INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) EDUCATION: A TOOL FOR SOLVING NIGERIA SECURITY CHALLENGES IN SCHOOLS AND THE SOCIETY

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Abstract

Insecurity, arguably, is the bane of socio-economic development in Nigeria today The state of insecurity in Nigeria today is not new to anyone and, although it can be laid on some factors that have been left unchecked for a long time by both government and the people of Nigeria, Information and communication technology became the all-round programme that is applicable in all our day to day activities across the world. Basically, ICT is a phenomenal service that can lead to the enhancement of high multimedia services such as video, text, images and audio files. This paper discusses how computer education tools can be used to ensure that insecurity in Nigerian schools and the society is brought to bay with lots of measures to be taken with the used of information and communication technology. Such tools include, CCTV Cameras, GPRS Tracking/positioning systems among others. The paper also pointed out the prospect of the total overhaul of Nigeria's tertiary institutions toward the promotion of security within the system at all the levels and the application of modern technological tools to provide, enhance and/or boost security situations which will invariably promotes teaching and learning. Recommendations made include; Schools must invest in their security infrastructure to make themselves less vulnerable to kidnappers. Round-the-clock surveillance systems and well-lit surrounding are a turn off for kidnappers, Government should pay more attention to the funding of ICT surveillance etc.

Keyword— ICT, education, security challenges, schools and society.

Introduction

The ICT stands for Information and Communication Technology. Information communication technology is the new communication and computing technology used for creating, storing, selecting, changing, developing, receiving and displaying many kinds of information. ICT is classified into three groups namely: (i) those that process information e.g. computer (ii) those that disseminate information e.g. communication i.e. electromagnetic devices and system (iii) those for presentation of information e.g. multimedia (Adewoyin, 2009). ICT is a technological tools and resources used to communicate, create, organize, disseminate, store, retrieve and manage information. ICT is a very wide umbrella that includes any communication device which encompasses radio, phones, computer, satellite, networking, location and any other internet application such as video conferencing and so on (Chika, 2008). Technology is one of the platforms that cannot be ignored, especially when it comes to insecurity where by a lot of instruments can be deployed to tackle, improve vigilance of all the organizational activities. It is said that security is every one's concern? Basically ICT can be a great tool in detection and identification of citizens, their interaction and communication, movement, education and so on. When we look at Nigeria in particular, Nigeria is a country that has a lot of issues that can contribute to insecurity such as poverty, illiteracy, corruption, unemployment and so on. Any country with any of the above can be at risk of increase in the level of violence or crimes e.g. robbery, kidnapping, rape, and even terrorism. The level of insecurity in the country today is threatening to tear it apart and requires a quick, adequate and a new approach to deal with the security challenges plaguing the nation (Ndanusa, 2014).

Development in the ICT sector of Nigeria was far below expectation for a country of its size and resources. From a policy and regulatory standpoint, the FGN adopted the National Telecommunication policy in 2000 to guide the development of Telecommunications Industry in Nigeria (Report of Ministry of Communication and Technology, 2012b). The ICT policy is to provide a framework for streamlining the ICT sector and enhancing its ability to catalyze and sustain socio-economic development critical to Nigeria's vision of

becoming a top 20 economy by the year 2020.(NITDA 2013) For several years, scholars have realized the significant role ICT plays in tackling insurgences in Nigeria, particularly because sophisticated and advanced ICT technologies have greatly replaced older forms of security operations and surveillance gadgets (Shatimah & Adamu, 2016). The use of ICT in uncovering, studying and identification of citizens 'activities, interaction and movement help in checkmating any security threatening activities and tasks. Recently, Nigeria has started showing interest in addressing insurgence with new ICT technologies. This new strategy which centered on ICT assists in revealing threats involved in the society by conveying images, videos, and other chosen databases for reporting any abnormal and skeptical wrongdoing for necessary measures (Eijkman,2012).

Effects of Insecurity on Nigerian School

According to Akintunde and Musa (2016), insecure school environment affects the learning of children. Situations of insecurity trigger traumatic disorder and toxic stress that affect learning negatively. General school attendance and enrolment are equally affected as parents pull their children out of schools while in some extreme cases, insecurity has led to closure of schools. For instance, Borno State schools were shut-down in major towns as a result of insurgency(Ameh,2015). These attacks on schools usually lead to vandalization and outright destruction of school facilities which discourage the establishment of new schools. Consequently, government resources are depleted as funds meant for other developmental projects are channeled to tackling the aftermath of attacks. In the end, educational attainment in terms of quality of graduates and manpower suffers. This impacts negatively on overall national development aspirations.

Roles of ICT on tertiary institutions and society

i. Providing real opportunities for monitoring all activities at ease by security personnel.

ii. Strengthening chances and providing opportunities for easy flow of information and new ideas within and outside the school system.

iii. Providing opportunities for security personnel to communicate with one another by using current technologies such as e-mail, SMS, radio phone and a host of others so as to provide information concerning the security situation in the schools.

iv. It also provides quicker and easier access to more extensive current information that can be used academically, administratively or to carry out security operations at appropriate time.

v. Providing security operatives with a steady avenue for dissemination of security reports and findings (Adeoye, 2013)

Prospect of ICT in Solving Security Challenges in Nigerian Tertiary Institutions and the Society

The nation's most important educational goal should be to produce learners adequately prepared to work in the 21st Century and ICT plays a key role in reaching that goal. According to official statistics released the US spending on technology products, services and staff was estimated to reach around 1.8 trillion US Dollars in 2020, (Shanhong,2019). ICT plays an indispensable role in all the spheres of national life especially security and economic development. For instance, for ICT to be applied in national development, a developing country such as Nigeria should reduce her spending, on defense and increase the budgetary allocation for ICT development, (Ani,2010). ICT Tools that are commonly used for Teaching and Learning in Tertiary Institution among other services as identified by Srivastava (2017) are:

Zip Drive, Notebook, Floppy disk drive, 3D Printer, Internet/WEB, Emails, Word Processer, Spread Sheets, Blogs, Overhead Projector, LCD Projector, Multimedia, Cell Phones, Desktop, laptops, Digital Cameras, Printer, Photocopier, Pen drive, Tablet, Scanners, Microphones, DVDs, CDs, Smart Board and Flash Disc.

ICT tools for security enhancement in Tertiary Institutions and the Society.

Close Circuit Television (CCTV)

CCTV plays a significant role in protecting the public and assisting the police in the investigation of crime. The UK is one of the most watched countries in the world (McCahill & Norris 2003). It is estimated that there are five million CCTV cameras in use today, and this number is likely to rise in future (Gill, 2006). Even though the exact number of CCTV systems deployed in the UK is unclear, "the extent of CCTV coverage and the government's funding of new systems have increased dramatically over the last decade," yet there is little substantive research evidence to show that CCTV works (Armitage, 2002). Social perceptions and attitudes towards security have changed, and over time society has become increasingly security conscious. This change has also been a result of the mass media coverage on crime. People have changed their views as a result of terrorism, gun crime, child abductions among others and. And have adopted a more proactive role in ensuring their own safety. One way this has been achieved is through investment in CCTV systems. Security is now considered essential for the protection of both people (e.g., within businesses and for the general public) and their property. With the rise in crime in Nigeria especially in the North East and South-South where terrorism and kidnapping are issues disturbing the peace of the region, there is need for CCTV to be deployed.

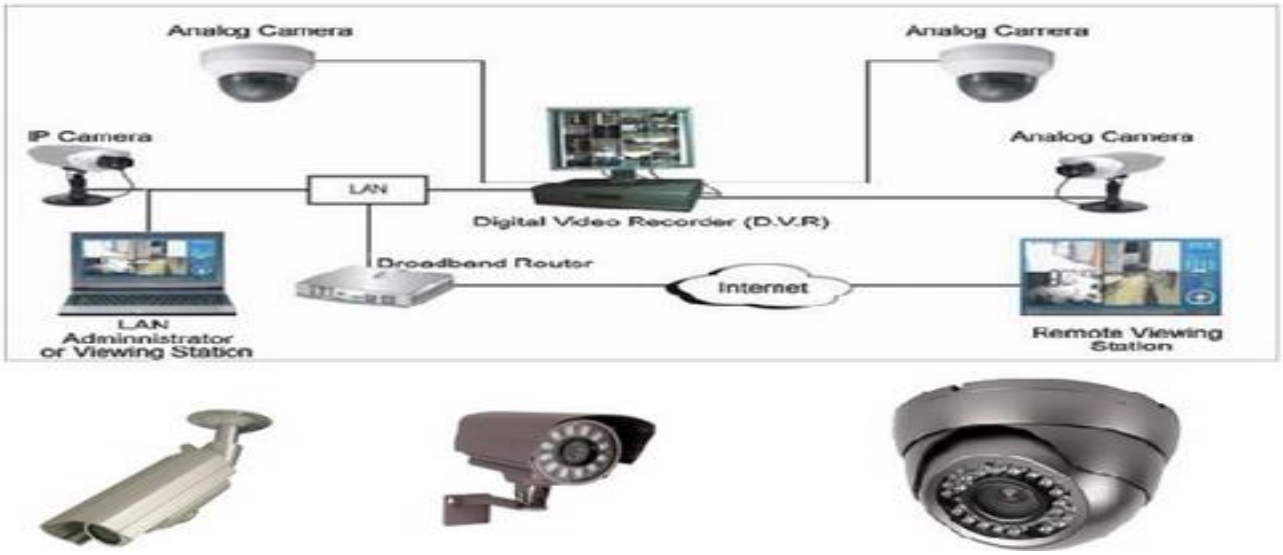

Figure 1. IP CCTV Surveillance Camera

Online Vehicle Registration

Vehicle Registration in Nigeria began over 100 years ago and the records have been essentially manual which in turn has not help to raise the efficiency of general automotive services in recent years. Today, computer has been discovered as a very efficient instrument, which has played a very significant role in adequate management of information. However, computerization has helped in many areas of life and due to vehicle owners, the thought of computerization of this operation becomes of great important in order to wipe out the manual data processing system from which many problems have originated. One of the main objectives of this paper is to come up with an online registration for vehicles as a more reliable and better medium where road network can be controlled.This cannot be achieved without a scheme; some of the road network schemes are found in Singapore and Malaysia. Electronic road control is one of the main schemes established by Singapore government to control road traffic where only licensed and registered vehicles are allowed on the road (Authority, 2016). Vehicles movement is controlled due to the installation of gantries which determine and sensor the movement of each vehicle that pass by for the day. With the help of this system the government also introduces the electronic road pricing scheme. ERP is an Electronic Road Pricing System used in managing road. Based on a pay-as-you-use principle, motorists are charged when they use priced roads.

Some benefits of ERP system are; to

• Minimizes traffic volume.

• Record of each vehicle passed for the day.

• Optimizes usage of the road network.

• Avoid human errors.

• Be reliable and operates 24 hours.

• It ensures that gantries are always working properly.

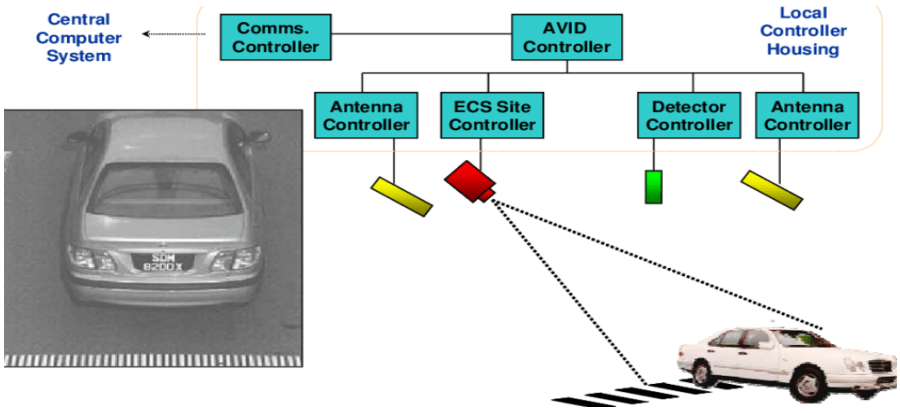

Fig. 2: Installed Gantries which Record Car Movement in ERP

Sim Registration/NIN

A SIM, Subscriber Identity Module, is the removable circuit board found in a modern cellular phone. It carries the network identity information and is a type of smart card which can also be found on payment cards (EMV), ID cards and so on. A smart card is basically a small computer, providing a safe and controlled execution environment (Edsbäcker, 2010-06-12). When the global system of mobile communication (GSM) standard was proposed there was an obvious need for a strong user/network authorization. This meant a telephone number was to be closely tied to a subscriber account in the operator's network and at the same time making it very hard for someone to copy the information (since this might enable debiting calls on somebody else's account). One way to solve this would mean putting the phone number, necessary encryption keys and the like inside the physical phone itself. This was the method used in older American CDMA one-based networks. However, it meant that the user got one phone number for each physical phone, making replacement a big problem. In order to avoid this in the GSM networks, the authentication and user identity functionality was placed on a removable smart card. This smart card type was called a Subscriber Identity Module (SIM). The smart card command set as defined by the ISO standard was extended to make it possible for the SIM to perform user interaction. Examples of such commands are the ability to display text

on the phone's display, get user input and sending/receiving SMS.

The Nigerian Communications Commission (NCC) embarked on a nationwide SIM Card Registration Project which commenced on March 28th 2011. This was necessitated by the fact that in 2008, security agencies approached the Commission to assist them in resolving crimes perpetrated through the use of telephones in which criminal elements could not be identified with the number of the phones that they use

Figure 3 Sim Card

The objectives of SIM Registration exercise were

• To assist security agencies in resolving crime and by extension to enhance the security of the state.

• To facilitate the collation of data by the Commission about phone usage in Nigeria

• To enable operators to have a predictable profile about the users on their networks

• To enable the Commission to effectively implement other value added services like Number Portability among others.

Figure 4. NIN Registration

The Nigerian President Muhammadu Buhari spoke in a joint press conference with the visiting South African president, Mr. Jacob Zuma at the presidential villa Abuja, He gave the reason why the Nigeria National

Communication NCC, fined the MTN network provider. He said: “This is the first time I will personally as a president be making a public comment about it. The concern of the federal government is basically on the security and not the fine imposed on MTN. You know how the unregistered GSM are being used by terrorists. “And between 2009 and today, at least 10,000 Nigerians were killed by Boko Haram. That was why NCC asked MTN, Glo and the rest of them to register GSM. Unfortunately, MTN was very, very slow and contributed to the casualties” (Buhari 2016).

GPS Tracking System

A GPS tracking unit is a device that uses the Global Positioning System to determine the precise location of a vehicle, person, or other asset to which it is attached and to record the position of the asset at regular intervals. The recorded location data can be stored within the tracking unit, or it may be transmitted to a central location database, or internet-connected computer, using a cellular (GPRS), radio, or satellite modem embedded in the unit. This allows the asset's location to be displayed against a map backdrop either in real-time or when analyzing the track later, using customized software. A GPS tracking system uses the Global Navigation Satellite System (GNSS) network. This network incorporates a range of satellites that use microwave signals which are transmitted to GPS devices to give information on location, vehicle speed, time and direction. So, a GPS tracking system can potentially give both real-time and historic navigation data on any kind of journey. A GPS tracking system can work in various ways. From a commercial perspective, GPS devices are generally used to record the position of objects for example vehicles as they make their journeys. Some systems will store the data within the GPS tracking system itself (known as passive tracking) and some send the information to a centralized database or system via a modem within the GPS system unit on a regular basis (known as active tracking).

GPS tracking System is one of the most rapidly growing technologies around the world. Most developed countries have focused on the GPS technologies in resolving some of their inherent security problems. According to Michael and McNamee (2006) Global Positioning System (GPS) is increasingly being adopted

by private and public enterprise to track and monitor humans for location based services (LBS). A location-based service (LBS) is information or entertainment service, accessible with mobile devices through the mobile network and utilizing the ability to make use of the geographical position of the mobile device. LBS can be used in a variety of contexts, such as health, indoor object search, entertainment, work, personal life, and so on. LBS include services to identify a location of a person or object, such as discovering the nearest banking cash machine or the whereabouts of a friend or employee. LBS include parcel tracking and vehicle tracking services.

Figure 5 GPRS Tracking Device

Explosive Device Detectors

Nowadays a lot of attention is being paid to the development of methods and instrumentation for the detection of explosive devices. Initiated explosives have already killed thousands of people and injured several tens of thousands worldwide not only Nigeria, Infrastructural facilities, like railway stations, airports,

undergrounded railways, security offices, electricity, water supply, among others. are preferred targets involving up to thousands of people. Assuming, the methods will be found to early detect explosives by means of sensors. New forms of bomb attacks are more sophisticated, more dangerous, using remote control of Improvised Explosive Devices (IED); initiation by mobile phones permits terrorists to initiate a bomb immediately. Therefore, detection systems with a reliable detection efficiency used in broad range of IEDs are important to examine. An IED is an improvised explosive charge, equipped with a non-standard (home-made) or a professional detonator. Improvised Explosive (IE) may be any chemical or mixture capable of an explosive reaction. IED detection techniques can be divided into two groups: bulk detection of explosives, and trace detection of explosives. In bulk detection, a macroscopic mass of explosive material is detected directly, usually by viewing images made by X-ray scanners or similar equipment. In trace detection, the explosive is detected by chemical identification of microscopic residues of the explosive compound. These residues can be applied in either or both of two forms: vapor and particulate.

Vapor detection refers to gas-phase molecules emitted by a solid or liquid explosive. The concentration of explosives in the air is related to the vapor pressure of the explosive material and to other factors, such as the duration of the presence explosive material in the given location, its packing, temperature and air circulation in the location.

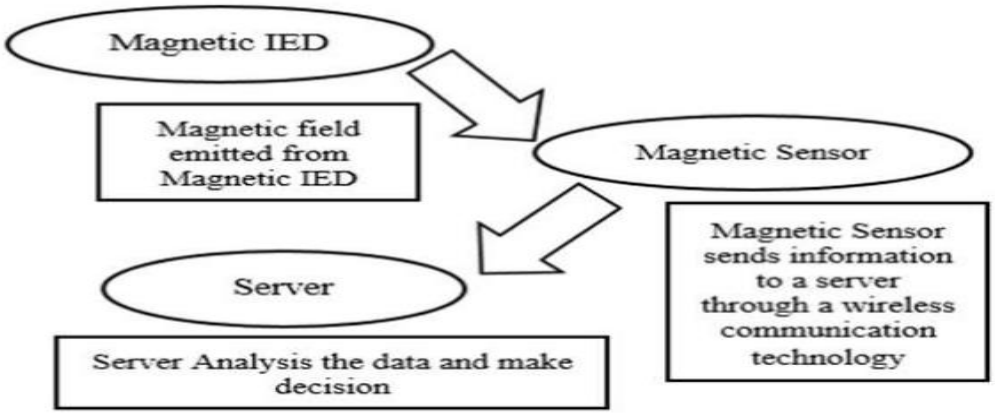

Figure 6. Basic structure of Sticky IED detector

Conclusion

Security is one of the basic needs of life, without it citizens cannot lead a decent life. The use of ICT and internet available in large numbers in this part of the world than before has positively impacted on security and made life more worthwhile and efficient in many spheres of life. Information technology has led to successful practices in many part of the world and in Nigeria it will provide information, which in otherwise is practically inaccessible. With the adoption of the mentioned ICT applications, a significant surveillance can be achieved where a lot of activities can be monitored and controlled. The citizens of Nigeria deserve a better life than the one currently being experienced. Tertiary Institutions should, therefore, quicken the pace of development and embrace technology as a re-engineering strategy to bring about a security revolution in Nigerian schools.

Recommendations

The following recommendations were made as ways forward.

- Adequate funding should be given to I T sector by government to cater for the supply of power for the operation of ICT surveillance and easier for the security stakeholders to perform their civic duties, hence, Tetfund sponsored projects should be gears towards ICT development in our educational institutions
- Adequately and regularly training, workshops and seminars is needed for people saddled with the responsibility of handling ICT surveillance gadget to update their knowledge about the current issues on ICT surveillance.
- Network operators should take back control of our compromised Cyberspaces and the transmissions channels from terrorists, proper sim registration and tracking in order to manage the new trend of events and data transmission nationwide.
- As new technology keeps evolving where more sophisticated and enhanced devices keep emerging, ICT gadgets upgrade is required

- Schools must invest in their security infrastructure to make themselves less vulnerable to kidnappers. Round-the-clock surveillance systems and well-lit surrounding are a turn off for kidnappers and partner with law enforcement agencies for periodic patrols and inspections within and outside the school fence to ensure there are no ongoing breaches

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