

**AVAILABILITY AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) FOR MANAGING EXAMINATION MISCONDUCT IN PUBLIC UNIVERSITIES IN SOUTH-EAST NIGERIA.**

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**Abstract**

This study investigated the availability and utilization of ICT for managing examination misconduct in public universities in South-east Nigeria. Four research questions guided the study and four hypotheses were tested at 0.05 level of significance. Descriptive survey research design was adopted for the study. The population of the study was 8,121 lecturers in ten public universities in South-east Nigeria. A sample of 615 lecturers was drawn using simple random sampling technique. Data were collected using a questionnaire of 26 items developed by the researchers and titled "Availability and Utilization of ICT for Managing Examination Misconduct Questionnaire (AUICTMEMQ). It was validated by three experts who are lecturers from the Faculty of Education, Nnamdi Azikiwe University, Awka. Reliability indices obtained were as follows; section A, 0.78, section B, 0.89, section C, 0.79, and section D, 0.89. The overall reliability of the four sections of the instrument was 0.84. Data were analyzed using percentages for research question one and mean for research questions two, three and four. Chi-square was used to test hypothesis one while t-test was used to test hypotheses two, three and four. The findings revealed that the three listed ICT devices and services are available in public universities in South-east Nigeria. The study found that Computer Based Test (CBT) can be used in managing aspects of examination misconduct such as: curtailing exchange of answer sheets, eliminate snatching of question papers and taking away of answer scripts from the examination halls during examination. Furthermore, CBT can be utilized to reduce manipulation of students' scores by lectures after examination and reduce access to examination questions before the examination. The study also found out that there is a significant difference in the mean responses of lecturers in federal and state universities on the availability of ICT services in public universities in South-east Nigeria. Based on the findings of the study, it was recommended among others that, to effectively utilize CBT and CCTV in managing examination misconduct, alternative power source should be made available by the government and university authorities. There is no part of the country that can boast of steady power supply, as a result, government and university authorities should provide an alternative power source to be able to provide steady power for effective utilization of these ICT devices.

**Keywords:** availability, utilization, information and communication technology, ICT, examination misconduct.

## Introduction

The present era of globalization and Information and communication Technology (ICT) calls for individuals and institutions to adapt and readapt to inevitable changes in utilization of ICT. Such changes include integration of computer education in the educational system, application of ICT in performing human daily activities and becoming ICT compliant which involves the ability to use ICT by individuals and institutions for various purposes such as taking examination and monitoring the conduct of examinations.

Examination According to Kelly (2010) is a test of capacity and knowledge and has become a major and universal means to assess achievement. It is an assessment through which students are evaluated to find out the quality of knowledge they have acquired within a specified period. The outcome of these examinations are used to determine learners' abilities and difficulties, and teaching method effectiveness (Bello, Kolajo & Uduh 2010). Proper conduct of examination is a critical factor in the realization of educational objectives. Failure to conduct examination properly will lead to non-achievement of educational objectives. More so, the high expectation and the huge resources (human and materials) invested in education call for accountability which examination provides.

Success in examination is perceived as one of the major achievement in education. However, Emaikwu (2012) posited that in recent times, school examinations have been bedeviled by misconduct and malpractices. Students are desperate in achieving success in examinations even without reading their books. This has led many students into examination misconduct of various forms.

Examination misconduct is any action carried out by some stakeholders such as educational administrators, teachers, parents or students that is likely to render the assessment or examination ineffective or useless (Bruno & Obidigbo, 2012). Over the years, several ways of cheating in examinations at all levels of education have been prevalent and have caused a lot of grief to some educational stakeholders. Examination misconduct is an illegal behaviour or attitude which a student engages in, before, during or after examination in order to attain success (Adegoke, Nsisong & Okorodudu, 2013). Examination misconduct have reduced some students' urge to read for examination, because, they believe that they will cheat when the examination comes. Examination misconduct seems to have assumed an alarming rate at the higher level of education. Many patriotic Nigerians are disturbed by this trend since it has reached a stage where certificates obtained from education institutions in Nigeria may not be recognized by other countries (Annan, 2010).

In order to deal with the menace of examination misconduct in Nigerian educational system especially in tertiary institutions, some tertiary institutions in the country have set their own sets of examination rules and regulations published in examination answer sheets and students' handbooks. The handbooks are given to students during admission process to put them

on the right pedestal for academic hard work. The sanction for malpractice in Nigerian tertiary institutions ranges from suspension, expulsion, withdrawal, repeat to award of “F” in the course depending on the degree of the examination malpractice (Akanni & Odofin, 2015).

External examinations such as Unified Tertiary Matriculation Examination (UTME) conducted by Joint Admission Matriculation Board (JAMB) and Senior School Certificate Examination (SSCE) conducted by West African Examination Council (WAEC) and National Examination Council (NECO) were established to monitor examination taken by candidates going into tertiary institutions. Onabanjo (2006) argued that all measures aimed at managing examination misconduct in schools seem to have failed.

However, technologically, it would be relatively possible to minimize examination misconduct in schools and institutions of higher learning if various hi-tech Information and Communication Technology (ICT) equipment are employed. This is because, the massive application of Information and Communication Technology (ICT) in Nigeria has added new dimensions to the forms of examination misconduct engaged in by students.

According to Ofodu (2010), ICT is an electronic or computerized devices assisted by human for a wide range of teaching and learning for public or personal uses. ICT devices (e.g., laptop or desktop computers and smart phones etc.) carry out a wide range of communication and information functions such as e-mail, SMS text messaging, video chat (e.g., Skype), and online social media (e.g., Facebook). Adeyanju (2010) defined ICT as technologies used to convey, manipulate and store data by electronic means.

The rapid growth of digital technologies and their integration in education have given many students new tools to facilitate cheating at all levels. These irregularities have adverse effects on examination integrity. Eromosele (2011) opined that examination misconducts has long graduated from the normal “giraffing” at neighbours work; copying from handouts, notes or text books; copying on sheets of papers, desk or laps to a more advanced and sophisticated type using ICT devices such as: mobile phones, Bluetooth, electronic organizers, MP3 players, microscopic earphones, spy glasses, MP3 pens, electronic pocket dictionary, programmable calculators, palmtops, digital camera phones among others. Some of these ICT devices are used by students to bring answers into the examination halls especially for the multiple choice items. Sometimes, when the examination is on-going, answers are sent to candidates’ mobile phones inside the examination hall.

Jekayinfa, Omosewo, Yusuf and Ajidagba (2010) identified mobile phones and sophisticated calculators which have facility for multiple entries as some of the prominent technologies used by students to perpetuate examination misconduct in Nigeria Universities. Some students inscribe answers on their calculators and copy verbatim from their calculators into their answer scripts. Some invigilators, especially those who are not ICT-compliant may not know that the calculator has such facilities thinking it’s an ordinary calculator. Also, some candidates browse for answers on the internet while in the examination hall. Nweke (2009) sees mobile phones as an instrument for carrying out examination fraud. He singled out mobile phone’s Short Message Service (SMS) as a means of perpetuating examination misconduct in Nigerian Universities. He noted that examination fraud has continued to rise among Nigerian

students. Buttressing Nweke's view, Akesuola (2009) asserted that students store answers in their phones and bring them to the examination hall. They hide it in some parts of their body, in order to copy answers on their scripts.

Several institutions rely on the use of manual methods to manage examination misconduct. This method involves verification and thorough searching of students before the assessing the examination halls to ensure they do not enter with any material or devices that may help them cheat during the examination. According to Odejebi & Clarke (2010), manual method appears to have failed in this regard because even after the manual verification and checks on students before and during the examinations, some students are still caught with prohibited materials and gadgets in the examination halls while some are not caught by the supervisors. The unsatisfactory outcome brought about by the use of the manual checks and verification on students before and during the examination, necessitated the introduction of ICT devices and services such as; Computer Based Test (CBT), Closed Circuit Television (CCTV), Card Reader and Fingerprint Scanner, Electronic Detectors (ED) and Phone Signal Jammers (PSJ) among others in managing examination misconduct. For the purpose of this study, attention will be focus on three ICT devices and services which are: Computer Based Test (CBT), Closed Circuit Television (CCTV) and Electronic Detectors (ED).

Computer Based Test (CBT) is one of the ICT services being executed with the operation of computer system. CBT is a paperless process of taking examination, whereby examinations are designed, developed, delivered and scored by the computer system. The advantage of the CBT over paper test is that the questions are authored and loaded onto the computer servers. This takes off the stress of marking from examiners. CBT is employed in diverse applications such as admission selection, employment, drivers' license theory tests, language proficiency and technology certification assessments.

Closed Circuit Television (CCTV) is a surveillance camera that is used to capture peoples' activities with or without their knowledge. This ICT device is mounted on ceilings or walls and some CCTV are small enough not to be noticed. In the same vein, the usage of CCTV in schools aid in managing examination misconduct because, it captures and records the activities of candidates during the examination. It can be used to take note of students' activities during and after examinations without stress.

Electronic Detector (ED) is an ICT device which has the ability of detecting mobile electronic devices when they are switched on or off. These electronic detectors could be utilized to identify mobile phones and other electronic foreign materials students intend using to execute examination misconduct within the examination hall.

According to Ifijeh, Onuoha, Ilogho and Osinul (2015), in managing the incidence of examination misconduct before, during and after examinations, digital actions such as installation of jammers in examination halls, utilization of electronic detector devices that could indicate any mobile electronic device being taken into an examination hall and the use of CBT method of examination have been found effective. The Joint Admissions and Matriculation Board (JAMB) experimented with CBT during the 2014 Universities, Polytechnics and Colleges

of Education admission examinations and has confirmed that this method has potential to reduce examination misconduct (Sunday, 2014).

Notwithstanding the effectiveness of ICT in managing examination misconduct, higher institutions in Nigeria appear to be battling with obtaining and utilizing ICT devices and services in managing examination misconduct. Thus, higher institutions as relates to the study are the public universities in South-east Nigeria, owned by both Federal and State Government. These public universities differ in terms of facility availability, funding and management. This entails a possible difference in the availability and utilization of ICT devices and services in managing examination misconduct in these public universities.

### **Statement of the Problem**

Examination misconduct by students are checked in various tertiary institutions using different manual strategies such as expulsion and suspension of students caught in the act and cancelation of examination. However, with the introduction of ICT devices and services by various examination bodies such as Joint Admissions and Matriculation Board (JAMB) and West African Examination Council (WAEC) in the conduct of examination, examination misconduct seems to have been reduced. This notwithstanding, examination misconduct in tertiary institutions in South-east appears to have persisted.

In 2013 during Unified Tertiary Matriculation Examination (UTME) conducted by Joint Admission and Matriculation Board (JAMB) about 1,948 mobile phones with evidence of prepared answers sent through Short Message Service (SMS) were seized. The figure increased to about 2,039 in 2014. Also, Scientific Calculators that are capable of retrieving data stored, performing symbolic mathematical manipulation, integration or differentiation were caught with students in examination halls (Oduwaiye, 2014).

In Ebonyi State University, Abakiliki, 11 students that engaged in examination misconduct were penalized. Three students were asked to repeat a session while eight students were suspended from school for two semesters in 2014/2015 academic session (Ikeh, 2015). In 2016, the Federal University of Technology, Owerri (FUTO) expelled four students and Enugu State University of Science and Technology announced the expulsion and suspension of 13 students as a result of examination misconduct (Abu, 2016). This raises some questions such as whether ICT devices and services are available and utilized in different institutions in South-east Nigeria. This prompted the researcher to embark on this study to ascertain the availability and utilization of ICT devices and services for better management and decision taking on issues in relation to examination misconduct in tertiary institutions in South-east Nigeria.

### **Research Questions**

The following research questions guided this study:

1. What are the ICT devices and services available in public universities in south-east Nigeria?
2. What aspect of examination misconduct is Computer Based Test (CBT) used to manage in public universities in South-East Nigeria?

3. What aspect of examination misconduct is Closed Circuit Television (CCTV) used to manage in public universities in South-East Nigeria?
4. What aspect of examination misconduct is Electronic Detectors (ED) used to manage in public universities in South-East Nigeria?

## Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance.

1. There is no significant difference in the responses of lecturers in federal and state universities on the available ICT devices and services in public universities in South-East Nigeria.
2. There is no significant difference in the mean ratings of lecturers in federal and state universities on the aspects of examination misconduct computer based test (CBT) is used to manage in public universities in South-East Nigeria.
3. There is no significant difference in the mean ratings of lecturers in federal and state universities on the aspects of examination misconduct closed circuit television (CCTV) is used to manage in public universities in South-East Nigeria.
4. There is no significant difference in the mean ratings of lecturers in federal and state universities on the aspects of examination misconduct electronic detectors (ED) is used to manage in public universities in South-East Nigeria.

## Method

A descriptive survey research design was adopted for the study which was carried out in public universities in South-east Nigeria. Four research questions guided the study and four hypotheses were tested at the 0.05 level of significance. The population of the study was 8,121 lecturers in ten public universities in South-east Nigeria. A sample size of 615 lecturers were drawn using simple random sampling technique. Data were collected using a questionnaire of 26 items developed by the researchers and titled "Availability and Utilization of ICT for Managing Examination Misconduct Questionnaire (AUICTMEMQ). It was validated by three experts who are lecturers from the Faculty of Education, Nnamdi Azikiwe University, Awka. Reliability indices obtained were as follows; section A, 0.78, section B, 0.89, section C, 0.79, and section D, 0.89. The overall reliability of the four sections of the instrument was 0.84. The direct administration and retrieval method was used for data collection. Data were analyzed using percentages for research question one and mean for research questions two, three and four. Chi-square was used to test hypothesis one while t-test was used to test hypotheses two, three and four. For research question one, a percentage score of 50% and above was interpreted as available or not available while for research question two, three and four a mean rating of 2.50 and above was interpreted as agree while mean rating of less than 2.50 was interpreted as disagree. The null hypothesis was rejected where the p-value was less than 0.05 whereas the null hypothesis was not rejected where the p-value was greater than 0.05.

**Results**

**Research Question One:** What are the ICT devices and services available in public universities in south-east Nigeria?

**Table 1: Frequency and Percentages on the Available ICT Devices and Services in public Universities in South-east Nigeria.**

	Available		Not Available		Remark
	Freq	%	Freq	%	
1. Computer Based Test	410	70.1	175	39.9	Available
2. Closed Circuit Television	393	67.1	192	32.9	Available
3. Electronic Detectors	378	64.6	207	35.4	Available

Table 1 shows the frequency and percentages of responses on the availability of ICT devices and services in public universities in South-east Nigeria. The analysis shows that the three listed ICT devices and services are available in public universities in south-east Nigeria. They include: Computer Based Test (CBT) (70.1%), Closed Circuit Television (CCTV) (67.1%) and Electronic Detectors (ED) (64.6%), all having over 50% availability.

**Research Question Two:** What aspects of examination misconduct is Computer Based Test (CBT) used to manage in public universities in South-East Nigeria?

**Table 2: Mean ratings of the responses of lecturers on the aspects of examination misconduct Computer Based Test (CBT) is used to manage N=410**

In my University, CBT is used to:	Mean	SD	Remark
1. Curtail exchange of answer sheets during examination	3.43	.73	Agree
2. Discourage breaking into rooms/offices where question papers are stored to cart away with exam questions	3.61	.58	Agree
3. Eliminate snatching of question papers during the examination	3.41	.77	Agree
4. Eliminate taking away answer scripts from the examination halls during the examination	3.64	.63	Agree
5. Reduce manipulation of students' scores by lectures after the examination	2.60	.73	Agree
6. Eliminate students sorting lecturers for undeserved marks after the examination	2.91	.79	Agree

7. Reduce access to the examination questions before the examination	3.01	.78	Agree
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As depicted in Table 2, the respondents agree that the seven listed items are the various aspects of examination misconduct CBT is used to manage. The mean ratings for the items which ranged from 2.60 to 3.64 were all above the cut off mean of 2.50. The respondents' standard deviation fell between .58 and .78 which shows that the respondents were homogeneous in their responses on the aspects of examination misconduct Computer Based Test (CBT) is used to manage in public universities in South-East Nigeria.

**Research Question Three:** What aspects of examination misconduct is Closed Circuit Television (CCTV) used to manage in public universities in South-East Nigeria?

**Table 3: Mean ratings of the responses of lecturers on the aspects of examination misconduct Closed Circuit Television (CCTV) is used to manage N=393**

In my University, CCTV is used to:	Mean	SD	Remark
8. Monitor offices where examination materials are kept to discourage students from breaking into them	3.39	.72	Agree
9. Identify students discussing examination questions during examination	3.20	.67	Agree
10. Identify students who are exchanging answer scripts in the examination hall	3.35	.82	Agree
11. Identify students sending answer scripts outside the examination hall during examination	2.66	.71	Agree
12. Identify students sending materials into the examination hall to their friends to during the examination	3.40	.67	Agree
13. Identify students copying answers from other students in the examination hall	3.26	.73	Agree
14. Monitor lectures/staff assisting students during the examination	3.21	.69	Agree
15. Identify students making use of electronic devices during the examination	2.75	.74	Agree

Table 3 shows that the respondents agree to the eight listed items on the various aspects of examination misconduct CCTV is used to manage in public universities in South-East Nigeria. Their mean responses for the eight items ranged from 2.66 to 3.40. The range of the standard

deviation which fell within .67 and .82 indicated that the respondents were homogeneous in their mean ratings on the aspects of examination misconduct CCTV is used to manage in public universities in South-East Nigeria.

**Research Question Four:** What aspects of examination misconduct is Electronic Detectors (ED) used to manage in public universities in South-East Nigeria.

**Table 4: Mean ratings of the responses of lecturers on the aspects of examination misconduct Electronic Detectors (ED) is used to manage N=378**

In my University, ED is used to:	Mean	SD	Remark
16. Detect students entering the examination hall with mobile phones for use during the examination	2.80	.81	Agree
17. Identify students going into the examination hall with infrared devices for use during the examination	2.84	.79	Agree
18. Detect students entering the examination hall with Bluetooth devices for use during the examination	3.10	.71	Agree
19. Detect students going into the examination hall with electronic spy glasses to copy answers from colleagues during the examination	3.05	.69	Agree
20. Identify students entering the examination hall with electronic organizers for use during the examination	2.63	.63	Agree
21. Detect students going into the examination hall with electronic wrist watches to relay stored information during the examination	3.12	.73	Agree
22. Detect students going into the examination halls with earphones to listen to audio recorded notes during the examinations	2.88	.68	Agree

As shown in Table 4, the respondents agreed to the seven items listed as the various aspects of examination misconduct Electronic Detectors is used to manage in public universities in South-East Nigeria. Their mean responses for the seven items ranged from 2.63 to 3.10. The range of the standard deviation which fell within .63 and .81 indicated that the respondents were homogeneous in their mean responses on the various aspects of examination misconduct Electronic Detectors is used to manage in public universities in South-East Nigeria.

**Hypothesis One:** There is no significant difference in the responses of lecturers in federal and state universities on the available ICT devices and services in public universities in South-east Nigeria.

**Table 5. Chi-square analysis on the availability of ICT devices and services in public universities based on university ownership**

	Federal University		State University		$\chi^2$	p-value	Remark
	Available	Not available	Available	Not available			
1. CBT	256(73.1)	94(26.9%)	154(65.5%)	81(34.5%)	3.88	.04	S*
2. CCTV	216(61.7%)	134(38.3%)	177(75.3%)	58(24.7%)	77.44	.00	S*
3. ED	205(58.6%)	145(41.4%)	173(45.8)	62(26.4%)	13.92	.00	S*

The analysis in Table 5 showed that there is a significant difference in the responses of lecturers in federal and state universities on the availability of ICT services in public universities in South-East Nigeria as all the three items had p-value less than the stipulated 0.05 level of significance. The null hypothesis of no significant difference was therefore rejected.

**Hypothesis Two:** There is no significant difference in the mean ratings of responses of lecturers in public and private universities on the aspects of examination misconduct Computer Based Test (CBT) is used to manage in public universities in South-East Nigeria.

**Table 6: t-test Comparison showing the Mean Ratings of Responses of Lecturers in Federal and State Universities on the aspects of Examination Misconduct Computer Based Test (CBT) is used to manage.**

Source of variation	N	Mean	SD	df	t-cal	t-crit	Decision
Federal	256	3.22	.48	485	.77	1.96	Not Sig
State	154	3.24	.34				

The t-test analysis presented in Table 6 showed that the calculated t-value of .77 was less than the critical t-value of 1.96 at alpha level of 0.05 and degree of freedom (df) 485. This shows that there is no significant difference in the mean ratings of responses of lecturers in the federal and state universities on the aspects of examination misconduct which Computer Based Test (CBT) is used to manage in public universities in South-East Nigeria. The null hypothesis of no significant difference between the two groups was therefore not rejected.

**Hypothesis Three:** There is no significant difference in the mean ratings of responses of lecturers in public and private universities on the aspects of examination misconduct closed circuit television (CCTV) is used to manage in public universities in South-East Nigeria.

**Table 7: t-test Comparison showing the Mean Ratings of Responses of Lecturers in Federal and State Universities on the aspects of Examination Misconduct Closed Circuit Television (CCTV) is used to manage.**

Source of variation	N	Mean	SD	Df	t-cal	t-crit	Decision
Federal	216	3.26	.33	309	5.85	1.96	Sig
State	177	3.02	.46				

Table 7 showed that the t-cal value of 5.85 was greater than the critical value of 1.96 at alpha level of 0.05 and degree of freedom (df) 309. This indicated that the difference in the mean rating of responses of lecturers in federal and state universities on the aspects of examination misconduct closed circuit television (CCTV) is used to manage in public universities in South-east Nigeria was significant. Therefore, the null hypothesis was rejected.

**Hypothesis Four:** There is no significant difference in the mean ratings of responses of lecturers in public and private universities on the aspects of examination misconduct electronic detectors (ED) is used to manage in public universities in South-East Nigeria.

**Table 8: t-test Comparison showing the Mean Ratings of Responses of Lecturers in Federal and State Universities on the aspects of Examination Misconduct Electronic Detectors (ED) is used to manage.**

Source of variation	N	Mean	SD	df	t-cal	t-crit	Decision
Federal	205	2.93	.36	376	.90	1.96	Not Sig
State	173	2.89	.49				

Table 8 showed that the t-cal value of .90 was less than the critical value of 1.96 at alpha level of 0.05 and degree of freedom (df) 376. This is an indication that the difference in the mean rating of responses of lecturers in federal and state universities on the aspects of examination misconduct Electronic Detector (ED) in used to manage in public universities in South-East Nigeria was not significant. Therefore, the null hypothesis was not rejected

## Discussion of Findings

The finding of this study shows that the three ICT devices and services are available in public universities in South-east Nigeria. They include Computer Based Test (CBT), Closed Circuit Television (CCTV), and Electronic Detectors (ED). This finding is consistent with Onyibe, Nwachi-Ikpor and Abdulhakim (2015). They affirmed that ICT services such as CBT has come to stay in Nigeria with the Nigerian Immigration Service (NIS) and other government agencies keying into Computer Based Test for recruitment exercise and in next ten years, all public examinations would have been via CBT. This also supports Jamil, Tariq and Shami (2012) who emphasized that a number of higher institutions are adopting the use of ICT in their evaluation processes in order to save time.

Availability of ICT devices and services in the public universities in South East Nigeria can be seen as a step towards the right direction in managing examination misconduct, thereby bringing some level of sanity into the university examination process. When effectively utilized, ICT devices and services such as CBT, CCTV and ED can assist in managing examination misconduct which is prevalent in universities during and after examination.

The finding of the hypothesis showed that there was a significant difference in the responses of lecturers in federal and state universities on the availability of ICT services in public universities in South-East Nigeria. This difference appears to be as a result of the difference in university type. Some of the state owned universities in the South-east appear ill equipped in terms of ICT devices.

The finding of the study shows that Computer Based Test (CBT) can be utilized to curtail exchange of answer sheets during the examination, discourage breaking into rooms where question papers are stored to cart away with exam questions, eliminate snatching of question papers during the examination, eliminate taking away answer scripts from the examination halls during the examination, reduce manipulation of students' scores by lectures after the examination, eliminate students sorting lecturers for undeserved marks after the examination, reduce access to the examination questions before the examination. This finding is consistent with some other findings reported in the literature such as Oladipo (2009), who reported that CBT is a system which spurs development in education as well as other sectors of the economy. CBT usually assist to ensure that candidate's identity in the examination hall is efficiently cross-checked. Computer-based test (CBT) is an efficient way for test sponsors to provide a secure, consistent environment for certification and licensure as it also enhance students' experience (Abubakar & Adebayo, 2014).

Similarly, Adewale, Ajadi, and Inegbedion (2011) noted that CBT had advantages over Paper-based test, both for lecturers that give the test and for the students who participate in the test. CBT allows for more accurate, secure, rapid and more controlled test administration. Administration of test using the computer helps to minimize almost entirely the use of paper printing. This could also reduce the manipulation of students' scores by lectures after the examination and also reduce the administration costs as well as environmental impact.

According to Hochlehnert, Brass, Moeltner and Juenger, (2011), Computer-based test automate a very time consuming task, marking and monitoring progress. Computer-Based test enables easier control and editing of exam items, gives room for better incorporation of testing into the learning environment using specific feedback. Examination misconducts such as exchange of answer sheets during the examination and mutilation of scores after the examination will be drastically reduced using CBT (Durojaiye & Omotehinwa (2013).

The finding of the hypothesis shows that there is no significant difference in the mean ratings of responses of lecturers in federal and state universities on the aspects of examination misconduct computer based test (CBT) is used to manage in public universities in South-East Nigeria. The reason for this could be that the lecturers in both the federal and state universities are aware of the importance of CBT for examination misconduct management and various aspects of examination misconduct in which CBT can be used to manage in public universities in South-east.

The finding of this study shows that the aspects of examination misconduct CCTV is used to manage in public universities in South-East Nigeria include: Monitoring offices where examination materials are kept to discourage students from breaking into them, identify students discussing examination questions during examination, identifying students who are exchanging answer scripts in the examination hall, students sending answer scripts outside the examination hall during examination, students sending materials into the examination hall to their friends to during the examination, students copying answers from other students in the examination hall, monitoring lectures/staff assisting students during the examination and identifying students making use of electronic devices during the examination. This finding is supported by Onasanya (2005) who stated that with the aid of CCTV, security agents can gather information without stress during and after examinations about students that cheat. Madara, Ataro and Sitati (2016) stated that CCTV cameras are used to capture peoples' activities with or without their knowledge. It can be used to monitor the conduct of examinations to identify students or staff engaging in various malpractices. The devices are mounted on ceilings or walls and are small enough not to be noticed.

The finding of the hypothesis indicated that the difference in the mean rating of responses of lecturers in federal and state universities on the aspects of examination misconduct closed circuit television (CCTV) is used to manage in public universities in South-East Nigeria was significant.

The findings of the study showed that the aspects of examination misconduct Electronic Detector is used to manage in public universities in south-east Nigeria include; detecting students entering the examination hall with mobile phones for use during the examination, identifying students going into the examination hall with infrared devices for use during the examination, detecting students entering the examination hall with Bluetooth devices for use during the examination, detecting students going into the examination hall with electronic spy glasses to copy answers from colleagues during the examination, identifying students entering the examination hall with electronic organizers for use during the examination, detecting students

going into the examination hall with electronic wrist watches to relay stores information during the examination and detecting students going into the examination halls with earphones to listen to audio recorded notes during the examinations. This finding in accordance with Essien (2010), he noted that Electronic Detectors are technological equipment that has the ability of detecting mobile technology devices as they are switched on or off. This device could be utilized to identify mobile phones and other electronic foreign materials students intend using to execute examination misconduct within the examination hall.

The finding of the hypothesis indicated that the difference in the mean rating of responses of lecturers in federal and state universities on the aspects of examination misconduct Electronic Detector (ED) is used to manage in public universities in South-East Nigeria was not significant.

## **Conclusion**

Based on the findings of the study presented, analyzed and discussed, it was concluded that the three ICT devices and services examined in this study are available in public universities in south-east Nigeria. They include: Computer Based Test, Closed Circuit Television, and Electronic Detectors. The lecturers agreed that the seven items listed are the various ways CBT can be utilized in managing examination misconduct in public universities in South-East Nigeria.

On the utilization of Closed Circuit Television (CCTV) in managing examination misconduct in public universities in South-East Nigeria, the lecturers agreed that the eight listed items are ways through which it utilized. The lecturers also agreed that the seven listed items are ways Electronic Detectors (ED) can be utilized in managing examination misconduct in public universities in South-East Nigeria.

## **Recommendations**

Based on the findings of the study, the following recommendations were made:

1. To effectively utilize CBT and CCTV in managing examination misconduct, alternative power source should be made available by the government and university authorities. There is no part of the country that can boast of steady power supply, as a result, government and university authorities should provide an alternative power source to be able to provide steady power for effective utilization of these ICT devices.
2. Examination monitoring team or invigilators should always utilize electronic detectors in checking students before they enter the examination halls. Effective utilization of electronic detectors will help identify students who intend to cheat with electronic gadgets in the examination.

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