

Perceived effectiveness of computer-based test examination mode for large classes among undergraduates of Nigerian Universities: Implications for social work

Samuel O. Ebimgbo¹, Ngozi J. Igwe², & Agnes E. Okafor³

^{1,3}Department of Social Work, University of Nigeria, Nsukka
²Department of Adult Education, University of Nigeria, Nsukka

Abstract

Conducting examinations of large classes is one of the challenges facing Nigerian universities, especially when it involves pen-paper mode. The challenges include examination malpractices and influencing examination grading. This study sought to ascertain the perception of University students on the effectiveness of computer-based tests for large classes. Questionnaire (151) and In-depth Interviews (12) were used to collect data from students of the University of Nigeria, Nsukka. The data were analyzed using quantitative and qualitative methods. Findings revealed that computer-based tests have helped to reduce stress, missing scripts, and examination malpractices. The course of study and adequate knowledge of computers influences views on the effectiveness of computer-based test examination for large classes. However, power and software failure, and insufficient time, challenge the use of computer-based tests. Nigerian universities should pave the way for the full integration of computer-based tests in all examinations. Social workers have an important role to play in this transition, through advocacy and mediation.

Keywords: computer-based test, paper-based test, information communication technologies, social work, undergraduate students.

Introduction

Acquiring knowledge is one of the distinctive features as well as fundamental social achievements of human beings (Sarkar, 2012). In line with the Sustainable Development Goals (SDGs) number four which reiterates the need for access to higher education (United Nations, 2015), students all over the world usually undergo series of examinations to assess their level of intellectual ability and capacity. In many countries, the predominant mode of assessing students' learning ability is the traditional mode of Paper-and-Pencil Test (PPT) method. However, whenever examinations involve a large number of students using the conventional PPT method of assessment, serious flaws seem to be experienced. Such flaws include examination malpractices like possessing unapproved documents during examination, duplicating likely answers on some materials such as currency notes and identity cards, copying from other candidates' answer scripts, exchange of answer scripts, and tampering or influencing the examination grading (Khoshsima & Hashemi Toroujeni, 2017; Nwoke, Osuji & Agi, 2017; Oladimeji & Mwuese, 2018). Others include gross mistakes from

teachers and students, excessive cost, and time involved (Khoshsima & Hashemi Toroujeni, 2017; Simin & Heidari, 2013). Thus, the introduction of the Computer-Based Test (CBT) through Information and Communication Technologies (ICT) application in higher institutions has led to changes in the way academic institutions carry out their activities especially in the teaching and learning process as well as monitoring of students' progress through periodic assessment.

In recent years, the world has experienced tremendous interest in the use of CBT in academic activities including students' assessments (Hashemi Toroujeni, 2016; Yan Piaw, 2012). The CBT has enabled most American Universities as well as the Bologna University in Germany to not only administer examinations but manage academic courses (Bandari, 2014). In Australia, the approval of CBT testing enables students' guardians to access the student's performance and other academic-related activities, also allows teachers to assist any student who is not performing as expected (Kobal & Jiang, 2018). Despite trailing developed nations in adopting CBT both in teaching and learning, some African countries like South Africa and some North African countries including Morocco, and Algeria are leading the way in integrating ICT in their education activities because of the considerable development they have achieved in information and communication technology (Law, Pelgrum & Plomp, 2008). Other counties like Cameroon, Ghana, Mauritius, and Botswana who are currently undergoing stable economies are equally making ICT a priority in their academic activities (Bandari, 2014).

In Nigeria also, despite the novelty in the use of ICT in academic activities, educators have started advocating for the maximum integration of ICT in all education activities because of its capacity to produce students with global relevance especially in competing demands associated with workplaces and other spheres of life. Thus, Nigerian higher institutions such as Universities and Polytechnics as well as post-primary schools have integrated the use of CBT as a means of assessing students' performance (Ajinaja, 2017). This is premised on the ability of ICT to expose students to different opportunities and challenges brought by the digital world. The use of CBT, therefore, prepares students to participate reasonably and favourably in the face of these development challenges (Samson & Okon, 2015). This will enhance to a large extent the prospect of achieving the SDGs which focus on allowing everyone to attain a higher level of learning (United Nations, 2015).

Studies have found that factors such as gender (Okocha, Toluwani & Owolabi, 2017; Samson & Okon, 2015; Sanni & Mohammad, 2015), course of study (Sanni & Mohammad, 2015), place of residence (Okocha, Toluwani & Owolabi, 2017; Ubulom & Wokocha, 2017), and computer literacy (Adegun, Akinola, Adepoju & Kolajo, 2018; Agah, Ogbeche & Okorie, 2016; Faniran & Ajayi, 2016; Jimoh, Shittu & Kawu, 2012) influence views on acceptance of CBT. Regarding interest in and acceptability of CBT by students, Okocha, Toluwani and Owolabi (2017) sampled the opinions of 168 students and discovered that over 95% of them were in favour of using CBT for examinations and tests. Also, Olafare, Akinoso, Omotunde and Annene (2017) revealed that students perceived CBT as a useful, easy-to-use, and credible mode of examination. Other studies have also shown that students prefer the CBT mode of examination to PPT (Boevé, Meijer, Albers, Beetsma & Bosker, 2015; Faniran &

Ajayi, 2016; Hosseini, Abidin & Baghdarnia, 2014; Sanni & Mohammad, 2015; Tella & Bashorun, 2012).

However, several challenges were found to be associated with the CBT mode of examination in the literature. A study by Oladimeji and Mwuese (2018) revealed that among students of Olabisi Onabanjo University, Ogun State, Nigeria, loss of network connection, insufficient time allocated for the examination, computer malfunction in the process of examination are prevalent challenges in CBT. Furthermore, Onyibe, Nwachi-Ikpor and Abdulhakim (2015) aver that one of the challenges of CBT is the gross inadequacy of ICT infrastructure in the country. In Ilorin, the narratives by Tella and Bashorun (2012) revealed that slow network affects the use of CBT in Nigerian universities while Alabi, Issa and Oyekunle (2012); Joshua and Ikiroma (2013); Nkwocha, Akanwa and Nkwocha (2015); Oladimeji and Mwuese (2018) observed that system or network failure and insufficient time constitute impediments to effective use of CBT. These challenges experienced by students during examinations involving the use of CBT could endanger the vision of the United Nations to provide a learning opportunity for every citizen. Thus, the intervention of social work professionals becomes imperative to ensure that these challenges associated with CBT are adequately addressed.

The major concerns as envisaged by SDGs are captured in the principles and values of the social work profession. Thus, the context and content of social work values and principles have given the profession befitting status across the globe (Kumar, 2018). Social workers promote social change and the general development of people, their communities, and their environments as well as the empowerment of people. They promote conducive environments required for the fulfillment of people's needs by engaging opposing structures that pose threats to goals and aspirations (International Association of School of Social Work [IASSW] & International Federation of Social Work [IFSW], 2014; National Association of Social Workers [NASW], 2017). In the international domain, social work professionals have been active in influencing global agenda that have been crucial to societal development (IFSW, 2012). Though the role of social work has been well recognized and understood in various universities across the globe, such interventions have special relevance for universities in low-middle income countries (LMIC) like Nigeria which are confronted with scarce resources and poor infrastructural facilities including CBT facilities.

The PPT mode of examination that is prevalent in many Nigerian universities has recorded copious flaws as articulated by (Khoshsima & Hashemi Toroujeni, 2017; Nwoke et al., 2017; Oladimeji & Mwuese, 2018; Simin & Heidari, 2013). To a great extent, these irregularities associated with the PPT mode of examination are capable of retarding the development and aspirations of students through denial of potential grades and results, late submission of results, among others. Thus, social workers are stationed to deal with these several impediments between students and their social environments which can potentially increase distress, affect their abilities to fulfil several life tasks, and realise their aspirations and values (Parmar, 2014). Through advocacy and mediation, social workers can influence changes in some of the existing structures that contribute to students' poor development.

Modernization theory developed by Cowgill and Holmes (1972) was adopted to structure the study's theoretical framework. The theorists proposed that modernization is an important factor in transforming society and its activities from primitive to new ways of life. Modernization theory reiterates that the adoption of more modern practices is responsible for the development of traditional societies. The developments experienced in the area of science and technology have altered the mode of education including teaching, learning, and examination across the globe. Before the introduction of modern technology in the education system, the predominant mode of assessing students' learning ability in most countries has been the traditional paper-and-pencil assessment method. However, scholars like Khoshsima et al. (2017); Nwoke et al. (2017); Oladimeji and Mwuese (2018) have revealed associated flaws with the traditional PPT mode of assessment such as examination malpractices and influencing examination scores. Also, Khoshsima & Hashemi Toroujeni (2017); Simin and Heidari (2013) found that gross mistakes from lecturers and students, excessive cost, and time involved equally characterized the PPT mode of assessment. These flaws are likely experienced whenever an examination of large classes is involved. Thus, the introduction of CBT which represents a modern and current way of examining students substituted the traditional Pen and Paper (PNP) format (Bennett, 2015). The usefulness of CBT in examinations that involve a large number of candidates across the globe has been documented in the literature (Fagbola, Adigun & Oke, 2013). Scholars have found that the University of Ilorin in Nigeria adopted the use of CBT mode of examination to enable them to conduct examinations of large classes such as General Studies (GNS) and Post UTME examination (Alabi et al., 2012; Olumorin, Fakomogbon, Fasasi, Olawale & Olafare, 2013).

The CBT system has been adopted in many Nigerian universities as the mode of conducting examinations. The University of Ilorin and Covenant University were the first to integrate CBT in their examination systems. Following the adoption of CBT by these universities, other universities across the country including the University of Ibadan, Obafemi Awolowo University, Ile Ife, National Open University of Nigeria (NOUN), Federal University of Technology, Minna, University of Lagos, started implementing the CBT in assessing their students (Ajinaja, 2017). At the University of Nigeria Nsukka, CBT was introduced on the 15th of January 2018 with the intention that all examinations with over 250 students must be conducted through CBT. The CBT mode of examination was first adopted with first-year students which aided the university in graduating more students by reducing the problem of missing results, late submission of results, and missing scripts. It was based on this development that the administrator saw the need to continue the use of CBT mode of examination (Ozumba, 2018). This study, therefore, sought to investigate the effectiveness/appropriateness of CBT from the perspective of students. The specific objectives included: 1) Ascertain the views on CBT mode of examination. 2) Assess the challenges of CBT. 3) Identify factors that influence views on the effectiveness of CBT. 4) Explore the role of social work professionals.

Material and methods

Study setting and population

The study adopted a cross-sectional design to enable the researchers to generalize data from the entire population from the selected study sample. The study was conducted

at the University of Nigeria, Nsukka (UNN) which is a federal university located in Enugu State, Nigeria. UNN was founded in 1955 and formally opened in 1960 and currently operates 102 academic departments across 16 faculties. The Department and Faculties cut across two main campuses: Nsukka and Enugu campus (UNEC). About 10 faculties namely: Agriculture, Arts, Biological Science, Education, Engineering, Pharmaceutical Sciences, Physical Sciences, the Social Sciences, Vocational Teachers Education, and Veterinary Medicine are domiciled within Nsukka campus while five faculties namely: Business Administration, Dentistry, Environmental Studies, Health Science and Technology, Medical Sciences and Law are within the Enugu campus. The target population at the time of the study included all the regular and registered undergraduate students of the University of Nigeria, Nsukka. The students' population is made up of 16462 males and 16979 females making a total population of 33,441 (University of Nigeria Nsukka, 2018).

Study sample and sampling

For a high level and comprehensive understanding of the topic under study, a mixed-method approach was adopted. Probability and non-probability (cluster, simple random, purposive, and accidental) sampling were adopted to select 163 participants for the study. Nsukka campus was purposively selected because it housed more faculties than the Enugu campus. This enabled the researchers to sample opinions from diverse faculties within the institution. The researchers clustered UNN into nine faculties (Arts, Agriculture, the Social Sciences, Biological Sciences, Physical Sciences, Engineering, Veterinary Medicine, Education, and Pharmaceutical Sciences) and adopted simple random sampling to select four faculties for the quantitative study. The selected faculties were Education, Biological Sciences, Pharmaceutical Sciences, and Social Sciences. Except for the Faculty of Biological Sciences, where 37 participants were selected, 38 participants were selected from the Faculty of Pharmaceutical Sciences, 38 from Education, and 38 participants from the Faculty of the Social Sciences through accidental sampling.

The consent of the participants to be included in the study was sought before the study and assurances of confidentiality were given to them. Out of 163 students, we approached, only 12 students declined to participate in the study as a result of their numerous academic engagements. Thus, a total of 151 participants were selected for the quantitative study.

For the qualitative study, the Faculty of Physical Sciences and Faculty of Arts were selected to complement the responses from the quantitative study. In all, 12 participants (six males and six females) were selected through accidental sampling.

Data types and source

Data for the study was collected using a questionnaire and In-depth Interview (IDI) schedule. About 38 questionnaires were administered in the Faculty of Biological Sciences, 38 were equally administered in the Faculty of Education, and 38 questionnaires were administered in the Faculty of the Social Sciences while 37 were administered in Biological Sciences. With the help of three trained research assistants who were students of UNN, the questionnaires were administered in these selected faculties. The questionnaire was structured into two parts which include demographic

characteristics such as sex, marital status, course of study, level of study, monthly stipend, etc. while the second part of the questionnaire contained questions on the CBT.

For the qualitative study, the lead researcher moderated the interview while the second researcher served as a recorder and note-taker. The IDI schedule contained unstructured questions which permitted the researchers to generate more questions that were not initially included in the interview but still addressed the scope of the study. Each contact was structured to last for about 30 minutes. The study's instrument and methodology were approved by the Ethical Review Board of the University of Nigeria, Nsukka,

Data analysis

The data collected through the questionnaire was analyzed using the Statistical Package for the Social Sciences (SPSS). Frequency tables, percentages were used to code and analyze data from the questionnaire while Chi-Square (χ^2) was used to test the relationship between the independent variables such as sex, income, level of study, etc., and dependent variable at < 0.05 level of significance. On the other hand, the qualitative data were analyzed using thematic analysis. The audio-taped narratives were transcribed into English since the English language was used during the discussion. The researchers on separate timing read the analysis of transcripts several times to identify, and generate some recurring themes in which the final findings for this study were reported.

Results

Demographic information

The analysis of quantitative data shows that a greater percentage of the participants (53.6%) were females while a vast majority of the participants (92.1%) were still single as at the time of the study. The result shows that over 50% of the participants receive less than ₦20,000 monthly while over 46% were in 200 levels of study. Over 92% belong to the Christian faith while 72.8% reside outside the campus.

Going further, the background characteristics of the participants for the qualitative study shows an equal number of both male and female participants. The ages of the participants ranged from 18 years to 26 years. Only 3 participants were found to be living in the hostel at the time of the study while 9 participants were living outside the campus.

Views on the CBT mode of examination in Nigerian Universities

The finding of the study shows that over 68% of the participants indicated that CBT is reliable (see Table 1). Supporting the finding, Jerry, a 200-level male participant from the Faculty of Arts y said, "I prefer CBT because it is a more reliable way of conducting examination". Also, Ego, who is a female participant and a 400-level student from the faculty of the Physical Sciences said, "I have undergone CBT examination before and I feel is reliable and a flexible means of examining with all the necessary measures considered". An opinion of a male participant was captured in the quote:

CBT is a good form of examination, it is reliable and stress-free, most times. The lecturers repeat their questions, so all the students need to do is read the

past question paper. So, in essence, what I am saying is that CBT has benefits students (**300 level students of physical sciences; age 20 years**).

Table 1
Participants' views on the CBT mode of examination

Issues with CBT	N= 151	%
<i>Views on CBT</i>		
Reliable	104	68.9
Unreliable	47	31.1
<i>Effectiveness of CBT</i>		
Has helped to conduct large examination	144	95.4
Has not helped to conduct large examination	7	4.6
<i>Areas CBT has helped</i>		
Reducing malpractice	58	40.3
Reducing time	21	14.6
Reducing missing result	24	16.7
Reducing missing script	41	28.5
<i>Preference of mode of examination</i>		
CBT over Pen and paper	96	63.6
Pen and paper over CBT	55	36.4

Source: *Fieldwork, 2019*

The analysis shows that 95.4% of the participants indicated that CBT has helped in conducting a large class examination. The finding was also supported by the responses from the qualitative study. For instance, Jane, a 23 years old female participant and a 400-level student from the Art faculty said:

In my view, I would say that CBT helps conduct an examination, especially when it has to do with all these GS and faculty examinations. It saves both lecturers and students the stress of writing for a long time and also marks large scripts most times which might result in the missing script like how the first speaker rightly pointed out.

Also, the view of Joy, a 300-level student from the Art faculty supported the expressed view but in a different way.

CBT is very helpful like I said earlier because conducting exams in this school would still be difficult because of the large number of students. The point that I am trying to make here is that when a large number of people use CBT mode to write the exam, it reduces the stress of marking by the examiner, and students don't stress themselves in writing for a long time.

Furthermore, the analysis of the study shows that 40.3% of the participants indicated that CBT has helped in reducing examination malpractice. Also, over 28% indicated that CBT has helped in reducing missing scripts. The finding of the study is in agreement with the finding of a qualitative study. A female participant, Ann who is in 400 level of study from the faculty of Physical Sciences and 23 years of age reflected: CBT is beneficial in the area of checkmating examination malpractices because the questions are reshuffled; your neighbor's question format is not always the same as you. That way it makes students not to be co-dependent on their neighbor during the examination.

A female participant, Ifeoma who is in 100 level of study from the faculty of Physical Sciences said:

Well, Ummm I feel that the use of CBT as a means of writing and conducting the examination is better because unlike writing with biro and paper, it reduces the risk of missing script, for instance, my sister that is in her third year, after writing one of her departmental courses, the result came out, but she couldn't find her reg number on the result sheet. After making inquiries, the lecturer said that he couldn't find her script, but her name was on the exam attendance. She had no choice but to rewrite the course. But in the CBT exam this type of thing does not occur, so for me, I will say CBT is good.

Regarding the preference to the mode of examination, over 63% of the participants indicated that they prefer CBT over PPT as shown in table 3. However, in our qualitative study, there were diverse opinions concerning preference to the mode of examination. While some people indicated that they prefer CBT to PPT, others noted that they consider PPT over CBT. For instance, Agbo, who is a 400-level male student from the faculty of Art and aged 26 said:

CBT is a good form of examination; I wish that the school management will make all the courses to be CBT examination so that we won't be wasting time in the exam hall. Me personally, I no dey like dey exam hall, I dey like fast fast something.

Also, Ifeoma, an 18-year-old 100 level student of Physical Sciences said:

hmmm CBT all the way my dear oo, I cannot come and kill myself for UNN (chuckles). I prefer CBT because it's easier and once you read, you will pass and it doesn't take time, sharp sharp you are done.

On the contrary, other responses from the study's participants which indicate their preferences of PPT over CBT are equally expressed. One of the participants, Ifesi, a 21-year-old female student from faculty of the Physical Sciences said:

I prefer the paper-pen test (PPT). It gives room for expression of oneself; also, you have an option to choose the question you are comfortable to answer. In PPT you get to answer three questions out of six or four questions out of six. In PPT even if you don't know the answer, just by attempting the question, you might write what is related to the answer, but in CBT if you don't know the answer, you don't know it.

Another 20-year-old male student from physical science:

"I prefer PPT and CBT. Both of them are effective in testing and evaluating students. CBT is stress-free and saves time while PPT makes students work hard for their grades. CBT however reduces exam malpractice and missing script, but also students miss their exam due to impromptu change in exam date and time. (Emeka).

Challenges of CBT in UNN

Our findings further revealed that over 59% of the participants indicated that insufficient time is one of the challenges of CBT while over 49% indicated system or software failure as shown in Fig. 1. These findings from the qualitative study support the finding. According to a 200-level male student from the faculty of Physical Sciences, "CBT is very annoying especially when there is no enough time and the system also starts hanging, it will like if the world is ending. I have been a victim of that so many times". Another male participant, Goddy from Physical Sciences who was in 100-level of study as at the time of the study, "seriously, more time should be allocated or better, the time should tally with the question, then the system should be upgraded to accommodate the number of students writing the examination to avoid hanging system". The view of Amadi, a 400-level male student from the faculty of Art was captured in the quote:

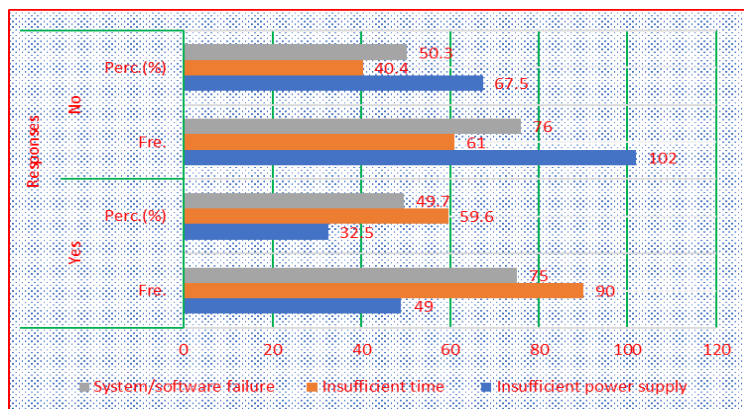


Fig. 1 showing participants' views on the challenges of CBT

Source: *Fieldwork 2019*

The problem of CBT, hmmm. Well for me I have not experienced anyone personally, but the last CBT exam that my friends wrote they were complaining of their system hanging; they said that the system or network was slow and because of that their questions were not loading fast. But like I said, me I have not experienced any of these.

Jane who is a 400-level student from the Art faculty stated:

For me, I suggest that more time should be added or rather, the number of questions the lecturer set should at least tally with the amount of time they give for the exam, that way students can read and understand the questions they are answering.

Finally, the opinion of Emeka, a male participant from the Faculty of Physical Sciences was reflected:

For me, I would say that limited time to answer a lengthy or bulky question. Most times you will see the lecturers will set something like a hundred (100) questions to answer in thirty minutes (30) or forty (40) minutes, this very annoying because the students won't have enough time to answer to read, understand and answer the question, this is the reason a lot of students fail CBT exams.

Factors that influence views on the effectiveness of CBT used in Nigerian Universities
This section explains the relationship between some selected factors that influence views on the effectiveness of CBT as presented in Table 4. The section was completed by re-coding some variables for easy comprehension. For instance, Faculties of the Social Sciences and Arts were Art-related courses while Biological Sciences and Pharmaceutical Sciences were recoded as Science-related courses. Also, those who earn below ₦20,000 were regarded as low-income earners. From the analysis, the only course of study and computer knowledge show a significant relationship on views of about effectiveness of the use of computer-based test examination mode for large classes among undergraduates of Nigerian Universities. About 71.9% and 72.6% of the participants who are studying Science-related courses and have adequate knowledge of computers perceived CBT use for the large classes as effective.

Table 2

Factors that influence views on the effectiveness of CBT

Variables	Effective Freq. (%)	Ineffective Freq. (%)	Total	χ^2
<i>Sex</i>				
Male	50(71.4)	20(28.6)	70(100.0%)	0.430
Female	53(65.4)	28(34.6)	81(100.0%)	
Total	103(68.2)	48(31.8)	151(100.0%)	
<i>Course of study</i>				
Science-related	82(71.9)	32(28.1)	114(100.0%)	0.009*
Art-related	21(56.8)	16(43.2)	37(100.0%)	
Total	103(68.2)	48(31.8)	151(100.0%)	
<i>Income level</i>				
Lower-income	53(69.7)	22(30.3)	41(100.0)	0.685
Higher-income	50(66.7)	25(33.3)	75(100.0)	
Total	103(68.2)	48(31.8)	151(100.0)	
<i>Computer Knowledge</i>				
Adequate knowledge	82(72.6)	31(27.1)	113(100.0%)	0.048*
Inadequate knowledge	21(55.3)	17(44.7)	38(100.0%)	
Total	103(68.2)	48(31.8)	151(100.0%)	
<i>Place of Residence</i>				
Within the campus	31(75.6)	10(24.4)	41(100.0)	0.233
Outside the campus	72(65.5)	38(34.5)	110(100.0)	
Total	103(68.2)	48(31.8)	151(100.0)	

Source: Fieldwork 2019

Discussion

Our study ascertained the views of students on the use of the computer-based mode of examination for large classes in Nigerian universities. From the study, several findings were made. The findings revealed that majority of the participants indicated that CBT is a reliable means of conducting an examination. Over 95% of the participants equally indicated that CBT has helped in conducting large class examinations. The narratives from the qualitative study equally show that CBT is an effective mode of conducting examinations especially when it concerns large classes. The findings corroborate the findings from other studies such as Olafare et al. (2017) who found that students of Covenant University, Kogi State University, University of Ibadan, and University of Ilorin perceived CBT as a useful, easy-to-use, and credible mode of examination. Therefore, social workers through advocacy should press for the possible eradication of PPT to pave way for the adoption of CBT in all forms of students' assessments in Nigerian universities.

The study further revealed that 95.4% of the participants indicated that CBT has helped in conducting large class examinations. Also, IDI narratives show that CBT has aided in conducting examinations that involve large classes. The study revealed that CBT has been relevant in curtailing examination malpractice; saving both the lecturers and students the stress of writing for a long time and also marking large scripts which in many cases culminate in missing scripts. The finding is in tandem with the modernization theory which shows the impact of modernization in transforming the primitive ways of societal activities into more modern ways (Cowgill & Holmes, 1972). The adoption of the traditional PPT assessment method in large classes was characterized by many flaws including examination malpractices and tampering or influencing the examination grading (Khoshsima & Hashemi Toroujeni, 2017; Nwoke et al., 2017; Oladimeji & Mwuese, 2018); mistakes from teachers and students, excessive cost, and time-consuming (Khoshsima & Hashemi Toroujeni, 2017; Simin & Heidari, 2013). The study by Fagbola et al. (2013) revealed that the CBT mode of assessment has been very useful in evaluating large students in various institutions across the world. In the University of Ilorin, Nigeria CBT mode of examination was adopted to enable the institution to conduct examinations of large classes such as General Studies (GNS) and post UTME examination (Alabi et al., 2012; Olumorin, Fakomogbon, Fasasi, Olawale & Olafare, 2013). The introduction of CBT mode of examination has led to reduction of mistakes either from the teaching staff or the students, save the lecturers' time and cost in supervising and marking (Khoshsima & Hashemi Toroujeni, 2017; Simin & Heidari, 2013). In the same vein, Khoshsima and Hashemi Toroujeni (2017) found that CBT has helped to reduce any form of examination malpractice, reduce errors experienced in scoring, as well as reduce stress for both the staff and students. This study, therefore, suggests the need for integrating CBT in all examinations in Nigerian Universities irrespective of the number of candidates that are involved. By this, some of the irregularities such as missing and untimely publishing of results, favouritism, etc. will be curtailed. Social workers should liaise with school authorities or administrators to ensure that the CBT mode of examination is adopted in Nigerian universities to reduce some of the irregularities experienced using the PPT mode of examination.

The findings of the study also revealed that over 63% of study participants indicated that they prefer CBT to PPT mode of examination. Although, the narratives from the qualitative study show variations regarding the preference for a mode of examination. Some of the participants indicated that they prefer CBT over PPT while other participants said that they prefer PPT over CBT. Students' preference of PPT to CBT might be connected to student's lack of computer knowledge or anxiety about computer operation while maintaining the development occasioned by modernity could inform the preference of CBT by some students over PPT mode of assessment. Similarly, other findings such as Boevé et al. (2015) revealed that in the Netherlands, about 50% of students indicated that they preferred PPT to CBT while a quarter revealed that they preferred CBT to PPT. Also, in South Africa, Faniran and Ajayi (2016) found that the students prefer CBT to PPT while Hosseini, Abidin and Baghdarnia (2014) found that the Iranian students preferred PPT over CBT. Other studies such as Sanni and Mohammad (2015); Tella and Bashorun (2012) revealed that students consider CBT mode of examination over PPT. Also, in Kwara State, the study by Okocha, Toluwani and Owolabi (2017) revealed that the students are interested in using CBT for examinations and tests. The preference of CBT to PPT by the students suggests the student's quest to achieve the best of academic records which will enable them to compete favourably in the global environment. Therefore, there is a need for social workers to vigorously advocate for the eradication of the PPT mode of assessment to pave way for the CBT mode of assessment.

From the finding of the study, about 59.6% of the participants indicated that the CBT mode of examination is challenged by insufficient time while over 50% indicated that system or software failure affects the effective use of CBT used in Nigerian universities. The narratives of our qualitative study further revealed that CBT could be very annoying especially when there is insufficient time and the system (software) develops faults. In agreement with other findings from scholars such as Oladimeji and Mwuese (2018) revealed that among the students of Olabisi Onabanjo University, Ogun State, Nigeria, the identified challenges of CBT include loss of network connection, insufficient time allocated for the exam, computer malfunction mid-way into the exams. Also, Onyibe, Nwachi-Ikpor, and Abdulhakim (2015) also found that one of the challenges of CBT is the gross inadequacy of ICT infrastructure in the country. In Ilorin, Tella and Bashorun (2012) found that a slow network affects the use of CBT in Nigerian universities. Several other authors like Alabi, Issa and Oyekunle (2012), Joshua and Ikiroma, (2013), Nkwocha, Akanwa, and Nkwocha (2015) have found that network failure, pose a major challenge to effective use of CBT by Nigerian students while Oladimeji and Mwuese (2018) found that system or network failure and insufficient time challenge the use of CBT in Nigerian universities. The study, therefore, suggests that students should be given adequate time to complete their examinations. This will help to manage anxieties associated with CBT examinations. Also, the ICT management unit should ensure the adequate functioning of both the hardware and software components of the computer to enable students to complete their examinations without interruption. This could be achieved by test running the systems before the examination; also, ICT maintenance teams ought to be on standby to assist students in fixing their systems whenever they experience any difficulty.

Our study equally identified several factors that influence the views of Nigerian students regarding the effectiveness of CBT used in examining larger classes. Among these factors is a course of study and knowledge of computer operation. The result revealed that among the participants who stated that CBT is effective in examining with large classes, 71.9% are studying science-related courses while 56.8% are studying art-related courses. The findings corroborate the finding of Sanni and Mohammad (2015) who found that students' faculty influences the views on the use of CBT. Equally, the results revealed that among participants who stated that CBT is effective in examining with large classes, 72.6% have adequate knowledge of computer operation while 55.3% have inadequate knowledge of computer. These findings conform to other studies such as Okocha, Toluwani and Owolabi (2017) which revealed that basic computer knowledge is required by the students to enable them to undertake CBT examination. Thus, the need for students to be trained in the use of computers is very paramount. In Ogbomoso, Oyo State, Adewole, Olugbenga, Olusegun and Kolajo (2018) found that a significant number of students reiterated their familiarity with computer operation which was one of the major reasons for their adequate knowledge of CBT. Therefore, there is the need for the Nigerian government at all levels to enforce policy on computer literacy for all Nigerian students especially at the primary and secondary levels of education to enable every student to have adequate knowledge of computers, develop competency and skill needed to undergo CBT.

Conclusion

The study ascertains the views of students on the effectiveness of the use of computer-based test examination mode for large classes in Nigerian universities. CBT was introduced in various universities across the globe as a result of some limitations associated with the conventional PPT mode of examination. These limitations include examination malpractices, missing results, and scripts, etc. The findings of the study show that the CBT mode of examination has aided in conducting examinations that involve a large number of students. CBT has helped to reduce the experience of missing scripts, examination malpractices, and despicable experiences by the students. The finding also revealed that some factors such as a course of study and having adequate knowledge of computer influence views on the effectiveness of the use of CBT examination mode for large classes. Several challenges such as power and software failures as well as insufficient time allocation affect the effective use of CBT in Nigerian Universities.

The findings of the study have important implications for interventions for both the university authorities as well as social workers. The administration of Nigerian universities should make a swift move to eradicate the traditional and manual method of paper-based examination to pave way for full implementation of CBT examination in Nigerian universities. The interventions of social workers hinge on ensuring that the challenges of CBT mode of examination like inadequate timing, system or network failure, among others experienced in Nigerian Universities are ameliorated through proper engagement with university management. Despite making important findings by the study, some limitations were recorded by the study. Among the limitations is assembling the opinion of the students in the narrative without the views of lecturers.

We recommend that a similar study should be carried out to capture the opinion of the academic staff on the use of CBT mode of assessment.

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