Department, 100 undergraduate each were randomly selected from 200 level, 300 level, and 400 level undergraduates. Thus, 1,200 forms the sample for the study.

A self-developed questionnaire titled “Perception of CBT in curbing Examination malpractices and Revitalizing Quality Control (PCBTCEMRQCQ)” was used to elicit information from the respondents. The questionnaire consisted of four (4) main sections A-D with four points Likert scale (4=high, 1= low) response. Section A contained questions fashioned to identify the irregularities associated with Paper-Pencil Test. Section B contained questions formed to determine the effectiveness of computer-based test (CBT). Section C contained questions molded to ascertain the effectiveness of computer-based test (CBT) in revitalizing quality control.

Section D contained questions shaped to identify the challenges facing computer-based test. To validate the instrument, it was first administered on 100 undergraduates from University of Ilorin. Data collected from the pilot administration of the questionnaire were subjected to factor analysis starting with the original data matrices and using multiple correlation as the estimates of communalities, principal factors were extracted after interacting of communalities. Factors with Eigen value greater than 1 were retained for rotation and this procedure yielded 4 and 3 factors for sections B and C respectively. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity (BTS) statistics were run on the data. The KMO values of the B and C sections (0.843, and 0.783) were higher than 0.5 and the BTS of each of the sections possesses Chi-square values whose p-value was less than the 0.05 threshold. This indicated that the data collected with the instrument could be well analyzed with factor analysis. To further ensure the reliability of the instrument, the Cronbach's alpha, split-half and Spearman-Brown reliability estimates were obtained from the SPSS 17 software. For the measure on how effective the computer-based test (CBT) is in curbing examination malpractices, a Cronbach Alpha of 0.834, Split-half values of 0.822 and 0.809 were obtained for the two halves and the Spearman Brown coefficient was 0.791. To ascertain the effectiveness of computer-based test (CBT) in revitalizing quality control, a Cronbach Alpha of 0.812 was obtained, Split-half values of 851 and 0.749 were obtained for the two halves and the Spearman Brown coefficient was 0.747. On the challenges facing computer-based-test in curbing examination malpractices and revitalizing quality control, a Cronbach Alpha of 0.801 was obtained, Split-half values of 0.862 and 0.749 were obtained for the two halves and the Spearman Brown coefficient was 0.767. All these values indicated that the scales were very valid to measure the constructs they were purported to measure. The final validated instrument was administered on the selected 1, 200 undergraduates distributed by hand to the respondents. However, 1,080 copies of questionnaires were retrieved and usable from the respondents making 90% response/returning rate and were computed using the SPSS 17 software and frequency count, mean, percentage and standard deviation.

RESULTS AND INTERPRETATION

Research Question 1: What are the perceived irregularities associated with Paper-Pencil Test by undergraduates of Federal Universities in Southwestern Nigeria?

To answer the question, section A of the study instrument were collated and analysed using frequency count and percentages. The results is as presented in table 1 below.

Table 1: Perceived Irregularities Associated with Paper-Pencil Test form of Examination by undergraduates of Federal Universities in Southwestern Nigeria.

	Forms of Examination Malpractices During Paper-Pencil Test	Frequency	%
1.	Rendering an external assistance to students during examination	904	84.0%
2.	Inscribing materials on anything like palms, thighs, baby pampers; handkerchiefs, rulers, chairs, tables, chalk or white marker board	902	84.0%
3.	Inflation of a candidates original mark by those who grade the scripts is rampant in PPT	905	83.8%
4.	A more knowledgeable student impersonating a less knowledgeable one	896	83.4%
5.	Revealing answers using dictation, phones and papers during examinations	891	83.2%
6.	Sorting, in the form of money, gift items or sex to influenced score is observed in a paper-pencil test	878	81.3%
7.	The use of coded sign languages by some candidates, exchanging of answer booklets or note comparison or outright impersonation	878	81.1%
8.	Scientific malpractices with the use of mobile phones unauthorized scientific calculators, organizers, compact disc, is paramount in a PPT	853	79 %

9.	Pre-examination malpractices or registration of non-school candidates for school examination	842	78.0%
10	Inadequate candidate spacing is paramount in a paper-pencil test	842	78.0%
11	Laxity in supervision can be observed in a paper-pencil test	834	77.3 %
	Weighted average estimated means	878	81.3%

Result as presented in Table 1 showed that 878 (81.3%) of the respondents agreed that the paper pencil test is susceptible to different kinds of malpractices. The Table also showed that 84.1%, 84.0%, 83.8%, 83.4%, 83.2%, 81.3%, 81.1%, undergraduate respondents attested that Rendering an external assistance to students during examination; Inscribing materials on anything like palms, thighs, baby pampers; handkerchiefs, rulers, chairs, tables, chalk or white marker board; Inflation of a candidates original mark by those who grade the scripts is rampant in PPT; A more knowledgeable student impersonating a less knowledgeable one; Revealing answers using dictation, phones and papers during examinations; Sorting, in the form of money, gift items or sex to influenced score is observed in a paper-pencil test; The use of coded sign languages by some candidates, exchanging of answer booklets or note comparison or outright impersonation examination malpractices paper pencil test is susceptible to. The table further revealed that 79.0 %, 78.0 %, 78.0 % and 77.3 % of the undergraduate respondents attested that Scientific malpractices with the use of mobile phones unauthorized scientific calculators, organizers, compact disc, is paramount in a PPT; Pre-examination malpractices or registration of non-school candidates for school examination; Inadequate candidate spacing is paramount in a paper-pencil test; and Laxity in supervision can be observed in a paper-pencil test or supervisor conniving with the school authority were other forms of examination malpractices the PPT is prone to respectively.

Research Question 2: What is the perceived effectiveness level of CBT in curbing examination malpractices by undergraduates of Federal Universities in Southwestern Nigeria?

Table 2: Undergraduates Perceived Effectiveness Level of CBT in Curbing Examination Malpractices

CBT Effectiveness Level in Curbing Examination Malpractices	Frequency	Percentage (%)
Low	-	0.0
Average	135	12.5
High	945	87.5
Overall	1,080	100%

Figure 1: Graphical Representation of Undergraduates Perceived Effectiveness Level of CBT in Curbing Examination Malpractices

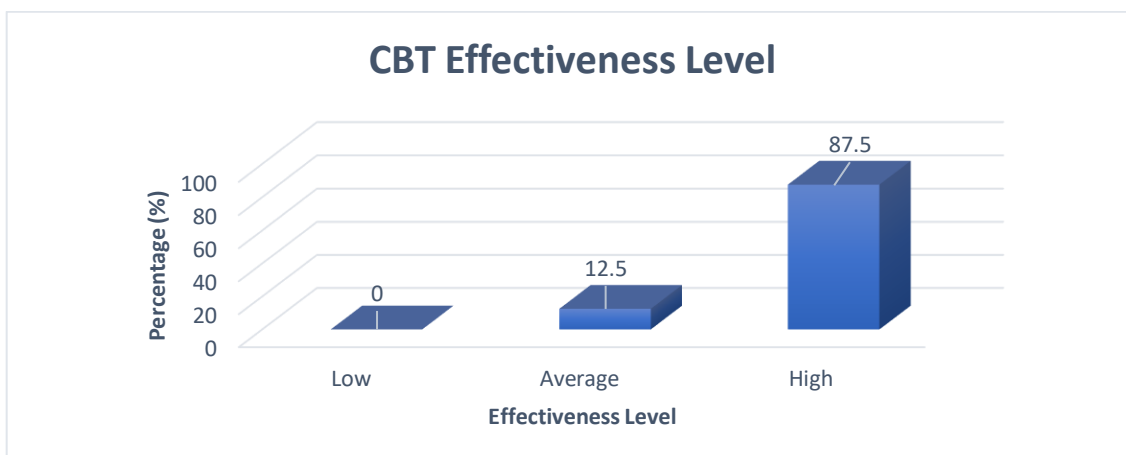


Figure 1 is a graphical representation of Table 1 revealed that the Undergraduates Perceived Effectiveness Level of CBT in Curbing Examination Malpractices is high (87.5%) while only a minority (12.5%) of the respondents rated the effectiveness of CBT in curbing examination malpractices to be average. However, it is worth noting that, none of the undergraduates perceived the effectiveness of CBT in curbing examination malpractice to be low. Thus, it can be concluded that the undergraduates believe that CBT has been effective in successfully curbing examination malpractices.

Research Question 3: What is the perceived extent of effectiveness of CBT in revita-lizing quality control by undergraduates of Federal Universities in Southwestern Nigeria?

Table 3 showing perceived effectiveness of CBT in revitalizing quality control.

CBT Extent of Effectiveness in Revitalizing Quality	Frequency	Percentage (%)
Small	000	00.0
Average	285	26.4
Large	795	73.6
Overall	1,080	100%

Figure 2. Graphical Representation of Table 3 showing perceived effectiveness of CBT in revita-lizing quality control.

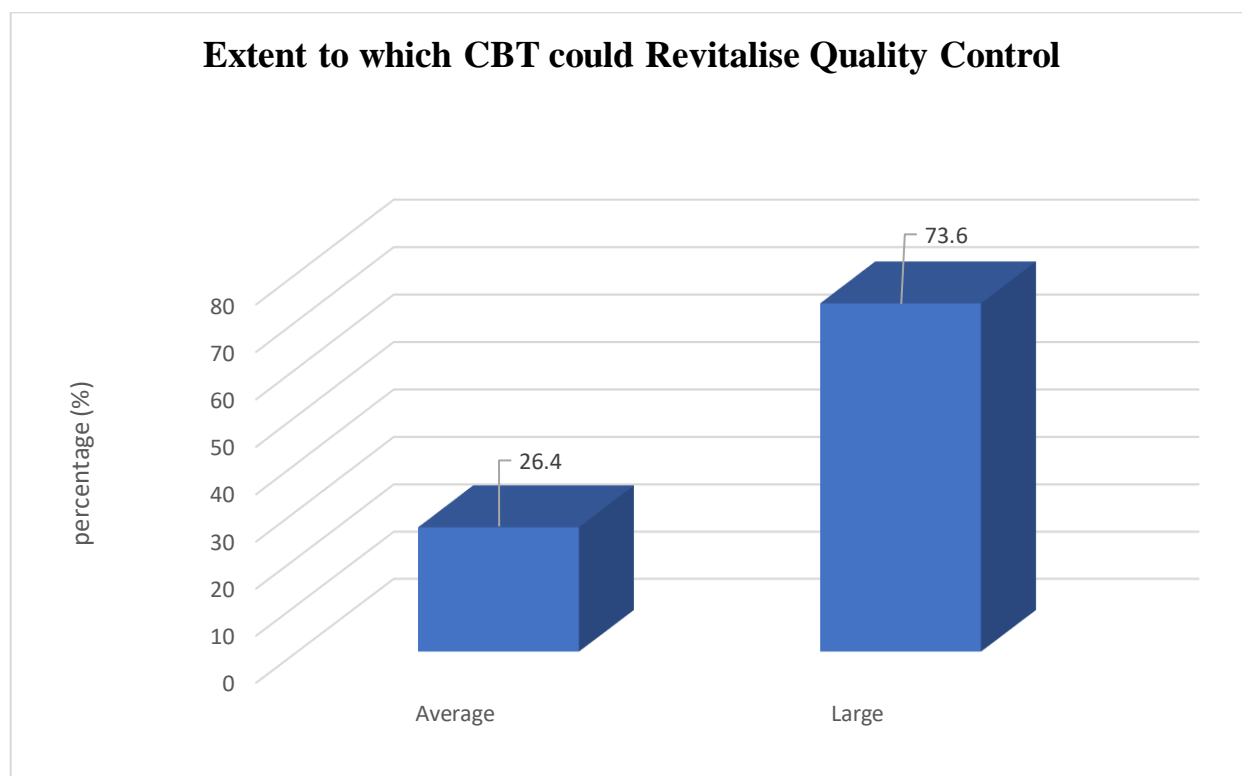


Figure 2 graphically represented in Table 3 revealed that majority of the participants (73.6%) indicate that CBT could effectively revitalize quality during examinations and quality of graduates in Southwestern Nigeria Federal Universities to a large extent, while few of the participants (26.4%) indicated that CBT could effectively revitalize quality control during examinations only to a somewhat average extent.

Research Question 4: What are the perceived challenges facing computer-based-test in curbing examination malpractices and revitalizing quality control by undergraduates of Federal Universities in Southwestern Nigeria?

Keys: SA= Strongly Agree, A= Agree, D= Disagree, SD= Strongly Disagree

Table 4 Challenges Facing CBT in Curbing Examination Malpractices and Revitalizing Quality Control at Federal Universities in Southwestern Nigeria.

S/N	CHALLENGES FACING CBT IN CURBING EXAMINATION MALPRACTICES AND REVITALIZING QUALITY CONTROL	MEAN	SD
1.	Poor computer literacy affects students use and performance in CBT	3.12	0.94
2.	High cost of buying personal computer	3.04	0.86
3.	Inadequate ICT manpower to man computer centers	3.00	0.90
4.	Power failure when writing CBT gives room for student's	3.03	0.84
5.	Network failure or bad connection during CBT	3.03	0.87
6.	Inadequate or bad computer facilities at CBT centers is a retardant to CBT	3.15	0.82
7.	Poor ICT funding on the part of all levels of government and agencies	3.04	0.88
8.	ineffective ICT policy and implementation from government	2.99	0.83
9.	Lack of computer literature in the Country.	2.89	0.95
10.	Lack of enough test frames in computer-based test.	2.90	0.86
11.	Lack of a well-designed examination instruction on the use of CBT	2.85	0.95
12.	CBT results get mixed up due to improper data base management	2.89	0.87
13.	My use of CBT is not voluntary but compel.	2.83	0.93
14.	Although, it might be helpful, using CBT is not compulsory for my course.	2.70	0.85
15.	Interaction with CBT has been understandable.	2.67	0.94
16.	Lack of computer facilities for CBT centers is a retardant to CBT.	2.66	1.11
	Weighted Average	2.92	

Table 4 showed the challenges facing CBT in curbing examination malpractices and revitalizing quality control by undergraduates of Federal Universities in Southwestern Nigeria. The table revealed that poor computer literacy skills (mean = 3.12), inadequate computer facilities (mean = 3.15), high cost of purchasing computer gadgets (mean = 3.04), poor internet connectivity (mean = 3.03), as well as inadequate funding from the government (mean = 3.04), amongst others were major challenges facing the effective utilization of CBT in curbing examination malpractices and revitalizing quality control by federal universities in southwestern Nigeria.

DISCUSSION OF FINDINGS

The section presents a discussion of the major findings of the study. The findings of the study are discussed under each research questions.

Findings from research question that the estimated weighted average mean of the PBT abnormalities was 3.25, which was higher than the anticipated 2.5 weighted average. This finding indicates that anomalies exist with PPT as perceived by undergraduates of Federal Universities in Southwestern Nigeria. This is in consonance with the findings of Osuji (2020), Nnam, and Inah (2015) who concluded in their studies that examination malpractices related to paper-pencil tests are widespread to the extent that every examination season sees the development of new and creative methods of cheating. These crimes and illegalities are now so widely performed that there is practically no examination at any level, anyplace where they are not practiced, and they are prevalent everywhere. The pace at which they are committed these days' calls for significant worry.

The finding from research question two showed the undergraduates perceived effectiveness level of CBT in

curbing examination malpractices to be very high as attested by the majority of the respondents 945, (87.5%), while very few of the respondents attested that the undergraduates perceived effectiveness level of CBT in curbing examination malpractices to be very high low 135 (12.5%). This is an indication that CBT is helpful in reducing test malpractices. This is an agreement with Sanni and Mohammad (2015) who opined that the introduction of computer-based tests (CBT) for UTME examinations grabbed most students' interest, and as a result, CBT was preferred over traditional paper-pencil tests. Faniran and Ajayi (2016) also believed that CBT is an effective, easy-to-use form of test whereas Samuel et al. (2021) believe that "CBT is a helpful, easy-to-use mode of exam. In addition, most of the respondents (73.6 percent) believed that CBT could significantly improve quality control, whereas only a small minority of participants (26.4 percent) believed that CBT could improve quality of graduates just a little. Sanni and Mohammad (2015) discovered that "CBT may minimise examination malpractices and improved security as compared to paper-pencil test." This result supports their conclusion.

When it comes to research question 4, the results are in agreement with those of Joshua (2018), who identified the challenges of computer-based testing as that major stake holders, students, were concerned that the examination could be disrupted by power outages, while others were concerned about computer system failures during the CBT. The loss of network connection, inadequate time allotted for the examination, computer malfunction during the examination process are common difficulties in Computer-based test identified by Oladimeji and Mwese (2018); Onyibe Nwachi-Ikpor and Abdulhakim (2015), as well. A lack of ICT infrastructure in the nation is also a barrier for computer-based tests, they said. CBT is hampered by problems with the system or network, as well as a lack of available time. These are the difficulties students face while taking exams that utilise computer-based testing.

CONCLUSIONS

In conclusion, the findings of this study shed light on the perceived effectiveness of computer-based testing (CBT) in curbing examination malpractices and revitalizing quality control measures among undergraduate students in Federal Universities. Through a thorough analysis of the data collected, several key insights have emerged.

Firstly, it is evident that there is a general consensus among students regarding the potential of CBT to mitigate the incidence of examination malpractices. The implementation of CBT introduces various security features and monitoring mechanisms that serve as deterrents to cheating and collusion during examinations. Features such as randomized question selection, time limits, and instant feedback contribute to a more secure and controlled testing environment, thereby reducing opportunities for academic dishonesty.

Secondly, students perceive CBT as a means of enhancing the quality control measures associated with academic assessments. The use of technology allows for the standardization of test administration and scoring procedures, ensuring greater consistency and reliability in the evaluation process. Moreover, the ability to analyze data trends and performance metrics facilitates targeted interventions and instructional improvements, ultimately leading to enhanced learning outcomes.

However, it is important to acknowledge that the effectiveness of CBT is contingent upon various factors, including infrastructure, technical support, and training for both students and faculty. Challenges such as limited access to computers, inadequate internet connectivity, and resistance to change may hinder the successful implementation of CBT initiatives. Therefore, it is imperative for Federal Universities to invest in the necessary resources and capacity-building efforts to support the widespread adoption of CBT.

In light of these findings, this study underscores the importance of leveraging technology to address the pervasive issue of examination malpractices and promote academic integrity in higher education. By embracing innovative assessment methods such as CBT, Federal Universities can strengthen their quality assurance mechanisms and uphold the credibility of their academic programs. Moving forward, further research and collaborative efforts are needed to optimize the use of CBT and ensure its sustained impact on student learning and assessment practices.

RECOMMENDATIONS

Based on the findings and conclusions of this study, several recommendations are proposed to enhance the effectiveness of computer-based testing (CBT) in curbing examination malpractices and revitalizing quality control measures in Federal Universities:

- i. **Investment in Infrastructure and Resources:** Federal Universities should prioritize investments in infrastructure, including computer labs, reliable internet connectivity, and technical support services. Adequate resources are essential to ensure seamless implementation and operation of CBT systems.
- ii. **Comprehensive Training Programs:** Institutions should develop comprehensive training programs to familiarize both students and faculty with the use of CBT platforms. Training sessions should cover topics such as navigating the testing interface, understanding security protocols, and interpreting assessment results.
- iii. **Awareness Campaigns on Academic Integrity:** Educational institutions should launch awareness campaigns to promote a culture of academic integrity and ethical behavior among students. These campaigns can include workshops, seminars, and outreach activities highlighting the consequences of examination malpractices and the importance of upholding ethical standards.
- iv. **Continuous Monitoring and Evaluation:** Ongoing monitoring and evaluation of CBT implementation are crucial to identify areas for improvement and address emerging challenges. Institutions should establish mechanisms for collecting feedback from stakeholders and conducting regular assessments of CBT effectiveness.
- v. **Customization of CBT Platforms:** CBT platforms should be customizable to accommodate the specific needs and requirements of different academic disciplines and assessment formats. Flexibility in test design and administration ensures that CBT remains relevant and applicable across diverse educational contexts.
- vi. **Integration of Security Features:** CBT systems should incorporate robust security features to prevent cheating and ensure the integrity of assessments. This includes features such as biometric authentication, randomized question pools, and remote proctoring solutions.
- vii. **Collaboration and Knowledge Sharing:** Federal Universities should facilitate collaboration and knowledge sharing among institutions to exchange best practices and lessons learned in CBT implementation. Platforms for sharing resources, case studies, and research findings can facilitate collective efforts to strengthen assessment practices.

By implementing these recommendations, Federal Universities can harness the full potential of computer-based testing to promote academic integrity, enhance assessment practices, and uphold the quality of education for all students. i. Examining bodies should endeavor to provide the necessary facilities for the full implementation of CBT.

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