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Research Article

# Information and Communication Technology Integration in School Security Management and Principals' Job Performance in Private Secondary Schools in Akwa Ibom State, Nigeria

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**ABSTRACT:**

This study determined the extent to which ICT integration in school security management predicts principals' job performance in private secondary schools in Akwa Ibom State, Nigeria. However, from the literature reviewed so far it was observed that the relationship between ICT integration in school security management and principals' job performance has not satisfactorily given adequate attention in the context of Closed Circuit Television (CCTV), entry metal detectors, social net watchers, panic buttons and school bus tracking system in private secondary schools in Akwa Ibom State, Nigeria. This study aimed to bridge this gap by examining the relationship between these variables. A correlational research design was adopted while the population consists of all 476 principals of the private secondary schools in Akwa Ibom State. Krejcie and Morgan Table was used to determine the sample size of 214, while purposive sampling was used to sample only schools that have the ICT facilities under study. Two research instruments were used to elicit data for the study. Regression analysis was used to answer research questions and to test all the null hypotheses at 0.05 level of significance. Findings of the study show that integration of Closed-Circuit Television (CCTV), entry metal detectors, social net watcher and panic buttons had low positive but no significant predictive influence on principals' job performance in private secondary schools in Akwa Ibom State. The result also indicated that integration of school bus tracking have moderate positive and significant predictive influence on principals' job performance in private secondary schools in Akwa Ibom State. Based on the findings, it was concluded that limited ICT security integration in private secondary schools in Akwa Ibom state represents a significant vulnerability, increasing risk to students and staff. Therefore, urgent prioritization of ICT integration is crucial. It was recommended among others, that private school administrators in collaboration with parents should invest in ICT tools in order to ward off potential threats, and that public schools in collaboration with the government should adopt and invest in ICT as a matter of urgency.

***Keywords:*** *Information and Communication Technology (ICT), School Security Management, CCTV, Principals' Job Performance and Private secondary schools*

## 1. INTRODUCTION

Principals' job performance could be regarded as the effectiveness and efficiency with which administrative tasks, responsibilities, and functions are carried out within an organization. It involves the successful execution of administrative duties to support the overall goals, objectives, and operations of the organization. Job performance encompasses various aspects such as leadership, decision-making, planning, organization, communication, problem-solving, and resource management. Principals' job performance in this context refers to the effectiveness of administrative actions and strategies in ensuring the safety and security of students, staff, and the school community. Here, the principal has several functions in the management of school security such as; school needs assessment, security policy implementation, educating the personnel on security awareness, collaboration with law enforcement and recommendation for recruitment of security technicians.

Principals are responsible for conducting regular school needs assessment to identify potential security threats and vulnerabilities within the school premises. This involves oversight and coordination, security policy implementation, educating the personnel on security awareness, collaboration with law enforcement and recommendation for

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recruitment for security technicians. Principals play a crucial role in implementing security policies and procedures. These policies cover a range of security aspects, including visitor management, access control, crisis response, and the use of security technologies.

Again, principals are responsible for developing a comprehensive security training program for all personnel. They usually ensure that these individuals are well-trained, equipped with the necessary skills, and aware of their roles and responsibilities. They also collaborate with law enforcement in order to establish and maintain effective partnerships with local law enforcement agencies. This collaboration may involve sharing information, coordinating emergency response plans, and seeking guidance on security best practices. Principals are responsible for assessing the specific security needs of the school to determine the required skills and expertise of the security technicians. This includes considering factors such as the size of the school, the layout of the premises, existing security measures, and any previous security incidents or concerns.

However, the recent occurrences in secondary schools suggest that some principals cannot discharge these responsibilities properly because these ICT security systems are not made available. This is evident in the insecurity widespread in some schools. For instance, on 29th January, 2024, it was reported by the Punch Newspaper that teachers, pupils, and the bus driver of Apostolic Faith Group of Schools in Emure-Ekiti, Ekiti State were kidnapped while conveying the pupils back to their different destinations. Also, on 10th March, 2022 it was reported by the Punch Newspaper that an senior secondary school three student of Aka Community in Uyo, Akwa Ibom State stabbed a senior secondary two student to death in the school premises. It was again reported by the Punch Newspaper on 15th August, 2021 that fire gutted a private secondary school, Annang Secondary Commercial School, located in Idung Esimuk, Odoro Ikot in Essien Udim Local Government Area of Akwa Ibom State. A viral video also made rounds on all social media platforms on 20th December, 2020 where one Mrs. Deborah Okezie alleged that her son was sexually abused by some senior students in Deeper Life High School in Uyo, Akwa Ibom State. On 19th February, 2018, 110 schoolgirls were kidnapped by the Boko Haram terrorist group from the Government Girls' Science and Technical College (GGSTC), Dapchi in Yobe State. Similarly, on 14th April, 2014, 276 female students were kidnapped by the same Boko Haram terrorist group from the Government Girls' Secondary School at the town of Chibok in Borno State.

Insecurity could be regarded as the state of being subject to danger or injury. It is regarded as the lack of safety, risk, hazard, uncertainty, lack of defense and lack of security [1]. Apart from being the fear of virtually every Nigerian, insecurity has become the word on their lips and a discussion topic where two or three are gathered. In recent time, the security situation in the nation appears to be elusive and insurmountable which could be presumed that the government at all levels have not done enough to combat the persistent security threats in the nation, especially in educational institutions.

Presently, it appears most Nigerian private secondary schools still employ analog security management practices such as use of manual gates and checkpoints, issuance of tally for motorists, stop and check, issuance of identification cards or badges for students, staff, and authorized personnel, reliance on human security guards stationed at school entrances, face-to-face communication and coordination during incidents, paper-based documentation and filing systems, hardcopy emergency response plans and procedures, and poor perimeter fencing among others. Although these efforts are commendable; however, it does not seem completely effective in the management of school security.

The issue of insecurity in Nigerian secondary schools has been a longstanding challenge, with concerns ranging from student safety, to incidences of violence, and even the threat of kidnappings. As secondary schools grapple with security concerns, the influence of ICT-driven solutions may be the breakthrough needed to create safer learning environments. This could be done through integration of information and communication technology (ICT) in its management, especially in schools, by principals, to manage security situation. Technology, especially ICT seem to have influenced

every aspect of human life, of which educational system is not left out. In regard to this, [2] referred to technology as tools, systems and devices that can generate, create, store or process information. The data processing and logic capabilities of digital technologies are enabled through microprocessors that are programmed to perform various functions.

In this regard, [3] referred to Information and Communication Technology (ICT) as all forms of technologies that are used to create, store, share or transmit and exchange information. From the foregoing, ICT could therefore be described as the infrastructures and components that enable modern information management, with tools such as; Closed Circuit Television (CCTV), entry metal detectors, social net watchers, panic buttons and school bus tracking system which could be integrated for security management in schools.

Closed-Circuit Television (CCTV) is a system that uses video cameras to monitor and record activities in specific areas or locations. It includes some key aspects which is useful, when it comes to incident investigation, emergency response, access control among others. This is why [4] affirms that CCTV are systems which uses cameras to capture video footage of a facility. This footage is sent to a recording device, where it is stored for future references. It serves as an identification tool that has the capacity to identify people from their peculiar characteristics. This could make it easier for principals to keep track of the school facility to better understand who should or should not be within school premises. Another important ICT system that could ensure school's safety are entry metal detectors.

Entry metal detectors are security devices commonly used in various settings, including schools, that could enhance safety by detecting metallic objects that individuals may be carrying. In this regard [5], describes an entry metal detector as a genuine security guard that examines an individual having objects, and shows it. The primary purpose of entry metal detectors is to identify and prevent the entry of potentially dangerous weapons such as knives or firearms. These detectors provide an opportunity for early detection of weapons or dangerous items before they could enter into any facility. Interestingly, these detectors are like a silent announcer, which could notify authorities of any irregularities. This could make it easier for principals to ensure prompt notifications when a student or an intruder acts against the school law. Social net watchers are monitors and ICT program that can ensure students' safety and security.

Social net watchers could refer to individuals or organizations that monitor social media platforms to identify and report potentially harmful or illegal activities. It includes monitoring for cyberbullying, hate speech, threats, or the sharing of explicit or inappropriate content. This is why [6] affirms that social net watchers are computer programs that keep tabs on every activity the students perform on the internet. The programs monitor students' social media posts, and alerts teachers and parents to potential cyberbullying, suicide, or violent threats in real time. Social net watchers run completely in the cloud, and there is no need for onsite installation, Information Technology (IT) resources, maintenance, or even any downloading to devices. This could make it easier for principals to therefore flip the students' safety model to preventive rather than remedying, and developed easy-to-use prompt software, and by so doing could save lives. Panic buttons is another ICT system that could enhance schools' security.

Typically, panic buttons are small buttons or switches that can be activated with one press or click. They are often connected to security emergency, and other communication networks. Similarly, [7] submitted that a panic button is a type of device designed to quickly and easily alert employees or emergency services to a situation that requires immediate attention. Principals who integrate panic buttons in the management of security could therefore be assured that every second is being optimally utilized, and that emergency help is alerted in real time. School bus tracking system is another ICT that could ensure security.

A school bus tracking system is a technology-based solution designed to track and monitor the movement and location of school buses in real-time. It utilizes various technologies such as Global Positioning System (GPS), cellular networks, and software applications to provide accurate and up-to-date information about the school buses. In this regard, school bus tracking system tracks each bus

in the fleet by Global Positioning System (GPS) software installed in them. This system is integrated with the systems in the fleet managers' office to provide them the real time location of the buses in the fleet. Also, monitoring the movement of buses and implementing any changes to the routes can be done easily. Any deviations from the assigned routes are detected and alerted by the system. These tracking systems are proactive because they operate in real-time. Around the world, various configurations of buses are used, but the most iconic examples are the yellow school buses seen in the United States and Canada. Principals who adopt this system, could improve visibility to track and manage student attendance across multiple campuses. These ICT systems as highlighted if integrated, is assumed that they could impact positively on principals' administrative job performance.

It is assumed that the interplay of integration of ICT systems by Principals' could enhance the management of school security thereby promoting their job performance. This study aims to explore the extent of ICT integration in school security management and assess its validity or impact on the job performance of principals in private secondary schools in Akwa Ibom State.

## 2. Literature Review

### 2.1: Concept of ICT Integration

Integration is the action or process of successfully combining two or more things in an effective way. It is the combination with compatible elements in order to incorporate them. This means that, it refers to a state of being harmonized or unified, where separate parts are joined together to form a whole that is coherent, harmonious, or consistent. In an integrated system, there is a sense of cohesion, agreement, or interconnectedness among the various components or aspects involved. In this regard, [8] defined integration as the act of bringing together smaller components or information stored in different subsystems into a single functioning unit. He added that, it refers to the end result of a process that aims to combine different, often disparate subsystems so that the data contained in each becomes part of a larger, more comprehensive system that, ideally, quickly and easily shares data when needed. This implies that, integration is the intentional merging of content, skills, and dispositions from multiple disciplines to address complex, real-world problems, through ways such as ICT integration.

ICT stands for Information and Communication Technology. It refers to the broad range of technologies used for the collection, storage, processing, transmission, and presentation of information. ICT encompasses various hardware, software, networks, and digital tools that enable the creation, access, and exchange of data and communication. In this dimension, [9] provided insights into integrating ICT and security management. They discuss the use of ICT tools such as; intrusion detection systems, security information and event management systems (SIEMS), and video surveillance to enhance security measures in organizations such as schools. ICT integration therefore refers to the process of incorporating information and communication technology into various aspects of an organization's operation and processes. It involves leveraging technology to enhance efficiency, productivity, communication and decision-making. ICT integration in security within this framework refers to the incorporating and utilization of information and communication technology (ICT) systems, tools, and processes to enhance security measures, protocols, and operations. It involves integrating digital technologies and systems in the overall security infrastructure to improve efficiency, effectiveness, and responsiveness in preventing, detecting, and responding to security threats. A good school management not only focuses on education, but the school safety as well. Therefore, a well-integrated ICT system such as CCTV, entry metal detectors, social net watchers, panic buttons and school bus tracking system are considered crucial in the management of school security. A good school management not only focuses on education, but the school safety as well.

### 2.2 Job Performance

Job performance refers to the process of managing and supervising the operations, resources, and activities of an organization or institution. It involves planning, organizing, coordinating, and controlling various aspects to ensure the smooth

functioning and achievement of organizational goals. A principal is the chief administrator in the secondary school who is responsible with multifarious tasks to ensure the realization of the school's objectives, and without them nothing works in the school. Whatever the principal does in schools with materials, human beings, the ground itself could be described as principals' job performance. A school principal acts as a key determinant as a key determinant in the realization of desired outcomes and successes in schools, hence, it is viewed as critical by all education stakeholders. A principal is the primary leader in a school who establishes a culture of high expectations and belongingness for every child, staff member and parent [10]. This implies that principals are usually very disciplined and are expected to carry out a variety of duties, including the establishment of school educational standards, policies and procedures. They also monitor and evaluate teachers and other staff within their specific educational facility. Principals therefore build schedules, assign duties, create committees and provide staff with relevant information.

Job performance in school security refers to the effectiveness of administrative actions and strategies in ensuring the safety and security of students, staff, and the school community. Here, the principal has several functions in the management of school security such as; school needs assessment, security policy implementation, educating the personnel on security awareness, collaboration with law enforcement and recommendation for recruitment of security technicians. Principals are responsible for conducting regular school needs assessment to identify potential security threats and vulnerabilities within the school premises. This involves oversight and coordination, security policy implementation, educating the personnel on security awareness, collaboration with law enforcement and recommendation for recruitment for security technicians. Principals play a crucial role in implementing security policies and procedures. These policies cover a range of security aspects, including visitor management, access control, crisis response, and the use of security technologies.

Again, principals are responsible for developing a comprehensive security training program for all personnel. They usually ensure that these individuals are well-trained, equipped with the necessary skills, and aware of their roles and responsibilities. They also collaborate with law enforcement in order to establish and maintain effective partnerships with local law enforcement agencies. This collaboration may involve sharing information, coordinating emergency response plans, and seeking guidance on security best practices. Principals are responsible for assessing the specific security needs of the school to determine the required skills and expertise of the security technicians. This includes considering factors such as the size of the school, the layout of the premises, existing security measures, and any previous security incidents or concerns. It is assumed that the interplay of integration of ICT systems such as CCTV, entry metal detectors, fire alarms among others by Principals' could enhance the management of school security thereby promoting their effective administrative performance.

### 2.3 CCTV

CCTV stands for Closed-Circuit Television. It refers to a system of cameras that are used to monitor and record activities in specific areas. It is commonly used for security purposes to deter crime and provide evidence in case of incidents. The cameras are typically connected to a closed circuit, which means that the video feed is only accessible to a limited number of authorized individuals or security personnel. This implies that, the signals are not publicly distributed but are monitored, primarily for surveillance and security purposes. Circuit Television (CCTV), is the use of video cameras to transmit a signal to a specific place on a limited set of monitors [11].

A well-integrated CCTV system is pivotal in the maintenance of the safety and security in the school premises, and to facilitate proceedings in the context of criminal or civil issues. This posits that, for school security to be effective, CCTV systems supposed to be integrated in the school, this is because, CCTV has become a mainstream crime prevention strategy. The absence of CCTVs in secondary schools could lead to misappropriate behaviours of staff, students and visitors or intruders in the management of school security. Although some few schools in Nigeria like; Holden Park School, Lagos have a

securely monitored CCTV surveillance system, most secondary schools in Nigeria especially in Akwa Ibom state do not adopt these CCTVs owing to challenges such as; Lack of ICT policies, limited financial resources, maintenance costs, infrastructure and power challenges and regulatory and legal challenges etc. The use of CCTVs has long been adopted in developed countries like; United Kingdom, Australia, U.S.A, Canada, among others. It has proven to be a good idea, making schools safer and has also contributed immensely in running a successful educational institution. CCTV plays a significant role in providing heightened level of security, and as such, school principals who adopt this system with compliance with regulations and standards could stand a chance to circumvent potential threats in the school. Another ICT system that could enhance school security are entry metal detectors.

### 2.4 Entry Metal Detectors

Entry metal detectors are electronic devices designed to detect the presence of metal objects on a person's body or in their belongings as they pass through a specific entry point, such as a doorway or checkpoint. These detectors use electromagnetic fields to identify and alert security personnel to the presence of metallic items, which may include; weapons, knives, firearms, or other potentially dangerous object. Interestingly, an entry metal detector is like a silent announcer that notifies authorities if there are any irregularities. For instance, if an individual goes into a school premises with a pistol or other dangerous metallic object, the device will silently alert the school's authority control room. A well-integrated metal detector in the school premises is crucial because, it serves as an immediate detection of weapons, as students, staff and visitors enter the school building. In recent times, secondary schools in Nigeria especially in Akwa Ibom state are faced with many social vices such as; bullying, death threats, murder among others. A report by [12] stated the incident of a secondary school student who stabbed another student with a knife in a fight which led to his death. It was gathered that the ugly incident occurred on Thursday, March 10, 2022 during school hours in Community Comprehensive Secondary School (C.C.S.S), Aka Offot, In Uyo L.G.A where an SS2 student was stabbed to death by an SS3 student over the case of a cult-related rivalry which led to indefinite shut down of the school following the directives of the state government through the Ministry of Education. The absence of entry metal detectors in schools could have several potential outcomes such as; increased risk of weapon-related incidents, reduced deterrent effect, limited ability to detect hidden weapons and slower response to security incidents among others. Although most school principals seem to be aware of the threats of insecurity, they do little or nothing about it. Social net watchers are a ICT program or software that can ensure students' safety.

### 2.5 Social Net Watchers

Social net watchers are computer programs that keep tabs on every activity the students perform on the internet through social media platforms such as, Facebook, Twitter, WhatsApp, LinkedIn, Instagram among others [13]. These programs do this through social networking as it tracks social media conversations, mentions, and trends to provide insights, analytics, and reputation management services. Social net watcher also has application beyond student safety such as; preventing disclosure of sensitive intellectual property or compliance with protective orders from offenders. This implies that these programs keep each user anonymous, and also flip the students' safety model to preventative measures rather than reactive measures and by so doing could save lives. A well-integrated social net watcher programs is necessary as it aims to ensure the safety and well-being of students by identifying and addressing issues such as; cyberbullying, harassment or any potentially harmful or inappropriate behavior online. In recent times, secondary schools in Nigeria especially in Akwa Ibom state are challenged with dangers of social media such as; cyberbullying, identity theft, invasion of privacy, and offensive images and messages to students. Undeniably, people are constantly being bullied on social media for having different religious beliefs, sexual orientations or for just being from a certain tribe. As such, situations like these could have likely been curbed, if school principals integrate social net watchers because some students feel more comfortable relaying their thoughts on the social media to boycott the fear of

being identified. The absence of social net watchers in schools could have several potential outcomes such as; increased risk of cyberbullying, limited awareness of online safety, delayed crisis response, lack of support for students in need, and limited parental and community engagement among others. Inadvertently, Nigerian secondary schools have scored poorly on cybersecurity, and this is the reason a cybersecurity expert, [14] urged the Federal Government to prioritize cybersecurity and invest in real-time monitoring against cyberattacks because school principals will not be able to shoulder the responsibilities alone as these challenges could be blamed on several factors such as; resource constraints, lack of awareness or understanding, privacy concerns, staffing and training challenges, legal and liability concerns as well as trust in existing policies and measures among others. Nevertheless, integrating social net watchers is of immense benefits to the overall school community as they can provide guidance and support to students, promoting positive online interactions and preventing negative incidents from occurring. Panic buttons is another ICT device that can enhance school security.

### 2.6 Panic buttons

Panic buttons are electronic devices that can be used to quickly and discreetly alert authorities or designated personnel in emergency situations. When pressed, they initiate an immediate response to address a potentially dangerous or threatening situation. Panic buttons are designed to minimize time until assistance can arrive. During an emergency situation, there is nothing more important than response time. Panic buttons give teachers and other staff, including students the ability to trigger a safety response plan with a simple press of a button, relieving a lot of stress and potential for mistakes during an emergency situation. [15] submitted that a panic button is a wearable or portable device, like a key fob that is designed to summon help in an emergency situation. The buttons allow a person to instantly call for help simply by pushing a button. In general, panic buttons issue a silent alarm that alerts security personnel, management or emergency services that an incident is in progress. This silence is crucial as it allows staff to call for help without alerting their assailant. It is important as devices that make loud, sudden sounds, often called 'screamers' can aggravate the situation. He further added that there are three (3) main types of panic buttons which are; wearable panic buttons, which could be worn as pendants, panic button apps, which could allow the user to send pre-customized texts to specific contacts as well as messages showing their location at set intervals and, fixed panic buttons, which are secured to the wall of the premises.

A well-integrated panic button system is beneficial in enhancing school security, this is because, it serves as a rapid emergency response, which allows authorities or designated responders to reach the location quickly and mitigate the situation. This implies that, for school security to be effective, panic buttons supposed to be integrated in the school to contribute to a safer school environment by providing an additional layer of security in the sense that these buttons can be strategically placed throughout the school premises, enabling students, staff and visitors to summon help in cases of threats, violence, medical emergencies, or other dangerous situations in the school. In this context, The absence of panic buttons in schools can present various challenges and limitations when it comes to emergency response and ensuring the safety of students, staff and visitors such as; delayed emergency response, which could potentially put the school at greater risks, potential for communication barriers which could make school staff and students face barriers in effectively communicating their location, the nature of the emergency or other critical information impeding the response efforts. School bus tracking system is another ICT device that can enhance security.

### 2.7 School Bus Tracking System

A school bus tracking system is a technology-based solution that allows schools, parents, and administrators to monitor and track the location and movement of school buses. It utilizes various technologies like Global Positioning System (GPS) and real-time date to provide accurate and up-to-date information about the buses whereabouts, such as their current location, estimated arrival time, and any deviations from the planned route. The system enhances students' safety, improves communication between schools and parents,

facilitates efficient fleet management, and provides valuable data for analysis and decision-making. In this regard, [16] submitted that the bust tracking software is a solution that can track the school bus in real-time, providing updates on its status and location. It provides alerts to parents and the school administration, keeping them informed about the whereabouts of the children and the vehicles. This implies that, a school bus GPS tracker tells you where your buses are, when they will arrive at various locations, and how carefully they are being driven. Analyzing driver behaviour is particularly important to school bus companies because the children's safety and security is paramount. Parameters to monitor arrival times, excessive speed and aggressive driving can be checkmated.

Around the world, various configurations of buses are used; the most iconic examples are they yellow school buses seen in the United States of America and Canada. The main purpose of this application is to provide exact location of the student's respective buses in Google Maps besides providing information like bus details, driver details, stops, contact number, routes, etc. This application may be widely used by the college students since Android smart phones have become common and affordable for all. It is a real time system as the current location of the bus is updated every moment in the form of latitude and longitude which is received by the students through their application on Google maps. The application also estimates the time required to reach a particular stop on its route and uses client-server technology.

A well-integrated school bus tracking system is valuable in enhancing school safety and security, this is because it serves a real-time location tracking as it provides real-time updates on the location of school buses and allows all the stakeholders involved to know the exact position of the bus, its estimated arrival time, and any delays or deviations from the planned route, This means that, for school security to be effective, bus tracking system supposed to be integrated in the school system by enhancing safety and security of students as it will reduce concerns about missed buses or prolonged waiting times.

## 3. METHODOLOGY

### 3.1 Study Area

The study is conducted in Akwa Ibom State. Akwa Ibom State is in the south-south geopolitical zone of Nigeria. Bounded on the east by Cross River state, on the west by Rivers State and Abia state, on the south by the Atlantic Ocean, and by Ebonyi state on the north. Located in the Niger Delta, Akwa Ibom State occupies 8,412kmsq. The state was created from Cross River state on 23rd September, 1987 with its capital as Uyo during the military administration of General Ibrahim Badamosi Babangida [17]. Akwa Ibom presently has thirty-one (31) local government areas and it is a home to over 5.5 million people and the predominant language is Ibibio dialect which is among the three major ethnic groups namely; Ibibio, Annang and Oron, but there is no language barrier among all the ethnic groups as Ibibio is spoken and understood among all the linguistic groups. However, English is spoken as the official language. Akwa Ibom State has 1,110 primary schools, 476 private secondary schools, 256 public secondary schools with three unity schools, and 11 tertiary institutions with the University of Uyo being a federal institution located in the heart of Uyo. (Source: [18]. I chose this area for the study because it aligns with my expertise and background in the sense that, it builds upon my existing knowledge, skills, and academic or professional background thereby allowing me leverage my expertise and prior experience to tackle complex research problems effectively.

### 3.2 Methods

The study adopted a correlational research design to explore the relationship between ICT integration in school security management and principals' job performance among 476 private secondary school principals in Akwa Ibom State. [19] opines that correlational research design investigate relationships between variables without the researcher controlling or manipulating any of them. A correlation reflects the strength and/or direction of the relationship between two or more variables. The direction of a correlation can be either positive or negative or no relationship. Correlational research allows for investigating variable connections through data analysis without intervention, aligning with the study's objectives.

This design also accommodates multiple realities in the field, making it suitable. Additionally, it enables studying a subset of the population, enhancing generalizability while being cost-effective.

A sample size of 214 was determined using the Krejcie and Morgan table, with purposive sampling for schools equipped with ICT facilities. Data collection instruments included the "ICT Integration in School Security Management Scale" (IISSMS) with 70 items and the "Principals' Job Performance Scale" (PJPS) with 25 items. Both instruments were validated by experts from the University of Uyo and showed good reliability, with Cronbach's alpha values of 0.87 and 0.76, respectively. The researcher personally administered the instruments over three months, aided by trained research assistants, ensuring a high retrieval rate of 214 completed questionnaires. Data analysis was conducted using simple linear regression in SPSS, with a significance level of 0.05 applied to test hypotheses. P-values were compared to this threshold; hypotheses were rejected if p-values were less than 0.05, indicating statistically significant results, and retained if greater. The nature of influence among various ICT tools was assessed using unstandardized beta coefficients, while the coefficient of determination ($R^2$) helped explain contributions to job performance. Ethical considerations included informed consent, maintaining cordiality, and ensuring participation was voluntary among others. The study's design and instruments aimed to achieve accurate results that are generalizable within the population.

## 4. RESULTS AND DISCUSSIONS

**Table 4.1:** Summary of Regression Analysis for predictive validity of integration of CCTV on principals' job performance in private secondary schools

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .108[a] | .012 | .007 | .91223 |

Source: Researcher's field computation (2024)

Table 4.1 gives the summary of the simple regression test. The result shows that the r- value is .108, indicating that there is a positive relationship between integration of CCTV and principals' job performance in private secondary schools. The adjusted $R^2$ value is .007, indicating that 1% changes in principals' job performance in private secondary schools is attributed to integration of CCTV. This result implies that integration of CCTV has a very low positive predictive validity on principals' job performance in private secondary schools in Akwa Ibom State.

**4.1.2 Research Question 2:** What is the predictive validity of integration of entry metal detectors on principals' job performance in private secondary schools in Akwa Ibom State

**Table 4.2:** Summary of Regression Analysis for predictive validity of integration of entry metal detectors on principals' job performance in private secondary schools

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .053[a] | .003 | -.002 | .91630 |

Source: Researcher's field computation (2024)

Table 4.2 gives the summary of the simple regression test. The result shows that the r- value is .053, indicating that there is a negative prediction of integration of entry metal detectors on principals' job performance in private secondary schools. The adjusted $R^2$ value is -.002, indicating that less than 1% changes in principals' job performance in private secondary schools is attributed to integration of entry metal detectors. This result implies that integration of entry metal detectors has a very low negative predictive validity on principals' job performance in private secondary schools in Akwa Ibom State.

**4.1.3 Research Question 3:** What is the predictive validity of integration of social net watcher on principals' job performance in private secondary schools in Akwa Ibom State?

**Table 4.3**: Summary of Regression Analysis for predictive validity of social net watcher on principals' job performance in private secondary schools

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .002[a] | .000 | -.005 | .91762 |

Source: Researcher's field computation (2024)

Table 4.3 gives the summary of the simple regression test. The result shows that the r- value is .002, indicating that there is a positive relationship between of integration of social net watcher and principals' job performance in private secondary schools. The adjusted $R^2$ value is -.005, indicating that 1% changes in principals' job performance in private secondary schools is attributed to integration of social net watcher. This result implies that integration of social net watcher has a very low positive predictive validity on principals' job performance in private secondary schools in Akwa Ibom State.

**4.1.4 Research Question 4:** What is the predictive validity of integration of panic buttons on principals' job performance in private secondary schools in Akwa Ibom State

**Table 4.4**: Summary of Regression Analysis for predictive validity of integration of panic buttons on principals' job performance in private secondary schools

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .076[a] | .006 | .001 | .91494 |

Source: Researcher's field computation (2024)

Table 4.4 gives the summary of the simple regression test. The result shows that the r- value is .076, indicating that there is a negative relationship between integration of panic buttons and principals' job performance in private secondary schools. The adjusted $R^2$ value is .001, indicating that less than 1% changes in principals' job performance in private secondary schools is attributed to integration of panic buttons. This result implies that integration of panic buttons has a very low negative predictive influence on principals' job performance in private secondary schools in Akwa Ibom State.

**4.1.5 Research Question 5:** What is the predictive validity of integration of school bus tracking system on principals' job performance in private secondary schools in Akwa Ibom State?

**Table 4.5:** Summary of Regression Analysis for predictive validity of integration of school bus tracking system on principals' job performance in private secondary schools

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .636[a] | .405 | .402 | .70787 |

Source: Researcher's field computation (2024)

Table 4.5 gives the summary of the simple regression test. The result shows that the r- value is .636, indicating that there is a positive relationship between integration of school bus tracking system and principals' job performance in private secondary schools. The adjusted $R^2$ value is .402, indicating that only 40% changes in principals' job performance in private secondary schools is attributed to integration of school bus tracking system. This result implies that integration of school bus tracking system has a moderate positive validity on principals' job performance in private secondary schools in Akwa Ibom State.

**4.1.6 Research Question 6:** What is the joint predictive validity of CCTV, entry metal detectors, fire alarms, social net watchers, digital maps, panic buttons and school bus tracking system on principals' job performance in private secondary schools in Akwa Ibom State?

**Table 4.6:** Summary of Regression Analysis for joint predictive validity of CCTV, entry metal detectors, fire alarms, social net watchers, digital maps, panic buttons and school bus tracking system on principals' job performance in private secondary schools

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .693[a] | .480 | .462 | .67155 |

Source: Researcher's field computation (2024)

Table 4.6 gives the summary of the multiple regression test. The result shows that the r-value is .693, indicating that there is a positive prediction of principals' job performance in private secondary schools from integration of ICT in school management. The adjusted $R^2$ value is .462, indicating that 46% changes in principals' job performance in private secondary schools is as attributed integration ICT gadgets (CCTV, entry metal detectors, social net watchers, panic buttons and school bus tracking system) into school security management. This indicates that integration of ICT has a moderate positive predictive validity on principals' job performance in private secondary schools in Akwa Ibom State.

## RESEARCH HYPOTHESES

The following null hypotheses were tested at .05 level of significance

**4.1.7 Hypothesis One** There is no significant predictive validity of integration of CCTV on principals' job performance in private secondary schools in Akwa Ibom State.

**Table 4.7:** Simple Regression analysis of the prediction of principals' job performance from integration of CCTV.

| Model | Sum of Squares | | Mean Square | F | Sig. of F |
|---|---|---|---|---|---|
| Regression | 2.031 | | 2.031 | 2.441 | .120 |
| Residual | 171.425 | | .832 | | |
| Total | 173.457 | | | | |
| Model | B | β | t | Sig of t | |
| Constant | 3.18 | | 21.422 | 0.000 | |
| CCTV integration | .133 | .085 | 1.562 | .120 | |

Not Significant at 0.05 level of significance.

Source: Researcher's field computation (2024)

Table 4.7 shows the summary of the regression test. The probability value (p-value) is .120. Since the probability value is greater than the alpha level of .05 ($P>.05_{.120}$), the result is statistically not significant. Thus, the null hypothesis that there is no significant predictive validity of integration of CCTV on principals' job performance in private secondary schools in Akwa Ibom State is upheld at the 0.05 level of significance $p>0.05$ hence the prediction is not significant. This finding also agrees with research that investigated the effect of CCTV surveillance technology on school safety in public boarding schools in Kenya [20]. The study revealed that schools should be located in safe areas both from internal and external threats and CCTVs should be positioned in the most unsafe areas in schools (e.g. dormitories, toilets and near the fences).

**4.1.9 Hypothesis Two** There is no significant predictive validity of integration of entry metal detectors on principals' job performance in private secondary schools in Akwa Ibom State

**Table 4.9:** Simple Regression analysis of the prediction of principals' job performance from integration of entry metal detectors.

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| | Regression | .496 | 1 | .496 | .591 | .443 |
| 1 | Residual | 172.960 | 206 | .840 | | |
| | Total | 173.457 | 207 | | | |
| Model | | B | β | t | Sig of t | |
| | Constant | 3.498 | | 22.622 | 0.000 | |
| | Metal detectors integration | -.062 | -.053 | -.769 | .443 | |

Not Significant at 0.05 level of significance.

Source: Researcher's field computation (2024)

Table 4.9 shows the summary of the regression test. The probability value (p-value) is .443. Since the probability value is greater than the alpha level of .05 ($P>.05_{.443}$), the result is statistically not significant. Thus, the null hypothesis that there is no significant predictive validity of integration of entry metal detectors on principals' job performance in private secondary schools in Akwa Ibom State is upheld at the 0.05 level of significance $p>0.05$ hence the prediction is not significant. This study further agrees with research that examined the impact of random metal detector searches on contraband possession and feelings of safety at school in Florida (Miami-Dade and Broward) [21]. They found that the searches reduced the likelihood that students brought weapons to school and also decreased incidences of being offered illegal drugs at school in Miami. Moreover, students in Miami were less likely to report skipping school due to safety concerns following the introduction of the searches.

**4.1.10 Hypothesis Four** There is no significant predictive validity of integration of social net watcher on principals' job performance in private secondary schools in Akwa Ibom State.

**Table 4.10:** Simple Regression analysis of the prediction of principals' job performance from integration of social net watcher.

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .000 | 1 | .000 | .001 | .981 |
| | Residual | 173.456 | 206 | .842 | | |
| | Total | 173.457 | 207 | | | |
| Model | | B | β | t | Sig of t | |
| | Constant | 3.387 | | 25.545 | 0.000 | |
| | Social net watcher integration | .001 | .002 | .024 | .981 | |

Not Significant at 0.05 level of significance.

Source: Researcher's field computation (2024)

Table 4.10 shows the summary of the regression test. The probability value (p-value) is .981. Since the probability value is greater than the alpha level of .05 ($P<.05_{.981}$), the result is statistically not significant. Thus, the null hypothesis that there is no significant predictive validity of integration of social net watcher on principals' job performance in private secondary schools in Akwa Ibom State is upheld at the 0.05 level of significance $p>0.05$ hence the prediction is not significant. The findings agree with research that focused on the development and piloting of a cybersecurity curriculum for middle school students in Georgia [22]. The study found that students had significant growth and interest in the mastery of key cybersecurity concepts.

**4.1.11 Hypothesis Six:** There is no significant predictive validity of integration of panic buttons on principals' job performance in private secondary schools in Akwa Ibom State.

**Table 4.11**: Simple Regression analysis of the prediction of principals' job performance from integration of panic buttons.

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1.010 | 1 | 1.010 | 1.207 | .273 |
| | Residual | 172.446 | 206 | .837 | | |
| | Total | 173.457 | 207 | | | |
| Model | | B | β | t | Sig of t | |
| | Constant | 3.534 | | 24.131 | 0.000 | |
| | Panic buttons integration | -.102 | -.076 | -1.099 | .273 | |

Not Significant at 0.05 level of significance.

Source: Researcher's field computation (2024)

Table 4.11 shows the summary of the regression test. The probability value (p-value) is .273. Since the probability value is greater than the alpha level of .05 ($P<.05_{.273}$), the result is statistically not significant. Thus, the null hypothesis that there is no significant predictive validity of integration of panic buttons on principals' job performance in private secondary schools in Akwa Ibom State is upheld at the 0.05 level of significance p>0.05 hence the prediction is not significant. This finding agrees with a literature review that examined public alert and warning systems in the USA [23]. They found that the use of panic buttons was one of the security measures set up by schools.

**4.1.12 Hypothesis Seven** There is no significant predictive validity of integration of school bus tracking system on principals' job performance in private secondary schools in Akwa Ibom State.

**Table 4.12:** Simple Regression analysis of the prediction of principals' job performance from integration of school bus tracking system.

| **Model** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
|---|---|---|---|---|---|---|
| | Regression | 70.233 | 1 | 70.233 | 140.163* | .001 |
| 1 | Residual | 103.223 | 206 | .501 | | |
| | Total | 173.457 | 207 | | | |
| Model | | B | β | t | Sig of t | |
| | Constant | -.131 | | -.435 | 0.664 | |
| | School bus tracking system integration | -.976 | .636 | 11.839 | 000 | |

* Significant at 0.05 level of significance.

Source: Researcher's field computation (2024)

Table 4.12 shows the summary of the regression test. The probability value (p-value) is .001. Since the probability value is less than the alpha level of .05 ($P<.05_{.001}$), the result is statistically significant. Thus, the null hypothesis that there is a significant predictive validity of integration of school bus tracking on principals' job performance in private secondary schools in Akwa Ibom State is rejected at 0.05 level of significance. This finding supports research that assessed parents' perceptions of the quality of public transport services used by children commuting to school [24]. The results of the confirmatory factor analysis indicated that parents had concerns with school bus timing. From the result in Table 4.15, the prediction of principals' job performance from integration of

school bus tracking system could be done using the equation:

Y = -0.131 + 0.636X

where Y = Principals' job performance

X = Integration of school bus tracking system.

**4.1.13 Hypothesis Eight** There is no significant predictive influence of integration of CTV, entry metal detectors, social net watchers, panic buttons and school bus tracking system on principals' job performance in private secondary schools in Akwa Ibom State.

**Table 4.13**: Summary of Multiple Regression analysis of the prediction of principals' job performance from integration of CCTV, entry metal detectors, social net watchers, panic buttons and school bus tracking system.

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 83.261 | 7 | 11.894 | 26.374* | .000 |
| | Residual | 90.196 | 200 | .451 | | |
| | Total | 173.457 | 207 | | | |

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .358 | .382 | | .937 | .350 |
| | CCTV_Integration | .078 | .071 | .064 | 1.103 | .271 |
| | Metal_detectors | -.134 | .061 | -.115 | -2.188 | .030 |
| | social_net_watcher | .019 | .037 | .027 | .522 | .602 |
| | Panic_buttons | -.057 | .072 | -.043 | -.792 | .429 |
| | School_bus_tracking | .987 | .079 | .643 | 12.463 | .000 |

*Significant at 0.05 level of significance.

Source: Researcher's field computation (2024)

Table 4.13 shows the summary of the regression test. The result shows that the probability value (p-value) is .001. Since the probability value is less than the alpha level of .05 ($P<.05_{.001}$), the result is statistically significant. Thus, the null hypothesis that there is a significant predictive joint validity of ICT (integration of CCTV, entry metal detectors, social net watchers, panic buttons and school bus tracking system) on principals' job performance in private secondary schools in Akwa Ibom State is rejected at 0.05 level of significance. The result of analysis shows that integration of ICT has a moderate positive predictive validity on principals' job performance in private secondary schools in Akwa Ibom State. The hypothesis test confirms that there is a significant predictive joint validity of ICT (integration of CCTV, entry metal detectors, fire alarms, social net watchers, digital maps, panic buttons and school bus tracking system) on principals' job performance in private secondary schools in Akwa Ibom State. This result shows that when taken together, schools with ICT tools integrated would positively predict principals' job performance. This findings agrees with research examining the impact of security countermeasures on human behavior during active shooter incidents [25]. The experiment results showed countermeasures significantly influenced participants' response time and decisions (e.g. run, hide, fight).

From the result in Table 4.13, the prediction of principals' job performance from integration of the above listed ICT security systems in its order of importance could be done using the equation:

$$\mathbf{Y} = .358 + 0.064\mathbf{X_1} - 0.115\mathbf{X_2} + 0.027\mathbf{X_3} - 0.043\mathbf{X_4} + 0.0643\mathbf{X_5}$$

where

**Y** = Principals' job performance

$\mathbf{X_1}$ = CCTV integration

$\mathbf{X_2}$ = Metal detectors

$\mathbf{X_3}$= Social net watchers

$\mathbf{X_4}$=Panic buttons

$\mathbf{X_5}$= School bus tracking system

The multiple regression result shows that the Beta weight (β) according to its order of integration in school security management from the highest to the lowest ranking.

Constant = 0.693

School Bus tracking system = 0.643

CCTV = 0.064

Social net watcher = 0.027

Panic buttons = -0.043

Entry metal detectors = -0.115

## 5. CONCLUSION

It was concluded based on the findings that ICT integration for security has a low level of integration in private secondary schools in Akwa Ibom state which represents a significant vulnerability, increasing risk to students and staff. Therefore, urgent prioritization of ICT integration is crucial. There is a low level of integration of CCTV, entry metal detectors, social net watchers, panic buttons and school bus tracking system in private secondary schools in Akwa Ibom State.

## 6. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

i. Private school administrators should prioritize the integration of Closed-Circuit Television (CCTV) systems. Doing so will enhance data collection and analysis of security incidents, leading to informed decision-making and improved resource allocation. Additionally, utilizing advanced ICT technologies in collaboration with security agencies can effectively address criminal activities and bullying, thereby creating a safer school environment.

ii. Private school administrators should implement entry metal detectors as a critical component of their security management strategy. Integrating these detectors will enhance safety by effectively preventing weapons and contraband

from entering the premises, thereby fostering a more secure learning environment. Additionally, pairing metal detectors with trained personnel can improve incident detection and response, further ensuring the well-being of students and staff.

iii. Private school administrators should integrate social net watchers into their security management systems. This technology can monitor online interactions and detect potential threats, such as bullying or harmful behaviors, in real-time. By utilizing social net watchers, schools can proactively address issues before they escalate, fostering a safer and more supportive environment for students.

iv. Private school administrators should integrate panic buttons into their security management systems. These devices can provide an immediate alert to school security personnel and law enforcement during emergencies, facilitating rapid response to threats. By equipping staff and students with panic buttons, schools can enhance safety and ensure a prompt reaction to critical incidents, thereby creating a more secure learning environment.

v. Private school administrators should implement a school bus tracking system as part of their security management strategy. This system can provide real-time monitoring of student transportation, ensuring that buses are on schedule and safe. By enhancing visibility and accountability during transit, schools can better protect students and respond quickly to any unforeseen incidents, thereby fostering a more secure environment both on and off campus

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