TECHNOLOGY BASED DEVICE AND ELECTORAL PROCESS IN NIGERIA

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Abstract
The use of technology is the most appreciable and the real issue in the 2015 general election in Nigeria’s democratic system. The main reason for the use of the technological based device for the conduct of the election by the Independent National Electoral Commission was to check electoral fraud. The smart card reader had played a very significant role in the 2015 general elections in Nigeria. This paper therefore examines the impact of technology in improving the credibility of 2015 general election in Nigeria. Cybernetic model of communication theory was adopted for the study. The objectives of the study was to examine the impact of technology on the 2015 general election and to have a critical look into the use of smart card reader and to identify some of the challenges recorded during the exercise. Data were gathered from secondary sources and analyzed. The study finds that the use of technological based device has helped in reducing electoral fraud in the electoral process in Nigeria. However, there is need to ensure that the issues and challenges which confronted the use of the device during the elections do not reoccur in future elections.

Keywords: Technology, Election, Democratic System, Electoral Fraud, Smart Card Reader, Cybernetics

Introduction
Technology is the accumulation of procedures, abilities, techniques and method utilized as a part of the generation of products, administrations or in the achievement of goals, for example, logical examination and election. Technology can be the information of methods, procedures, and so on or it can be implanted in machines, PCs, gadgets and manufacturing plants, which can be worked by people without point by point learning of the workings of such things
The introduction of technological devices most especially the smart card reader during the 2015 general election was mainly to check the abnormalities, irregularities and electoral fraud during the election. Free, fair and credible elections are central to electoral democracy and provide vital means of empowering citizens to hold their leaders accountable. In a multi-party democracy, it behoves both the elected and appointed government officials at all levels of the political system to render periodic account of their stewardship to the populace (Nwangwu, 2015).

The inclusion of technology in the 2015 general election in Nigeria can be traced to cybernetics theory. This theory was developed by Norbert Wiener in 1948. It is the scientific control of any system using technology. In the current age of globalisation, the dictates of global governance and democratisation require that countries comply with certain standards, and these standards are further propelled by technology, especially communication technology (Agbu, 2016).

According to Nnoli (2003), “elections are so clearly tied to the growth and development of representative democratic government that they are now generally held to be the single most important indicator of the presence or absence of such government”. They are meaningfully democratic if they are free, fair, participatory, credible, competitive and legitimate. Elections are, therefore, adjudged to have met these criteria:

- when they are administered by a neutral authority;
- when the electoral administration is sufficiently competent and resourceful to take specific precautions against fraud;
- when the police, military and courts treat competing candidates and parties impartially;
- when contenders all have access to the public media;
- when electoral districts and rules do not grossly handicap the opposition;
- when the secret of the ballot is protected;
- when virtually all adults can vote;
- when procedures for organizing and counting the votes are widely known;
- and when there are transparent and impartial procedures for resolving election complaints and disputes (Diamond, 2008:25).

Alebiosu (2015) was of the view that the 2015 general election appears to be the most keenly contested in the history of elections in Nigeria because it was the first time about four major opposition parties came together to form a very strong party, All Progressive Congress (APC) in order to challenge the dominance of the ruling party, Peoples Democratic Party (PDP) in the polity. According to Omotola (2013: 172), the election became the only game in town, shaping and reshaping public discourse and political actions.

Before the 2015 general elections, some technologically based reforms such as biometric Register of Voters, Advanced Fingerprints Identification System were embarked upon by the Independent National Electoral Commission headed by Prof Attahiru Jega, the election management body empowered by the 1999 Constitution (as amended) of the Federal Republic of Nigeria to organize, undertake and supervise all elections in Nigeria.

The adoption and the use of biometric in African elections is on the rise. No fewer than 25 sub-Saharan African countries (e.g. Sierra-Leone, Democratic Republic of Congo, Zambia, Malawi, Rwanda, Senegal, Somaliland, Mali, Togo, Ghana etc.) have already held elections employing a biometric voter register (Piccolino, 2015). The Automated Fingerprint Identification System was used in the 2011 general elections as a digital register to eliminate doubles from the list, and was not capable or verifying the identity of voters at the polling stations (Piccolino, 2015).

**Theoretical Framework**

Various frameworks have been used to explain the application of technology in society. This study employs the cybernetics model of communications theory as a tool for analyzing the role of Information and Communications Technology (ICT), in general and the card reader in particular, in curbing electoral malpractices during the 2015 General Elections. The communications theory was developed through the pioneering research efforts of Norbert Wiener, Louis Couffignal, John von Neumann, McCulloch, W. Ross Ashby, Alan Turing, W. Grey Walter and Karl W. Deutsch. In the field of computer technology, cybernetics has become a conceptual relic of communications theory. The significance of Deutsch's Nerves of
Government: Models of Political Communication and Control lies in that it is the first attempt to formulate a fully developed theory of politics based on a communications model. He particularly introduced the techniques of cybernetics to the sphere of political analysis. However, it was Wiener's work *Cybernetics* that gave the cybernetics model its analytic fervour. Wiener further popularised the social implications of the model, drawing analogies between automatic systems and human institutions in his work, *The Human Use of Human Beings: Cybernetics and Society*. Cybernetics is the branch of science concerned with the study of systems of any nature which are capable of receiving, storing and processing information so as to use it for control (Nwangwu, 2015).

According to Gauha (2003), “cybernetics is the study of the operation of control and communication systems; it deals both with biological systems and man-made machinery”. Similarly, “the term cybernetics covers not only the versions of information theory...but the theory of games, self-controlling machines, computers and the physiology of the nervous system” (Varma, 1975:432-3). The model is based on a multi-disciplinary approach which arose as an offshoot of the Eastonian systems analysis and seeks to explain how actions within a given system generate some changes in its environment. Thus, “the system codes incoming information, recognizes patterns, stores the patterns in its memory unit, learns from its experience, recalls information on command, recombines information in new patterns, and applies stored information to problem-solving and decision-making” (Winner, 1969: 9).

The growing complexity of the world has made the use of ICT for administrative purposes a desideratum. Accordingly, Winner (1969:3) argues that “in a world which has become increasingly complex and bureaucratic, information may well provide a form of theoretical shorthand useful for the understanding of how regimes operate and how they tend to break down”. The 21st century has been generally characterized as the electric or jet age in order to underscore the pervasiveness of computer technology in different spheres of human existence. Hence, the practice of politics has increasingly involved the use of electronic mass media, mobile telephony and high-speed digital computers. As an activity in which men and machines participate hand-in-circuit, it is not surprising that the cybernetics model should become plausible as a basis for understanding electoral democracy. Men, machines, and political units all dispose of information from their environments in essentially the same manner. They act on certain varieties of messages and reject others. Progress has now been greatly accelerated by the use of digital computers as a new instrument for stating and testing theories. One of the earliest studies on voting decisions where the cybernetics model was applied is *The American Voter* where Angus Campbell led other researchers to give sophisticated accounts of how computer technology influences electoral processes (Nwangwu, 2015).

It is pertinent to note that the model is designed to elucidate understanding of the desirability of achieving credible electoral democracy within the electronic womb of computer technology. Thus, advances in ICT, especially through various social media platforms appreciably improved the transparency and credibility quotient of the 2015 General Elections in Nigeria.

**Permanent Voter Card and Smart Card Reader: the victory of Technology**

The Independent National Electoral Commission (INEC) produced Permanent Voter Cards (PVCs) for 68,833,476 persons in the biometric Register of Voters ahead of the March 28th and April 11th, 2015 general elections. The PVC replaced the Temporary Voter Card (TVC) issued on the heels of registration of voters in 2011. According to INEC, quality, security, durability and cost effectiveness were underlying factors in the production of the Permanent Voter Cards by INEC. These cards have many components and specialized features (e.g. base substrate, security printing, personalization, lamination and chip embedding), and it was designed with an average life span of ten (10) years (INEC, FACTSHEET on PVCs and Card Readers, 2015). The PVC has an embedded chip that contains all the biometrics of a legitimate holder (including fingerprints and facial image). On Election Day, it would be swiped with a Smart Card Reader at the polling unit to ensure 100 per cent authentication and verification of the voter before he/she is allowed to vote. The PVC has security features that are not easily susceptible to counterfeiting. Only voters who had their PVC were allowed to vote in the 2015 general elections. The PVCs were available for collection at distribution
points in the 36 states of the country and the Federal Capital Territory (FCT) until Sunday, 8th March 2015 (Agbu, 2015).

The smart card reader is a technological device setup to authenticate and verify on election day a Permanent Voter Card (PVC) issued by INEC. The device uses a cryptographic technology that has ultra-low power consumption, with a single core frequency of 1.2GHz and an Android 4.2.2. Operating System (INEC, 2015).

In other words, the INEC card reader is designed to read information contained in the embedded chip of the permanent voter's card issued by INEC to verify the authenticity of the Permanent Voter's Card (PVC) and also carry out a verification of the intending voter by matching the biometrics obtained from the voter on the spot with the ones stored on the PVC (Engineering Network Team, 2015).

The ability of the card reader to perform the above described functions as well as keeping a tally of the total numbers of voters accredited at the polling unit and forwarding the information to a central database server over a Global System for Mobile (GSM) network makes the card reader most welcome at this point in time in the nation's electoral history (Engineering Network Team, 2015).

On March 7, 2015, INEC test-ran the reliability of the biometric technology in 225 out of the total 120,000 polling units and 358 out of the 155,000 voting centres that were used for the elections (Idowu, 2015). The test-run of the device took place in 12 states namely: Rivers and Delta (South-South), Kano and Kebbi (North-West), Anambra and Ebonyi (South East), Ekiti and Lagos (South West), Bauchi and Taraba (North East) as well as Niger and Nasarawa (North Central). While acknowledging the challenges of the device in confirming fingerprints, the Commission expressed satisfaction that the basic duty of the card reader to authenticate the genuineness of PVCs was in almost all cases achieved.

**Impact of Technology on Electoral Process of the 2015 General Elections in Nigeria**

The adoption of smart card reader into the 2015 general election has helped in curbing electoral fraud. Many technology experts in Nigeria, who monitored the elections, are full of praises for INEC for insisting on the use of card reader machines, saying it is the best thing that has ever happened to the Nigerian electoral process in the area of election transparency.

The smart card reader was the most highly contentious and the real issue in the 2015 general elections in Nigeria. The smart card reader was a critical component in the 2015 general elections. It was used for the first time in Nigeria’s electoral process and it remains one of the greatest innovative technologies in the 2015 general elections (Alebiosu, 2015).

Among the fundamental basis for the deployment of the technologically-based device in the 2015 general elections by INEC was to prevent electoral fraud; to allow the electorates votes to count; to reduce litigations arising from elections; to authenticate and verify voters; to protect the integrity and credibility of the election; to audit results from polling units across the federation; and to ensure transparency and accountability. Others are to do a range of statistical analysis of the demographics of voting for the purposes of research and planning; to build public confidence and trust in the election; to reduce electoral conflicts; to ensure a free and fair election and to further deepen Nigeria’s electoral and democratic process (Alebiosu, 2015).

The 2015 General Elections in Nigeria was the 5th quadrennial election to be held since the end of military rule in 1999. The successful conduct of the 2011 General Elections marked a watershed in Nigeria’s democratic trajectory, as it contrasted sharply with the mismanagement and widespread fraud of previous polls. At the end of the voter registration exercise in 2011, INEC had claimed that a total of 73 million Nigerians had registered out of which the Automated Fingerprint Identification System had removed 800,000 persons for double registration (Aziken, 2015). Thus, determined to improve the outcome of the 2011 polls, INEC introduced technological innovations which were used to curb electoral fraud. These included a biometric PVC and card reader machine used to verify the authenticity of the PVC and also carry out a verification of the intending voter by matching the biometrics obtained from the voter on the spot with the ones stored on the PVC. The 2011 voters’ register Nigeria’s first electronically compiled register helped in the production of the PVCs that were used in the 2015 General Elections. The card reader is designed to read biometric information in the embedded chip of the PVC. It displays voter’s names and facial images, and authenticates their fingerprints. The deployment of the device ensured that each elector only voted in the
ward where he or she was registered. Although technology does not offer solution to all forms of electoral malpractice, the use of the SCRs made it more difficult to brazenly rig the 2015 General Elections. According to a press release by Mr. Kayode Idowu, the Chief Press Secretary to INEC Chairman, the decision to deploy SCRs for the 2015 General Elections have four main objectives.

- To verify PVCs presented by voters at polling units and ensure that they are genuine.
- To biometrically authenticate the person who presents PVC at the polling unit and ensure that he/she is the legitimate holder of the card. In this regard, there were a few issues in some states during the public demonstration. Overall, 59% of voters who turned out for the demonstration had their fingerprints successfully authenticated.
- To provide disaggregated data of accredited voters in male/female and elderly/youth categories a disaggregation that is vital for research and planning purposes, but which INEC until now had been unable to achieve. The demonstration fully served this objective.
- To send the data of all accredited voters to INECs central server, equipping the Commission to be able to audit figures subsequently filed by polling officials at the polling units and, thereby, be able to determine if fraudulent alterations were made. The public demonstration also succeeded wholly in this regard (Idowu, 2015 [http://inecnigeria.org/inecnews]).

Alebiosu (2015) postulates that the introduction of card reader has improved the electoral process in the following ways:

- First, the use of the card reader led to the increase and reinforcement of public confidence and trust in the electoral process. This public confidence is dependent on the integrity of an election which the 2015 general election appears to possess.
- Majority of Nigerians after the elections believed that their votes could count and as such their will be respect in future elections; and this has reinforced the legitimacy of Nigerians in the democratic process. Secondly, electoral fraud was reduced. Inflation of the number of voters present and multiple voting at polling stations were reduced. The device checked the undemocratic attitude of politicians in polling booth electoral malpractices.
- Thirdly, election litigations were minimized. There was a departure from the past where every election outcome is being contested at the election tribunal. Most of the candidates that lost in the 2015 general election did not challenge the outcome. In fact, some of the major contenders that did not win in the election embraced and congratulated the winners. For instance, the PDP presidential candidate immediately congratulated the APC presidential candidate, the winner of the presidential election. This attitude also happened across many states of the federation in the governorship and house of assembly elections and national assembly elections.
- In addition, electoral conflicts and violence was very minimal as the election was seen to be transparent and credible due to the use of the card reader. The usually excessive and pointless attacking and degrading between the election winners and losers in past electoral contest was significantly reduced. In view of the minimal level of electoral fraud due to the use of the card reader, tensions were reduced among the political gladiators, and as such, electoral conflict and violence was grossly diminished in the 2015 general elections outcome compare to past elections in Nigeria.
- Nigeria’s democratic capacity has increased and its democratic institutions strengthened. Nigerians and Nigeria’s democratic institutions now understood the knowledge needed to have a free and fair election in order to deepen the democratic process.

Elections in Nigeria are coterminous with brinkmanship and legal fireworks. Post-election dispute resolution is, therefore, a key activity which brings a final closure of the electoral process. Both the 1999 Constitution and the 2010 Electoral Act create the necessary ambience for election petition tribunals to adjudicate on petitions filed by complainants against the conduct of elections. Thus, the court is the only institution after the Commission that can determine the winner of an election or review and reverse the pronouncement of the Returning Officer on a poll (Nwangwu, 2015). He stressed further that, the invention of technology into 2015 general election in Nigeria has drastically reduced the number of election petitions.
The Challenges of Smart Card Reader in the 2015 General Elections in Nigeria

Despite the good intention of the Independent National Electoral Commission (INEC) to introduce smart card reader the first of its kind in the history of Nigeria election to avert, the problem of electoral fraud which has become the order of the day in the previous elections, this new innovation encounter numerous challenges. According to Alebiosu (2015) the following are the problems and challenges confronted by this device:

- The level of awareness among the electorates about the card reader was poor. A large number of Nigerians especially the electorates in rural communities are completely unaware of the device. Many of these categories of people have neither seen nor heard about the card reader until the Election Day. These categories of people have no information on the role of the card reader in the elections. There was a lot misconception about the device. To some of the electorates, the card reader was a voting device. This inadequate information dissemination and poor sensitization of the electorates on the card reader led to some poor human relations and uncooperative attitudes between some of the illiterate electorates and election officials.

- The training given to the ad hoc and INEC staff on the use of the card reader was inadequate. Majority of the Presiding Officers and Assistant President Officers I in the polling units were not effectively trained on the proper use and handling of the card reader. In most cases the venues provided by INEC for their training were crowded and not conducive such that most of the trainees did not properly receive the instructions on the use of the card reader. There were imperfect practical demonstrations of how the card reader would properly be effective. In some cases two card readers were provided for a class of hundred trainees.

- A large number of the trainees did not have the opportunities of operating the device. In some few cases, those that received training were replaced with those that have no proper idea of the effective use of the device. All of these led to the poor handling of the card reader during the elections to the extent that the protective film of some the card readers were not removed thereby leading to the impossibility of the device to detect thumbprints in some cases.

- Card reader breakdown was also witnessed during the elections. Some of devices malfunctioned on the day of election. Though, INEC had provided back-up in case of any card reader breakdown. However, some of the back-up failed to also function. For instance, five card readers were deployed for use at the polling unit of the Presidential Candidate for PDP in Bayelsa State yet none of them functioned. Similarly, the card reader at the polling unit of the Vice-Presidential Candidate of APC was non-functional.

- A number of the smart card readers were not smart to function effectively. A few of the card readers were unable to function due to blank screen, non activation of the Subscriber Identification Module (SIM) card in the device and low battery. Some INEC officials according to Vanguard (2015) attributed the failure of the card readers to INEC engineers who could not decode the inbuilt security installation in the card reader. The security code in the card reader is reportedly designed to update the time and date of voting. One official claimed that the cards were initially programmed for February 14 that with the postponement to March 28, some of the cards readers had not been re-programmed (Vanguard, 2015).

- Wherein the card readers functioned, a few of the devices were confronted with the challenge of PVC authentication and biometric data verification of the voters in the polling units. The authentication and verification of voters was part of the accreditation process for the election. A number of the PVC issued to voters by INEC could not be authenticated thereby disenfranchising some eligible voters in the elections. Wherein some voters’ cards were authenticated, their biometric data could not be verified after several trials; and where it is verified, it is slow in some cases especially the fingerprints.

Generally, the problems observed with the card readers during the 2015 General Elections are:
there were cases of fingerprint and even PVC rejection, especially of cards brought from other polling units;
a number of fingerprint rejections were among the elderly people;
there were cases of card readers not working at all;
there were delays in using the card readers in some polling units;
network failure;
there were cases where voters pictures did not appear on card reader;
some of the card readers functioned slowly and did not pick up on time;
some card readers were not very sensitive to thumbprints;
some card readers rejected their passwords initially;
there were a few cases of low battery strength and in some instances the batteries were completely drained;
there was a case where the card reader did not correspond with the manual;
some card readers stated card mismatch information;
some of the card readers had incorrect setting; and
during the Governorship and state assembly Elections, some card readers still had data from the March 28 elections on them (Election Monitor, 2015:46-47).

Most of these hitches as reported by Election Monitor characterized the Presidential and National Assembly Elections.

INEC as an institution improved significantly from the March 28 to the April 11 elections in the area of logistics, materials provision and mastery of the biometric technology by polling officers. The Commission was able to correct its mistakes of March 28 to deliver freer, fairer and more credible Governorship and SASS Elections. With particular reference to the South-West geo-political zone, the failure rate of SCRs dropped significantly after the Presidential and NASS Elections (Nwangwu, 2015).

Conclusion
The impact of technology into the electoral process is generating both interest and concern among voters, as well as the international community. Being the first of its kind in the history of Nigeria since independence and in the history of democratic governance, it shows that our democracy in Nigeria is wearing new look which will be emulated by the under developed and developing countries as well.

From the foregoing, the study therefore recommends that:

- The electoral body should put into use all measures that will help in combating logistic problems that was encountered during the 2015 general election and find means of upgrading some of their ICT centers to accommodate new discoveries.
- INEC should make use of the smart card reader in the state gubernatorial elections that will come up in states like Edo, Ondo, Ekiti and Osun. This will enable them to know where they are on the use of technology and to know the way forward before the 2019 general election.
- There should be enough sensitization of the general populace about the importance attached to the use of smart card reader in our election so as to promote and increase the interest of the citizenry in the national democratic process.
- Proper and adequate training and retraining should be conducted for both the permanent and temporary staff. This will help in sensitizing them on the effectiveness and proper use of the device.
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