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AVAILABILITY AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN MANAGING EXAMINATION MISCONDUCT IN PUBLIC UNIVERSITIES IN SOUTH-EAST NIGERIA

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ABSTRACT
This study explored the availability and utilization of ICT for managing examination misconduct in public universities in South-east Nigeria. The study was guided by five research questions. 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 size of 615 lecturers was drawn using simple random sampling technique. Data were collected using a questionnaire of 34 items developed by the researcher and titled "Availability and Utilization of ICT for Managing Examination Misconduct Questionnaire (AUICTMEMQ). It was validated by three experts in the Faculty of Education, Nnamdi Azikiwe University, Awka. Reliability indices obtained were as follows; section A, 0.68, section B, 0.89, section C, 0.79, section D, 0.89 and section E, 0.79. The overall reliability of the five sections of the instrument was 0.80. Data were analyzed using percentages for research question one and mean for research questions two, three, four and five. The findings revealed that out of the four listed ICT devices and services, three are available in public universities in South-east Nigeria. They include: Computer Based Test (CBT), Closed Circuit Television (CCTV), and Electronic Detectors (ED). The study found out that CBT is 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, CCTV is utilized in monitoring examination halls and offices while ED was found to be helpful in detecting students going into the examination hall with electronic devises. Based on the findings of the study, it was recommended among others that, to effectively manage examination misconduct in universities, CBT, CCTV and ED should continue to be adequately provided in all the public universities in South-east, Nigeria. It was also recommended that institutions should always utilize CBT, CCTV and ED in checking students during examinations. This will help to effectively check and contain examination misconduct in public universities in south-east, Nigeria.

Keywords*: Availability, Utilization, ICT, Examination Misconduct, Universities.*

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 the utilization of ICT. Such changes include the integration of computer education in our 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 the examination and monitoring the conduct of examinations to ensure that students achieve success through transparent means. Success in an examination is perceived as one of the major achievement in education. However, Yahaya, Odebode and Akinyemi (2017) posited that examination misconduct is not new in Nigeria. This implies that school examinations have been bedevilled by misconduct and malpractices. Students are usually desperate to achieve success in examinations even without studying hard. This has led many students into examination misconduct of various forms.

Examination misconduct is any irregular act exhibited by candidates or any stakeholder charged with the conduct of examination which breaches rules governing the conduct and mars the integrity of the examination (Anierobi,

Nwikpo, Okeke&Unachukwu, 2018). 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 defined by Oko and Adie (2016)as any deliberate act of wrongdoing, contrary to the rules guiding examinations which is designed to give a candidate undue advantage. Examination misconduct has reduced some students' urge to read for examination, because, they believe that they will cheat when the examination comes.According to Orji (2017) examination misconduct seems to have assumed an alarming rate at the higher level of education. Many patriotic Nigerians and academia are disturbed by this trend since it has become a threat to the integrity of the nation.

This embarrassing situation of examination misconduct has led to the Federal Government of Nigeria to promulgate Decree 20 in 1984 to deal with this menace. Incidentally, Examination Malpractice Act 33 of 1999 revised Decree 20 of 1984 specifies punishment ranging from payment of a fine of #50,000.00 to #100,000.00 and imprisonment for a term of 3 - 4 years with or without an option of fine (Akaranga&Ongong, 2013).Yet, examination misconduct has been on the increase. For instance, in Ebonyi State University, Abakiliki, 11 students that engaged in examination misconduct were penalized. Three students were punished with a repeat of a session while eight students were suspended from school for two semesters in the 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 about 120 students due to examination misconduct (Abu, 2016).

To deal with the menace of examination misconduct in the Nigerian education system especially in the tertiary institutions, some higher institutions in Nigeria have their own sets of examination rules and regulations published in examination answer sheets and students' handbooks. The handbooks are given to students during the 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 an award of "F" in the course depending on the degree of the examination malpractice (Akanni & Odofin, 2015). Despite the measures to check examination misconduct in schools, the ugly practice still persisted taking even new trends (Anierobi, Nwikpo, Okeke & Unachukwu, 2018). By implication, all previous measures aimed at managing examination misconduct in schools seem to have failed. However, technologically, it seems that 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. According to Eziechina, Ugboaja and Esiagu (2017), many efforts utilized by the different government levels and various schools at curbing examination misconducts proved abortive because means of perpetrating examination misconduct graduated from analogue to more digitalized forms.

Basically, several institutions rely on the use of manual methods to manage examination misconduct. This method involves verification and thorough searching of students before the examination to ensure they do not enter the examination halls with any material or devices relevant to the examination. The manual method appears to have failed in curtailing examination misconduct 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(Udim, Abubakar & Essien, 2018).The unsatisfactory outcome brought about by the use of the manual checks and verification on students before and during the examination, seems to have necessitated the introduction of ICT devices. According to Ubulom and Wokocha (2017), ICT encompasses different types of technologies, which are used for capturing, processing and transmitting information, with the aid of a computer such as Computer Based Test (CBT), Closed Circuit Television (CCTV), Card Reader and Fingerprint Scanner, Electronic Detectors (ED) and Phone Signal Jammers (PSJ). These ICT devices could be employed if made

available, in managing examination misconduct. For the purpose of this study, the researcher will focus on four of the ICT devices and services. They are Computer Based Test (CBT), Closed Circuit Television (CCTV), Electronic Detectors (ED) and Phone Signal Jammers (PSJ).

Computer Based Test (CBT) is one of the ICT services provided 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. One of the advantages of the CBT over paper test is that the questions are authored and loaded onto the computer servers and has the ability to promote the credibility of examinations and minimize examination fraud (Ubulom & Wokocha, 2017). This takes off the stress of marking scripts by examiners. CBT is employed in diverse applications such as admission selection, employment, drivers' license tests, language proficiency and technology certification assessments. One can assert that CBT has come to stay in Nigeria. This assertion is validated by Onyibe, Nwachi-Ikpor and Abdulhakim (2015) who found that the Nigerian Immigration Service (NIS) and other government agencies has keyed into Computer Based Test for recruitment exercise. The researchers equally observed that most of the public examinations such as JAMB and private examinations in some tertiary institutions such as Post-UTME are taken via CBT. Olufunmiola and Oladimeji (2015) investigated lecturers' perceptions of the usefulness; ease of use and credibility of CBT in Nigerian universities. It revealed that lecturers had positive rating on perceived usefulness, ease of use, and credibility of CBT.

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. In his study, Aworanti (2016) observed that some institutions such as Joint Admissions Matriculation Board (JAMB), West African Examinations Council (WAEC),

National Business and Technical Examinations Board (NABTEB), National Examinations Council (NECO), National Teachers' Institute (NTI) and Teachers' Registration Council of Nigeria (TRCN) experimented with CBT for admission examinations and have confirmed that this method has potential to reduce examination misconduct. Similarly, Edeh, Ani, Nnaji, Abdallahi, Alhussen & Quadri (2019), reported that CBT is a system which spurs development in education as well as other sectors of the economy in checking examination malpractice. In a study on the influence of computer-based test on examination malpractice in public examinations, Nwoke, Osuji and Agi (2017) found that CBT effectively reduced examination malpractice.

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, Curran, Middleton and Doherty (2011) asserted that the usage of CCTV in schools aid in managing examination misconduct because, it captures and records the activities of candidates during examination. It can be used to take note of students' activities during and after examinations without stress. According to Madara, Ataro and Sitati (2016),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. 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.

Electronic Detector (ED) is an ICT device which has the ability of detecting mobile electronic devices when they are switched on or off. Drinit (2015) reported that 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. Essien (2010)observed that Electronic Detectors 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.

Phone Signal Jammer (PSJ) is an ICT device designed to transmit signals on the same radio frequency as mobile phones, which disrupts the communication between a phone and its phone base station. Fayomi, Amodu, Ayo, Idowu and Iyoha (2015) pointed out that PSJ can effectively disable mobile phone signal once it is within the range of the installed PSJ, preventing any phone communication or transmission. Waldron (2012**)** observed that phone signal jammer obstructs transmission and receiving of radio-frequency to and from a mobile phone with a base station. When used, the jammer effectively disrupts cellular activity between the base station and the device, by creating a temporary "dead-zone" to all cell phone traffic in their immediate proximity

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 the menace. 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 availability of facility, funding and school management. This entails a possible difference in the availability and utilization of ICT devices and services in managing examination misconduct in these public universities; hence the researcher carried out this study to determine the availability and utilization of ICT for managing examination misconduct in public universities in South-East Nigeria.

Research Questions

The following research questions guided this study:

1. What are the ICT devices and services available for managing examination misconduct 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?
5. What aspect of examination misconduct is Phone Signal Jammers (PSJ) used to manage in public universities in South-east Nigeria?

Research Method

A descriptive survey design was used for the study. According to Nworgu (2015), descriptive survey design is one which aims at collecting data on, and describing in a systematic manner the characteristics, features or facts about a given population. This design was deemed appropriate for this study because the researcher collected data from a sample of the population and analyzed them in order to determine the availability and utilization of ICT in managing examination misconducts in public universities in South east Nigeria.

The population for this study consisted of all the 8,121 lecturers in the 103 Faculties and 598 Departments in the five Federal and five State universities in South-East zone of Nigeria. The use of lecturers as the population for this study is because they directly oversee the invigilation of examinations in the universities and are likely to provide balanced responses to the questions.

The sample size for this study comprised 615 respondents sampled out using multi-stage sampling procedure. At the first stage, the 10 public universities in the South-east were stratified according to ownership, thus Federal and State government ownership. At the second stage, simple random sampling technique was used to draw two federal and two state universities. The four universities randomly selected comprise of 205 departments. At the third stage, simple random sampling technique was used to sample three lecturers from each of the 205 departments. This yielded 366

lecturers from the federal universities and 249 lecturers from the state universities, totaling 615 lecturers.

The instrument that was used to collect data for this study was a researcher-developed questionnaire titled Availability and Utilization of ICT for Managing Examination Misconduct Questionnaire (AUICTMEMQ). The questionnaire was divided into two parts; part one and two. Part one has an item which elicited information on the background information of the respondent. Part two contained 34 items and was divided into five sections A, B, C, D and E. Section A contained four items that elicited information on the availability of ICT devices and services. Section B with seven items elicited information on the use of CBT in managing examination misconduct. Section C with eight items was on the use of CCTV in managing examination misconduct. Section D with seven items was the use of ED in managing examination misconduct while Section E has eight items which elicited information on the use of PSJ in managing examination misconduct. Items in Sections B-E of part two of the instrument were structured on a 4-point rating scale of: **SA =** strongly Agree; **A**=Agree; **D** = Disagree; **SD** = Strongly Disagree and weighted 4, 3, 2 and 1 respectively. The instrument was validated by three experts in the Faculty of Education, NnamdiAzikiwe University, Awka.

The reliability of the instrument was established using the Cronbach Alpha in determining its internal consistency using a sample of 20 lecturers from a university in the south-east outside the randomly selected universities for the study.Reliability indices obtained were as follows; section A, 0.68, section B, 0.89, section C, 0.79, section D, 0.89 and section E, 0.79. The instrument yielded an overall alpha coefficient of 0.80 which was considered high. The high reliability index confirmed the reliability of the instrument.

Analyses of data generated were done using percentages for research question one and mean for research question two, three, four, and five. For research questions one, percentage score from 50% and above was regarded as "Available" while percentage score of less than 50% was regarded as "Not available". For answering of the research

questions, mean score from 2.50 above was regarded as agree while mean rating of less than 2.50 was regarded as disagree.

Presentation of Results

Research Question One: What are the ICT devices and services available for managing examination misconduct in public universities in South-east Nigeria?

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

	Available		Not Available		
	Freq	**%**	**Freq**	**%**	**Remark**
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
4. Phone Signal Jammers	82	14.0	503	86.0	Not-Available

Results in Table 1 show 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 out of the four listed ICT devices and services, three 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. Phone Signal Jammer (PSJ) however, is not available as it had less than 50% availability.

Research Question Two: What aspects of examination misconduct are 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 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

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 are 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

Results in Table 3 show 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 are Electronic Detectors (ED) used to manage in public universities in South-East Nigeria.

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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	2.88	.68	Agree

	examination halls with earphones to listen to audio recorded notes during the examinations

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.

Research Question Five: What aspects of examination misconduct are Phone Signal Jammer (PSJ) used to manage in public universities in South-East Nigeria.

AJEMATES

Table 5: Mean ratings of the responses of lecturers on the aspects of examination misconduct Phone Signal Jammer (PSJ) is used to manage N=82

In my University, PSJ is used to:	Mean	SD	Remark
23. Prevent students from making use of electronic organizers to retrieve information during the examination	1.60	.49	Disagree
24. Prevent students from using Bluetooth earphones to receive audio recorded notes during the examinations	1.71	.46	Disagree
25. Prevent students in the examination hall from communicating with mobile phone with someone outside the examination hall	3.34	.48	Agree
26. Deny students access to the internet by disrupting mobile network services during the examination	3.26	.44	Agree
27. Prevent students from sending answers through electronic text messages to other students during the examination	3.47	.50	Agree
28. Prevent students from receiving answers through electronic text messages from other students during the examination	3.54	.50	Agree
29. Prevent students from relaying snapped answers to colleagues via phone Bluetooth during the examination	3.44	.50	Agree

AJEMATES

30. Prevent students making use of electronic wrist watches to access stored information in other devices during the examination	1.71	.46	Disagree

As shown in Table 5, out of the eight items listed, the respondents agreed to five items (25, 26, 27, 28 and 29) with mean ranging from 3.26 to 3.54 as the various aspects of examination misconduct Phone Signal Jammer is used to manage in public universities in South-East Nigeria. The respondents however disagreed with three items (23, 24 and 30) with mean ranging from 1.60 to 1.71. The range of the standard deviation which fell within .44 and .50 indicated that the respondents were homogeneous in their mean ratings of the items.

Discussion of Findings

The analysis of research question one shows that out of the four listed ICT devices and services, three are availablein public universities in South-east Nigeria. They include Computer Based Test (CBT), Closed Circuit Television (CCTV), and Electronic Detectors (ED). However, Phone Signal Jammer (PSJ) is not available in public universities in South-east Nigeria because it scored below 50% which is the yardstick for measuring availability. However, one could infer from its score of 14% that it is available in only very few public universities in south-east, Nigeria. This finding is consistent with that of Onyibe, Nwachi-Ikpor and Abdulhakim (2015),which revealed that some of the agencies in Nigeria have keyed in utilizing some aspects of ICT such as CBT in recruitment processes. This also supports Aworanti (2016) who found that a number of institutions are adopting the use of ICT in their evaluation processes in order to minimize the incidence of examination malpractices.

The analysis of research question two shows that Computer Based Test (CBT) was 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 Edeh, Ani, Nnaji, Abdallahi, Alhussen&Quadri (2019), who found that CBT spurs development in education in checking examination malpractice. It also agrees with Ubulom &Wokocha (2017)who found that CBT promotes the credibility of examinations and minimizes examination fraud. The finding further agrees with Olufunmiola and Oladimeji (2015) who investigated lecturers' perceptions of the usefulness; ease of use and credibility of CBT in Nigerian universities and found that lecturers had positive rating on perceived usefulness, ease of use, and credibility of CBT. The finding also corroborates with Nwoke, Osuji and Agi(2017) found that CBT effectively reduced examination malpractice.

The analysis of research question three 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 Madara, Ataro and Sitati (2016) whofound that CCTV cameras were used to capture peoples' activities with or without their knowledge. It also agrees with Curran, Middleton and Doherty (2011**)**who revealed that CCTV in schools aided in managing examination misconduct because, it captures and records the activities of candidates during examination.

The analysis of research question four revealed that the aspects of examination misconduct Electronic Detector is used in managing examination misconduct 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**)** who found that Electronic Detectors 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. It also aligns with Drinit (2015) who revealed that 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.

The analysis of research question five found that the aspects of examination misconduct phone signal jammers are used to manage in public universities in South-east Nigeriainclude the following: preventing students from communicating with mobile phone with someone outside the examination hall, denying students access to the internet by disrupting mobile network services during the examination, preventing students from sending answers through electronic text messages to other students during the examination, preventing students from receiving answers through electronic text messages from other students during the examination and from relaying snapped answers to colleagues via phone Bluetooth during the examination. This finding conforms to Waldron (2012) who found that phone signal jammer

obstructs transmission and receiving of radio-frequency to and from a mobile phone with a base station. When used, the jammer effectively disrupts cellular activity between the base station and the device, by creating a temporary "dead-zone" to all cell phone traffic in their immediate proximity. It also agrees with Fayomi, Amodu, Ayo, Idowu and Iyoha (2015)who revealed that Phone signal Jammers prevents radio equipment from receiving and transmitting the signal relevant to their functions..

Conclusion

Based on the findings of the study, it was concluded that out of the four listed ICT devices and services, three are available in public universities in South-east Nigeria. They include: Computer Based Test, Closed Circuit Television, and Electronic Detectors. The lecturers agreed that CBT in used to manage the listed seven aspects of 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 being utilized. The lecturers also agreed that the seven listed items are the various ways Electronic Detectors are utilized in managing examination misconduct in public universities in South-East Nigeria. The lecturers also agreed on five items out of the eight listed items on the utilization of Phone Signal Jammers (PSJ) 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. In order to effectively manage examination misconduct in universities, phone signal jammers should be made available by university management in all the public higher institutions in Nigeria. This will help to effectively disrupt cellular-activity within the examination hall.
2. Public universities in Nigeria should ensure that they provide adequate and functional ICT devises such as CCTV, Computer systems, electronic detectors, phone signal jammers for checking examination misconducts.

3. CCTV should be mounted in all the classes, examination halls and offices for monitoring the activities of both lecturers and students before, during and after examinations.
4. 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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