Application of ICT and Electronic Technology in Election Management: Challenges in Rural Areas in South-Eastern Nigeria

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Abstract— *This paper has presented the applications of Information Communication Technology and election management. The study has reviewed several challenges and bottleneck encountered in the electoral democratic system in Nigeria election. During the study, the use of electronic technology adoption in the electoral process has actually reduced human involvement in election process; this is due to irregularities and incessant increase in violence among electorates, party agents and other stakeholders. The relevance of this paper is to address the integration of ICT as well as electronic digital devices in carryout electrons in Nigeria. The research was conducted in the rural areas of the South-Eastern Nigeria States, it was discovered that about 60% of the respondent stated that the use of electronic technology in the deployment to rural areas has inadequate trained personnel in effective handling of the gadgets, issues on the use of card reader malfunctioning was also sported out. It was recommended that the electoral bodies should sensitized, make adequate available of electronic devices for efficient and effective election management in Nigeria.*

Keywords— *Electronic Voting, Election Management, Electoral, Electronic Technology, ICT*

I. INTRODUCTION

In today's globalization, Information Communication Technology (ICT) has taken the centre stage as nothing can be organized and executed with greater success without its use. This has motivated its use in electoral process in many countries all over the world. It has also been proven to be more efficient and reliable in achieving viable, credible and free election than the traditional (or manual) way of voting. Nigeria has keyed into the use of ICT in its election management because of the need to have viable, credible and free election.

Recently, elections in almost part of the world are geared towards using electronic technology. The use of electronic technology (or machine) in election management is called electronic voting (e-voting). Several types of electronic technology have been adopted into the electoral process by electoral administrator [5]. In this type of election management system (EMS), the electoral process can be carried out by electronic digital (computer) equipment. This requires less human involvement or intervention. These electoral processes are highlighted and include voter, party and candidate registration; candidate support signatures verification; production of ballots; electoral logistics; identification of voter; voting in polling units or stations; counting of votes; transmission of results; preliminary and final presentation of results of data [5].

Election management in a few countries have been able to reach or attain this level of automation. Oftentimes, election management body of a country combines manual processes and electronic technology to form a suitable hybrid system. This is influenced by a wide range of factors which could be considered as peculiar system for any given country.

Electoral democracies the world over, are adopting the electronic voting (e-voting) and transmission of result. It is a common knowledge that the adoption of e-voting and transmission system in the management of election is to improve efficiency and credibility in the administration of electoral process [1]. Electronic voting is a type of voting in which voters are required to use electronic device to make and record their ballot choice [3]. Electronic voting and election management refers to the use of electronics devices or technologies for the organization, administration, and execution of electoral tasks so as to improve and automate the entire election process.

The Nigeria democracy like some other democracies practised in developing countries still "Young and fragile." This requires greater care and transparency to nurture it to full grown and developed democracy with strong democratic intuition and structure. Nigeria has been able to

join other nations in the use of electronic technology in its electoral process. This is occasioned by the fact that manual voting process has been characterized by widespread malpractices like violence, corruption and results falsification [2]. The use of ICT and electronic technology in EMS is due to the fact that elections in many countries especially in developing countries like Nigeria lack credibility. This because the electoral process are marred by rigging and violence [2]. As a result of this, many electoral reforms have sprung up in recent time in order to curtail or eliminate the inadequacy and weakness encountered in election management.

Majority of the settlers in rural areas are not conversant with the present day electronic technology and internet facilities. As a result of this, devices such as digital capturing camera, finger print scanner, laptop etc. are not fully deployed to rural areas for use during election period. This has led to the wastage of resources, encouraged rigging, violence and all other forms of election malpractices in rural areas. As reported in [4], e-governance suffered because the people living in rural areas could not adopt the technology and as such e-voting system was not able to yield fruitful result in rural areas in Nigeria during election exercise, though with e-governance in place, e-voting could be fully implemented.

II. STATEMENT OF THE PROBLEM

The irregularities and widespread violence that occur during and after election occasion by rigging and election malpractices is a serious issue of great concern to election management body, government and other stakeholders. In order to address these, Information Communication Technology (ICT) and electronic technology has been employed in the electoral processes mostly in developed democracies. The adoption of ICT and electronic technology into the electoral process, its usefulness notwithstanding, still suffers some setbacks occasioned by poor or erratic power supply, malfunctioning, unskilled personnel, mass illiteracy, and election fraud using electronic voting. However, many research studies have been presented in literature based on the use of ICT and electronic voting in election management. Amongst these, only few have been considered the use of computer in election process in Nigeria with focus on rural areas. This study is presented to add to the gap existing in research works on the application of ICT and electronic technology in election management system in rural areas with focus on South Eastern Nigeria.

III. SIGNIFICANCE OF THE STUDY

In the research works of [6] and [7], the use of ICT in electoral processes was presented through the use of digital devices but not in Nigeria. Also, in the work of [8], election violence control was considered. This study examines the attendant issues arising in the application of ICT and electronic technology in election management in rural areas in South-Eastern Nigeria.

IV. RESEARCH OBJECTIVE

To The main objective of this research is to study the issues arising in the application of ICT and electronic technology in election management in South-Eastern Nigeria. The other specific objectives are:
I. To examine electronic voting system deploy all electoral activities, during and after election.
II. To study election management in using ICT facilities in rural areas in South-Eastern Nigeria.

To establish the various issues facing the application of ICT and electronic technology in election management and proffer useful suggestion for improvement.

1. REVIEW OF PREVIOUS STUDY

There are many related literature on the management of election (which focused on the Nigerian electoral process). Some of the works previously done that relate to this study are reviewed in this section.

On the study of design and possible implementation of electronic voting system, some of the works based on Nigerian electoral processes are presented. The research study carried out by [9] based on electronic voting, its challenges and prospect in Nigeria democracy, examined the development and implementation of electronic voting system (EVS) that supports voters to cast votes online and also for election administrators to register voters and print out the votes casted. Kuye et al [10] in the same vein developed a window based programme in their study on design and analysis of electronic voting system in Nigeria. The study aimed to computerise the Nigeria voting system. Also a paper on technological framework for transparent E-voting solution in the Nigeria electoral system was presented in [11]. It maintained that traditional voting is time consuming and often times subjected to irregularities. Also, card readers with biometric authentication technology which has been widely employed in view to achieving transparent results are subject to high level electoral fraud because of human control. Thus the desired result is yet to be achieved. It then presented a framework that consists of different electronic voting systems in a way that conform to the Nigerian electoral system so build confidence and trust in electoral process.

Some research works have looked at problems facing electronic voting in Nigeria. Ahmad et al [12] studied issues and challenges of transition to e-voting technology in Nigeria. It stated that country like Nigeria with enormous challenges of transparent voting system has adopted e-voting as an alternative to weaknesses that have

characterized the Nigerian voting system. It then maintained that with Nigerian moving into electronic voting and with few literature available on the enormous challenges facing the voting system, there is need to avail policy makers and democratic practitioners the factors affecting the electoral process. This will make them to play by the rules so as to have an acceptable and yet reliable voting system. In the study presented in [2] on challenges of ICT and election management in rural areas in Nigeria, the challenges surrounding the application of ICT devices in election process in South western part of the country were examined. According to [1], it is essential to pilot the electronic systems or gadgets by the electoral commission so as to build confidence in the performance. It recommended that earlier piloting of the e-voting technology in election management with the involvement of stakeholders the better the chances of building trust and confidence during elections. According to [13], in order to have an established and sustained credible electoral process, an essential ingredient that all election management body must adopt to is planning and needs anticipation. This is true because proper planning and anticipation of electoral needs will eliminate certain lapses that may likely hinder the smooth conduct of election.

2. ELECTION MANAGEMENT, ICT, AND ELECTRONIC TECHNOLOGY

The elections in Nigeria (national, state, or local government area elections) cover a wide area of geographical land mass. This area of land is habited by people with different living environments and with a varying literacy and educational level among the electorates. These people of course have different access to technology. Hence it is appropriate to categorize electorates based on their access to ICT and the voting electronic technologies. The following categories are formulated based on the voting populace:

a) Urban or rural dwellers
b) Accessible or inaccessible internet area
c) An internet (technologically) or non-internet (non-technologically) inclined electorate.

In this paper the focus is on rural dwellers. This is where the majority of the electorates resides. These areas are mostly referred to as remote areas. An area where it is not easy to have access to internet and modern electronic technology, and may not be internet connected. Majority of the electorates in this area are not internet or technologically inclined. So even when the electronic gadgets are provided and there is available internet service, their purpose for election often times suffers setback or are not utilized to the fullest. This is a challenge to the election management body and stakeholders.

The term ICT devices have been used in some literature to mean the same thing as electronic voting technology. This may seem appropriate, but it has considered separately this paper for clarification purpose. Information Communication Technology (ICT) involves sharing of information through a medium using electronic device. On the other hand, an electronic voting technology is a device or gadget that can function in isolation or as a standalone without internet service but will give greater efficiency, credibility and transparency if connected to the internet so that data/information can be shared in real time (that is ICT).

Generally, based on the particular electronic voting (e-voting) system implemented, two main types are possibly identified. These are:

i. Electronic voting in which physical supervision is carried out by election administrators or representative of government. That is a situation in which the electronic voting devices are located at the polling units; and this requires no internet (or ICT) services because data/information are shared or transferred in real time with any network.

ii. In a situation where the registration or voting result is required to be received by election management body with their not being physically present owing to the remote location of the place where election is being held, an internet services, private computer network, or telephone lines can be used to transmit results from the polling station to election authority. This is known as remote e-voting or simply called i-voting.

Since the use of ICT and electronic technology in election management has been adopted in Nigerian electoral process, it is expected of the electorates to be able to recognize and identify the electronic voting devices and their functions. These electronic-voting devices must be made availing by the independent Electoral Commission (INEC) at the various registration centres and/or polling units depending on the level or stage. Table 1 below is a list containing the Election management levels employing ICT medium and electronic technology.

Table.1: A List of Election Management Stages using ICT medium and Electronic Technology

Election Management Level	ICT Services (On-line service)	Electronic Technology
E- Registration	Internet services (e.g. Websites, e-mail), computer network	e-voter registration system, optical scan, data capturing device, printer module, laptop

		computer
E-Campaign	Internet services, Telephone lines (mobile network), Radio and Television networks	Graphic device, Mobile phones, Radio set, Television, computer system, electronic pool book
E-Voting	Telephones, private computer networks, Internet	Optical Scan, punched cards, voting systems, voting kiosks
E-Counting	Vote counting server	Optical mark recognition, optical character recognition, punch card counting machines, electronic ballot boxes
E-Compilation	Internet services, computer network	Mobile phones, computer system, Storage devices
E-Result	Internet services, mobile network, computer network, radio and television networks	Radio, television, electronic publication, electronic magazine

The e-voting system in Nigeria has not been fully automated to the level of online voting providing internet services for connectable household devices and remote location. It is presently limited to e-voting in which there is physical supervision by INEC representatives. That is electronic voting systems are located at the various polling stations in the area where election is held.

3. METHODOLOGY

This research was conducted considering the rural areas in South-Eastern Nigeria following some of the recent re-run elections for State and Senatorial Constituencies in Imo State, Local Government Area (LGA) Chairmanship and Councillorship elections in Ebonyi State, Gubernatorial election in Anambra State, and the most recently conducted senatorial election in Anambra State. So, out of the five states that make-up the South-Eastern region of Nigeria, which are: Abia, Anambra, Ebonyi, Enugu, and Imo; only four states were considered. The sampling method was used to sample and cover the four states

considered. The process of data gathering used was based on participant's observation and oral conversation. This was conducted among randomly chosen or selected participants considering age, class, sex, and status. One hundred (100) participants within the four states were considered. The information collected was properly studied and analysed. The respondents were sectioned in percentage according to their response to the question put forward to them.

4. FINDINGS AND DISCUSSION

Though Nigeria has not fully moved into online voting where ICT will play a centre role, it has only employed internet services in voters' registration. This study finds out that even where ICT is used and electronic technology deployed to manage election in rural areas, certain problems arise.

Firstly, the problem of personnel handling the electronic devices: About sixty percent (60 %) of the respondents orally interviewed stated that the use of electronic technology in voting is marred by the problem of inadequate number of personnel to handle the gadgets. Even where adequate personnel are present, the available gadgets are few compared to the number of voters at the polling units. Also, most of the personnel deployed to rural areas to handle these gadgets are not properly trained to effectively operate them. That is, they lack the expertise required to operate the gadgets. This problem can lead to manipulation of votes, and the outcome is rigging of election.

Secondly, due to the remote nature of some parts of the rural areas where elections are held, the respondents (50 %) reported that politicians deployed hired thugs to snatch or destroy the e-voting facilities meant for elections. This act largely impact negatively on the success of the election. The result of this is rigging or inconclusive election. This also can lead to voters' apathy and loss of interest in participating in election because fear of being harassed or intimidated by thugs.

Thirdly, there is generally problem of unstable power supply in Nigeria. The ICT facilities and electronic devices needs constant power to operate efficiently. Forty percent (40 %) of the respondents reported that most of the voting machines stops during the voting process due to battery run down. And when this happens in most cases, no available power supply to recharge battery or power the system. This can create loss of confidence on the credibility, integrity, and reliability of the system and the entire process.

Also, the issue of card reader malfunctioning: the response of forty five percent (55 %) of the respondents orally interview showed that the electronic card readers deployed to conduct elections in rural areas are oftentimes not properly in good working state or are not well

programmed for the task. This act seems deliberate as most often when compared to elections in urban areas where this is uncommon. This problem occasioned by poor election management, gives room for manipulation of votes and rigging of elections most times in rural areas.

It was again observed from the response of thirty five percent (35 %) of the respondents that they were not given any pilot training nor were they exposed to the devices. This has resulted to the interference of the election officials to assign somebody or themselves to guide or support some of the electorates on how to go about using the electronic devices to cast their votes during the voting process. They claimed that oftentimes, the choice of the electorate on whom to vote is being influenced. It is obvious that a situation like this makes an election to be unfair and the right of the electorate to vote the person of his choice has been denied. In fact, the credibility and transparency of such an election is lost.

Generally, the study revealed that the success of the use of electronic technologies in the management of elections in rural areas is seriously and largely hindered due to the problem of malfunctioning of the voting devices. There is the problem of inability of the personnel deployed to properly operate the gadgets to enable maximum number of voters to be accredited and cast their votes. This will make many eligible voters who came out to cast their vote to be disenfranchised. Also, the fact that most of the rural areas, usually very remote from the city, have poor network or internet coverage. Hence, the result of the voting process cannot be tracked or checked online or in real time and this brings delay in data collation and result announcement.

5. RECOMMENDATIONS

In order to properly manage the e-voting system in Nigeria rural areas so as to reduce most of the issues that have impacted adversely in election process, they following are worthy of note.

1. There should be proper sensitization and pilot training organize for rural dwellers with respect to the use of the electronic technologies.
2. The election authority should ensure that the personnel deployed to handle the electronic device have adequately acquire the expertise training on its operation and usage.
3. The government in collaboration with mobile network providers should ensure that rural areas are equipped with stable and reliable internet access facilities.
4. An adequate and reliable power supply should be provided in rural areas.
5. Also, adequate security should be provided during election in rural areas to ensure the safety of life,

the electronic devices and other election materials used.
6. The electronic voting systems deployed to rural areas should be properly checked to ensure they are in good working condition.
7. There should be enough personnel trained by the election management body to handle election in rural areas.

V. CONCLUSION

So far, the application of ICT and electronic technology in election management with focus on rural areas in South-Eastern Nigeria has been presented. The proper management of election in Nigeria so as to have a viable, free and fair election has been an issue of serious concern to election authority and stakeholders. In order to reduce or eliminate the irregularities that have marred the traditional voting system, the election management body decided to employ electronic voting system for proper conduct of election. This, it was believed, would make the election more transparent, reliable, credible, free and fair. However, it use in the conduction of election mostly in rural areas suffers some setbacks despite the fact that the application of this technology has somewhat improved confidence in the voting system. This paper has studied some of the issues surrounding the use of the electronic technology in rural areas in South-Eastern Nigeria. It revealed from the response of the respondents who were randomly selected and orally interviewed in rural areas covered that poor power supply, lack of expert personnel deployed to handle the devices, malfunctioning, inability of some electorates to use the gadget proper for voting, and insecurity are some of the problem being faced in using electronic technologies in the conduct of election in rural areas. This generally leads to poor election outcome and loss of confidence in the entire process by the electorates. Hence, the purpose of deploying such devices in election management seems to have been defeated.

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