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Wireless CCTV, a workable tool for overcoming security challenges during elections in Nigeria

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Abstract

There have been upheavals in areas where elections have been conducted lately in Nigeria. The latest being in Ekiti and Osun States where there were cases of ballot box snatching, electoral result fraud, sporadic shootings and killings which call for electoral security carefulness and concern. The government of the day has done well in trying to computerize the electoral process by introducing BVAS in all polling units, but has failed to implement a non-human monitoring mechanism which could watch over electoral conducts and support result collation in all voting points without loopholes, intricacies and injuries to members of the voting communities. Wireless Close Circuit Television (CCTV) is an electronic monitoring system that combines network Software and hardware subsystems which are installed with Wireless channels and other monitoring mechanisms to cover and record activities in a particular domain. Data recorded in this device are immediately transmitted from the remote database in real-time, to a cloud-based central server where all happenings and events are stored for future retrieval and decision making. This paper looked at various reports on security challenges and happenings in Nigerian elections for eight (8) years and recommended that all polling units in Nigeria should have a Wireless CCTV system installed before the 2023 presidential election, irrespective of the cost, instead of the always compromised human monitors. Data were gathered using the author's lens as a Supervisory Presiding Officer (SPO) from 2011 to 2019, and from related literatures.

Keywords: Election; CCTV; Monitor; Database; Nigeria

1. Introduction

The importance of election is to determine the right leaders who are supposed to be freely and willingly chosen by the people through the power of the ballot. This choice is made by the casting of votes on election day by the people. However, the powers of the people have been hijacked by ruthless and power-monger politicians who do not respect the rule of law. They do this by rigging their way through the seat of power and at the end, achieve nothing until the expiration of their tenure. This has endangered democracy and hampered development in the society to an unrecoverable extent. Many politicians come to the ballot with chunks of money to share and hoodwink the electorates into making the wrong choices without minding the aftermath. Most of these practices are against the electoral ethic and standard but there is always nobody to be trusted with reports emanating from such error prone electoral units. Most times, the electoral monitors and officials are compromised with monetary packages which would further influence their report and electoral results negatively. However, there are lots Information Communications Technology (ICT) has done to be a panacea to man's need (Ogonnia and Chiamaka, 2020). The invention of Wireless Close circuit Television is the good news. The Wireless Close Circuit Television which would be mounted in hidden places and distanced higher above human reach, is a state-of-the-arts wireless technology which has a virtual eyeball that covers the happenings in electoral units and sends signals out to a central server, located far away from the state where the elections are conducted. The Wireless Close Circuit Television server is to be viewed and monitored by security

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personnel and trained INEC officials who will extract data intermittently and store same in an external storage within the monitoring room as events are covered from different voting points. The storage is to have a backup in case of database error or system crash from the data source. Since the monitoring interface can reveal real-time and on-the-spot happenings, security men can easily send signal to arrest any suspected situation before it gets out of hand. The INEC can also make its decision on a particular electoral fraudster after taking a look at what really transpired as reported by the data extracted from the server of the CCTV. This study has a chief concern of ushering a panacea to the security challenges and happenings on polling units and aiding a conduct of a smooth, free and fair elections in the nearest future of Nigeria.

2. Electoral malpractices and security challenges in Nigeria

Alvarez and Hall (2008) stated that:

- Electoral malpractices make the citizens lose trust in electoral processes; and lack of confidence by the citizens in the democratic process obstructs the deepening of electoral democracy because if the citizens do not believe in the fairness, accuracy, openness, and basic integrity of the election process, the very basis of any democratic society might be threatened.

The security challenges caused by electioneering in Nigeria cannot be over emphasized as people are shown on TVs and heard on Radio stations crying and wailing on daily basis. The unrest in the North especially during elections is a case that calls for Security concern. The elections conducted so far within the states in Nigeria show that there is more to be done by INEC and the security agencies with mechanical and electronical expertise. The Ekiti and Osun States electoral paradigm is what baffled the power blocks on both the opposition and main stream parties. In the July 14 election of Ekiti State, there were radio reports which explained that all manner of malpractices were done. But there was no valid coverage which could have been used as an evidence for INEC to take decisions. In that election, the candidate of the People's Democratic Party (PDP), Kolapo Olusola, lost to the All Progressives Congress' candidate, Kayode Fayemi. This declaration caused fracas between the members of the two parties which propelled security threats in the State.

Also, in Osun State, the Independent National Electoral Commission (INEC) declared the election inconclusive and a rerun was fixed. This decision by INEC caused varying degrees of security challenges in the state where some people were also reported injured in a fight that ensued in most places and streets. If there had been a monitoring machine, it would have been easier for INEC and the security agents to identify what really played out in the polling units and that would have informed their decisions positively.

3. Technological innovations between 2011 to 2019 Nigerian elections

The 2011 elections which Prof. Atahiru Jega spearheaded was domestically and internationally adjudged to be a bit free and fair. This election saw the emergence of Goodluck Ebele Jonathan and Namadi Sambo as winners. This was a breakthrough to the electoral body as it was successful compared to the past elections. The voters' registration exercise was so short and this didn't allow all and sundry to register as it was done for just 21 days. As an INEC adhoc staff in the election, I witnessed no technology collation of results. Though after the result collation, Electronic mail was used to transmit results from local government and state offices to INEC national headquarters in Abuja. In 2015 general election, when Goodluck Jonathan and Namadi Sambo contested for the second time, there had been an improvement in the technological innovations in electoral conducts.

While discussing the 2015 general elections, Ayen and Esien (2018) opined that:

- This era marked a new era in the deployment of sophisticated Information Communication technologies in the history of Nigeria elections in addition to existing technologies. Improved Automated Fingerprints Identification System (AFIS) was introduced to identify similar fingerprints on the register used for 2011 election. Business rule was also applied in addition to further clean the register. The business rule required that at least two fingers must be captured for a voter to be included in the register. For the first time, INEC adopted technology for accreditation of voters with the aid of INEC Voters Identification System (IVAS) popularly called the Smart Card Reader (SCR). Temporary Voters' Cards (TVCs) which were issued to voters for 2011 election were replaced with the Permanent Voter Cards (PVCs). The PVC replaced the Temporary Voter Card (TVC) According to INEC, quality, security; durability and cost effectiveness were underlying factors in the production of the Permanent Voter Cards by INEC.

While also commenting on the outcome of the 2015 general election, Fabiyi (2015) opined that although there is hardly an electoral process that is devoid of the use of ICT, the 2015 general election in Nigeria witnessed the use of ICT by stakeholders, like never before and was considered as one of the major changes in Nigeria's election process that made the 2015 election a success.

Piccolino (2015) in his own assessment of the 2015 general election stated that there is an increasing utilization of ICT in the electoral process, especially in Africa. Piccolino pointed out that no fewer than 25 sub-Saharan African countries (e.g. Kenya, Sierra-Leone, democratic Republic of Congo, Zambia, Malawi, Rwanda, Senegal, Mali, Togo, Ghana, etc.) at one point in time have deployed ICT for elections.

Joseph, Aisha and Rahila (2015) concluded about 2015 election that:

- The successes achieved in spite the challenges go further to prove that ICT can contribute to good governance and upholding transparency in emerging democracies like Nigeria. The perceived usefulness and perceived ease of use as promoted by the Technological Acceptance Model explains the massive deployment of ICT for the 2015 electoral process. It is recommended that stakeholders should invest more on ICT to make the next general election better.

In 2019 election, the Bimodal Voter Accreditation System (BVAS) was introduced (Anyanwu et al., 2022). This helped to increase the electoral conduct in Nigeria. The electoral umpire, INEC has promised to deploy same technology for the 2023 election. The BVAS had a large screen like that of a Tablet with three authentication factors viz; thumb reader, bar code and facial scanner. Any of these could be used to authenticate a voter, unlike the single mode card reader used in the previous elections. This improvement exited the era of incidence form which was filled anytime the card reader couldn't read someone's thumb in the past elections. And many citizens doubted that the votes of those who filled the incidence form never counted.

4. Research Method

The author directly observed the happenings and took notes on each of the presidential elections conducted between 2011 and 2019. The INEC commissioner of a state in 2011 election, which the author prefers to keep anonymous, was consulted and told about this research, and permission was granted. The researcher was then deployed to work as a Supervisory Presiding Officer, where he gathered data on the workability of the monitoring style of election. Corps members and other electoral staff were told about the present of the author as a researcher. In one of the Local Government Areas (LGAs) coded as L1, there was a ballot box snatching, after a shootout which made people scamper for safety. In another LGA within same state (L2), there was vote buying. All the electoral officers were given bribe to compromise the outcome of the election. The politicians giving out these monies tagged it "feeding allowance" from their parties. The three major parties in the election (PDP, APC, APGA), were all involved in the feeding stipend distribution. There were physical monitors in these two LGAs. These monitors were also given stipends (bribed because the monies were huge, ranging from N20, 000 to N50, 000). This bribe was confirmed after no report was given about the ballot snatching in these areas under their watch. In 2015 election, the same process of obtaining permission was followed. In one of the LGAs (L3), there was a fight between party agents who were quarrelling over valid/invalid votes. In L4, electoral materials arrived few minutes to the end of the election, after voters had waited for a very long time. There were human monitors and observers on ground, yet no good report was sent to the Federal Government for cancellation of results. In 2019 election, the voting machine malfunctioned in L5 and L6 respectively. This caused chaos that resulted to some voting materials being destroyed. All these were not reported by human monitors that were present. If there were centralized cameras that were installed, these occurrences would have been taking cognizance of by those in the central INEC office.

5. CCTV as a Solution

Wireless Close Circuit Television is a gadget that monitors events and happenings in designated areas of coverage with no physical cable run or seen. This Wireless options for transmitting video can be advantageous due to ease of installation, lack of cabling requirements, and assured mobility. The wireless Close Circuit Television is basically used for security purpose in official buildings and homes. They are just like the ordinary video cameras although they have several unique features. For instance, they come with monitors that help them to operate on their own. They can also use wireless transmission to send images to monitors. Once the monitor has received the images, it sends them to the video tape or DVR. These cameras also have the ability to zoom in and out depending on the type of lenses they have. The camera works the same way that an ordinary camera does, only that it can be left to operate on its own. The camera

comes with a motor that helps it to move the zoom parts. Once an image has been picked by the camera, it is taken to the monitor and then recorded on video tape or Digital Video Recorder (DVR). The ability of the camera to zoom in and out is determined by the type of lens it has. Care Quality Commission (2014) opined that:

- The most common uses of surveillance systems, such as CCTV, are as a way to enhance the security and safety of premises and property, and to protect the safety of people. Surveillance may also be used as a tool to help protect people from the risk of abuse, or to investigate allegations or serious concerns about possible abuse or crime.

When we talk about “CCTV”, we mean camera surveillance systems that capture images of individuals or information relating to individuals. For example, a CCTV system may be used:

- To track or monitor what an individual (or group of individuals) is doing, for example in a shop or walking down the street;
- To capture information that could be used to investigate a crime
- To use surveillance as a means of deterring crime

From the foregoing, there is no doubt about the fact that Wireless CCTV will go a long way to solve litany of security challenges we encounter on election periods in Nigeria.

6. Wireless transmission mechanisms that can establish the workability of wireless CCTV

There are various kinds of wireless mechanisms through which CCTV can be connected and data transmitted wirelessly. These are Laser, Infrared, Radio frequency, Microwave and IP Network Transmission.

6.1. The Laser

Laser transmission systems offer the following features:

Transmission over distances of 20 meters to 2 kilometers in clear weather; Data speeds from 25 MB to 1.2 GB; Handling of misalignments of 2.4 degrees horizontally and vertically (Sharma, 2014).

- No ground loop, lightning, or induction issues;
- No license or permit requirements; and
- Difficult to tap into without being detected.

6.2. Infrared

According to Uysal et al (2014), an alternative to laser transmitters is an IR LED transmitter. IR LED systems may cost less than laser systems, but they often have shorter transmission distances and lower bandwidth. LED systems are also more susceptible to reflections when transmitting through glass.

6.3. Radio Frequency

Radio frequency (RF) is another method of wireless transmission relevant to CCTV surveillance. RF modulation of video signals is used in cable TV systems with ultrahigh frequency (UHF) and very high frequency (VHF) bands. RF encompasses a broad range of frequencies. Transmissions are typically focused beams, which are most efficient in open-air, line-of-sight situations (Baird et al., 2015). Physical obstructions such as walls or buildings are likely to degrade an RF video signal.

6.4. Microwave

Microwave transmission is a wireless, line-of-sight transmission medium with many similarities to laser and LED systems (Amer and Shaban, 2022). Depending on its specific configuration, a microwave system can transmit video, audio, and data. Some factors to consider when exploring microwave transmission are: Transmissions from 100 feet to 20 miles are possible, and longer distances can be achieved with microwave repeaters which tolerates adverse weather and obstructions better than laser transmission. However, very heavy rainfall and very dense fog can affect microwave transmissions. Microwave systems emit at low energies, which are typically less than 1 milliwatt per square centimeter (mW/cm^2). In comparison the minimum safe radiation exposure level established by the American National Standards Institute is $10 \text{ mW}/\text{cm}^2$ (AIHA, 2003); and Microwave systems typically are more expensive than LED or laser systems.

Microwaves can pass through glass; therefore, mounting a system indoors to maintain an aesthetically pleasing building exterior may be feasible. The receiver and transmitter require careful alignment for optimal results. Since the signal can weaken over a long distance, it is important to consider the distance and performance requirements carefully in the system design. Shiny surfaces, such as windows or water that are aligned parallel to the beam, may reflect energy in the outer portions of the beam toward the receiver and degrade the video signal.

6.5. IP Network Transmission

IP-based systems have emerged as an attractive alternative to other technologies, due in large part to their ability to achieve high-performance video capabilities at a low cost. The industry has found ways to implement IP-based systems that use existing cameras, cables, and other equipment. However, organizations planning and designing new systems should consider IP-based technology (Shin, 2014).

7. Conclusion

Security of lives and properties is paramount in every endeavor including electioneering. This study has been able to X-ray the workability of Wireless Close Circuit Television and also highlight the cases of insecurity and related challenges during elections in Nigeria. An election with a proper technology and monitoring system would have a less biased result or outcome as evidence leading to the conclusion and declaration of the winners by the INEC would be glaring and undoubted.

8. Limitation

This study was limited by the number of LGAs that were covered in this research, and this could affect the generalization of this research that elections between 2011 and 2019 were not carefully monitored. This was because of finances and sensitivity of election related researches. However, it is advised that expanded study should be made on more, if not all localities in Nigeria, as to have corroborated or refuted outcome for decision making.

Recommendation

Since human electoral monitors are compromised often, this study recommends that:

- Electoral bodies implement the Wireless Close circuit Television monitor which would record events in all polling units and go a very long way to arrest the security challenges recorded in elections in Nigeria.
- Government should equip the electoral bodies with all needed states-of-the-arts technologies to carry out their electioneering duties perfectly.
- INEC should involve the National Communication Commission Staff who are well trained and experts in the field of handling ICT gadgets during elections, as to help them to make sure they have perfect outing.
- INEC, Police and other Security agencies should create ICT centers where all their Staffs would be intermittently trained on the workability and usage of Wireless CCTV especially prior to elections.
- As the 2023 election is fast approaching with three major contenders (Mr Peter Obi, Mr Atiku Abubakar and Mr Bola Tinubu), causing high heat in the country, this recommendations should be implemented as soon as possible.

Compliance with ethical standards

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