



## FACTORS MILITATING AGAINST APPLICATION OF ELECTRONIC SECURITY DEVICES IN FEDERAL COLLEGES OF EDUCATION LIBRARIES IN NORTHWEST, NIGERIA

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### Abstract

*The study investigates factors militating against application of electronic security devices in Federal Colleges of Education libraries in Northwest, Nigeria. The study had two research questions. The qualitative research method was adopted for the study using descriptive survey research design to elicit information from the participants. The population of the study constituted twenty five (25) participants from FCE libraries in Northwest, Nigeria out of which seventeen (17) participants were purposively sampled. Structured interview with open ended questions was used as instrument for data collection. The data was collected by administering interview and analyzed using thematic analysis with open coding. The findings revealed that erratic power supply, poor maintenance culture, poor staff training and high cost of electronic security devices as the factors militating against application of electronic security devices (ESDs) FCE libraries in Northwest, Nigeria. The study further revealed that hackers attack as another factor militating against application of ESDs in the FCE libraries under studies. As such, the study recommends that the FCE libraries in Northwest, Nigeria should invest in robust cybersecurity infrastructure, including firewalls, encryption tools and regular software updates, library staff and IT personnel should undergo regular training on cybersecurity best practices to mitigate potential threats that affect electronic security devices. Federal government, TETFUND and institutional management should prioritize increased funding for libraries to acquire modern electronic security systems and maintain their IT infrastructure.*

**Keywords:** Electronic Security Devices, FCE Libraries, Northwest, Nigeria

### Introduction

The library is an information centre that is stocked with various information materials that are consulted to satisfy the various information needs of the library users (Udo-Anyanwu, 2022). Considering the above submission, there are different kinds of libraries, including public libraries, special libraries, school libraries, private libraries and academic libraries. Academic libraries are institutions set up to cater for the educational, cultural, research, and recreational information needs of their users (Odutola &

Ogbonyomi 2022). However, Federal Colleges of Education libraries in Northwest, Nigeria are facing significant security challenges from different directions.

The rate at which information resources disappear in college libraries cannot be overemphasize, as the extent of these challenges varies from one library to another. The goal of the security system in the college libraries should be to provide a safe and secure environment for employees, information resources and equipment, and library patrons. At the same time, the security system



must perform these functions as seamlessly as possible without interfering with the library's objectives of easily and simply providing patron services (Dorayi, 2017). Therefore, college libraries should invest huge funds for installations of electronic devices for protection of resources, library staff and users. Application of electronic security devices (ESDs) in libraries has become a global trend aimed at enhancing the protection of information resources and ensuring the safety of library staff and users.

Electronic security systems are device that are used with the help of electrical gadgets to safeguard library materials. These systems support libraries to reduce unethical behaviours in the libraries (Nath, 2021). According to Nyemezu, Oladipupo and Ejuh (2020:61) electronic security systems are those modern technologies used in the library to secure library resources against unauthorized removal, theft, mutilation, vandalism, hiding of library materials, writing and drawing on pages, folding library resources, use of other patrons' library cards, duplicating ownership stamps among others. These facilities include: Close Circuit Television (CCTV), Radio Frequency Identification (RFID), Barcode scanner and digital camera. In the context of librarianship, electronic security devices denote the devices, software, and hardware systems that library professionals adapt in order to protect their information resources from intruders.

The application of ESDs has been proposed as a viable solution to these challenges, but their implementation has been inconsistent due to a combination of financial, technical and environmental factors (Aina, 2018). From the researchers' existing search of literature, there seems to be no study on factor militating against application of electronic security devices in libraries particularly in the study area. On this basis, the study investigated factors militating against application of electronic security devices in Federal Colleges of Education Libraries in Northwest, Nigeria.

### **Statement of the Problems**

Application of electronic security devices (ESDs) in libraries has become best practice for safeguarding valuable information resources. However, in Federal Colleges of Education (FCE) libraries in Northwest Nigeria, application of these great technologies faces significant challenges in implementation and maintenance. A recent study by Dorayi, Adam and Bako (2025:112) highlights prevalent security issues in FCE libraries including theft, mutilation, non-return of borrowed items, disasters and cybercrimes. Despite these challenges, libraries found electronic security devices usable for protection of information resources, users and library staff respectively.

One of the primary factors militating against application of ESDs is the lack of adequate funding for the acquisition, installation and maintenance of ESDs. FCE libraries in Nigeria often operate with limited budgets and library development is frequently not prioritized (Aina, 2018). Furthermore, Eze and Awa (2015:1) identified frequent power outages and the lack of alternative energy sources, such as solar power or generators, disrupt the functionality of ESDs rendering them ineffective. To this end, the researchers investigated factors militating against application of electronic security devices in Federal Colleges of Education Libraries in Northwest, Nigeria.

### **Research Questions**

The questions of this study are as follows:

1. What are the factors militating against application of electronic security devices in Federal Colleges of Education libraries?
2. What are the solutions to the identified factors?

### **Literature Review**

Studies have been carried out on challenges affecting application of electronic security devices in libraries of different tertiary institutions in Nigeria and beyond, For instance, study conducted by Ozowa, Aba and Abah (2016:2) on impact of electronic surveillance systems on theft and mutilation in Francis Suleimanu Idachaba Library, University of



Agriculture Makurdi. The study revealed that inadequate funding of library ( $X = 2.73$ ), poor power supply ( $X = 2.60$ ); high cost of electronic surveillance system ( $X = 2.55$ ), lack of trained personnel to handle gadget ( $X = 2.53$ ) as constraints that affect the effectiveness of electronic surveillance system of theft and mutilation. The Grand mean of ( $\bar{x} = 10.42$ ) showed that inadequate funding of library; poor power supply and high cost of installing electronic surveillance affect the effectiveness of electronic surveillance in Francis Sulemanu Idachaba Library. This finding is in line with Ogbodo (2011:40) that revealed inadequate funding of the library, lack of security policy, inadequate infrastructure, lack of trained staff and power failure were some of the constraints that affect security of information sources.

In another study Amoah (2016:1) investigated assessment of library user security in Sam Jonah Library, University of Cape Coast, It was found out that inadequate funds to purchase ICT based security equipment, inadequate security personnel at the entry and exit of the library and inadequate attention placed on the security of users. Similarly, Ekwelem, Eke and Anazodo, (2014:1) surveyed students' perception of new security measures in Nnamdi Azikiwe Library, University of Nigeria Nsukka. The study revealed that epileptic internet supply, inadequate infrastructure such as computers, photocopiers, backup generators, disorganized manual catalogue. Also, Abioye and Adeowu (2013:1) revealed "majority of the library staff 69(67.7%) indicated erratic power supply to implement electronic security which also affirmed by 151(58.8%) of the library user respondents".

In the same vein, Akor, Justina and Akor (2019:13) revealed lack of literate or skilled personnel: libraries and information centre's lack skilled personnel that can operate teach and instruct the use of these telecommunication security systems even when they are made available in the library. Poor power supply: These telecommunication security systems or devices need electricity to power them and due to the poor power supply, these systems often time are

not working and as such are incapable of performing their expected task of securing the library and its collection. Chioma and Nwosu (2018:1) revealed that RFID (Radio Frequency Identification System) is not in use in any of these Federal University Libraries. The main reasons identified as being responsible for the occasional use of electronic security systems include poor maintenance, inadequate funding and incessant power supply. Dorayi, (2017:80) revealed challenges facing use of CCTV device in Nigerians' academic libraries are; erratic power supply, inadequate training of personnel, inadequate fund. Also the finding revealed that CCTV used to lower the level of staff vigilant in many organizations.

Siddiqui and Eraj (2014:9) discussed the various method of the security system and policy/procedure weakness in the library. Ferdinand, Patrick and Nneka (2015:46) described how the information-bearing materials of the library can be secured using traditional and electronic measures, features of good security measure, securing the library physically and electronically and finally, they suggest the use of telecommunication security system and devices require budgetary management support, staff support, software development and hardware upgrade for the attainment of the set goals thereby appealing to the library management to release funds that are needed to accomplish this task. Chatterjee and Maity (2013:94) submit that now the older security threats in the library transform into modern cybercrime and network hazards. It also briefly describes two different sets of threats in modern libraries and the measures that can be adopted for prevention.

### **Methodology**

The study adopted the survey research design method. The entire population of the study consists of twenty five (25) participants from FCE libraries in Northwest, Nigeria. The study used an eligibility criterion to select the participants of the study by requiring them to be college librarian, e-librarian, circulation librarian and head of security unit, have five years of working experience and ability to provide



informed consent. Exclusion criteria included staff of other section of the library, less than five years of working and inability to communicate in the study. Eligibility criteria include a list of characteristics for eligibility for membership in the target population (Memon, Thurasamy, Ting & Cheah, 2025). The purposive sampling technique was used to draw a sample of seventeen (17) participants. Kumar (2011:235) opined that the primary consideration in purposive sampling is the researcher's judgments

as to who can provide the best information to achieve the objectives of the study. The researcher used open-ended interviews as an instrument for data collection and four (4) criteria for validating qualitative research, viz.: credibility, transferability, dependability, and confirmability were used as a means of validation and reliability of the instrument. The data was collected by administering interviewed and analysed using thematic analysis with open coding.

## Data Presentation and Analysis

### Background Information of the Participants

SN	Name of Federal College of Education	Participants	Time & Date of Interview
1	Federal College of Education, Kano	<b>P1</b> College Librarian	2/9/24 10:00 - 10:30 am
		<b>P2</b> e-librarian	2/9/24 10:45 – 11:20 am
		<b>P3</b> Circulation Librarian	2/9/24, 11:30 -12:10 Pm
		<b>P4</b> Security Head	2/9/24 1:30 -2:00 pm
2	Federal College of Education (T) Bichi, Kano	<b>P5</b> College Librarian	9/9/24, 12:06 – 12: 20 pm
		<b>P6</b> e-librarian	9/9/24 12:40 – 1:00 pm
		<b>P7</b> Circulation Librarian	9/9/24 2:00 – 2:30 pm
		<b>P8</b> Security Head	9/9/24 2:40 -3: 15 pm
3	Federal College of Education, Katsina	<b>P9</b> College Librarian	9/9/24 11:45 -12:20 pm
		<b>P10</b> e-librarian	9/9/24 11:00 – 11:40 am
		<b>P11</b> Circulation Librarian	9/9/24 10:00 – 11:34 am
4	Federal College of Education, Zaria	<b>P12</b> College Librarian	3/9/24 1:15 – 1:30 pm
		<b>P13</b> e-librarian	3/9/24 12:00 – 12:30 pm
		<b>P14</b> Circulation Librarian	3/9/24 11:00 – 11:30 am
5	Federal College of Education (T) Zamfara	<b>P15</b> College Librarian	26/9/24 11:46 – 12:19 pm
		<b>P16</b> e-librarian	25/9/24 1:30 – 2:00 pm
		<b>P17</b> Circulation Librarian	26/9/24 10:00 – 11:30 pm

*Source: Field work, 2024*



### **Research Question One: Factors Militating against Application of Electronic Devices**

The researcher asked the participants to state the factors militating against application of electronic security devices in Federal Colleges of Education (FCE) libraries under studies. The responses of the participants are categorized into the following sub themes:

Sub-Theme One (T1) – Erratic Power Supply

Sub-Theme Two (T2) – Poor Maintenance Culture

Sub-Theme Three (T3) – Poor Staff Training

Sub-Theme Four (T4) – High cost of ICT Facilities

Sub-Theme Five (T5) – Hacker Attack

The responses of the participants revealed that p1-p17 reported erratic power supply, poor maintenance culture, poor staff training and high cost of electronic security devices. However, only p1-p4 revealed hackers attack as the factors militating against application of electronic security devices in FCE libraries under studies.

On the erratic power supply, the responses of the participants revealed that p1-p17 reported erratic power as common factor militating against application of electronic security devices in the libraries of FCEs under studies. This deduces frequent power outages in Northwest Nigeria can disrupt electronic security devices including CCTV and RFID systems and electronic access controls, leaving information resources vulnerable.

**P5, p12 and p15** reported *‘erratic power failure disturbs the library as high cost of diesels necessitates the management to avoid stand by generator(s)’*.

**P6, p8 p14, and p10** revealed *‘we are facing problem of power supply which affects monitoring of information resources in library and environment’*.

**P7, p11, p13 and p17** shared *‘systems require stable network connectivity for real-time monitoring, data storage and system updates as poor connectivity can hinder their performance of these systems, limiting their effectiveness in protecting information resources’*.

**P9 and p16** highlighted *‘Internet-based devices like cloud surveillance cameras are almost impossible to implement due to poor broadband service’*.

However, p1-p4 revealed that problem of power supply is not a problem in their library as they have three sources of power.

**P1, p2, p3 and p4** observed: *‘we are not affected by power outage as the library have three different sources of electricity ranging from college generator, independent library generator and solar’*.

It is evident to note that a power outages issue which is common in some libraries of FCEs in Northwest, Nigeria can affect the reliability of electronic security devices as indicated.

Pertaining poor maintenance culture, the responses of the participants revealed that p1-p17 reported poor maintenance culture as a factor militating against application of electronic security devices in the libraries of FCEs in under studies. This portrays absence of consistent maintenance of electronic security devices may lead to malfunction leading to system downtimes that compromise security of the library.

**P1-p4, p5 and p7** reported *‘poor maintenance culture hinders the functionality of CCTV devices in our library’*.

**P6 p9, p12, p14, p15 and 16** *‘we observed improper maintenance results in partial or total dysfunction of surveillance systems, leaving sections of the library without suitable monitoring. This creates security gaps that make information resources vulnerable to theft and vandalism’*.

**P8, p10, p11, p13, and 17:** *Had this to say, poor maintenance culture presents significant challenges for the application of electronic of device used for securing information resources.*

It can be deduced that malfunction of electronic security devices such as broken access control systems or improperly wired cameras can create safety hazards for library user and staff. Poor maintenance exacerbates these risks, as systems





are not checked or repaired proactively as indicated.

With regards to poor staff training, the responses of the participants revealed that p1-p17 reported poor staff training as a factor militating against application of electronic security devices in the libraries of FCEs under studies. This signifies poor training presents a critical challenge in the effective application of electronic security devices for safeguarding information resources in libraries at FCEs in Northwest Nigeria.

**P4, p8, p12 and p16:** *In this library, lack of adequate training limits staff's ability to use, maintain and troubleshoot these devices, leading to reduced effectiveness, increased risks and operational inefficacies.*

**P1, p3, p15, p5 and p6:** revealed *'poor training and retraining of staff affect application of electronic devices in academic libraries'.*

**P3, p7, 10:** *'We need training and retraining of our staff so as to handle security issues in the library'.*

**P2, p9, p11, p13 and P14:** *'In many libraries, staff lacks basic skills on how to use security devices. This results in underutilization of the equipment, compromising the security of information resources in the library'.*

It is evident to note that with training, staff cannot fully leverage real-time monitoring and response features. For instance, staff may struggle to detect suspicious activity on electronic security devices or respond promptly to slower to access control issues, leading to slower response times during security incidents in library.

On high cost of electronic security devices, the responses of the participants revealed that p1- p17 reported high cost of electronic security devices as a factor militating against application of electronic security devices in the libraries of FCEs under studies. This highlights high cost of electronic security devices is a major factor militating against the protection of information resources in libraries at FCEs under studies. These institutions often face financial limitations,

which complicate their ability to procure, maintain and upgrade electronic security devices.

**P2, p7, 9, and 16** reported, *'high cost of ICT facilities due to inflation affect application of electronic security devices for safeguarding information resources in this library'.*

**P5, p8, p14, and 17:** *In these institutions, we often operate on tight budgets, with limited funds allocated to library resources and infrastructure which limiting the library's ability to afford advanced electronic security devices.*

**P3, p4, p6, p10 and p13:** *'Due to exchange rate of Naira against Dollar, obsolesces software, hardware and other ICT facilities are rampant in Nigerian market which affect application of electronic security systems in libraries'.*

**P1, P11 and p15:** *We realized that the security technologies evolve quickly, with new devices and features emerging regularly. The high cost of replacing outdated devices makes it difficult for libraries to stay current.*

**P12:** *In this library, high cost of electronic devices limits our ability to scale security systems effectively as the library may afford few cameras, leaving other areas without surveillance.*

It can be deduced that libraries of FCE in Northwest, Nigeria are facing budget constraints and financial limitations. These may diminish the protection of information resources available in the libraries of FCE in Northwest, Nigeria.

Pertaining hackers attack, the responses of the participants revealed that p1-p17 reported hackers attack as factor militating against application of electronic security devices in the libraries under studies. This indicates hackers' attacks are a significant factor hindering the effective application of electronic security devices in FCE libraries in Northwest Nigeria.

**P2, p9, p12 and p17** reported *'our libraries rely on digital tools and devices, making them susceptible to malware attack, such as viruses, ransom ware and spyware as they use to gain unauthorised access to library resources, modify data or disrupt services'.*



**P1, p3 and p6:** *We realize scammers use social engineering tactics to deceive library staff or users into revealing sensitive information leading to illegal access to library databases.*

**P4, p7 and p10:** *We encounter attack that overwhelms the library systems, rendering services temporarily unavailable.*

**P8, p13 and p15:** *Some library staff and users may not be fully aware of cyber threats in recognizing security risks which increases the chances of successful attacks.*

**P5, p11, p14 and p16:** *Many libraries rely on outdated or obsolesces software and hardware which can have unpatched vulnerabilities. This makes them more susceptible to exploitation by hackers who can easily breach these systems.*

It can be seen that libraries of FCE in Northwest, Nigeria are facing hackers attack on electronic security devices in the libraries present a significant challenges to the security of information resources within FCEs in Northwest Nigeria. Furthermore, the main security issues include various cyber threats like malware and phishing, vulnerabilities arising from resources constraints, obsolesced and outdated infrastructure and the resulting impact on library operations.

## **Research Question Two: Solution to the Identified Factors**

On the solution to the identified factors, the participants were asked to suggest possible solutions to overcome the factors militating against application of electronic security devices for the security of information resources in the college libraries, their responses are categorized under the following sub themes:

Theme One (T1) – Provision of Adequate Funds

Theme Two (T2) – Provision of Alternative Power Supply

Theme Three (T3) – Install Strong & up-to-date Antivirus

Theme Four (T4) – Provision of Adequate Staff Training

Theme Five (T5) – Install other Electronic Security Device

The responses of the participants revealed that p1- p17 reported provision of adequate funds, provision of alternative power supply, install strong and up-to-date antivirus, provision of adequate staff training and install other electronic security device solution to overcome the identified factors militating against application of electronic security devices in FCE libraries under studies. This signifies that implementing electronic security device for protection of information resources requires a combination of planning, resource allocation, partnership and staff training.

**P2 and p4:** *We need adequate funds to enable the library install additional electronic security devices’.*

**P1, p6 and p16:** *observed ‘libraries can seek additional funding from institutional grants designed to support security initiatives’.*

**P3, p5 and p7:** *Had this to say, there should always be an alternative supply of power like solar energy in library to support the electronic security devices.*

**P8 and p11:** *In this library, without staff training, staff cannot fully operate electronic devices for protection of information resources in library.*

**P10:** *had this to say; training programs of staff on how to operate, monitor and maintain can improve device utilisation devices.*

**P9, 12, p15:** *Had this to say, software upgrades are essential for addressing security vulnerabilities as it’s require compatible hardware.*

**P14 and p17:** *We observed a need for library to install and constantly update it antivirus to prevent hackers attack.*

**P13:** *Had this to say, provision of other electronic security devices such as barcode device, electromagnetic gate, radio frequency identification, biometric devices, smart card device, 3M technology and automatic book drop system so as to curtail the security issues*

It can be seen that libraries of FCEs in Northwest, Nigeria requires multidimensional solutions tailored to financial, operational and human resources limitations. By pursuing alternative funding, engaging in tactical partnerships,



improving device usage, and investing in staff training, these libraries can maximise the efficacy of their security systems within existing constraints.

### **Discussion of Findings**

Regarding research question one of the study, the study revealed that erratic power supply, poor maintenance culture, poor staff training and high cost of electronic devices in FCE libraries in Northwest, Nigeria. This portrays college libraries of FCEs in Northwest, Nigeria are lagging behind in the use of ICT gadgets for protection of information resources and staff. On erratic power supply, it is regarded as a common phenomenon in academic libraries in Nigeria, particularly in Northwestern part of the country. This is in line with the findings of Dorayi, (2017:80) who found erratic power supply, inadequate training of personnel, inadequate fund. Ogbodo (2011:40) found inadequate funding of the library, lack of security policy, inadequate infrastructure, lack of trained staff and power failure were some of the constraints that affect security of information sources. Abioye and Adeowu (2013:1) revealed “majority of the library staff 69(67.7%) indicated erratic power supply to implement electronic security which also affirmed by 151(58.8%) of the library user respondents”.

On poor maintenance culture, this is happens as a result of negative attitude of library staff, poor clean library environment and dusty weather condition in the Northwestern region. The findings agreed with that of Chioma and Nwosu (2018:1) revealed that RFID (Radio Frequency Identification System) is not in use in any of these Federal University Libraries. The main reasons identified as being responsible for the occasional use of electronic security systems include poor maintenance, inadequate funding and incessant power supply. Also, the finding is agreed with that of Dorayi (2017:80) who found erratic power supply, inadequate training of personnel and inadequate fund.

On poor staff training, this factor is rampant in majority of academic libraries especially those in colleges of education in Northwest, Nigeria as

staff training improves productivities in organization. This is in line with the findings of Akor, Justina and Akor (2019:13) revealed lack of literate or skilled personnel that can operate, teach and instruct the use of these telecommunication security systems even when they are made available in the library. Poor power supply: These telecommunication security systems or devices need electricity to power them and due to the poor power supply, these systems often time are not working and as such are incapable of performing their expected task of securing the library and its collection.

On high cost of electronic devices, college libraries are faced with declining budgets and increasing demands from users as this factor negate application of electronic security devices in libraries of FCE in Northwest, Nigeria. This is in agreement with the findings of Ozowa Aba and Abah (2016:2) who found the grand mean of ( $\bar{x}=10.42$ ) that showed inadequate funding of library; poor power supply and high cost of installing electronic surveillance affect the effectiveness of electronic surveillance in Francis Sulemanu Idachaba Library.

On hackers’ attacks of electronic security devices, it often result in data breaches, unauthorized access to sensitive information and system malfunctions, undermining the reliability of electronic security devices in FCE libraries in Northwest, Nigeria. This is in conformity with the findings of Chatterjee and Maity (2013:94) submit that now the older security threats in the library transform into modern cybercrime and network hazards.

Pertaining research question two of the study, the findings revealed provision of adequate funds, provision of alternative power supply, install strong and up-to-date antivirus, provision of adequate staff training and install other electronic security devices solution to overcome the identified factors militating against application of electronic security devices in FCE libraries. This depicts the need for regular cybersecurity training for library staff, investment in modern IT infrastructure and collaboration with cybersecurity experts to safeguard electronic





security systems by increasing funds to all tertiary institutions. This finding is in agreement with the submissions of Ferdinand, Patrick and Nneka (2015:46) who suggested the use of telecommunication security system and devices require budgetary management support, staff support, software development and hardware upgrade for the attainment of the set goals thereby appealing to the library management to release funds that are needed to accomplish this task.

### Conclusion

Based on the findings of the study, it is imperative to conclude that application of electronic security devices in Federal College of Education (FCE) libraries in Northwest, Nigeria faces significant challenges, including frequent hackers' attacks, inadequate cybersecurity awareness, outdated IT infrastructure and limited funding. These factors collectively hinder the effective application of modern security technologies. Addressing these issues requires a concerted effort to enhance cybersecurity measure, provide staff training and secure adequate funding. By tackling these barriers, FCE libraries in Northwest, Nigeria can improve their security systems, protect valuable resources and create a safer environment for users, ultimately supporting their mission to promote education and knowledge dissemination.

### Recommendations

Based on the findings of this research, the following recommendations are put forwards to improve factors militating against application of electronic security devices in FCE libraries in Northwest, Nigeria:

1. FCE libraries in Northwest, Nigeria should invest in robust cybersecurity infrastructure, including firewalls, encryption tools and regular software updates. Additionally, library staff and IT personnel should undergo regular training on cybersecurity best practices to mitigate potential threats that affect electronic security devices.
2. Federal government, TETFUND and institutional management should

prioritize increased funding for libraries to acquire modern electronic security systems and maintain their IT infrastructure.

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