

ELECTRONIC VOTING SYSTEM AND ITS ROLE IN ENSURING CREDIBLE ELECTORAL PROCESS (NIGERIA AS A CASE STUDY)

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Abstract- The Evolution and advancement of various technologies, exactly information technology has greatly obsoleted the standard method of polishing off many-sided functions. Invariably, company outfits, Private Businesses, Governmental, law-making and leadership structures, etc. all look towards the exploration of time saving, Efficient, Effective and additional reliable ways in which there day to day businesses can be run. Thus, kinds of technologies that may facilitate these functions are welcomed with open arms. To confirm credible and truthful electoral method, different world governments are step by step substituting the paper ballot method of conducting elections with newer and additional systematic ways that is suitable in eliminating the traditional method of conducting elections (E.g. the Electronic voting systems). Apparently, the discretionary and obscure fuss that has encircled the Nigerian elections in decades suggests that the simplest way to work against this menace would be to integrate the e-voting system into the voting system of the Nigerian government. This study will carefully analyse the various issues that are inherent with the Nigerian electoral method further as counsel ways in which these shortcomings are solved. It will further highlight and identify distinct criteria's that should be met before the e-voting system can be successfully implemented.

Keywords- Smart Electronic voting machine (EVM), Card reader, Ballot unit, Control unit

INTRODUCTION

The democratic state of Nigeria have posed a large concern to the Nigerian voters within Nigeria and in diaspora, slightly above a decade. For over fifteen years, Nigerian government has been noted to be running a democratic system, however the results of the various electoral processes that has been polled between these years have stated contrarily. Polls outcomes and analysis made of the various elections that has been conducted since Nigeria became a democratic state have shown that the Nigerian system has not yet recorded any strikingly reliable election method. The leadership of every dynamic and prosperity minded nation comes as a results of a triple-crown system of balloting. A decent variety of democratic governments have invested monumental funds to their voting system to confirm they need a wide accepted & reliable system. Within the case of African countries such as Nigeria, it looks like the political extremists are not willing to throw into this line of modification that their democratically connected counterparts/countries have invested into. Several eligible Nigerian voters don't participate within the electoral processes any longer. Lots of them have lost confidence of the method, whereas a decent variety of individuals wouldn't participate out of sheer concern of insecurity that has been systematically recorded throughout election days. Previous before the last ended election in Nigeria this year, 2015, cases like snatching of ballot papers, ballot boxes, felony of voters, relentless gun shots within the air (just to intimidate voters), killings, manipulation of results, child citizen registration, indeterminate elections, voters marginalization etc. were all dominant within the Nigerian system. Hence,

these problems encircled within the Nigerian system of election has made it tough for many Nigerians to

just accept outcomes of elections. The precipitous rise of data/information technology has narrowed down these influences or factors that might influence against triple-crown or fair electoral processes. Hence, several democratic countries have welcome the great tidings that this evolution should provide since it has to do with computers that recorded a good level of acceptance when it had been 1st developed. The event of computers has seen the world witness immeasurable technological advancement altogether. This has created the overall acceptance from the educated and non-educated masses since the technological progression has to do with computers. It's been conglomerately accepted as an agent of modification and improvement in any system it's been projected to be used. Each electoral method should be verifiable, incoercible, un-reusable, clear, auditable, value effective, efficient, reliable etc. Nonetheless, Electronic electoral system that is an embodiment of the data technologies is projected to be the foremost acceptable answer to the electoral manoeuvres common with the Nigerian election method.

1.1 In Vogue Voting System in Nigeria

Prior to the commencement of the Nigerian 2015 election, freelance or Independent National Electoral Commission, INEC, that is the commission accountable for conducting elections in Nigeria declared the introduction of Permanent Voters Cards (PVC) primarily for enfranchisement and authentication of eligible voters before votes may be forged. Also, they introduced the employment of card readers whose operation encloses, Authentication and enfranchisement of eligible voters and additionally

reading of PVCs. The card reader was designed according to different polling units. Invariably, every polling unit were entitled to a particular variety of card readers that might solely work on the precise polling unit that it had been designed. The card reader will solely be utilized by an INEC officer specifically trained to operate and take charge of the device. Electronically designed chips were surreptitiously embedded on the Permanent Voters Card which can solely be scan by the card reader. The data of the citizen in surreptitiously encrypted on the PVC, so once the permanent voter's card is slide across the card reader, the information of the citizen displays. Hence, after these processes, the voter can now proceed for finger printing. Upon the completion of the accreditation method, a detailed key (V) is employed to finish the method that eventually permits the officers in charge to have a preview of all the voters successfully accredited using a query key.

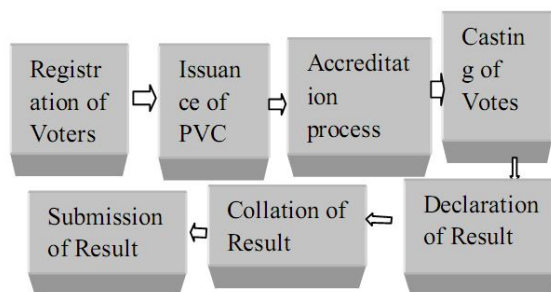


Fig 1. Block Diagram of the Nigerian 2015

Electoral Process

The figure above represents the various processes that was followed in the Nigerian 2015 elections. The proposed Electronic voting system will follow immediately after the third block. Hence, the first three processes which includes, Registration of voters, Issuance of permanent voter's card (PVC) and Accreditation of Eligible voters remains valid and should be utilised in the Nigerian context.

1.3 Inadequacies Recorded In the 2015 General Elections Conducted In Nigeria

In the 2015 general elections that had just passed off in Nigeria, lots of loopholes and discrepancies were recorded, even with the fresh adopted technology that was utilized in the accreditation method (The Card Reader equipment). variety of those issues recorded includes:

- Malfunction of the Newly acquired accreditation card reader
- Accreditation of below aged voters
- Election not conducted in many registered polling units
- Late Arrival of INEC officers to the polling unit
- Late Arrival of Ballot materials
- Multiple polling by one voter
- Snatching of ballot materials
- Conflicts between opposition parties/electoral aspirants

These issues were greatly witnessed in the course of the 2015 Nigerian elections. There was a transparent indication that the card Reader technology that was adopted by INEC throughout the 2015 election wasn't able to solve the various downside inherent with Nigerian Election. It had been additionally recorded that the card reader malfunctioned and was unsuccessful at different polling centres that caused the INEC officers to move to the traditional or previous manner of accrediting voters. These discrepancies witnessed within the electoral method cause numerous chaos and conflicts between parties, interest groups and aspirants. thus with these underlying problems we will conclude that the simplest approach in making certain viable and greatly acceptable election in Nigeria is to initiate for a more systematic and dynamic method that can help in which completing these activities effectively with an imperceptible error. Therefore, Electronic balloting system would be ideal for the Nigerian scenario.

2.0 ELECTRONIC VOTING SYSTEM

Electronic electoral system may be outlined as a scientific methodology of completing electoral processes using an electronic device, machine or applications. The construct of E-voting relates to a computerized methodology of completing voting method. The technology of Electronic voting is of various varieties which incorporates the employment of optical scan voting systems, direct recording voting systems (DRE), punch cards, online voting, voting by telephones and via personal computers. Introduction of electronic electoral system in Nigeria can scale back the large value of funding and usage of the manual electoral system. It'll additionally improve the turnout of voters throughout the election time. What is more is that it will guarantee the safety of voters and speed up the counting of votes also as declaration of results. Cases like, attacks on ballot materials, corrupt action of poll officers and the abrupt standardization of the machine in favour of a selected candidate can all be eliminated with the utilization of electronic electoral system. Researchers and authors have projected differing kinds of E-voting systems. A receipt free multi authority E-voting system was projected by [1] and its aim is to eliminate coercion in voting and additionally issue receipt to every citizen by means of electronically designed instrumentation. The DRE technology with voters verified paper record systems was highlighted in [6]. The aim of the design was to permit voters to vote for their best candidates on the machine and in private and be able to verify their alternatives on the printed paper record. On-line voting was prompted by [7] as an appropriate answer for countries with similar setbacks like African country. Four completely different means of conducting on-line voting were suggested, such as, poll internet voting

systems (voters are required to travel to polling units manned by staffs and use computers to cast their votes), kiosk internet voting systems (permits voters to vote from computers mounted in kiosks in numerous locations that is convenient for them), Remote systems (voters will vote through any computer connected to the web from anywhere) and Regional poll site (voters are permitted to vote from any poll station in their city). Notably, these and many more electronic voting systems are designed and projected by completely different Authors and researchers all for the aim of facilitating electoral processes. Thus the massive question is, which of these completely different technologies would be most acceptable for Nigeria given the various constraints that surrounds the country?

2.1 PROPOSED E-VOTING SYSTEM FOR NIGERIA

Thorough analysis has been created on the various kinds of E-voting system designed and suggested. Hence, it's judicious to note that almost all of these voting systems mentioned above can't be enforced into the Nigerian electoral method because Nigeria is yet to attain the technological height that may incorporate these systems. For instance, lack of constant power supply (Electricity), inaccessibility of the internet in numerous areas, High level of illiteracy particularly within the northern part of Nigeria, No compact manner of monitoring on-line transactions, High cost of internet subscription etc. all these and many more are factors that may militate against the use of high tech e-voting systems. Until all these constraints are rectified, Nigeria may not be able to fully enjoy the dividend that comes with Electronic voting. Therefore I have considered the Smart Electronic Voting Machine (Micro-Controller Based) as the most suitable system that can be integrated into the Nigerian electoral process [4].

3.0 OPERATION OF THE SMART ELECTRONIC VOTING MACHINE SYSTEM

Two most vital part of the electronic voting machine is the control unit and the ballot unit.

3.1 CONTROL UNIT: This unit is comprised of the power supply, micro controller, Switch, liquid crystal display the Result Button. One among the functions of the control unit is to monitor the input switches. Once a voter casts a vote, it activates the busy lamp which suggests that all the input switches are disabled for a given amount of time. The implication of this method is that it helps in preventing any style of tamper from voters. With this method it's not possible for a voter to vote for over one candidate. The control unit additionally reserves the content of memory registers for candidates. Once the selection is completed, the results of the polls will be viewed within the liquid crystal display simply by pressing

the RESULT button that's on the control unit.

3.2 BALLOT UNIT: This unit contains of Busy-Lamp (Red in colour), Switches, Ballot paper and ready lamp (Green in colour). Let's assume that there are six candidates contesting for a specific position, then the ballot unit can comprise of six switches each of them can represent the various aspiring candidates. The switches will be marked with the various party emblem of the six contestants. These switches will be accessed by the registered voters who are certified to vote. They'll select the candidate of their choice by pressing the button representing their candidates. Right away the electronic machine device is switched ON, the ready lamp comes ON, that indicates that the electronic machine is currently able to recognise and settle for a vote. The ballot unit and control unit are connected together with six wires, thus once a vote is polled, the control or management unit receives a sign through one among the six connected wires so activates the busy lamp for a certain amount of time. The operation of the electronic machine isn't utterly completely different from the traditional/obsolete voting system were the elector comes to the polling unit for accreditation and eligibility verification, Right after that the voters thumb is marked and he/she is given a ballot paper wherever he/she will vote for his/her preferred candidate. However, within the projected Electronic voting system, once the voter has passed through the accreditation exercise, he/she is directed to travel into a specific chamber where the electronic machine is mounted, where one can secretly vote for one's favourite candidate. Once the ready lamp is ON, the voter will vote and immediately after that the busy lamp automatically comes ON. Once this busy lamp comes ON, the voter would be required to leave the chamber and if the voter tries to poll another vote, the vote wouldn't be recorded within the systems memory.

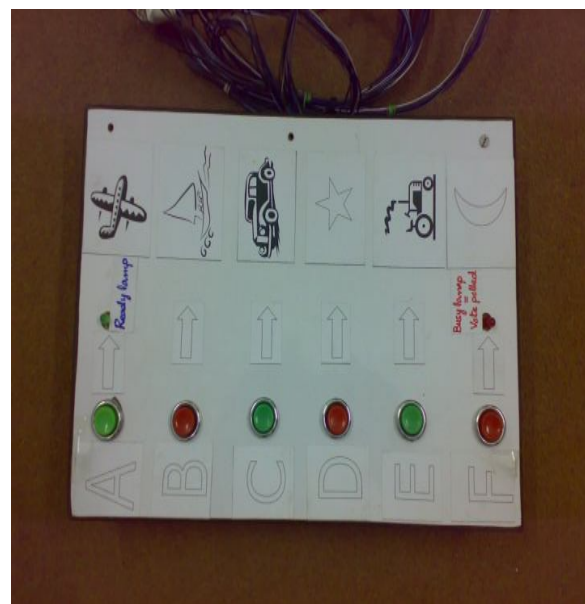


Fig 2. Physical Description of the ballot system [4]



Fig 3. Display screen of the electoral results [4]

On reference [4], the microcontroller circuit of the smart voting machine was rigorously analysed, with its elements outlined and explained. The machine is kind of appropriate for the Nigerian system as a result of the fact that it doesn't need a lot of technical power to control and it doesn't additionally need a lot of technologically familiarized approach. It's most appropriate since it can be simply understood by the overall masses, including illiterates and literates. One among its benefits is that it can be operated my means of external power provides (E.G electrical Generators) and it doesn't need internet connection for its practicality, that makes it out rightly cheap and affordable for the govt. to explore. Its operators might not have to be compelled to rely on the Nigerian Power offer company (PHCN) to control the system, thus it's most acceptable since it will be exclusively used without worrying of the unstable power supply problems that exists in Nigeria.

CONCLUSION

The EVM is quite an easy system and offers an appropriate work place potency because it is simple to grasp and operate. Given the voluminous

technological inadequacies that surrounds Nigeria, this technique presents the most effective escape route which will weigh down the deceitful reoccurrences that was witnessed within the 2015 Nigerian elections. This technique also will facilitate to revive the boldness of the individuals towards democracy. The system includes a very low maintenance rate and might be simply managed as its price of maintenance is relatively low in comparison to alternative electronic voting systems. Another advantage of this technique is that individuals will get the results of the elections right away once the polls are conducted which can facilitate and cut back the strain that had surrounded the country whenever polls are finished and the results are not speedily proclaimed. It'll further weigh down any plan to tamper the state of the poll's results by electoral officers in favour of a specific candidate since the results will be accessed at real time.

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