

An Evaluation of the Joint Admission and Matriculation Board's (JAMB) Computer Based Test Effectiveness in Post Secondary Schools in Nigeria

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Abstract

Computer Based Test (CBT) is defined as a test or assessment administered with the use of computer and ICT devices. CBT has become widespread in recent years in developed countries. For more than a decade CBT has been called the “new frontier of testing” (Thompson et al., 2002). CBT among other benefits enhances fair and precise evaluation of a candidate’s competency, rapid turnaround of exam results, and more choices as to when and where to take the exam and easier registration. The Joint admission and Matriculation Board (JAMB) in Nigeria saddled with the responsibility of conducting examinations for selecting students of Post Secondary schools into Nigerian Universities, Polytechnics, and Colleges of Education conducted the 2014 examinations using the traditional Paper based system and Computer based testing. Having experimented, the board has therefore perfected plans to conduct the 2015 examinations with CBT only for the purpose of curbing examinations malpractice with no missing result and answer scripts. This paper tends to evaluate the effectiveness; the infrastructure required and examines the attitude and views of Post Secondary School Students towards the use of CBT.

Keywords: Computer Based Test (CBT), Paper Based System, ICT

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Introduction

A Computer-Based Assessment (CBA), also known as Computer-Based Testing (CBT), e-assessment, computerized testing and computer-administered testing, is a method of administering tests in which the responses are electronically recorded, assessed, or both. As the name implies, Computer-Based Assessment makes use of a computer or an equivalent electronic device such as a cell phone or PDA. CBA systems enable educators and trainers to author, schedule, deliver, and report on surveys, quizzes, tests and exams. Computer- Based Assessment may be a stand-alone system or a part of a virtual learning environment, possibly accessed via the World Wide Web (Georgiy 2011)

In any Educational Sector, the relevance of the body saddled with the responsibility of conducting Examinations for students is stressed because it is the only institution that exists to ensure the survival of Education through its pivotal role of ensuring that only the best candidates are selected. This, therefore, calls for the need to have a strong and viable method of conducting this examination that will produce quality and best brains into different courses in Colleges of Education, Polytechnics and Universities as might be desired by students in Post Secondary schools in Nigeria. Computer and related technologies provide powerful tools to meet the new challenges of designing and implementing assessments methods that go beyond the conventional practices and facilitate to record a broader repertoire of cognitive skills and knowledge (Mubashrah, 2012). In the developed world, the use of CBT has been widely accepted and it is lauded as the answer to having cheaper and speedier test delivery for state and district-wide assessments. It is also seen by some as an avenue toward greater accessibility for students with disabilities (Thurlow, 2010). The Joint Admissions and Matriculation Board (JAMB) established by the Government of Nigeria as sole body to conduct this examination have concluded plans to use the Computer Based Test for assessments of new intakes into higher institutions to enhance fair and precise evaluation of a candidate's competency, rapid turnaround of exam results, more choices as to when and where to take the exam, easier registration and fortified examination security.

Computer-based testing is viewed by many policy makers as a way to meet the requirements of the No Child Left behind Act of 2001 (NCLB) (Thompson, et al., 2003) and it is the belief of these policy makers that Computer based testing allows candidates to take his or her examination in a convenient testing centre, saving time and money. The advantage is that these testing centres are located close to home, so travel expenses and time are saved. Further, the centres offer privacy along with a quiet and comfortable environment.

It is generally recognized that examinations determine the extent to which educational objectives have been achieved as well as the extent to which educational institutions have served the needs of community and society and assessment is an important component of a learning process in a formal Education.

A Brief introduction to the Joint Admission and Matriculation Board (JAMB) in Nigeria

The Joint Admissions and Matriculations Board (JAMB) is a Nigerian entrance examination board for tertiary-level institutions. The board conducts entrance examinations for prospective undergraduates into Nigerian universities. The board is also charged with the responsibility to administer similar examinations for applicants to Nigerian public and private Monotechnics, Polytechnics, and Colleges of Educations. All of these candidates must have obtained the West Africa School Certificate, now Senior School Certificate Examination, SSCE or its equivalent, National Examination Council, NECO.

By 1974, there were seven federal universities in the country. Every one of these existing universities conducted its own concessional examination and admitted its students. However, these systems of admission revealed serious limitations and quite often waste of resources in the process of administering the concessional examination, especially on the part of the candidates. The general untidiness in the uncoordinated system of admissions into universities and the attendant problems were sufficient cause for concern to the committee of vice chancellors.

These problems had assumed new dimensions when by 1976, the then federal military government, under the leadership of General Olusegun Obasanjo, established six additional universities. Consequently, the government set up a national committee on University entrance under the chairmanship of M. S. Angulu. The legal instrument establishing the Board was promulgated by the Act (No. 2 of 1978) of the Federal Military Government on 13th February, 1978. By August 1988, the Federal Executive Council amended Decree No. 2 of 1978. The amendments have since been codified into Decree No. 33 of 1989, which took effect from 7th December, 1989. Decree No. 2 of 1978 (amended by Decree No. 33 of 1989) empowered the Joint Admissions and Matriculations Board to:

(a) conduct Matriculation Examination for entry into all Universities, Polytechnics and Colleges of Education (by whatever name called) in Nigeria

(b) appoint Examiners, Moderators, Invigilators, members of the Subject Panels and committees and other persons with respect to matriculation examinations and any other matters incidental thereto or connected therewith.

(c) place suitably qualified candidates in the tertiary institutions after having taken into account:

(i) the vacancies available in each tertiary institution

(ii) the guidelines approved for each tertiary institution by its proprietors or other competent authorities

(iii) the preference expressed or otherwise indicated by the candidates for certain tertiary institutions and courses

(iv) Such other matters as the Board may be directed by the Honourable Minister to consider or the Board itself may consider appropriate in the circumstances.

(d) Collate and disseminate information on all matters relating to admissions into tertiary institutions or any other matter relevant to the discharge of functions of the board.

(e) Carry out other activities as are necessary or expedient for the full discharge of all or any of the functions conferred on it under or pursuant to this Decree. (Dare 2008).

The board had kept this mandate of conducting the examination over the years using the paper and pencil system but not without a lot of hitches and condemnation from other stake holders. This was now vividly clear when in 2009 University Matriculation Examination grading system of the normally reputable examination body was subject to serious controversy because the overall performance was one of the poorest on records. Much to Jamb's embarrassment, it was later revealed that the machines which optically graded the papers had erroneous answers and the JAMB changed some student's scores by as much as 15% (Ladipo et al. 2012).

Post-UME Screening Examination

The shortfalls of JAMB conducting the University Matriculation Examinations over the years with the use of the traditional paper and pen system created serious attention from the Federal Government of Nigeria through the minister of Education Mrs. Chinwe Obaji to introduce the Policy of Post-JAMB screening by universities in 2005. This policy made it mandatory for all tertiary institutions to screen candidates after their JAMB results and before giving admission using aptitude tests, oral interviews, or even another examination. The introduction of Post- UME in the Polytechnics and Universities further exposed JAMB as a body to conduct examination that will produce quality graduates.

Ogunleye (2008) reports that the Wesley University of Science and Technology (WUSTO), established by the Methodist Church Nigeria (MCN), licensed by the Federal Government in May 2007, has conducted its first UME screening. Oyedele (2008) quotes the University of Ado Ekiti Vice-Chancellor, Professor Dipo Kolawole, a well-known supporter of the post-UME test, as saying that "in the past a student will score 289, automatically he comes in, but with the Post-UME now, you find that such a student is scoring a very poor mark and cannot even write. If we desire sanitation of our educational system ... it does not make sense for anybody to be against the post-UME. If there are other built in mechanisms to purify the admission process ... it should be a welcome idea.." (Isaac 2010).

Below is the summary data on UME Malpractice and the Nature of Malpractice from Prof. Dibu Ojerinde, Jamb Registrar/ Chief Executive in a paper presented at the 35th IAEA Conference Brisbane, Australia in September, 2009.

Data on UME Malpractice and the Nature with the Use of Pencil and Paper System

S/ N	NATURE OF MALPRACTICE	2005		2006		2007		2008	
		UME	MPCE ME	UME	UME	UME	MPCE ME	UME	MPCE ME
1	No e-	1,289	185	808	86	2,006	85	1,68	102

	Registration Slip							7	
2	Absconding with Answer scripts	161	257	1,783	256	670	31	297	40
3	Spying/copying from prepared answers	6,314	3,007	3,419	217	2,362	1,604	1,187	271
4	Impersonation	226	81	216	22	253	74	152	69
5	Swapping of examination documents	248	139	455	31	144	209	45	119
6	No Registration Detail	-	-	69	-	-	-	3	-
7	Violent/Unruly to examiners	2,783	15	1,150	30	749	234	2,521	81
8	Lateness to examination hall without valid reasons	5,511	2,829	4,178	587	1,0470	256	3,549	313
9	Use of GSM phone	66	112	198	47	1,139	372	2,647	523
10	Smuggling out of Question papers/Answer sheets	974	367	601	186	257	149	860	52
11	Colluding with other candidates/examiners/external agents	8,2312	4,474	42,737	1,080	255	87	1,366	78
12	Leaving examination hall without	44	3	19	-	47	5	49	3

	permission								
13	Absent with script	2	-	2	-	4	-	2	-
14	Wide-spread cheating	41,042	11,797	50,224	1,620	591	2,700	18,437	1,740
15	Incomplete result	20,797	-	2642		30,155		25,552	
	TOTAL	161,769	23,266	108,501	4,182	49,102	5,906	58,354	3,391

Table1: Source: Jamb Registrar Speech Delivered At 35th IAEA Conference Brisbane, Australia In September, 2009.

From table1 above, it is very clear that the paper and pencil used in the conduct of the UTME by JAMB since inception has been long over due for change to a better method like the CBT. The paper and pencil method was characterised by Examination racketeering i.e., creation of special centres with the intention of assisting students during the examination, smuggling of question papers outside the hall, bribery and manhandling of invigilators, students sometimes make stray marks or messy erasures that can result in inaccurate scoring of an exam etc. This therefore necessitated the conduct of 2014 UTME with the mixed method and later conducted the 2015 UTME with only CBT because of the challenges encountered. The major question now is, how ready is JAMB to the task of conducting the examination with CBT considering the increasing number of prospective students intending to write the UTME, and the infrastructure required for its implementation?

Computer Based Testing

Computer-based testing has been called the “next frontier in testing” as educators, testing companies, and state departments quickly work to transform paper/pencil tests into technology-based formats (Thompson, 2003).

Moreover, offering different test formats and the immediate presentation of different types of feedback, either to students or testers, are also some of the great advantages of CBT

The standardization of test administration conditions is one of the benefits offered by computer-based testing (CBT). No matter what the tests’ population size is, CBT helps test developers to set the same test conditions for all participants. It also improves all aspects of test security by storing questions and responses in encrypted databases and enables testers to create randomized questions and answers from vast question pools (Saad, 2007).

There are many opportunities created when computer-based tests are used. These include more efficient test administrations, the availability of immediate results etc. In addition, computer-based testing opens up the possibility for built-in accommodations, student selection of testing options, and increased authenticity in

items that are included. Other benefits have been identified as well, so there is considerable pressure to move toward computer-based testing (Thompson, S., Thurlow, M., & Moore, M., 2003).

Methodology

The research method used in this research is based on the quantitative research methodology and it was used to analyze the views and opinions of Post Secondary School Students, which involved the use of questionnaires to explore the current trends and impact of CBT on the conduct of UTME.

The methodology as described by Black (1999) is a research methodology involving the use of structured questions (questionnaires) where the response options have been predetermined and a large number of respondents are involved.

Data Collection

This research was mainly based on primary data gathered from selected JAMB lecture houses at different locations in Edo State, Nigeria and we consider that each has about 30 to 120 students. The questionnaires were administered by teachers and proprietors of the lecture houses as it appeared to be the fastest and cheapest way of getting result from the students.

All the questionnaires sent out that go with the study, all were returned and used, making the response rate to be at a 100 percent. The participants of the questionnaire remain anonymous throughout the research as responses they provide would be untraceable and unidentifiable to the participant who provided them

Research Findings and Deductions

(i) Attitude and Views towards Computer Based Test

From the analysis of survey, about 88% of the respondents are somehow familiar with the concept and application of CBT, 9% are not sure when it comes to the concept and application of CBT. Only 5% declared that their familiarity with CBT is low. Also, 91% believe that CBT will have a major effect on the students while just 2% are not sure if CBT will have an effect.

On the importance of implementation of CBT to the respondents, 52% believe that it is very important for Students to embrace and use CBT while 44% are not sure how the implementation of CBT will be of importance to Students. Only 4% of the respondents believe that the implementation of CBT is not important.

Deduction

We can deduce that more than half of the respondents are familiar with the concept and application of CBT which goes to show that most of the respondents are already aware of what to face. This selected sample has enabled us to extend and generalize the result obtained from the survey to almost all other students preparing for UTME in Nigeria.

Also, almost all the respondents except less than 2% found that CBT will definitely have a great effect on the conduct of the examination in curbing exam malpractices and other problems associating with the paper and pencil system. This goes on to show that it is of great importance for JAMB to adopt Computer Based Test. Based on the analyses; we can conclude that students have the positive attitudes and views towards the concept and application of CBT.

(ii) Infrastructure Requirement

We categorize the basic elements of infrastructure requirements into four groups:

- Hardware and network (computers, internet, e-mail, modem, intranet and extranet etc)
- Software (standardized processes and Question bank etc)
- IT experts
- Skilled staff (in CBT)

Findings show that more 86% of the respondents believe that JAMB has the infrastructure requirement on hardware and network whereas 8% are not sure of the hardware and network available in adopting CBT. Only 6% believe that it does not have the infrastructure required.

Also, 84% believe that the board has the necessary software (Question bank) required for CBT implementation while 10% are not sure if it has the required software. 6% believe that the board does not have enough questions in a question bank to cater for all the centers nationwide for all the periods for the exam to implement CBT.

When it comes to the deployment of CBT, the availability of IT expert with necessary skills are required in order to put things right for the student when the need arises, 50% believe that the board has the needed IT expert to embrace and deploy while 42% are not sure if it has the required and needed skilled IT expert for implementation. 8% of the respondents believe that JAMB does not at all have the needed skilled IT expert required.

Following the information provided, about 60% of the respondents believe that the board has the required skilled and competent staff in CBT while only 7% of the respondents are not sure if the board has the skilled staffs required. 33% of the respondents believe that JAMB does not have the skilled staffs required for implementation.

Findings revealed that majority of respondents believed that JAMB is well equipped in terms of hardware and networking and equipped software needed for CBT implementation. Though, it was observed that IT expert could be moderately equipped from the response of the respondents.

(iii) Major Obstacle

Based on the literature and preliminary study, respondents were asked to evaluate these items accordingly:

- Economic factor.
- Security factor.
- Poor ICT culture, policy and implementation.
- Poor ICT funding.
- Power failure.
- Inadequate manpower/skills.

Findings shows that majority of the respondents believe that all of these major obstacles outline will hinder CBT adoption. They strongly agree on all obstacles but the strength of agreement slightly varied. The most important obstacles according to the respondents are listed in order of percentage below:

Economic factor - (63%)

Poor ICT culture, policy and implementation - (54%)

Security fears – (67%)

Poor ICT funding – (60%)

Power failure - (65%)

Inadequate manpower/skills – (70%)

This goes to show that these barriers are real and needs to be addressed if JAMB will need to adopt CBT effectively and continuously.

(iv) Perceived Benefits of CBT

In the final part, which is the last research question, the perceived benefits and advantages of CBT implementation were the main question asked from the respondents. To answer this question, the following benefits of CBT application was asked the respondents and they are:

(i) Curbing of Examinations Malpractice

(ii) JAMB Image promotion

(iii) Increase in reliability and efficiency

(iv) Improved administration and scoring efficiency

(v) Fast responses of result

(vi) Lower Cost as a result of elimination of shipping materials

(vii) Improved Test Security

(viii) Consistency and Reliability

Findings reveal that almost all respondents highly believed that in the case of CBT implementation, Curbing of Examination Malpractice will be a great benefit. This resulted in 90% agreement with respondents thus being regarded as the most important benefit among the top benefits. 10% are not sure if CBT implementations will Curb Examination Malpractice.

The second important benefit according to the respondent's idea is JAMB Image Promotion. About 91% of the respondents believe it is highly important to implement CBT in order to regain the confidence of stake holders in the Education industry.

The results of respondent's answers to other questions are shown below:

Increase in reliability and efficiency - 94%

Improved administration and scoring efficiency – 88%

Fast responses of result- 95%

Lower Cost as a result of elimination of shipping materials- 92%

Improved Test Security- 80%

Consistency and Reliability- 70%

Readiness to CBT Implementation

The last question in the questionnaire was designed to sum-up the respondents overall attitudes towards the implementation of CBT.

The research reveals that about 60% of the respondents believe that students are ready to embrace CBT in while 40% of the respondents are not sure if students are ready to embrace CBT application and this we believed to be the phobia to the use of Computer and ICT infrastructure.

In general, the readiness of any student adopting CBT application varies and this strictly depends on many factors surrounding the student.

Conclusion And Recommendations

Conclusion

The application of CBT can either be a challenge or even become a threat to JAMB considering the enormous task of CBT, i.e., staff training on ICT, infrastructure required and the large number of prospective students.

The adoption of CBT technology is one that is necessary in any examination process and for Joint Admission and Matriculation Board especially in obtaining a competitive leading and being able to compete with global educational institutions. It can be confirmed that from the related studies and the research findings that CBT not only serves on benefits and opportunities, it also brings a number of barriers if the technology is to be adopted successfully. Also we observed that CBT adoption will be a great opportunity for JAMB as a means of improving the standard of Education in Nigeria, stake holder's trust with good quality students that can defend their scores when the need arises.

The challenge before JAMB is enormous especially with some issues and questions that need to be addressed; Computer malfunctioning mid way into the examination, fixing of exam in the early hours (6am) in one of the sessions making students to leave homes at risk before 6am to be at the venue and most time not within reach of the students, delay in the start of exam thereby overlapping to the next session etc. The Infrastructure required for the implementation of CBT is enormous and it is our concern and believes that the credibility and integrity of private firms partnering with JAMB in the process should not be compromised.

Recommendations

In other to extend the present research, it is worthy to note the limitation of this study and its findings. Thus it is recommended that this research be repeated again to compare with a post-implementation study.

The Federal Government should as a matter of urgency put policy in place to make it mandatory for Secondary schools to practically teach students on the use of Computer in order to have the skills that can remove the phobia of students towards Computer.

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