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Assessment of ICT-Based Security Practices in the Selected Tertiary Institutions in Lagos State, Nigeria

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Abstract

This study assessed the availability and utilization of ICT-based security practices in three randomly selected public tertiary institutions in Lagos State. Two research questions and hypotheses were answered and tested respectively. The research design used in this study is the descriptive design of the survey type. A total of 780 participants comprised of 129 academic staff, 102 non-academic staff, 51 security personnel, 243 ICT personnel and 255 students participated in this study. A self-structured instrument named ICT-based security practices checklist (ISSPC) was used to collect data. The data was analysed using simple descriptive statistics of frequency counts, mean and percentages and Pearson Product Moment Correlation inferential statistical tool. Based on the findings, the study suggests adequate procurement of functional ICT-based tools for security practices ((Video Surveillance (CCTV)-Closed Circuit Television and Metal detector, Gunshot detector, Picture identity card, Metal detector, Surveillance equipment (Recording camera), Surveillance equipment – Monitor, etc.), and intensive seminars and workshops should be organized for students, academic staff, non-academic, security personnel and ICT personnel; irrespective of their gender and status in the university on security consciousness and the use of modern ICT-based security technologies.

Keywords: Assessment, ICT-based Safety Practice, ICT-based Security Practice, Tertiary Institutions

Introduction

The goals of tertiary education is to contribute to national development through high level of relevant manpower training, inculcating proper value for the survival of the individual, society and developing the intellectual capability of individuals to understand and appreciate their environment. Ogunode, Okwelogu, Elechukwu and Yahaya (2021) affirmed that progress and growth in tertiary education in Nigeria can be attained in peaceful, secured and conducive environment for teaching, learning and implementation of research programme. Observably, good academic curriculum, qualified personnel, availability of educational resources, infrastructure, adequate educational policies, safety and security of lives and properties are some of the things

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that can facilitate the achievement of these objectives. However, Nigeria higher institutions of learning are constantly facing security threats by some miscreants.

There is rising wave of insecurity in most learning institutions globally; and most universities are not spared from this problem. Enang (2019) further attested that university communities in recent times have been infested with all manner of criminalities which, quite sadly, paint an opaque and disheartening picture on expansion and rapid development of education in Nigeria. Akor, Musa and Ogunode (2021) further buttressed that many institutions, including tertiary institutions in Nigeria have been constantly attacked and vandalized due to security challenges facing the country. Structural and infrastructural facilities worth millions of naira were vandalized, destroyed; and human beings (students, teaching and non-staff) in times without numbers were killed or abducted by "unknown gunmen". These incessant attacks on tertiary institutions and human resources, especially on the academic staff, non-academic staff and students cannot guarantee sustainable development of tertiary education in Nigeria (Ogunode & Atobauka, 2021).

Security consciousness is a common denominator that can birth safety; which is the source and state of being benign, freedom from the occurrence of risk or injury, danger or loss from the quality of averting or not causing injury. It is secured environment for both students and staff to move freely at any period of the day that can guarantee effective and efficient teaching and learning atmosphere. Security in the university system and environment connotes the protection of tangible and intangible assets of the institution from all form risks and threats (Ekpoh, Edet & Ukpong, 2020). The author further refer to tangible assets as physical structure, the books in the libraries, the electronic gadgets in the departments, all the stake-holders and the player, the regular and occasional visitors to the universities; while the intangible assets are intellectual property, researchers' data, classified information, integrity, peace of mind, order and above all the image of the institutions. Therefore, securing schools from threat is sine qua none and measures taken to protect learning community (which subsumes students, academic, non-academic, staff, and parents, visitors to the campus, properties and valuable assets) from being attacked, vandalized or damaged.

In time past, Nigeria has witnessed chains of violence emanating from cultism related activities which is the most rampant among sources of insecurity in schools. Such occurrences were against lecturers, students and the entire learning institution communities resulting to sudden death of staff and students, ladies were raped, hostels were burgled, disruption of university academic activities and academic calendar being elongated among others. Subsequently, Ogunode and Chijindu, (2022) further attested to vandalisation of institution infrastructure at the slightest provocation, kidnapping for ransom, maiming, abduction, outright killing of innocent people, and intimidation of fellow students and clashes of rival cult groups. Hence, virtually no university in Nigeria can lay claim that it hasn't experienced safety and security related challenges despite all efforts put in place by the management of various institutions to ensure peaceful academic environment in Nigeria

The state of insecurity in most tertiary institutions across Nigeria calls for quick attention and ardent response by university management and other stakeholders to have an inalienable right and responsibility to protect itself, the numerous students entrusted to their care, the staff and other internal and external visitors who visit the university

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from all forms of dangers that assail the institutions daily (Garba, Ogunode, Musa & Ahmed, 2022). The authors further reiterated that It is disheartening to hear about the huge financial commitments been expended on human and non-human resources in Nigerian institutions of learning; but little has been spent on access, control and surveillance systems that will give urgent notice on the impending danger to the community.

Oladipo Awoyinfa and Adefarakan (2018) examined some related institutional factors that served as threats to personnel security at the University of Lagos. The study out found that there existed a strong positive relationship between school location, school culture, school facilities and personnel security However, weak, positive correlation existed between school climate and personnel security. The study inferred that over-stretched and inadequate learning facilities, outdated security framework, hostile school environment, indiscipline, poor staff and student safety and security awareness, inadequate capacity building for security personnel, poor funding of institutions, were among the major determinants of security threats plaguing most tertiary institution of learning. This research gap exists in the areas of deterrence, detection, emergency operation and recovery; using the 21st century technological gadgets for detecting impending danger. The deployment and engagement of Information and Communication Technology (ICT) as measures for detecting impending danger made could be a possible solution for the security operatives to monitor activities in various institutions of learning using sophisticated electronic security devices within outside and outside the institutions through the internet protocols. It is against this background that this study assessed ICT-based security practices in some selected tertiary institutions in Lagos State, Nigeria.

Statement of the Problem

Effective teaching and learning can only take place in a conducive, safe and secure environment. However, there is rising wave of insecurity in most learning institutions globally; which most universities in Nigeria are not spared from this problem; thereby becoming a source of great concern to all stakeholders. A situation where the university community (the academic, non-academic staff, students, and visitors to the campus) cannot move freely in the campus or lecturers teach the students with full concentration due to anticipation of likely distractions from varying sources of insecurity threats that may crop up from anywhere without any impending notice. The resultant effects are loss of concentration by students and poor academic performances in examination, with consequent elongation of graduation periods.

It has been substantiated from the literature that majority of tertiary institutions are faced with security challenges such as armed robbery, cultism, drug abuse, student union violence, sexual harassment, killing of innocent students, academic and non-academic staff arson, rape, extortion, kidnapping for ransom, abduction, and physical attacks and disruption of academic calendar. Findings from previous studies have shown the effectiveness of ICT-based security practices employed in various learning institutions in the developed countries to curb the menace of insecurity. However, such security practices in developing countries like Nigeria have not been given sufficient attention and investigated. Therefore, this study investigated the availability and utilization of ICT- based security practices in the selected public tertiary institutions in Lagos State, Nigeria.

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The Purpose of the Study

The aim of the study is to assess the availability level of ICT- based safety and security practices in the selected tertiary institutions in Lagos State. Specifically, the study set out to:

1. Determine the availability of ICT-based tools for security practices in selected tertiary institutions in Lagos State, Nigeria
2. Determine the utilization of ICT tools for security practices in selected tertiary institutions in Lagos State, Nigeria.

Research Questions

The study provided answers to these research questions.

1. What are the available ICT-based tools for security practices in the selected tertiary institutions in Lagos State, Nigeria?
2. Which of the available ICT-based tools that are been utilized for security practices in for security practices in the selected tertiary institutions in Lagos State, Nigeria?

Research Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho1: There will be no significant difference in the response of the participants to the availability of ICT-based tools used for security.

Ho2: There will be no significant difference in the response of the participants to the utilization of ICT-based tools used for security.

METHODOLOGY

Research Design

The research design for this study is the descriptive design using survey type as the variable had already existed and the researcher has no control over it.

Sample and Sampling Techniques

The sample for the study comprised participants that were randomly selected from three public tertiary institutions in Lagos State. A total of 780 participants including 129 academic staff, 102 non-academic staff, 51 security personnel, 243 ICT personnel and 255 students participated in this study. The tertiary institutions that were randomly sampled are: Lagos State University Ojo, Federal College of Education (Tech) Akoka and Lagos State Polytechnic Ikorodu.

Research Instruments

The self- made instrument named "ICT-based Safety and Security Practices Checklist (ISSPC)" containing the list of ICT tools used for safety and security practices in the selected public tertiary institutions in Lagos State were used to collect data in this study. It consists of 5 sections. Section A consists of demographic data such as status, gender, year of service , while section B and C consist of checklists that determined the availability of ICT- based safety and security tools, respectively in which the response format are available (A) and non-available (NA). Section D and E consist of items that determined the utilization of ICT- based safety and security tools respectively in which the response formats were utilized (U) and not utilized (NU). The instrument was subjected to content and face validity. The reliability of the instrument was attained by conducting a pilot survey outside the selected public institution that was used in this study. The reliability co-efficient of 0.74 was attained as cluster grand mean score using Crombach Alpha statistical instrument. The data collected were analysed using simple

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descriptive statistics of mean, standard deviation and percentages and Pearson Product Moment Correlation inferential statistics.

Results and Discussion of Findings

The results of the data analysis were based on the stated two research questions and hypotheses respectively.

Research Question One: What are the available ICT-based tools for security practices in your campus?

Table 1:

Available ICT-based tools for security practices in the campuses

Devices	Available	%	Not Available	%
Finger Print	538	69.0	242	31.0
Biometric	592	75.9	188	24.1
Property security marking with macro film or infrared	498	63.8	282	36.2
Picture identity card	616	79.0	164	21.0
Card readers	518	66.4	262	33.6
Metal detector	446	57.2	334	42.8
Patrol van (with essential communication gadgets)	471	60.4	309	39.6
Encrypted radio/walkie talking (w/t)	456	58.5	324	41.5
Non encrypted (w/t)	338	43.3	442	56.7
Surveillance equipment (Recording camera)	458	58.7	322	41.3
Wired security camera	449	57.6	331	42.4
Surveillance equipment (Monitor)	431	55.2	349	44.8
Free toll network	402	51.6	378	48.4
Satellite network	393	50.4	387	49.6
Global positioning system (GPS)	411	52.7	369	47.3
Motor Bike (with relevant ICT tools)	370	52.6	410	47.4
Foot patrol (with relevant ICT tools)	434	55.7	346	44.3
Unified communication	438	56.1	342	43.9
Gunshot detector	310	39.8	470	60.2
Mass notification system	356	45.7	424	54.3
Grand Mean Score	**443**	**56.8**	**337**	**43.2**

Table 1 reveals that Finger Print, Biometric, Property security marking with macro film or infrared, Picture identity card, Card readers, Metal detector, Patrol van (with essential communication gadgets), Encrypted radio/walkie talking (w/t), Surveillance equipment (Recording camera), Wired security camera, Surveillance equipment (Monitor), Free toll network, Satellite network, Global positioning system (GPS), Motor Bike (with relevant ICT tools), Foot patrol (with relevant ICT tools), Unified communication have percentages ranging between 50.4% and 79.0% showing that majority of the respondents agreed that these devices are available for security purposes in the sampled tertiary institutions. However, the respondents agreed that Mass notification system (54.3%), Non- encrypted (w/t) (56.7%) and Gunshot detector (60.2%) were not available for security related functions by the respondents in curbing

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security threats. The grand mean scores of 443(56.8%) revealed that the ICT-based tools for security practices were averagely available.

Research Question Two: What are the utilized ICT-based tools for security in your campus?

Table 2:

Utilized ICT-based tools for security in the campuses

Devices	**Used**	**%**	**Not used**	**%**
Finger Print	518	66.4	262	33.6
Biometric	544	69.8	236	30.2
Property security marking with macro film or infrared	450	57.7	330	42.3
Picture identity card	584	74.9	196	25.1
Card readers	510	65.4	270	34.6
Metal detector	412	52.8	368	47.2
Patrol van (with essential communication gadgets)	469	59.1	319	40.9
Encrypted radio/walkie talking (w/t)	425	54.5	355	45.5
Non encrypted (w/t)	360	46.2	420	53.8
Surveillance equipment (Recording camera)	393	50.4	387	49.6
Wired security camera	413	52.9	367	47.1
Surveillance equipment (Monitor)	375	48.1	405	51.9
Free toll network	393	50.4	387	49.6
Satellite network	354	45.4	426	54.6
Global positioning system (GPS)	406	52.0	374	48.0
Motor Bike (with relevant ICT tools)	403	51.7	377	48.3
Foot patrol (with relevant ICT tools)	388	49.8	392	50.2
Unified communication	331	42.4	449	57.6
Gunshot detector	324	45.4	426	54.6
Mass notification system	393	50.4	387	49.6
Grand Mean scores	**422**	**54.1**	**358**	**45.9**

Table 2 revealed that Finger Print, Biometric, Property security marking with macro film or infrared, Picture identity card, Card readers, Metal detector, Patrol van (with essential communication gadgets), Encrypted radio/walkie talking (w/t), Surveillance equipment (Recording camera), Wired security camera, Free toll network, Global positioning system (GPS), Motor Bike (with relevant ICT tools), Mass notification system have percentages ranging between 50.4% and 74.9% showing that majority of the respondents agreed that they are available majority of the respondents agreed that the tools are utilized for security. However, the respondents affirmed that Foot patrol (with relevant ICT tools) (50.2%), Surveillance equipment (Monitor) (51.9%), Satellite network (54.6%), Gunshot detector (54.6%) and Unified communication (57.6%) are not been used for security related functions within the sampled tertiary institutions.

Hypothesis Testing

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Hypothesis One: There is no significant difference in the response of the participants to the availability of ICT-based tools used for security.

Table 3:

Comparison in the Response of the Participants to the Availability of ICT-Based Tools Used for Security

		Sum of Squares	Df	Mean Square	F	Sig.
Available ICT for security	Between Groups	1750.463	4	437.616	24.345	.000
	Within Groups	16177.773	900	17.975		
	Total	17928.236	904			

Table 3 shows that the F-value (24.345) is significant at 0.05 (P<0.05). It follows that there is significant difference in the response of the participants to the availability of ICT-based tools used for security practices. However, .000 significant value did not show the specific direction of the difference, hence Post-Hoc statistical analyses was conducted as shown in Table 6.

Table 4:

Turkey HSD Post-Hoc Test on Available ICT Tools for Security

Variables	Frequency	Subset for Alpha = 0.05		
		1	2	3
Security	60	28.67		
Students	450		30.84	
ICT Personnel	_		30.90	
Non Academic Staff	120			33.20
Academic Staff	150			33.65
Sig,		1.000	1.000	.911

Table 4 revealed that responses of the security are significantly different from others. There is no significant difference between students and ICT Personnel, and between academic and non-academic staff. Also, academic and non-academic staff are significantly different from students and ICT staff. The chart below further gives the section with highest availability.

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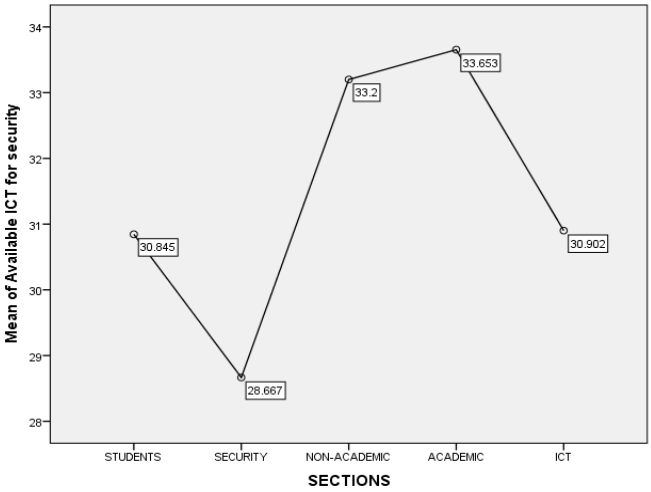

Figure 1: Available ICT Tools for Security Practices

From chart 1, academic staff has the highest mean of 33.653, followed by non-academic staff (33.2), ICT (30.902), students (30.845) and security personnel (28.667).

Hypothesis Two: There will be no significant difference in the response of the participants to the utilization of ICT-based tools used for security.

Table 5:

Comparison in the Response of the Participants to the Utilization of ICT-Based Tools Used for Security Practices

		Sum of Squares	Df	Mean Square	F	Sig.
Utilized ICT for security	Between Groups	581.564	4	145.391	9.137	.000
	Within Groups	14320.332	900	15.911		
	Total	14901.896	904			

Table 5 shows that the F-value (9.137) is significant at 0.05 (P<0.05). It shows that there is significant difference in the response of the participants on the utilization of ICT-based tools used for security practices. The post-hoc table below shows the sections with and without significance.

Table 6:

Turkey HSD post-Hoc Test on the Utilized ICT for Security

Variables	Frequency	Subset for Alpha = 0.05		
		1	2	3
Security	60	29.25		
Students	450	30.57	30.57	
ICT Personnel	_		30.64	
Non Academic Staff	120			32.64
Academic Staff	150		31.06	
Sig,		0.062	0.857	1.000

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Table 6 revealed that security personnel and students are not significantly different, likewise students, ICT staff and academic staff. Non-academic staff is significantly different from others. The chart below further gives the section with highest utilization.

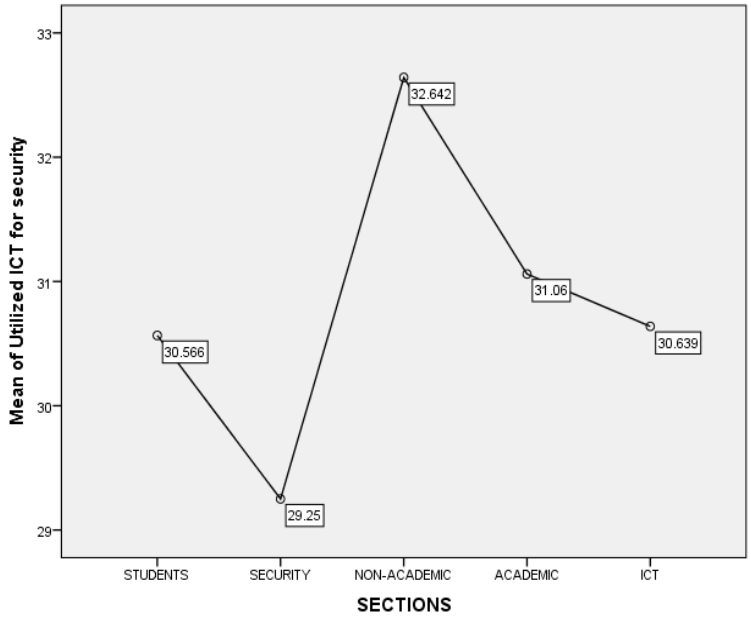

Figure 2: Charts Showing the Utilization of ICT Tools for Security

From figure 2, it shows that non- academic staff has the highest mean of 32.642, followed by academic staff (31.06), ICT (30.639), students (30.566) and security personal (29.25). However, security personnel have the least apparatuses for accessing and utilizing ICT- based security tools.

Discussion on Findings

The findings of the study also corroborate the assertion by Ibrahim (2013) that no educational institution in the modern day Nigeria is free from security challenges. Also, the study outcome supports the observation of Ekpoh, Edet and Ukpong (2020) that a huge gap still exists in the areas of crime deterrent and detection. This is seen in the extent of exposure to security challenges in universities. This study agreed with Akor, Musa and Ogunode (2021) that the security challenges such as armed robbery, cultism, drug abuse, student union violence, sexual harassment, killing of innocent students, academic, non-academic staff arson, rape, extortion, kidnapping for ransom, abduction, and physical attacks and disruption of academic calendar are the resultant effects of inadequate supply of security tools apparatuses impedes judicious use of such in curbing threats plaguing most of Nigerian tertiary intuitions.

Similarly, Oladipo, et al. (2018) findings corroborate this study that some related institutional factors that served as threats to personnel security are over-stretched and inadequate learning facilities, outdated security framework, hostile school environment, indiscipline, poor staff and student safety and security awareness, inadequate capacity building for security personnel, poor funding of institutions, were among the major determinants of security threats plaguing most tertiary institution of learning. The implication of inadequate procurement of the needed security apparatuses affected their

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utilization, thereby exemplified differences in access and utilization among the stakeholders (students, academic staff, non-academic, security personnel and ICT personnel) in the sampled tertiary institutions.

Conclusion

University is a learning institution that attracts students, staff and other related stakeholders to carry out various functions in enhancing pedagogic experiences. However, as university exists as a complex organization with heterogeneous identity comprising people from different backgrounds with distinct views and divergent goals, has some perennial challenges that make it susceptible to myriads of security threats due to inadequate provision and judicious use of the available ICT-based security tools. The resultant effect of security threats was due to inadequate provision and judicious use of the available ICT-based security tools, led to wanton killings of innocent souls, destruction of educational, structural and infrastructural resources and disruption to academic calendar. The study suggests adequate procurement of functional ICT-based tools for security practices in curbing security challenges facing Nigerian institutions of learning.

Recommendations

The recommendations stated below culminate from the findings of this study:

1. Adequate procurement of functional ICT-based tools for security practices (Video Surveillance (CCTV)-Closed Circuit Television and Metal detector, Gunshot detector, Picture identity card, Metal detector, Surveillance equipment (Recording camera), Surveillance equipment – Monitor, etc.) should be made available for general use within and outside tertiary institutions by the university management, government and non-governmental organization in curbing security related threats that are waging war against educational system in Nigeria.
2. The existing significant difference on judicious utilization of ICT-based tools for myriads security engagements in Nigerian tertiary institutions and among educational stakeholders (students, academic staff, non-academic, security personnel and ICT personnel) should be bridged harmoniously.

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